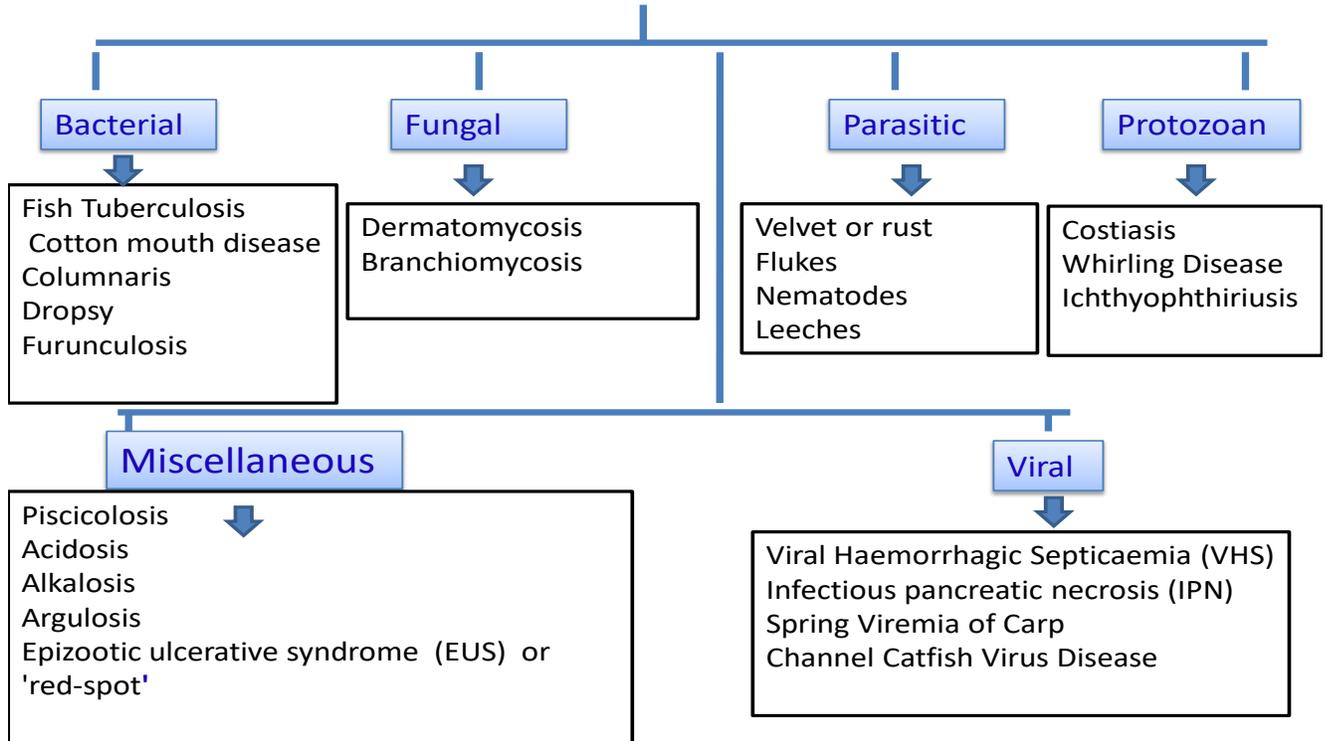


# “Fish Diseases”



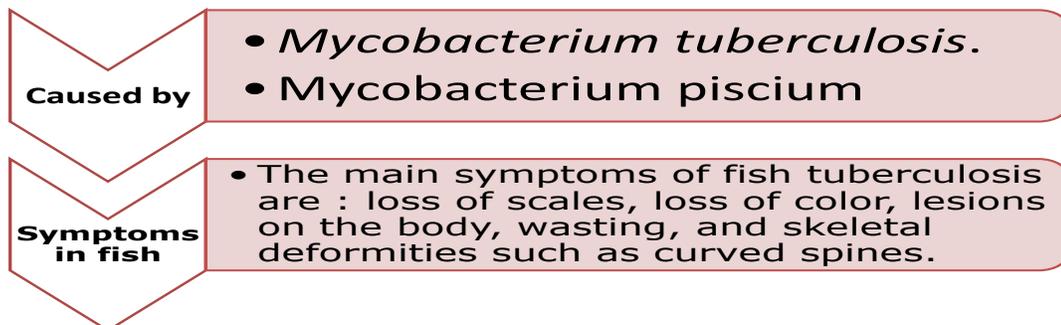
NOTE: Out of above mentioned ones only BACTERIAL, VIRAL, FUNGAL and PROTOZOAN DISEASES are included in your Syllabus.

## (A) Bacterial Diseases of Fishes

1. Fish Tuberculosis
2. Cotton mouth disease
3. Columnaris
4. Dropsy
5. Furunculosis

### 1. Fish Tuberculosis

#### 1. Fish Tuberculosis



#### Treatments

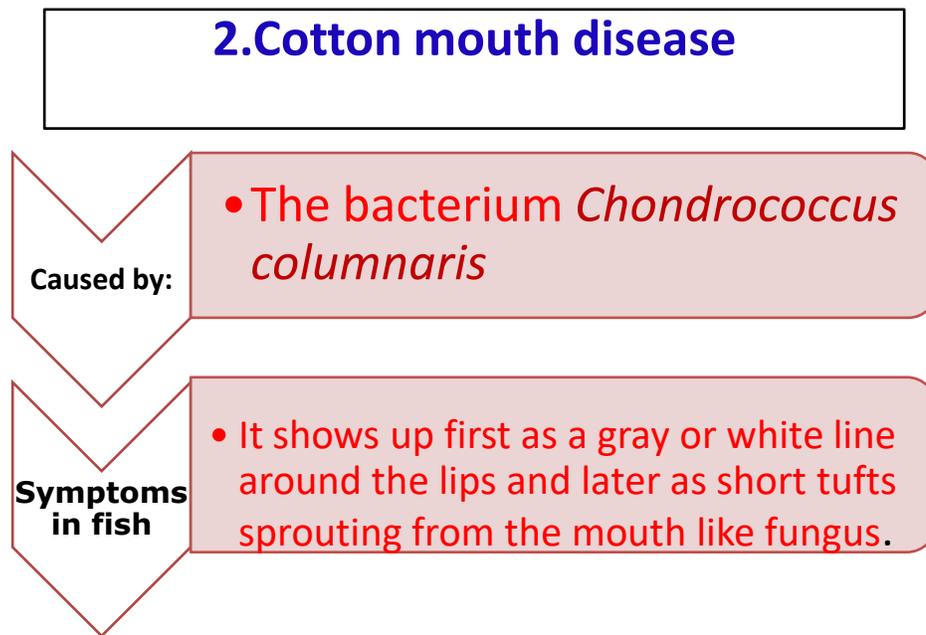
- Fish can be treated with the same drugs as humans get when they become infected by *Mycobacterium marinum*, e.g. Kanamycin.

- Since this is a very resilient microbe, normal treatment involves administering at least two different medications over the course of at least three months.

#### Prophylaxis

- Keeping your fish healthy, happy and well-fed will boost their immune system .
- New fish should ideally be quarantined before you allow it into you main aquarium. Plants, substrate, equipment etcetera should be sterilized to kill of potentially harmful bacteria before being introduced.

## 2. Cotton mouth disease



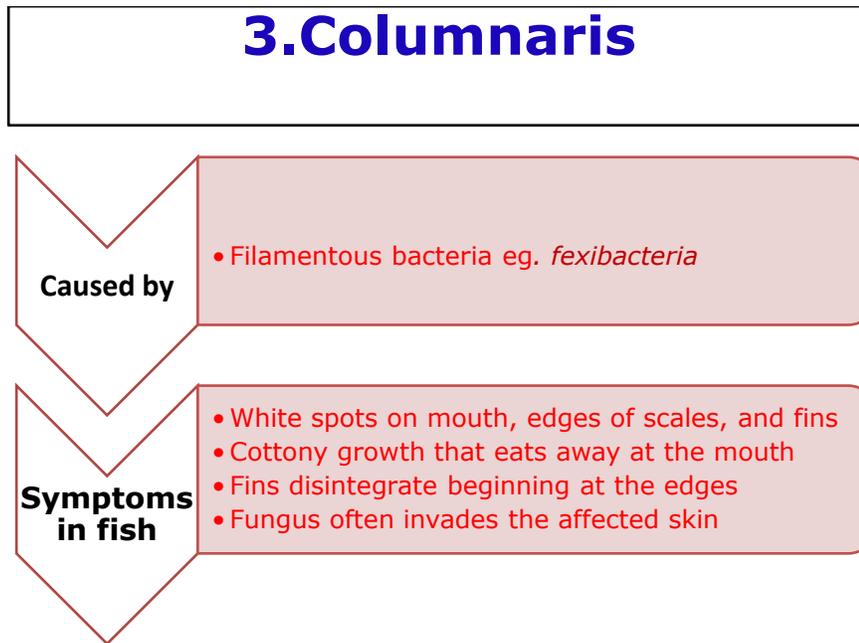
#### Treatments

- Hard to treat, but not impossible. Like any disease best caught early. There are commercial products available to treat cotton mouth.
- Also change the water daily 20% and use a regular dose of salt in your tank.

#### Prophylaxis

- It can be controlled by regular water changes and vacuuming of the gravel.
- Proper diet and maintaining good water quality in general will keep the fish from being stressed and therefore susceptible to infection.

### 3. Columnaris



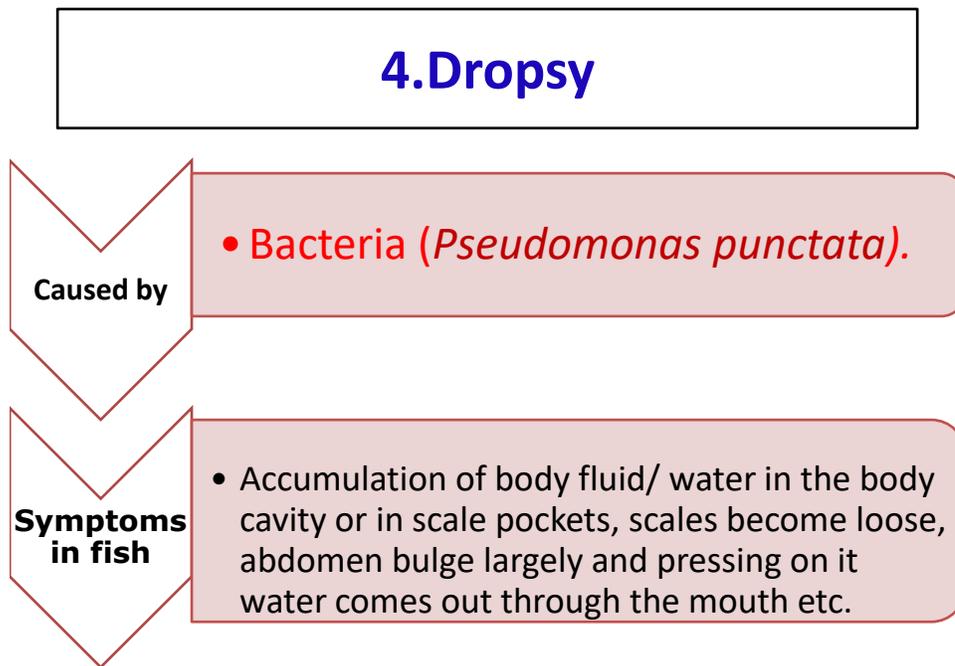
#### Treatment

- Change water
- Vacuum gravel
- Add aquarium salt
- Treat with copper sulfate or antibiotic
- Discontinue carbon filtration during treatment

#### Prophylaxis

- Maintain high water quality
- Provide fish with a nutritionally balanced diet
- Medicate fish prophylactically before moving them

## 4. Dropsy



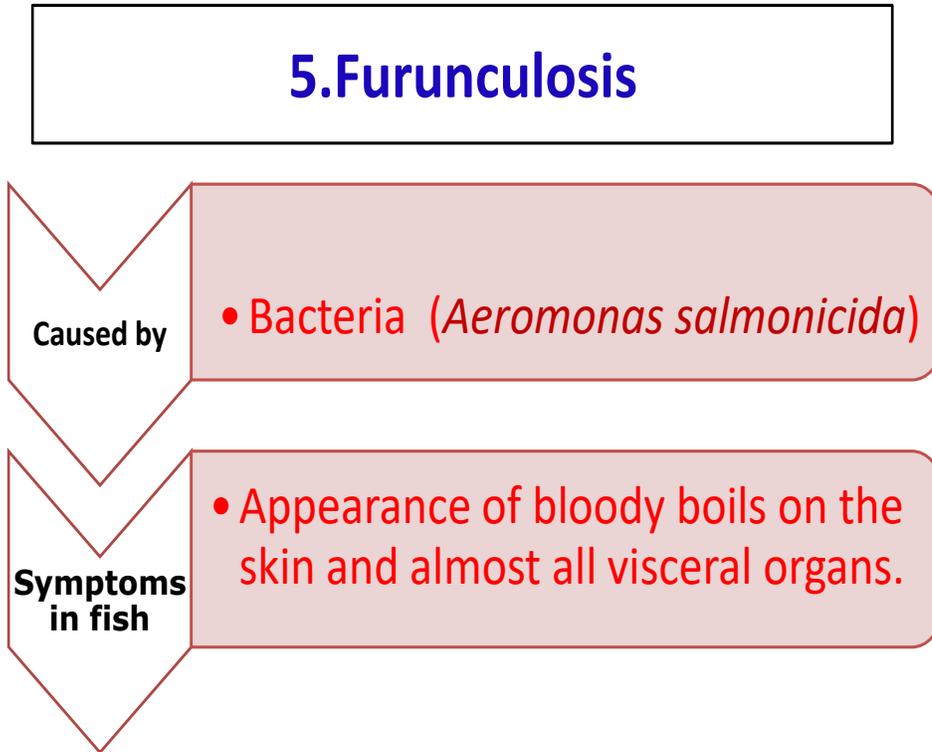
### Treatments

- It's possibly the hardest internal bacterial infection to cure.
- There are a number of medications available such as penicillin, tetracycline and naladixic acid.

### Prophylaxis

- Poor water conditions are often the culprit. Gouramies, Cyprinids (barbs, danios, etc), guppies, betta and goldfish are prone to this disease.
- Goldfish are said to be somewhat more prone to dropsy than other fish. High nitrates are usually the culprit.
- Clean Water, is a must! Clean Water, should I say that again? Good water conditions prevent this.

## 5. Furunculosis



### Treatment

- Many types of antibiotics have been used with varying degrees of success. Use of tetracycline, erythromycin and Nitrofurazone have no documented effect on *Pseudomonas* or *Aeromonas*.

### Prophylaxis

- Optimize your holding system.
- Quarantine and treat all new arrivals
- Isolate affected individuals



Cotton mouth disease



Fish Tuberculosis

**Bacterial  
Diseases of  
Fishes**



Columnaris



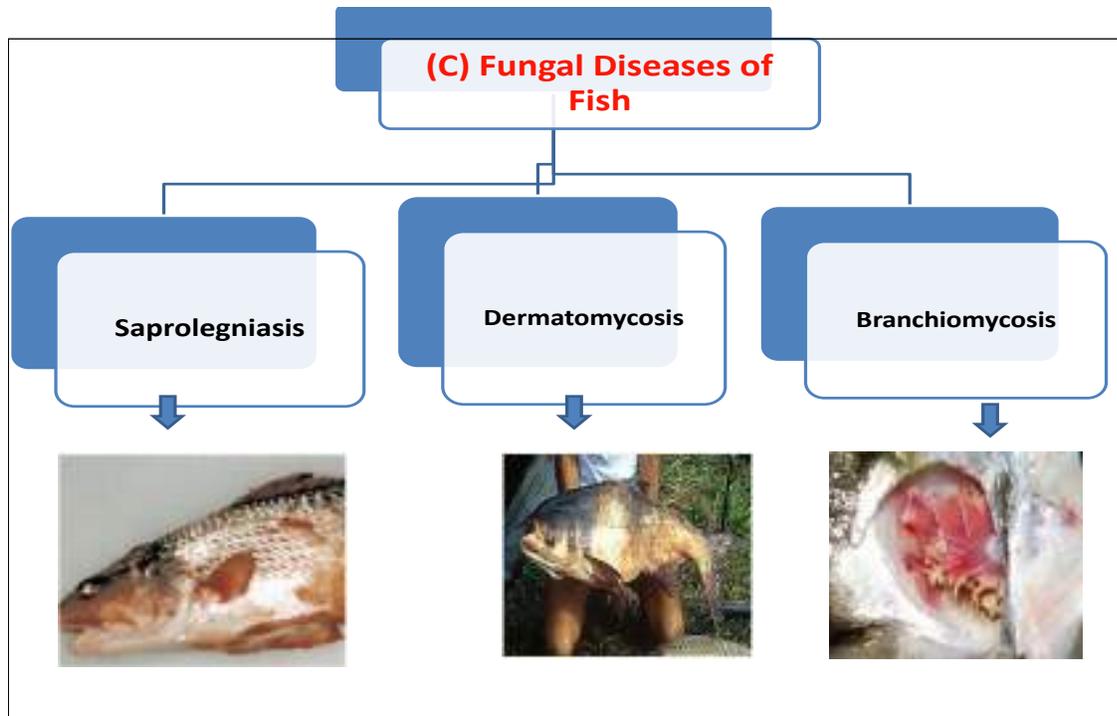
Furunculosis

**(B) Viral Diseases of Fishes**

1. Viral Haemorrhagic Septicaemia (VHS)
2. Infectious pancreatic necrosis (IPN)
3. Spring Viremia of Carp
4. Channel Catfish Virus Disease

| Disease name                                   | Causative agent                            | Symptoms  | Treatment  |
|--|--|---|--|
| <b>1. Viral Haemorrhagic Septicaemia (VHS)</b> | VSH Virus having RNA                       | These include pale gills, dark body colour, ascites (fluid in the body cavity), exophthalmos (bulging eye), and in some cases an intermittent period of erratic spiralling behaviour and rapid respiration. | As with many viral diseases of fish, there is no specific treatment or cure for VHS. |
| <b>2. Infectious pancreatic necrosis (IPN)</b> | Infectious pancreatic necrosis (IPN) virus | The first sign of a typical IPN epizootic is a sudden increase in mortality. The affected individuals swim in a rotating manner about their long axis.  | There is no effective medicine. Use of iodine may be useful                          |

| Disease name                            | Causative agent  | Symptoms   | Treatment                          |
|---|--|--|------------------------------------|
| <b>3. Spring Viremia of Carp</b>        | spring viremia of carp virus (SVCV) or <i>Rhabdovirus carpio</i> | Darkening of the skin, swollen abdomen, exophthalmia (popeye), hemorrhages in the skin, gills, swim bladder, and inflammation of the intestines.   | Not specific.                      |
| <b>4. Channel Catfish Virus Disease</b> | A herpes virus   | Fish may be seen swimming erratically, swollen abdomen; distension of the vent area, and bulging eyes, hemorrhages may be seen at the bases of fins, on the ventral abdomen, and within muscle tissue. | There are no effective treatments. |



## 1.Saprolegniasis

|                     |   |
|---------------------|---|
| <b>Pathogen</b>     | <i>Saprolegnia</i> .  |
| <b>Transmission</b> | <i>Saprolegnia</i> grow in trash fish, fish feed, culture gear and benthic organic matters. Masses of free spores are released from the body surface, faeces and rotten carcass of infected fish to look for new hosts in the water. Some <i>Saprolegnia</i> can survive for several years in benthic sediments in the water. As a result, fish may get infected continuously.  |
| <b>Symptoms</b>     | <i>Saprolegnia</i> can burrow into the fish body from surface wounds. They can also invade the digestive tract when fish eat food containing them. They bore holes in the intestinal wall and reach internal organs through the circulatory system, reproducing and spreading across the body. Affected fish have greyish white woolly fungi on the body surface. Some <i>Saprolegnia</i> can cause granuloma-like lesion in internal organs. |
| <b>Treatment</b>    | None. When saprolegniasis is diagnosed, all infected fish must be destroyed and no new fish are to be purchased or introduced until the fish farm is cleared and thoroughly disinfected.  |

## 2. Dermatomycosis

|                    |  |
|--------------------|--|
| <b>Caused by</b>   | Various member of class Oomycete   |
| <b>Symptoms:</b>   | Appearance of fine hair like tufts hanging from the infected areas. The fine become eroded and hemorrhagic at the latter stage of disease infected eggs tend to stick together and finally die.  |
| <b>Treatment</b>   | Use copper sulphate solution ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ), potassium permanganate ( $\text{KMnO}_3$ ) at the dose of 1g per 10L of water for 30 minutes (treatment is repeated every 12 hours for 10 days).<br>Basic Violet K (it is only effective in the early stages of disease).                            |
| <b>Prophylaxis</b> | Do not take food from ponds where outbreaks of the disease and fish's death have occurred.<br>The disease is best prevented by providing adequate aquarium maintenance routine and a balanced diet.<br>Environmental management is essential: any uneaten food, dead mollusks and fish should be promptly removed from the tank. |

## 3. Branchiomycosis

|                    |  |
|--------------------|--|
| <b>Caused by:</b>  | <i>Branchiomyces demigrans</i> and <i>B. sanguinis</i> (Phycomycetes<br><i>Archimycetes</i> )  |
| <b>Symptoms</b>    | This disease is seen in the blood vessels of the gill tissue, and it obstructs the circulation of blood through the gills, which makes the gills lose their bright red color.  |
| <b>Treatment</b>   | Diseased fish can be treated with malachite green at 0.1mg/l for extended periods of time or 0.3mg/l for 12 hours.<br>Ponds with enzootic branchiomycosis should be dried and treated with calcium oxide (quicklime) or 2 to 3 kg copper sulphate per hectare.   |
| <b>Prophylaxis</b> | <ul style="list-style-type: none"> <li>• Strict sanitation and disinfection are essential for disease control.</li> <li>• Dead fishes should be collected and daily and burned or deeply buried.</li> <li>• Transportation of infected fish areas to non-infected areas must be prevented.</li> <li>• Increase of water supply help in control of that disease.</li> </ul> |

## GENERAL CONTROL MEASURES FOR FUNGAL DISEASES

1. Incorporation of medicines like sulfamethanin, terramycin, erythromycin thiocyanate and calomel in the food supplied to the fish.
2. Treatment in Phenoxethol solution (10 to 20cc of 1% solution diluted in one litre of water).
3. Infected fishes may also be kept alternatively in bath water, containing 0.5ml of formalin solution in one litre of water plus ppm of malachite green. Gottwald (1961) has suggested a concentration of 10mg of malachite green per litre of water for 15 minutes bath every 2days.
4. Fishes kept in 15 to 30gm Nacl solution per litre of water for half an hour may also be freed from the fungus. Treatment may be repeated on the following days and subsequently if required.
5. A 5 to 90 minute bath in potassium permanganate (KMnO<sub>4</sub>) solution is also recommended. The time and dose, however, depends upon the hardness of fish and should be determined experimentally.
6. A homeopathic drug, the Argentum nitricum (Q) applied topically on the infected eyes of *Channa striatus* has also been found to cure the fungal disease.
7. Branchiomycoses is difficult to cure and the infected fishes so far have been removed and destroyed and the ponds drained and dried till the cracking of soil for fresh stocking.
8. The use of quick lime at a rate of 150-200kg/hectare is however, suggested to be added at two weeks intervals during summer and daily during the outbreak of disease. During treatment the pH of water should be restored below 9.0.
9. Use of copper sulphate is also suggested but proper care should be taken because the chemical also destroys many other aquatic organisms 12kg of CuSO<sub>4</sub> per hectare for pond with an average depth 1 meter has been recommended by *Schaperclaus*.
10. Various dip treatments involving different chemicals are suggested for infected fishes. Thus a 24 hour dip in 0.3mg per litre of malachite green 10 to 30 minutes dip in 100mg/litre of copper sulphate solution, a dip in 15-25ppm of formalin, dip in 3-5% of sodium chloride solution or an hour dip in 1-4ppm of benzalkonium chloride are recommended.

11. Ichthyophonosis is extremely difficult to control and only the quarantine regulation is suggested which is helpful in regulating its incidence. In this method (Quarantine) the infected fishes are isolated from the stock and kept for treatment in separate ponds (Quarantine ponds) until they become free of the parasites.
12. A bath of Benzalkonium chloride (1 to 4ppm) may also be used for 1 hour.
13. Fungal development on trout egg may be checked by daily formalin bath for 15 minutes.
14. Dense stocking and rich supply of inorganic matter should be avoided.
15. During the hot weather even the artificial feeding should be reduced.
16. Good supply of freshwater should always be maintained.

## (D) Protozoan Diseases of Fishes

1. Costiasis
2. Whirling Disease
3. Ichthyophthiriusis
4. Diplostomosis
5. Gut blocking

### 1. Costiasis

- Caused by: *Costia necatrix*
- Symptom: It causes the skin of the infected fish to become cloudy and milky.
- Treatment
  - Due to its inability to live in water above 28°C (82.4°F) , treat as if it was Ich by using a commercial Ich treatment or technique.
  - Other recommended treatments include MalachiteGreen, Potassium Permanganate, Acriflavine and strong salt baths of 3%



- **Prophylaxis**

- Newly bought fish are quarantined for 30 days. Before introducing new fish into the aquarium, give them three short-term therapeutic baths.
- It is not advisable to introduce pond plants without first disinfecting them. Nets, scrapers, feed boxes, thermometers, pulverizers and other equipment should not be shared between several aquaria.

## 2. Whirling Disease

- Caused by: A microscopic parasite called *Myxobolus cerebralis*.
- Symptoms: Damaging cartilage, whirling disease can kill young fish directly, or cause infected fish to swim in an uncontrolled whirling motion.



# Whirling Disease

- **Treatments**
- In watersheds where *Myxobolus cerebralis* is present in wild populations, there is currently no cure or means to eradicate it.
- **Prophylaxis**
- The key to preventing the spread of whirling disease is to prohibit the movement of the parasites from infected areas.
- Never transport live fish from one body of water to another
- Do not dispose of fish heads, skeletons or entrails in any body of water.

## 3. Ichthyophthirius

- **Caused by:**  
*Ichthyophthirius multifiliis*
- **Symptoms:**
- Small white spots resembling sand
- Fish scratch against rocks and gravel
- In advanced stages fish become lethargic
- Redness or bloody streaks in advanced stages



- **Treatment:**

- Raise water temperature
- Medicate for 10-14 days
- Reduce medication when treating scaleless fish
- Discontinue carbon filtration during treatment
- Perform water changes between treatments

- **Prophylaxis**

- Infection can be effectively controlled only by destruction or elimination of the free dividing tomonts or the tomites they release.
- In warm water systems (24–28°C), three to four daily transfers of fish to clean tanks will effectively reduce infection, while enabling the fish to develop tolerance to reinfections.
- vacuum suction.

## 4. Diplostomosis

- Caused by: Termatode, *Diplostomulum*
- Symptoms: Small black spots on the body.
- Treatment Black spot is generally easy to cure. There are a number of commercially available treatments and preventatives. It is fairly easy to treat with salt baths.



## 5.Gut blocking

- Caused by: A cestode, *Eubothrium*.
- Symptoms: Mechanical damage to the gut.



(E) Miscellaneous

### 1.Epizootic Ulcerative Syndrome (Red-spot Disease)

- Epizootic ulcerative syndrome (EUS) or 'red-spot' as it is known colloquially, is an ulcerative syndrome of fish.
- It begins as a small area of reddening over a single scale, which subsequently spreads to involve a number of adjacent scales; this is the characteristic 'red spot'.
- As the condition progresses, the 'red-spot' expands and deepens, giving a deep ulcer, which sometimes extends into the abdominal cavity.
- Some fish, especially barramundi (*Lates calcarifer*) develop unilateral or bilateral cloudiness of the cornea.

## Epizootic Ulcerative Syndrome (Red-spot Disease)

- **Caused**
- A pathogenic fungus, *Aphanomyces invadans* causes EUS.
- Infection occurs when motile spores in the water are attracted to the skin of fish. The spores penetrate the skin and germinate, forming fungal filaments or hyphae.
- The hyphae invade widely into the surrounding skin and deeply into underlying muscle tissues, resulting in extensive ulceration and destruction of tissues.



## Epizootic Ulcerative Syndrome

- **Species affected**
- In the Northern Territory, EUS has been reported in
- Archer fish (*Toxotes chartareus*)
- Barramundi (*Lates calcarifer*)
- Bony bream (*Nematolosa erebi*)
- Chanda perch (*Ambassis agassiz*)
- Fork-tailed catfish (*Arius* sp.)
- Long tom (*Strongylura krefftii*)
- Mangrove jack (*Lutjanus argentimaculatus*)
- Mouth almighty (*Glossamia aprion*)
- Mullet (*Liza diadema*)
- Red scat (*Scatophagus argus*)
- Saratoga (*Scleropages jardini*)
- Rainbow fish (*Melanotaenia splendida*), sleepy cod (*Oxyeleotris lineolatus*)
- Spangled perch (*Leiopotherapon unicolor*)
- Striped grunter (*Amniataba percoides*)
- nursery fish (*Kurtus gulliveri*)

## Epizootic Ulcerative Syndrome

- **Treatment**
- There are no specific control measures in fish for EUS in natural environments.
- In captive fish, early 'red-spot' lesions may respond to topical treatment with an antiseptic iodophore solution.
- **Prophylaxis**
- Increasing salinity of holding waters may prevent outbreaks of EUS in aquaculture ponds
- Fish from infected waterways, especially those with lesions of EUS, should not be relocated to other waterways.