Recognizing Common Fish Diseases

- Doug Sweet
- Superintendent
Fish are vertebrate animals like yourself therefore:

- Share the same genetic mechanisms, organ systems, much of the same biochemistry
- Have more similarities than differences when it comes to diseases
- Subject to the same disease processes
  - Parasites, bacterial infections, viruses
  - Nutritional diseases/imbalances (i.e. obesity)
  - Metabolic/hormonal problems – diabetes
  - Cancer
  - Complications from combinations of the above
Fish in the “wild”:

• Harbor a whole host of viruses, bacteria, and parasitic organisms
• Common to find anywhere from 4 to 11 or more species of parasites/disease organisms living on, or in, one individual wild fish specimen
• Yet, these “wild” fish rarely or only occasionally show disease “symptoms” from this heavy “disease organism” load
• Why?
Plate I. Life cycle of yellow grub (*Clinostomum complanatum*): (A) miracidium in water, after escaping from the egg before entering the digestive gland of snail; (B) sporocyst containing rediae within snail; (C) redia with daughter rediae; (D) cercaria produced by daughter redia within snail; (E) same, having escaped from the snail into the water; (F) cercaria encysted (metacercaria) in flesh of fish; (G) adult worm in pharynx and esophagus of double-crested cormorant. Numbers 1, 2 and 3 indicate first, second and third or final host respectively. After Hunter and Hunter (1935) from Meyer (1964). Courtesy Maine Department of Inland Fisheries and Game, Augusta.
Disease concept - disease organism and right environmental conditions are necessary for a problem to occur.
What do these parasites do if brought into an aquaculture facility?

- Mostly, usually, infections are self limiting or die out over time if environmental conditions are good for the fish and not right for the parasite (don’t always have to treat!)
- Remain at low, non-disease producing rates of infection
- Increase exponentially in fish population and create a zoonotic problem (often from stress on fish due to sub-optimal environmental conditions)
Diagnostic Triad for fish

• Three essential things to look at for fish health problems
  - Water quality – oxygen, temperature, ammonia, nitrite, pH, hardness, etc.?
  - Nutrition – proper food, quantity, size, composition, delivery, fresh, etc.?
  - Disease organisms present?
Symptoms to watch for and what they indicate?

Know what a happy and healthy fish looks like through observations

- breathing normally
- clear eyes
- clear unblemished skin
- erect fins not torn or tattered
- active
- normal coloration

MEET ART- A Rainbow Tilapia
CARCICATURE
You must become a detective!
Gasping and/or rapid respiration often near surface of the water

- Oxygen content of water?
- Water chemistry (ammonia, nitrite, pH extremes)
- Gill or skin parasites
- Bacterial gill disease (poor water quality, wrong sized food)
- Anemia
- Toxins (insecticides, pesticides, fish medications like formalin, hydrogen sulfide)
Clamped fins and listless
Tiny but distinct white spots (about .25 mm to .5 mm) on skin and fins

- *Ichthyophthirius* and *Cryptocaryon* (marine water)
- “Ich”
Microscope – very powerful and useful tool for first “layer” of diagnostics
Very tiny white, yellow, or brown spots on skin and fins (like lightly breaded in flour)

- Velvet (*Oodinium* and *Amyloodininium*)
Grey mucus patches on skin or fins
Flashing or scratching

- “Hey, I got fins and not hands or legs, how am I supposed to scratch? So I flash instead.”
Protozoan parasites

*Trichodina*  
*Chilodonella*
More protozoan parasites
Treatments for protozoan parasites

• Food Fish
  – Approved formalin product (Parasite-S, Formalin-F, Formacide-B)
  – 15-25 ppm indefinite (closed tanks or ponds)
  – 170-250 ppm flush or dip for one hour
Non-food fish (i.e. ornamentals) – protozoan parasite treatments

- Same as food fish – formalin
- Malachite green - .10 - .25 ppm
- Formalin/Malachite green combination
- Copper sulfate (.15 to 1.0 ppm)
- Potassium permanganate (.25 to 4.0 ppm)
- Methylene blue
- Salt (.25 to 1.0%)
White “furry” patches on skin or fins

- Fungus or water mold (Saprolegnia)
- Usually preceded by some other trauma or injury
Fungus Treatments

Food Fish

• None – except to try salt and formalin at protozoan treatment levels

• Can use Formalin for fungus on fish eggs from
  – 1,000 to 2,000 ppm for 15 minutes

Non-Food Fish

• Malachite Green - .1 to .25 ppm
• Formalin as listed to the left
Pin-head condition (lost weight)
Dropsy (pine-cone disease) - a symptom of ascites
Exophthalmia

- Parasitic, bacterial or viral infection
- Gas super-saturation (gas bubble behind eye)
- trauma
Radical color changes
Skin and fin lesions

- Ulcers/sores
- Petechial
- Ecchymosis
- Hemorrhage
- hyperemia
Food fish bacterial treatments:

- 35% Perox-aid<sup>tm</sup> – columnaris & bacterial gill disease
- Romet 30<sup>tm</sup> – furunculosis and enteric septicemia
- Terramycin<sup>tm</sup> 200 – for below plus hemorrhagic septicemia
- Aquaflor<sup>tm</sup> – enteric septicemia catfish
  - columnaris
  - Furunculosis
  - Coldwater disease
Non-food fish bacterial disease treatments

• Sky is the limit as extra-label
  – Tetracyline, oxytetracyline, sulfamerazine, sulfamethazine, nitrofurazone, furanace, minocycline, rifampicin, doxycycline, etc......etc......
Skin and gill flukes (monogenean trematodes)

*Cleidodiscus pricei*
Treatments for monogenean trematodes

Food Fish
• Formalin – (Parasite-S, Formalin-F, Formacide-B)
  250 ppm for 1 hour

Non-Food Fish (ornamentals)
• Formalin – 250 ppm for 1 hr.
• Praziquantel (Droncit)
  – .25 ppm – 3.5 ppm
• Dylox (Trichlorfon)
  – .25 ppm – 4 ppm
Parasitic copepods

- Fish lice (*Argulus*)
- Anchor worm (*Lernaea*)
- Gill maggots (*Actheres* and *Ergasilis*)
Anchor Worm (*Lernaea cyprini*)
THE ADULT PARASITE

ANCHOR WORM
Treatment options for parasitic copepods

• Food fish – none in this country currently approved (salt?)
• Canada – Slice™
  – (Enamectin benzoate in feed)

• Non-food fish (ornamentals)
• Dylox (trichlorfon) - .25 ppm
• Slice™
• Insect Growth Regulators
  – Program (Lufenuron)
    • .13 ppm
  – Dimilin (Diflubenzuron)
    • .066 to .01 ppm
Hopefully this program helps to keep ART