Infectious Diseases And Treatments

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The Plan:

3 Lectures, with homework...

1. Introduction to Fish Health Management
   ➢ Include Quarantine and Biosecurity

2. Water Quality and Non-Infectious Diseases
   ➢ Nitrogen Cycle, Dissolved Gases

3. Infectious Diseases and Treatments
   ➢ Common diseases and treatments
   ➢ Regulatory concerns
Introduction to Fish Health Management

Developing a Fish Health Management Program:

1. Water Quality/ Life Support
2. Nutrition
3. Sanitation
4. Quarantine/ Biosecurity
What is Disease?

A condition regarded as harmful or abnormal
A pathological condition
✓ Can be pathology of an organ, a system or the entire organism
✓ Characterized by an identifiable group of signs or symptoms

Deviation or departure from NORMAL

Dis - Ease
Fundamental Categories of Disease

- **Non-infectious**
  - Environmental
    - Water quality
    - Toxin
  - Nutritional
  - Genetic
  - Traumatic
  - Neoplastic

Sublethal Chlorine Exposure (Largemouth Bass)
Fundamental Categories of Disease

- Infectious
- Parasitic
- Bacterial
- Fungal
- Viral

Most of these can be internal or external.
Before you hold ‘em, you gotta be able to catch ‘em!

Photos courtesy of Juan Sabalones
Aquatic Animal Health - Review

Partnerships!!
Prevention is key!!
✓ Quarantine New Stock
✓ Good Biosecurity

Categories of Disease
✓ Non-Infectious
  ✓ WATER QUALITY!!!
  ✓ Other...
✓ Infectious
  ✓ Parasites
  ✓ Bacteria
  ✓ Virus
  ✓ Fungus
Examining a Fish

Look in the Mouth!
(Debbie Crain)

Assess Body Condition
(Debbie Crain)

Assess Lesions

Photo courtesy of Eric Lambert
Don’t forget to Weigh the fish!

Photo courtesy of Denise Petty
Biopsies First...

Biopsy Gill, Skin, Fins Every Time!

Photos courtesy of Juan Sabalones
Wet mounts-External

Biopsy Protocols:
- Use tank water if possible
- Try not to anesthetize fish
Wet mounts-External
Parasites are Opportunists

- **PREVENTION IS KEY**
- Often present in small numbers
- No problem if fish is immunocompetent
- Problems: stressors or overwhelming load
“ICH” (*Ichthyophthirius multifiliis*)

- Very common
- Wild and cultured FW species
- Wide host range
- **Ability to replicate very rapidly in culture systems!!**
- Very damaging to fish
- Without treatment, most fish will die
“White Spot Disease”...

Remember: Must biopsy to confirm!!!
Ich Life Cycle

Theronts penetrate cyst and infect fish

Tomonts develop into theronts (infective stage)

Tomont secretes gelatinous cyst and sticks to environment

Tomont divides into hundreds of daughter tomonts

Tomont (feeding stage) on infected fish

Tomont (reproductive stage) leaves fish
Common Parasite Treatments

Copper Sulfate

Potassium Permanganate

Formalin

➢ FDA Approved
For ALL Fin Fish

FDA = Food and Drug Administration
Using Copper Sulfate

➢ Often Treatment of Choice for Ich
➢ Cheap for use in ponds
➢ **Kills algae...**
  ➢ Legal algacide
  ➢ Can cause Oxygen problems
➢ **MUST KNOW ALKALINITY**
  ➢ For freshwater use

Photo Credit: wikipedia
Bacterial Disease Clinical Signs

- Not Feeding
- Change in behavior (hanging, lethargy, abnormal swimming, spinning)
- Hemorrhages, ulcers
- Popeye
- Don’t guess, culture!
**Culture and Sensitivity**

- Sterile technique
- Culture different organs
  - Blood agar most common
- Usually requires outside lab
Culture and Sensitivity

- Primary isolation
  - Isolate individual colony
- Sensitivity
  - Tests different antibiotics
  - Clear zone means bacterial cannot grow near that antibiotic
VIRAL DISEASES

Lymphocystis

Koi Herpes Virus
Viral Diseases are **NOT** Treated with Medication

Seek Assistance from a specialist!!
Sample Submission: Live Sick Fish are Best!!

- Sturdy plastic bag
- Water from pond
  - Enough to cover fish
  - No more than 1/3 of bag
- Fill with pure oxygen or room air
  - Do not exhale into the bag!
Preparing Dead Fish for Shipment

- Choose a fish that is in good condition, with clear eyes.
- Wrap the fish loosely in a paper towel moistened with water from the pond.
- Place wrapped fish into a sturdy plastic bag that can be securely closed.
- Put bagged fish into shipping container on ice or ice packs.
Poor Specimen Packaging
Proper Shipping Containers
Improper Shipping Containers