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?

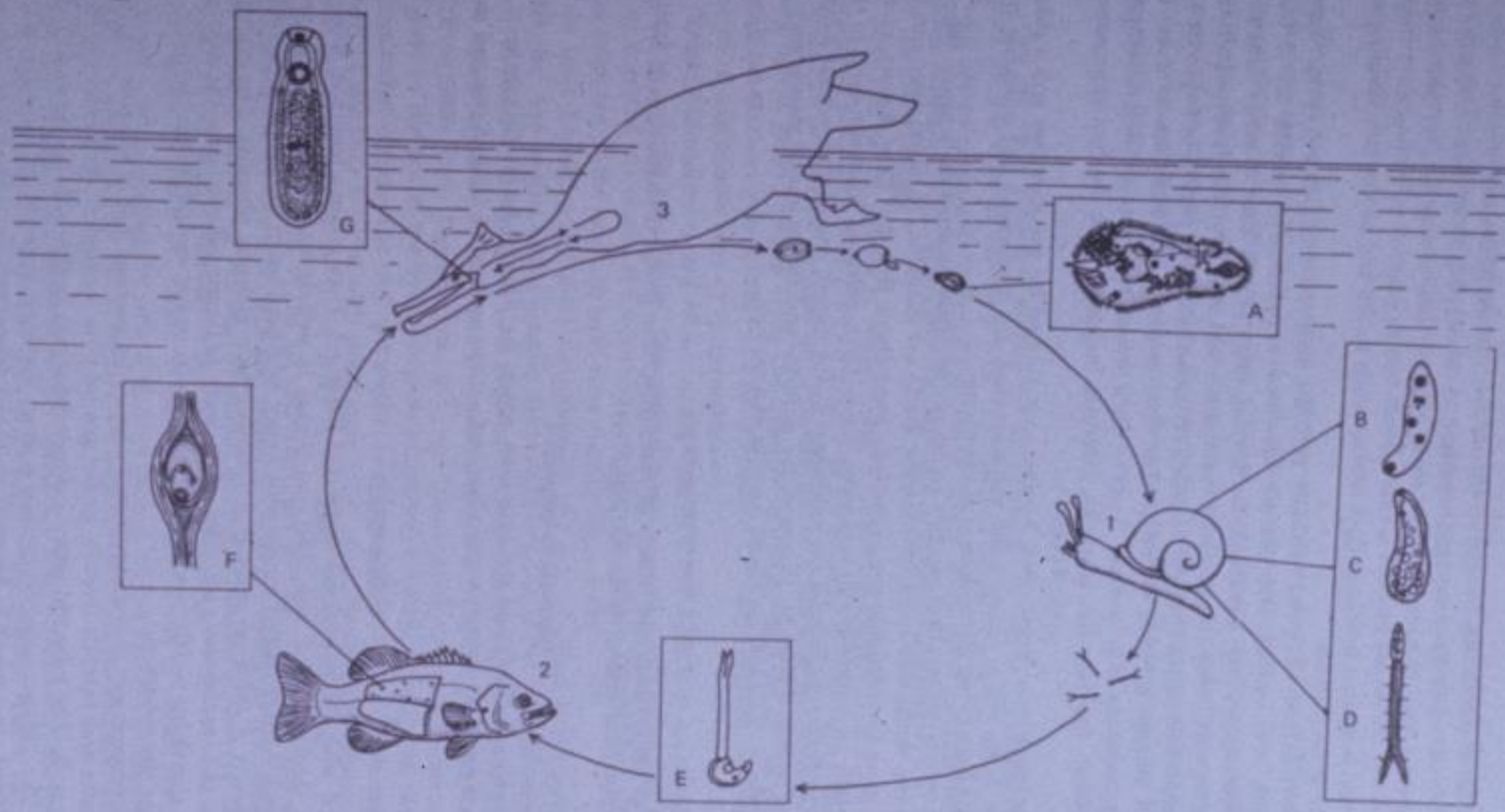
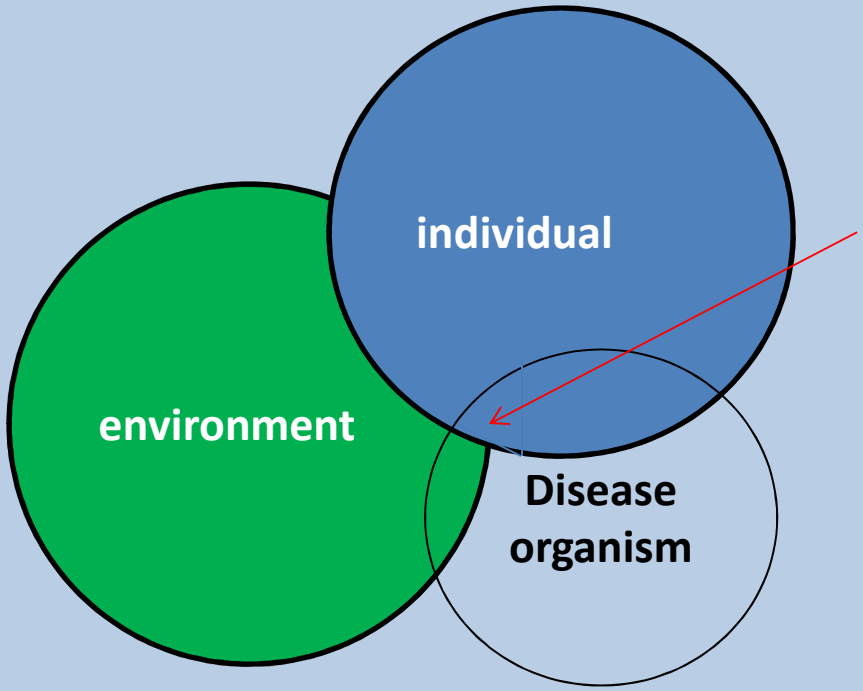


Plate I. Life cycle of yellow grub *(Clinostomum complanatum)*: (A) miracidium in water, after escaping from the egg before entering the digestive gland of snail; (B) sporocyst containing rediae within snail; (C) redia with daughter rediae; (D) cercaria produced by daughter redia within snail; (E) same, 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 (1954). 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

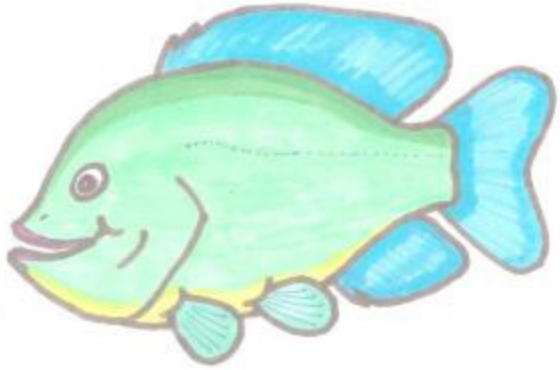
clear eyes

clear unblemished skin

erect fins not torn or tattered

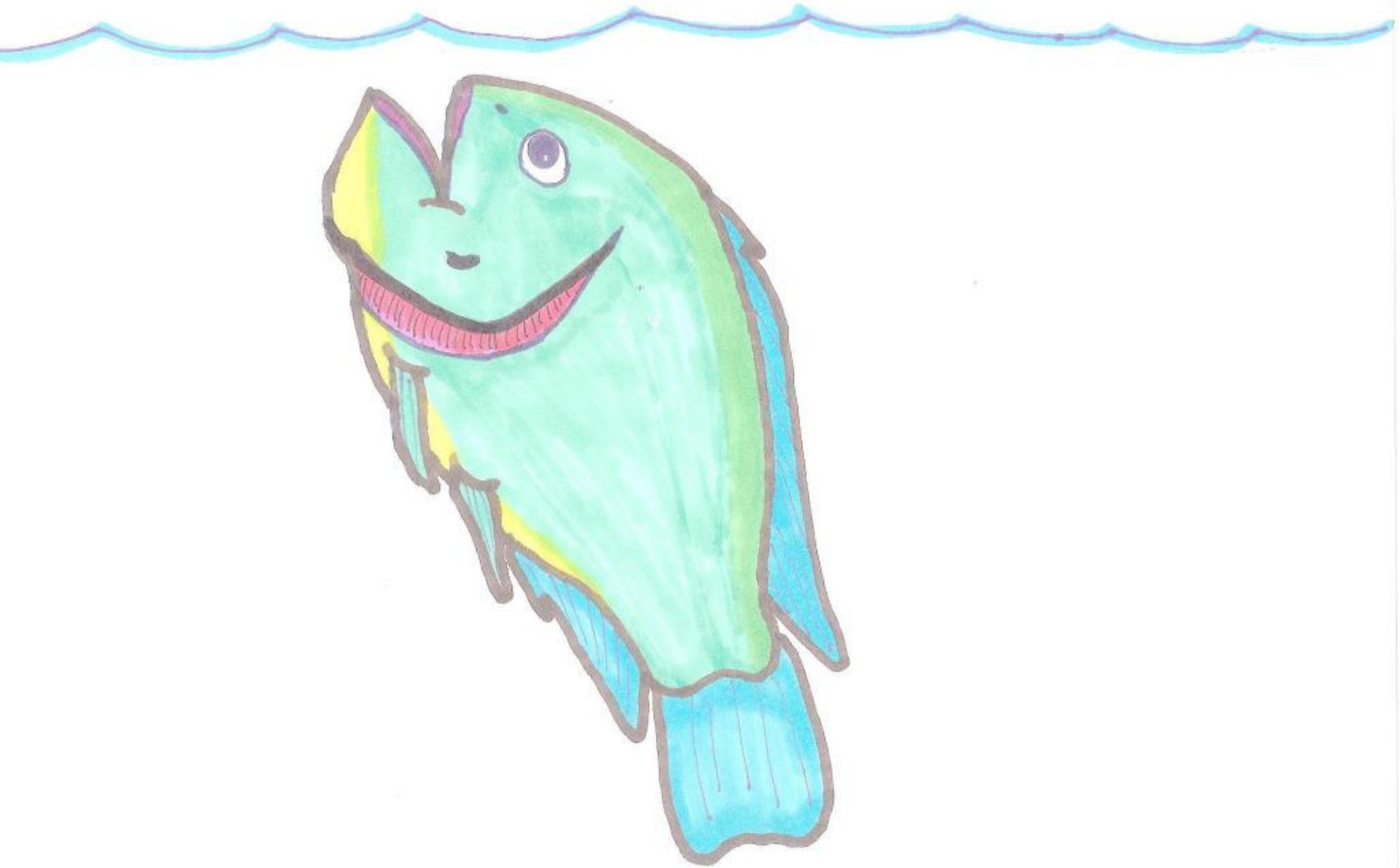
active

normal coloration



MEET ART- A Rainbow Tilapia

CARCICATURE

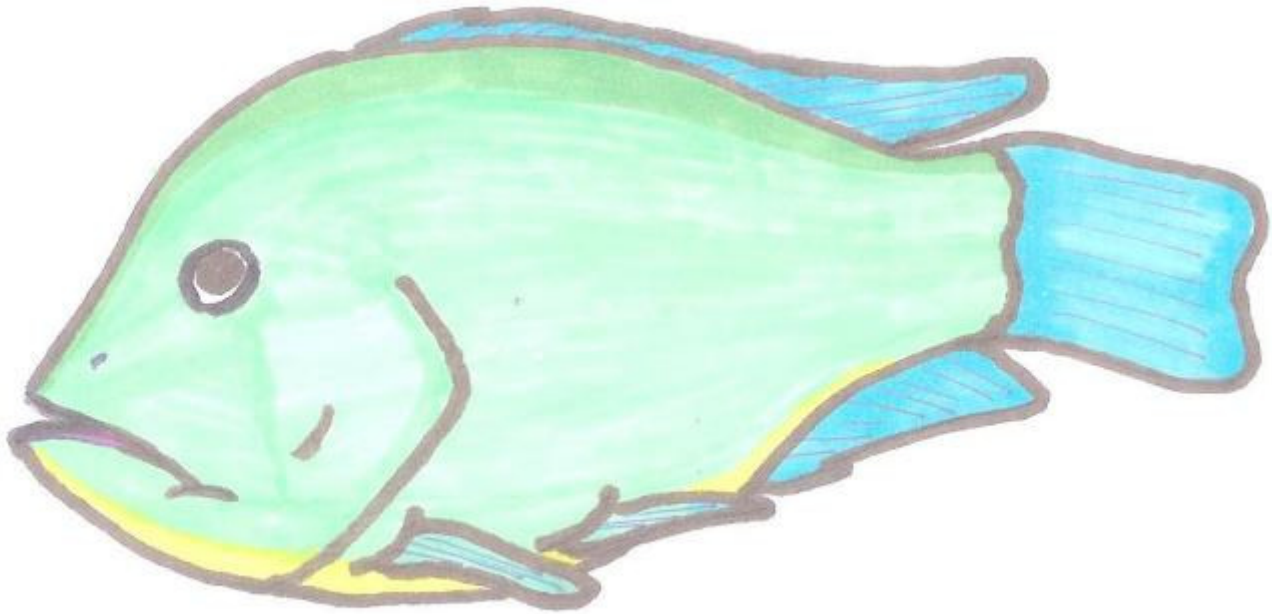


You must become a detective!

Gasping and/or rapid respiration often near surface of the water

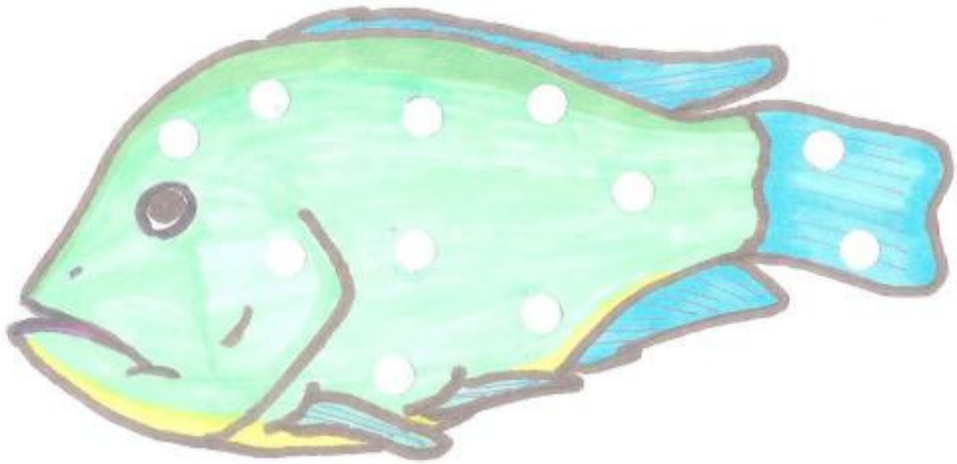
- Oxygen content of water?
- Water chemistry (ammonia, nitrite, pH extremes)
- Gill or skin parasites
- Bacterial gill disease (poor water quality, wrong sized food)
- Anemia
- Toxins (insecticides, pesticides, fish medications like formalin, hydrogen sulfide)

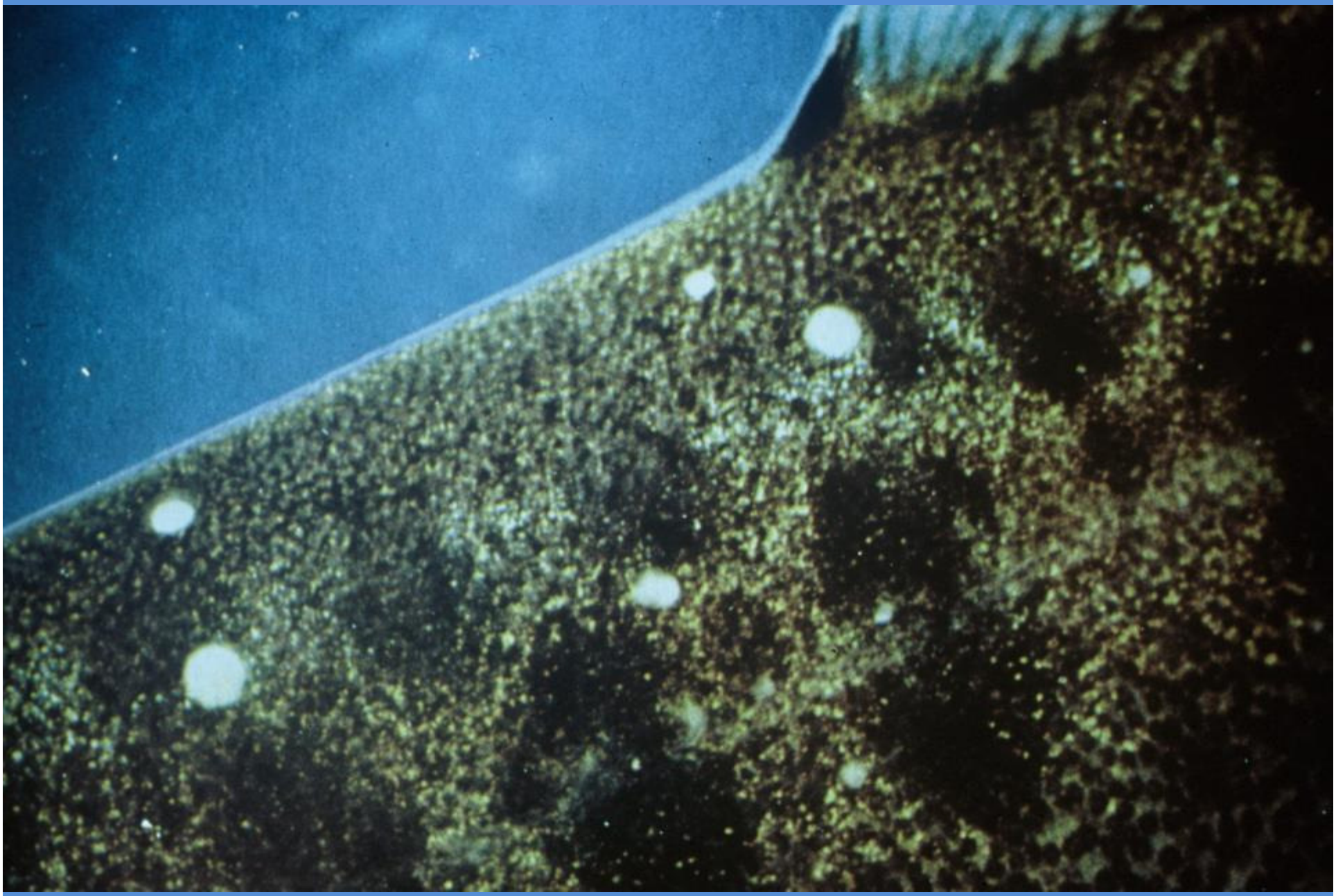
Clamped fins and listless



Tiny but distinct white spots (about .25 mm to .5 mm) on skin and fins

- ***Ichthyophthirius*** and ***Cryptocaryon*** (marine water)
- “Ich”



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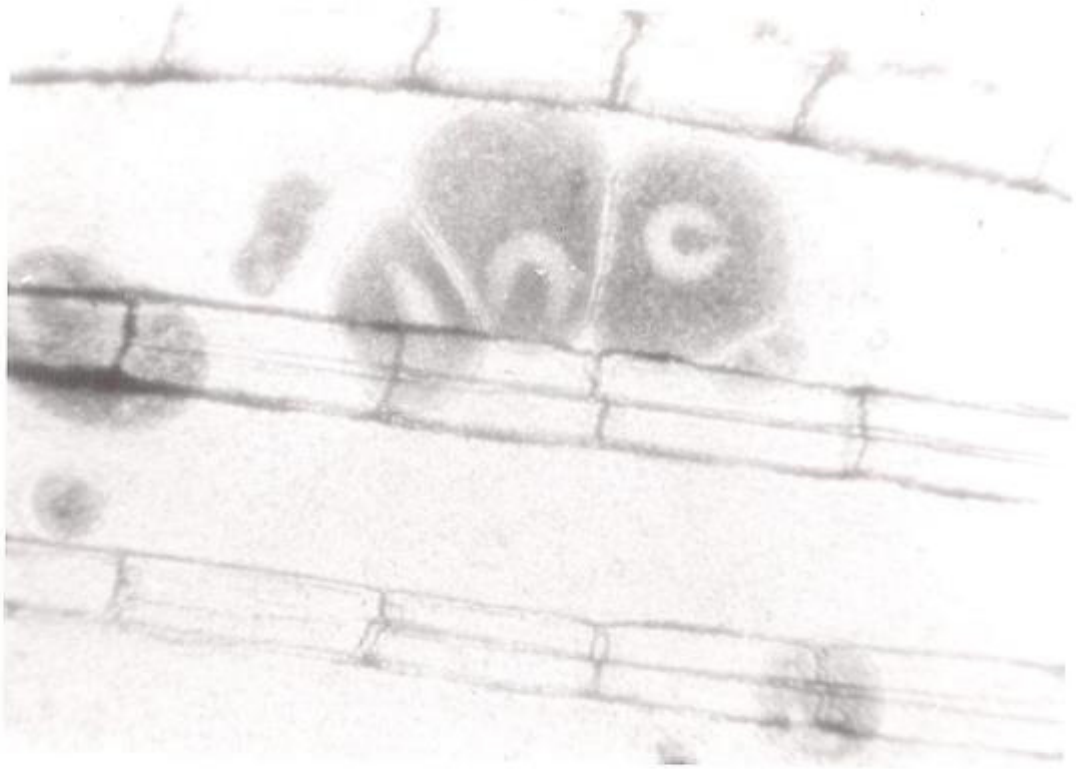
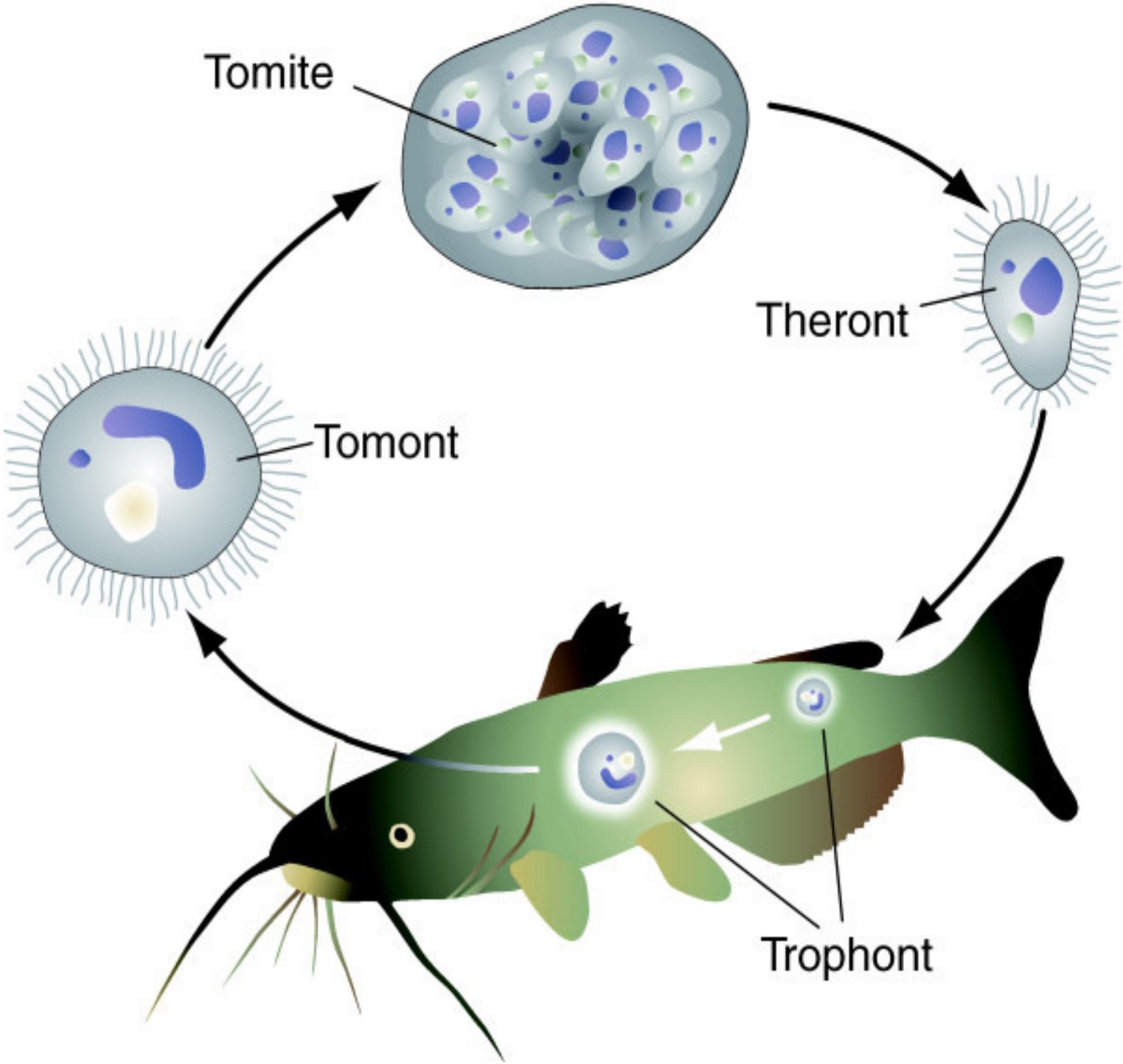
Microscope – very powerful and useful tool for first "layer" of diagnostics

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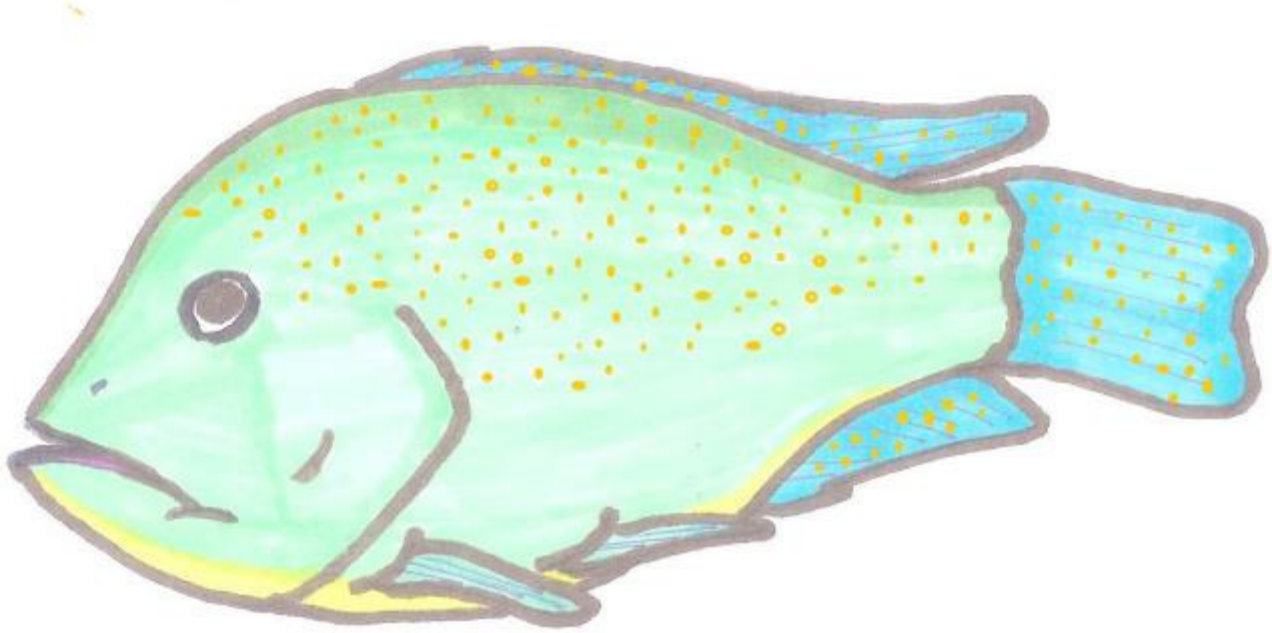
Very tiny white, yellow, or brown spots on skin and fins (like lightly breaded in flour)

- Velvet (***Oodinium*** and ***Amyloodinium***)



Grey mucus patches on skin or fins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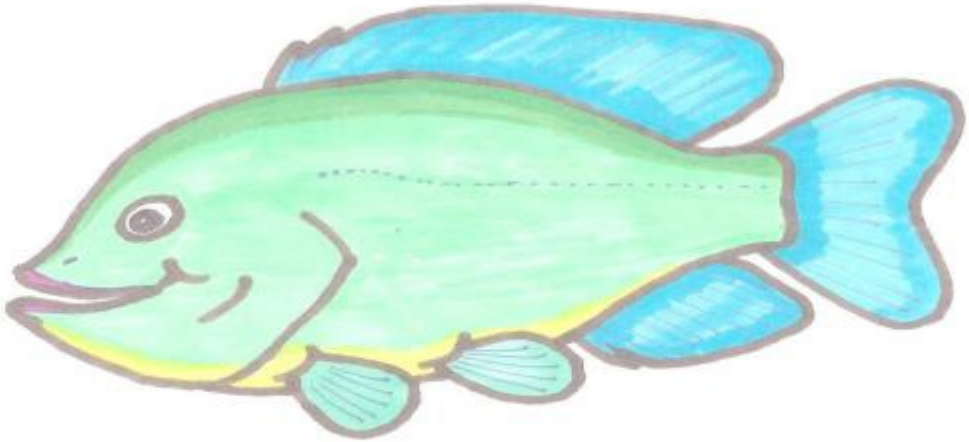
76-22

Flashing or scratching

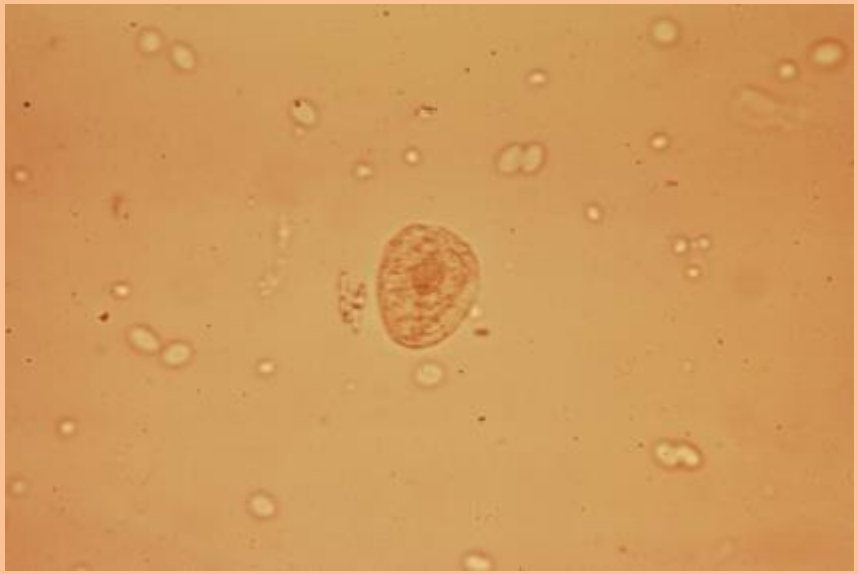
- “Hey, I got fins and not hands or legs, how am I supposed to scratch? So I flash instead.”

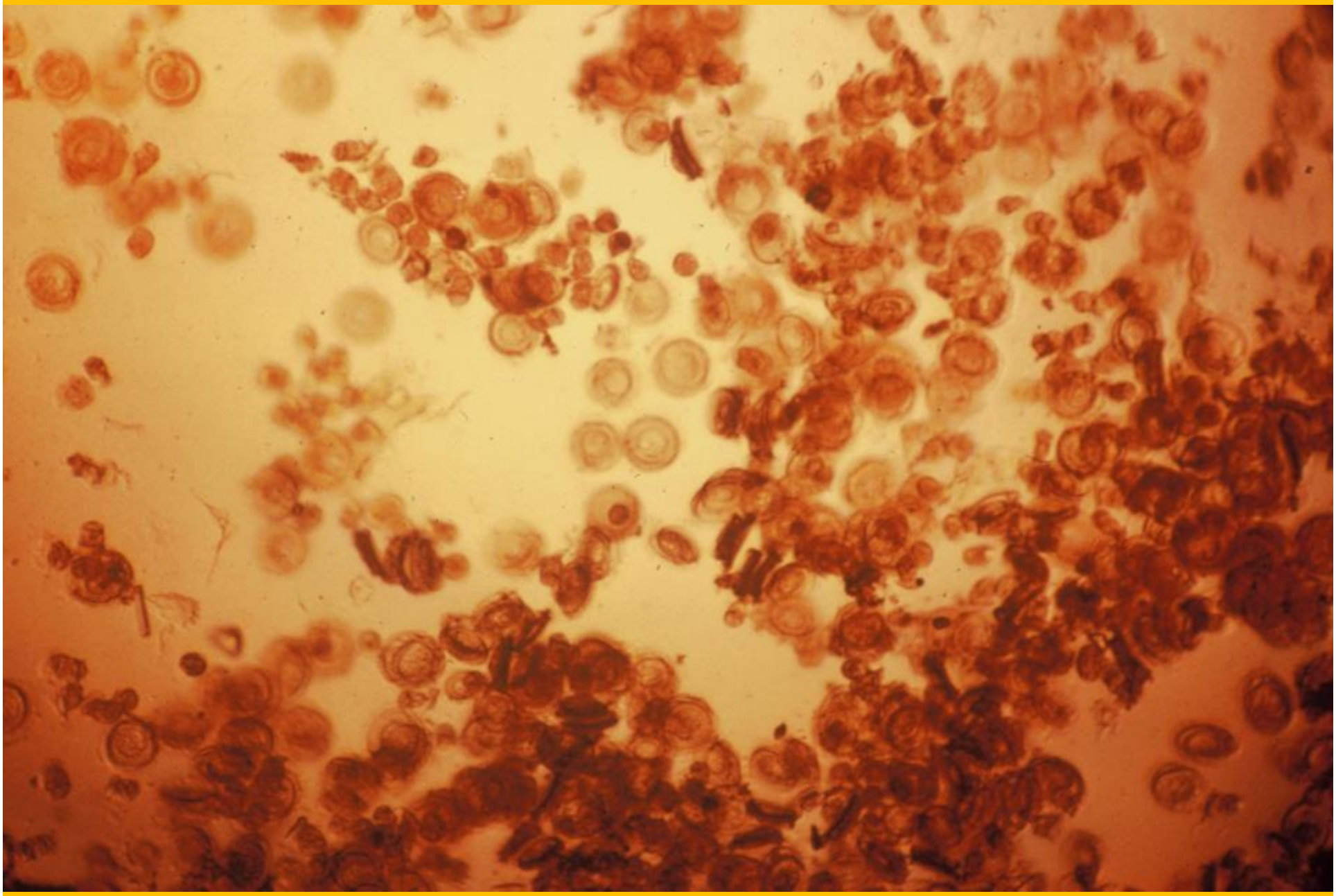


Protozoan parasites

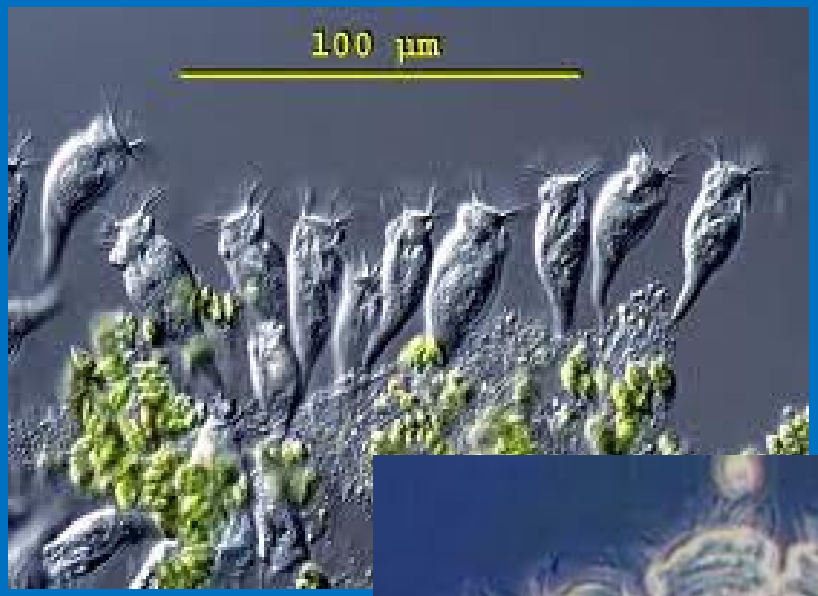
Trichodina

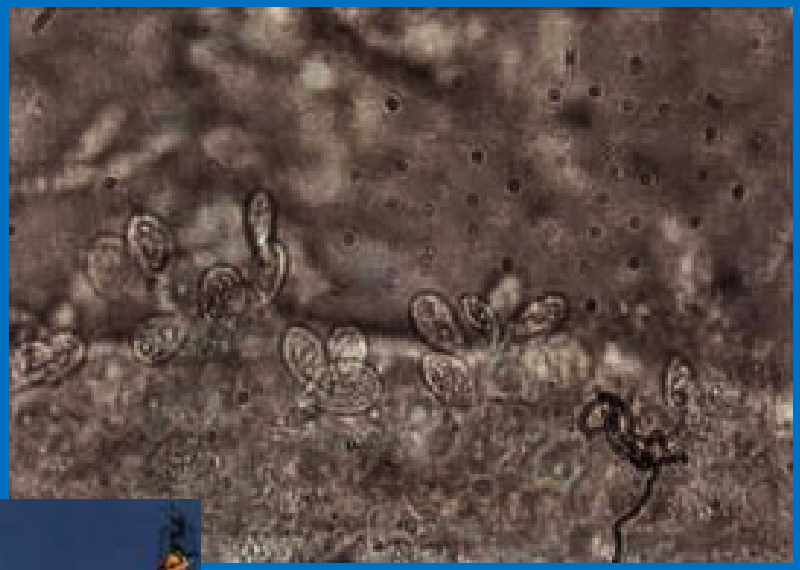
Chilodonella





More protozoan parasites





Treatments for protozoan parasites

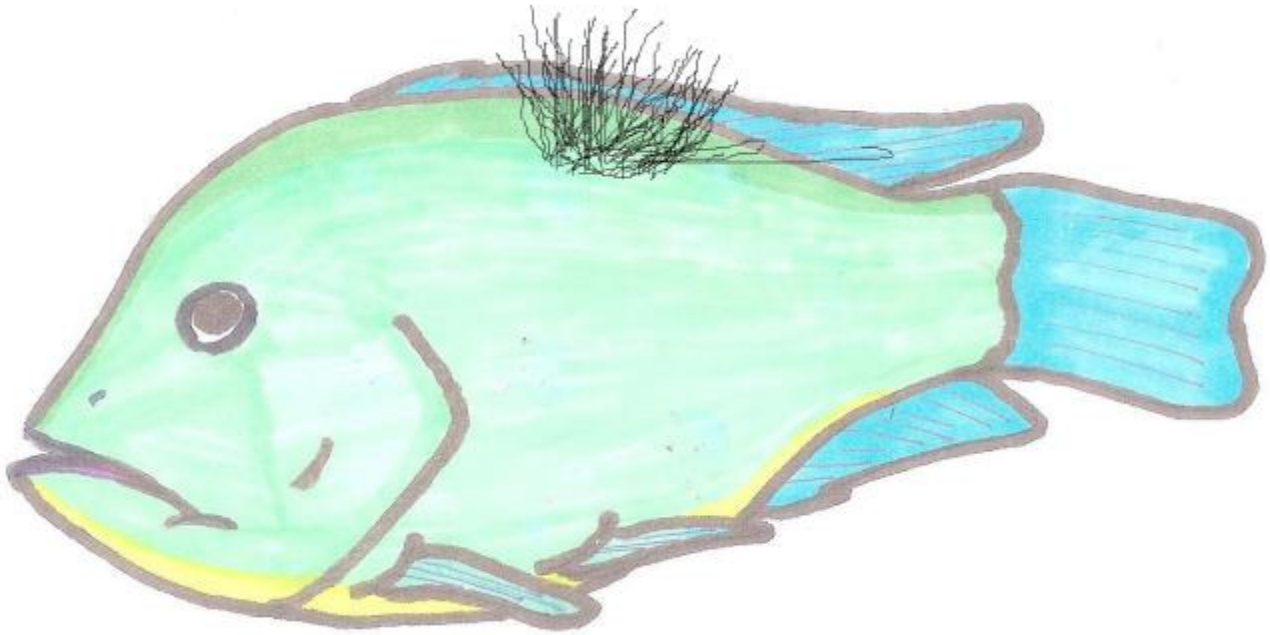
- Food Fish
  - Approved formalin product (Parasite-S, Formalin-F,
    - Formacide-B)
  - 15-25 ppm indefinite (closed tanks or ponds)
  - 170-250 ppm flush or dip for one hour

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

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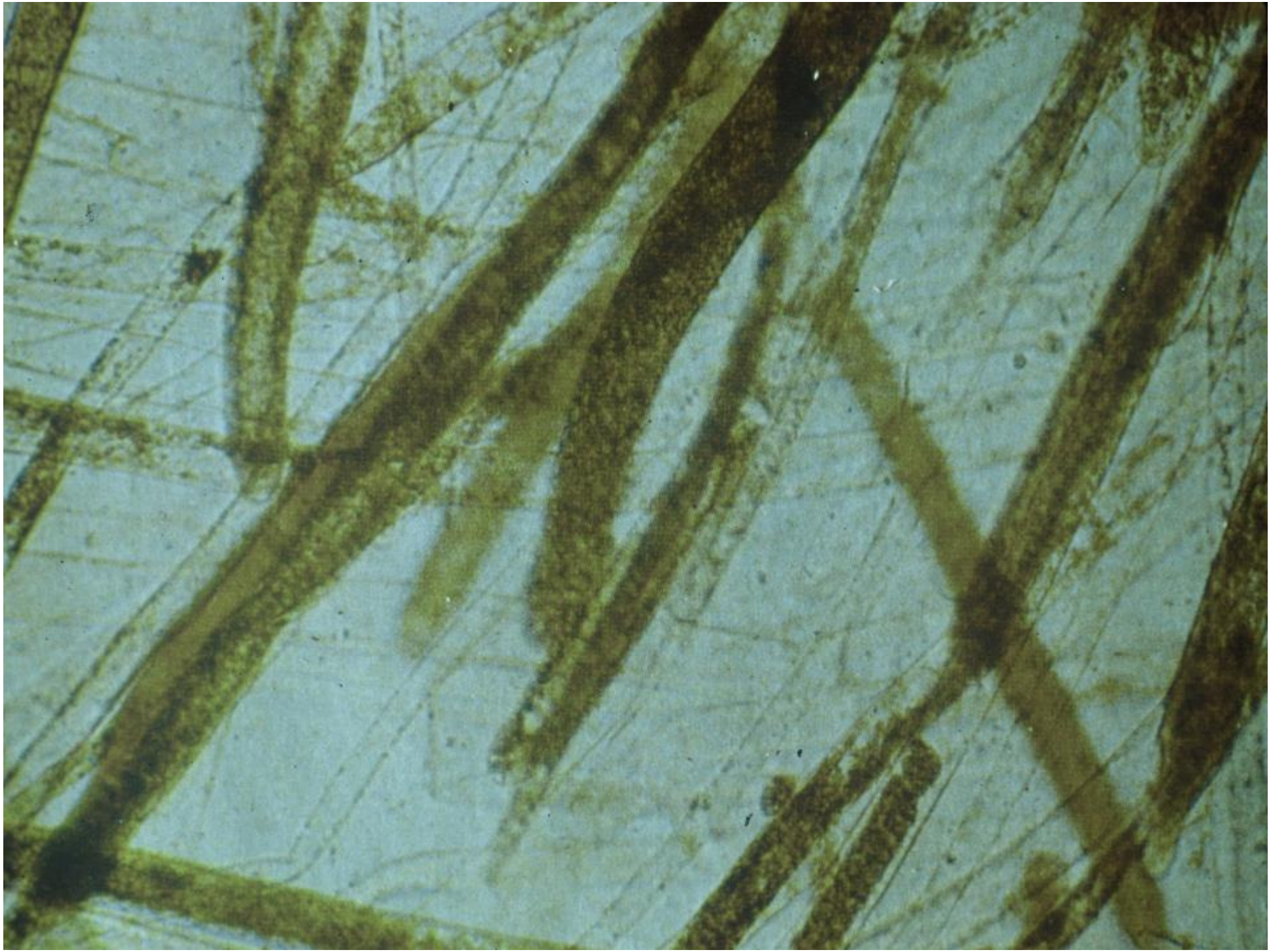


Fungus Treatments

Food Fish

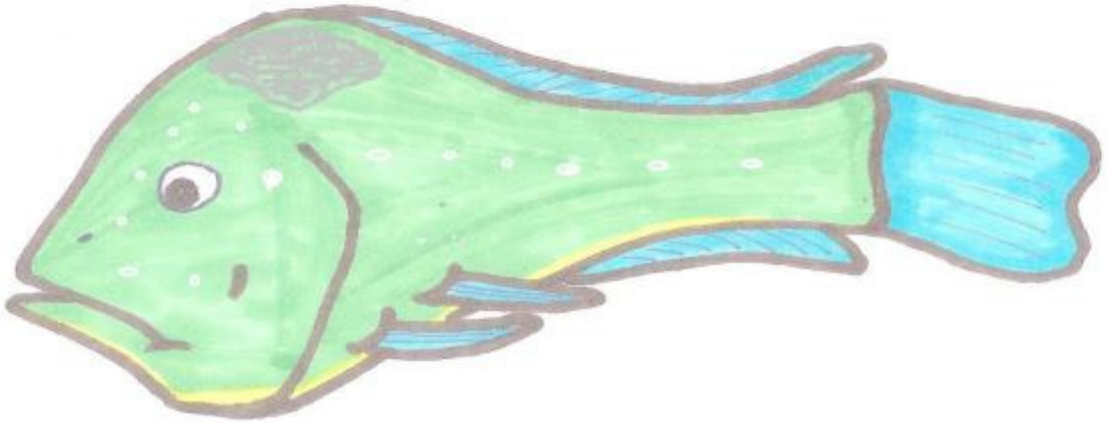
- None – except to try salt and formalin at protozoan treatment levels

- 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)

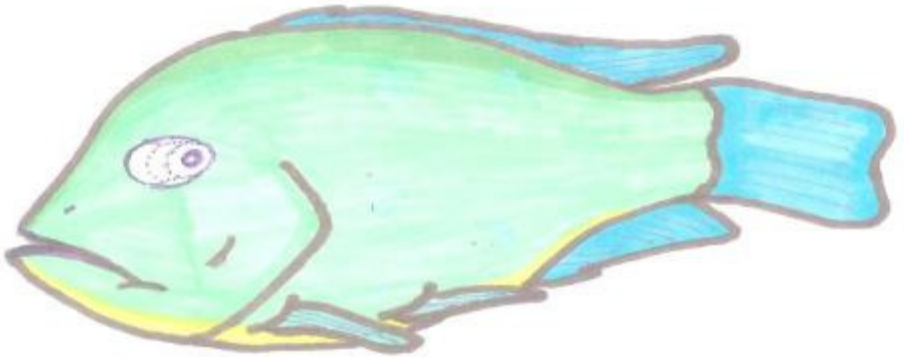


Dropsy (pine-cone disease)- a symptom of ascites

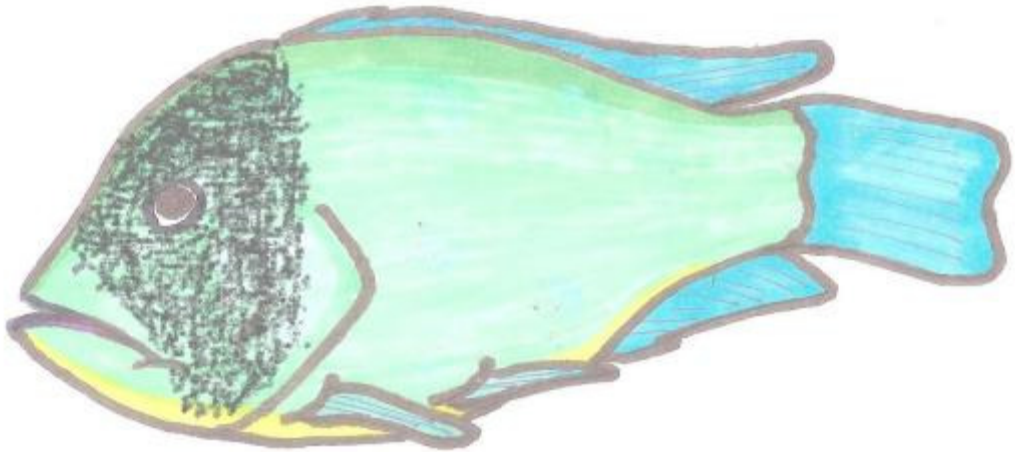

1964

Exophthalmia

- Parasitic, bacterial or viral infection
- Gas super-saturation (gas bubble behind eye)
- trauma

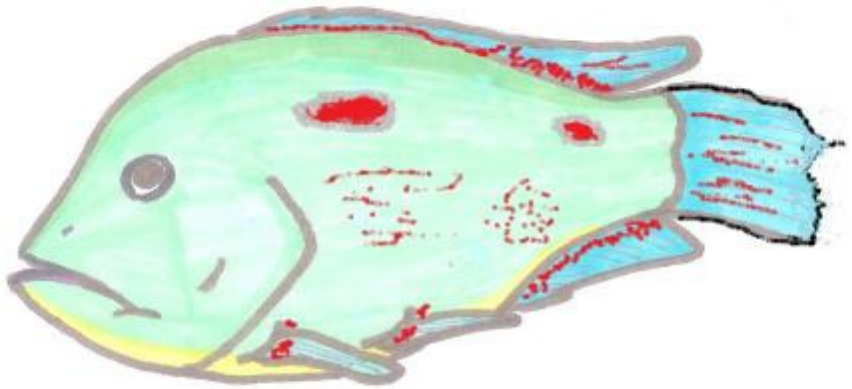


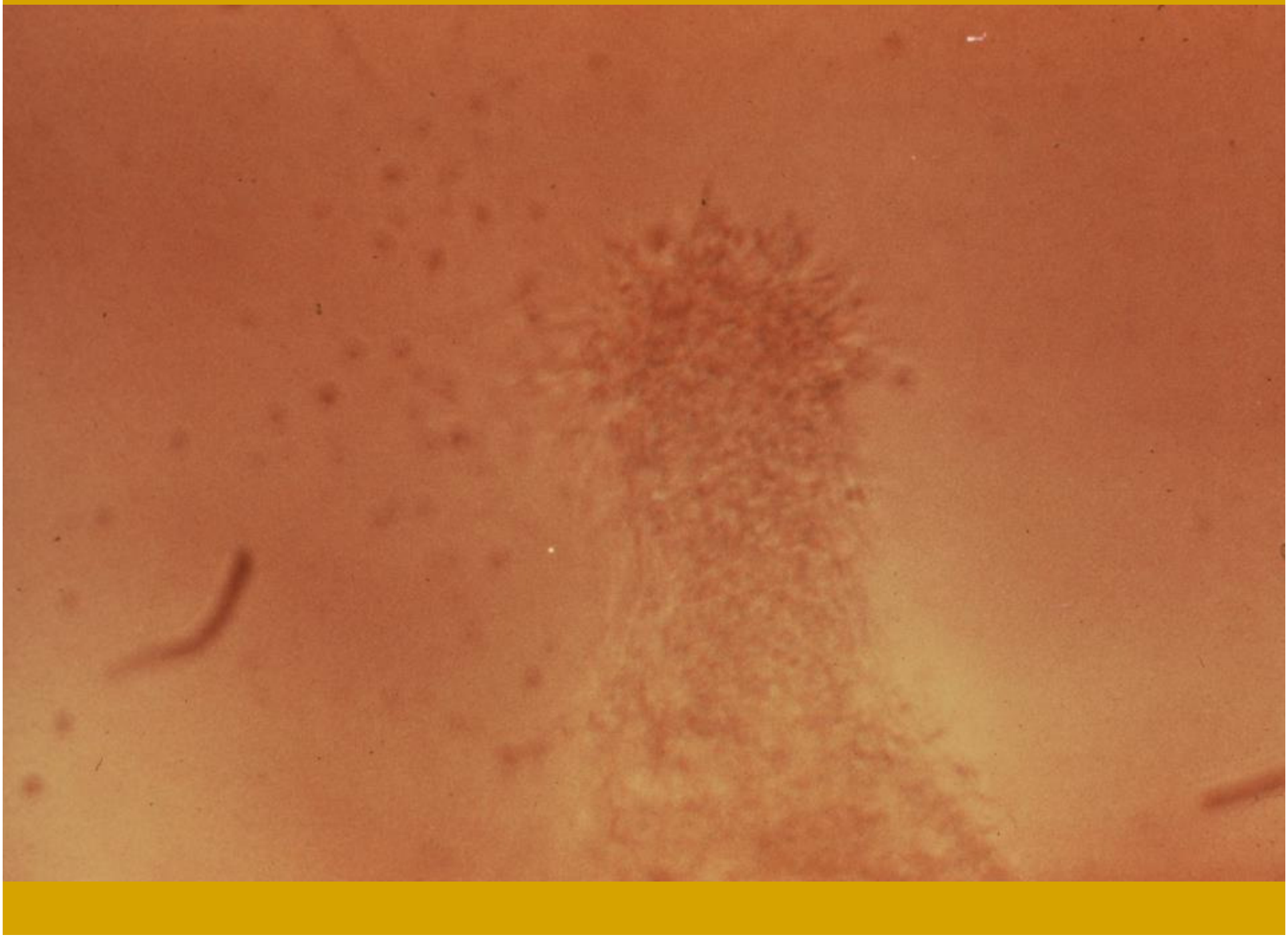
Radical color changes

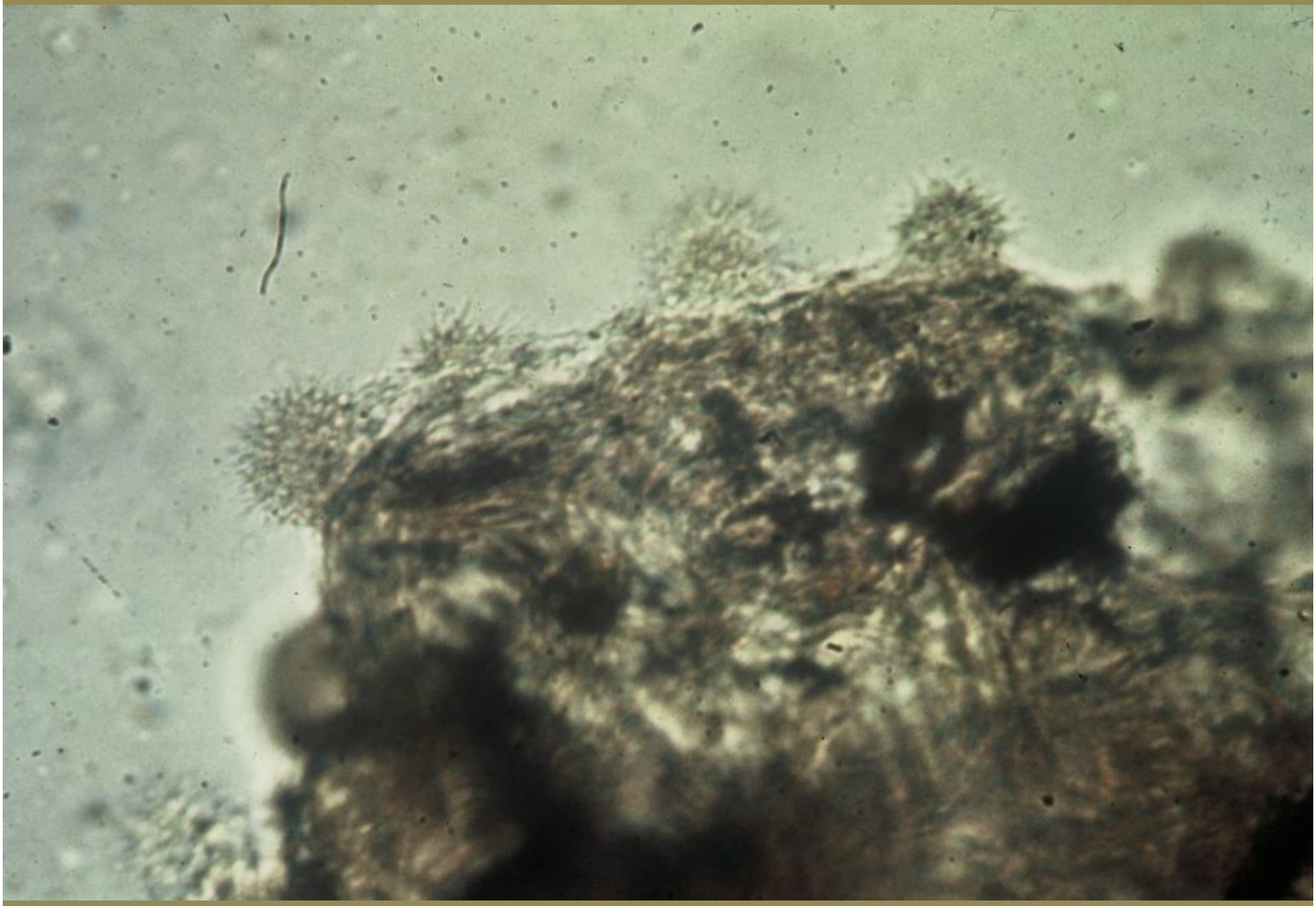


Skin and fin lesions

- Ulcers/sores
- Petechial
- Ecchymosis
- Hemorrhage
- hyperemia





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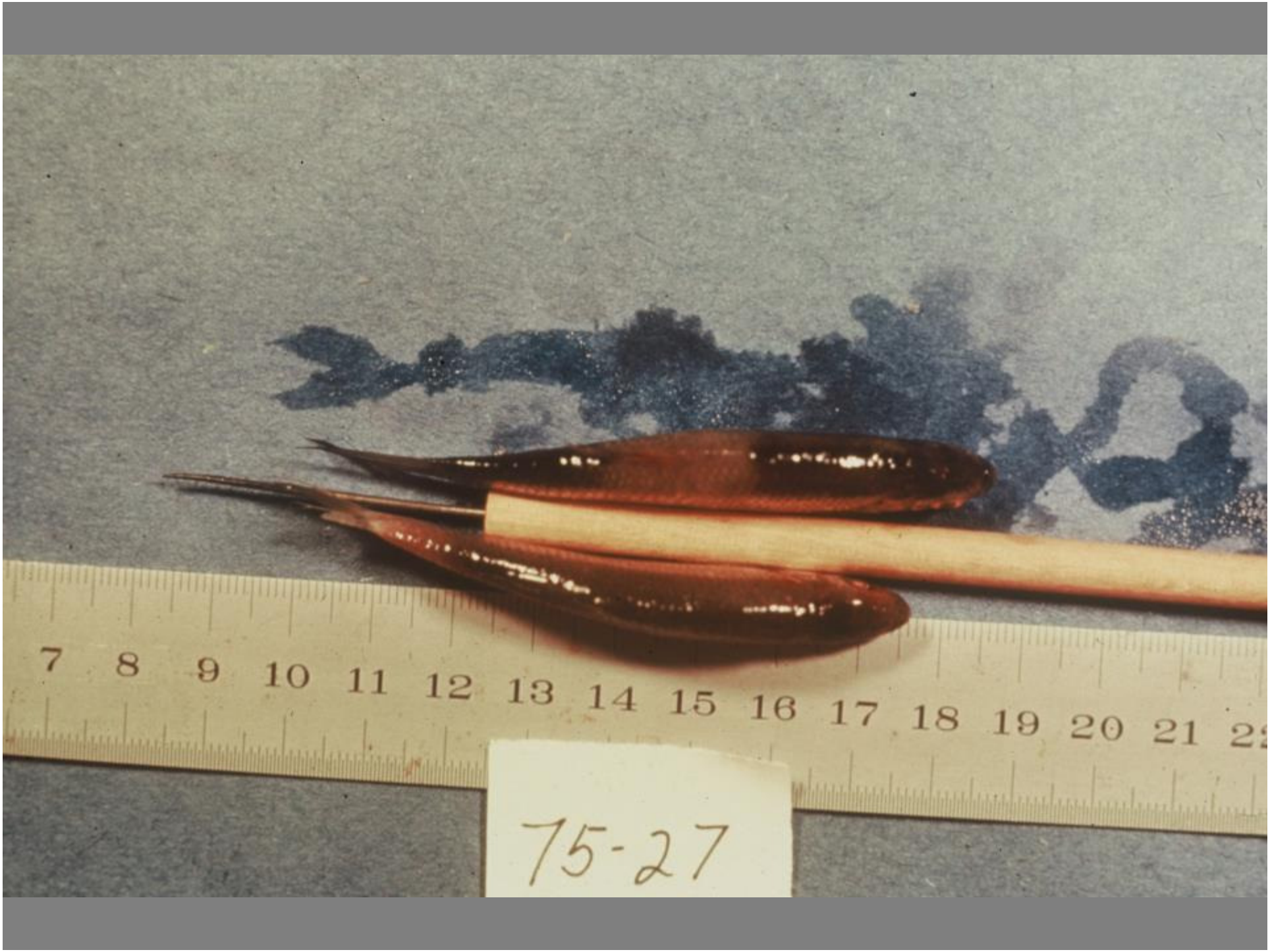
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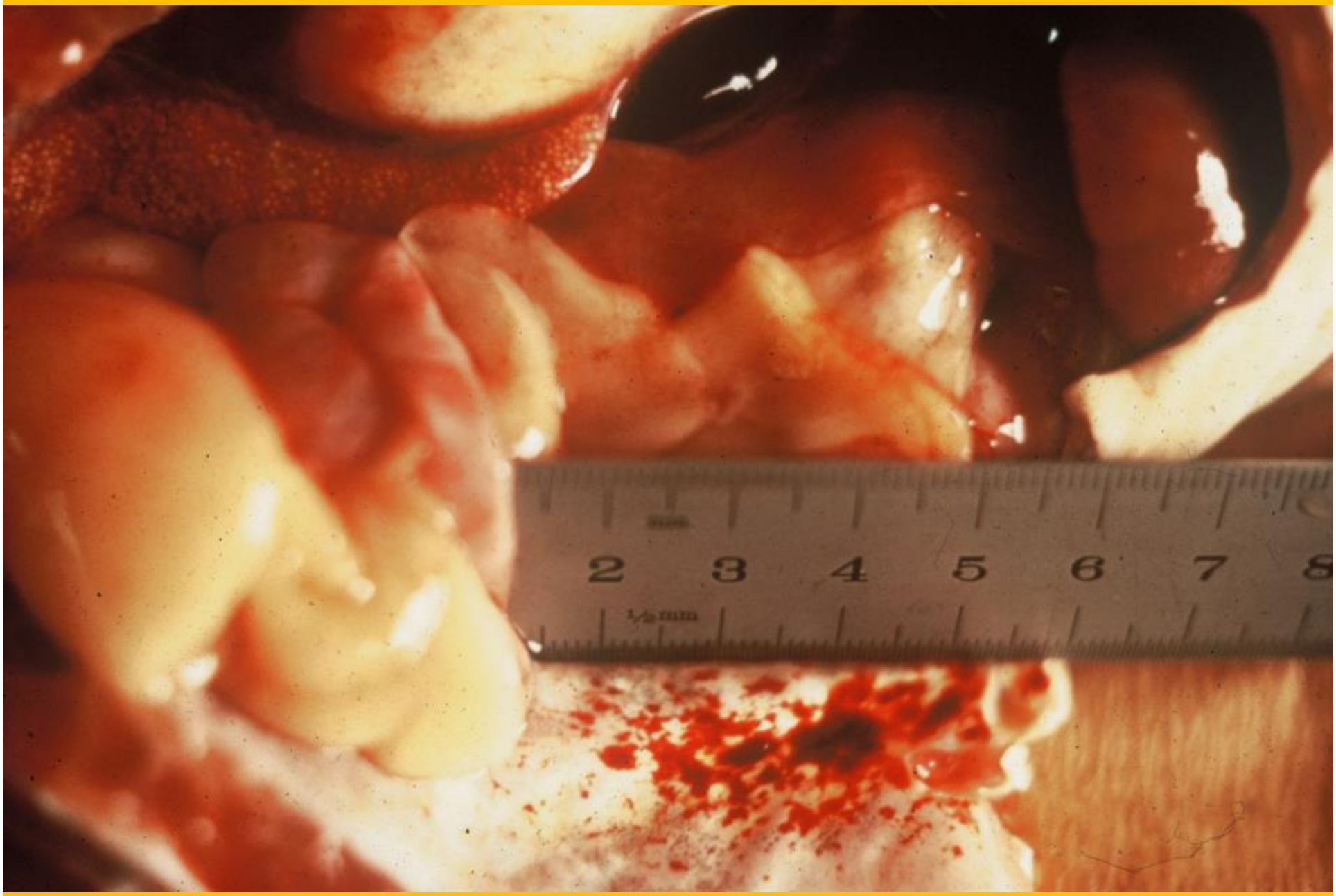
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Food fish bacterial treatments:

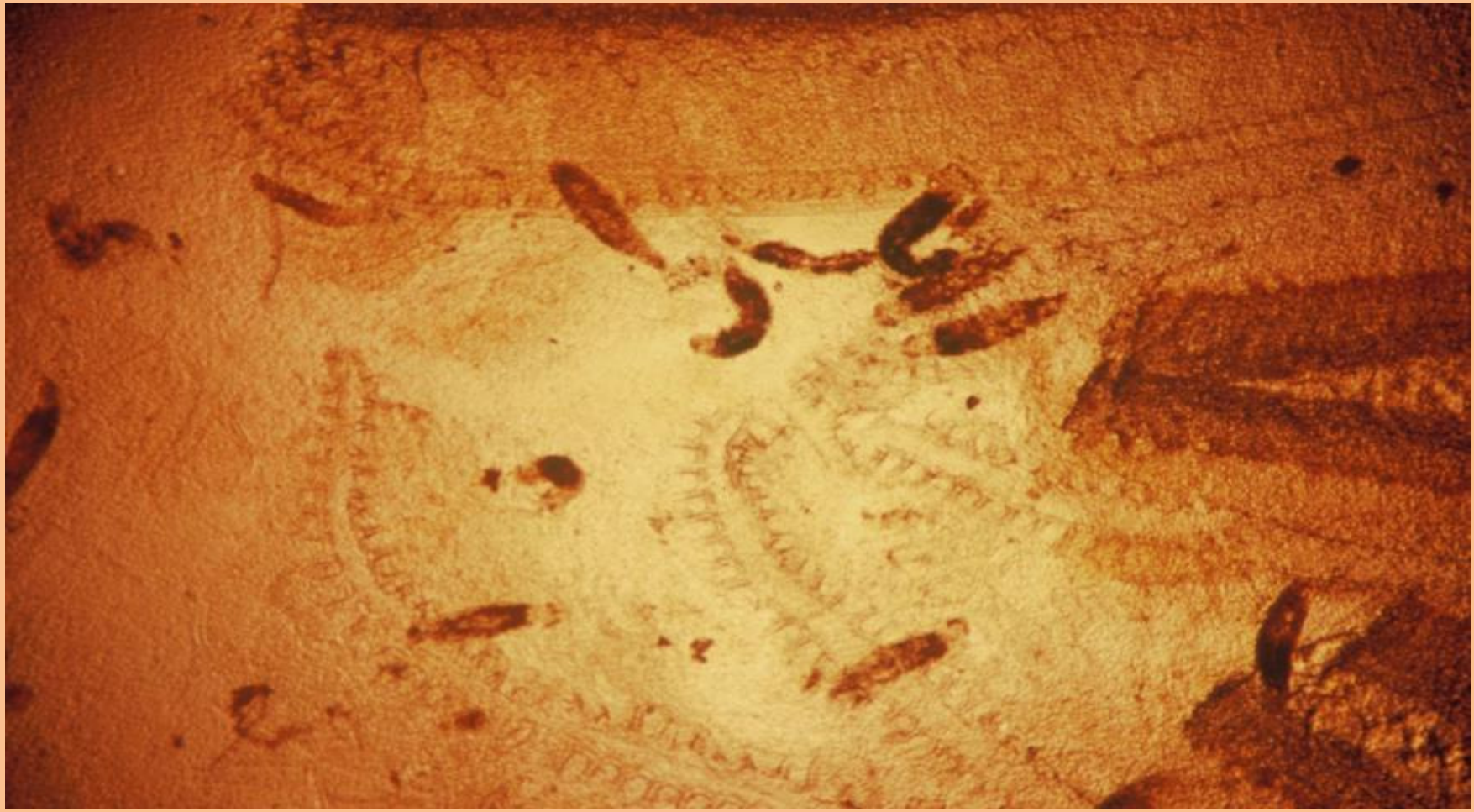
- 35% Perox-aid^{tm} – columnaris & bacterial gill disease
- Romet 30^{tm} – furunculosis and enteric septicemia
- Terramycin^{tm} 200 – for below plus hemorrhagic septicemia
- Aquaflor^{tm} – enteric septicemia catfish
  - columnaris
  - Furunculosis
  - Coldwater disease

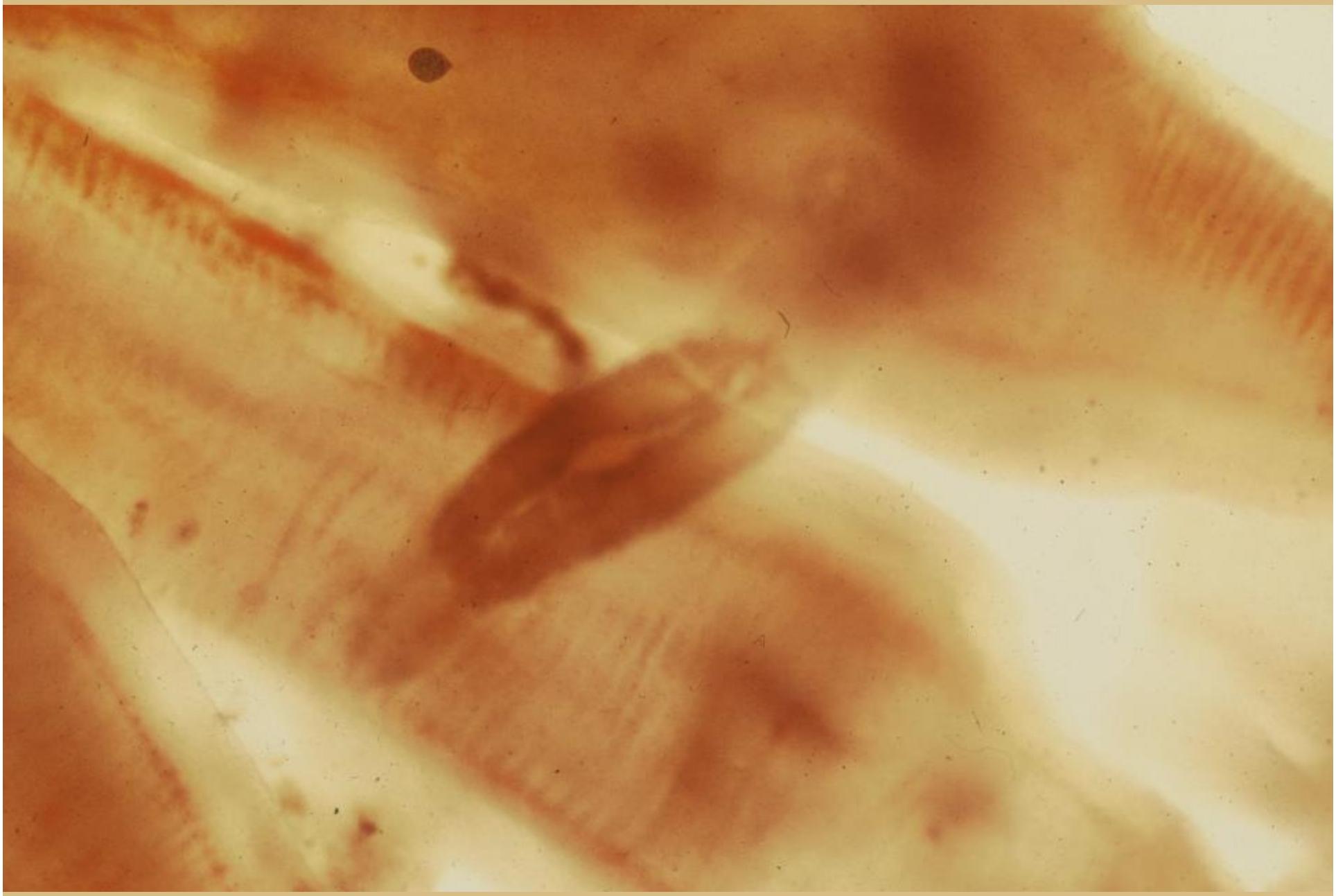
Non-food fish bacterial disease treatments

- 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






eImBE
Research

Treatments for monogenean trematodes

Food Fish

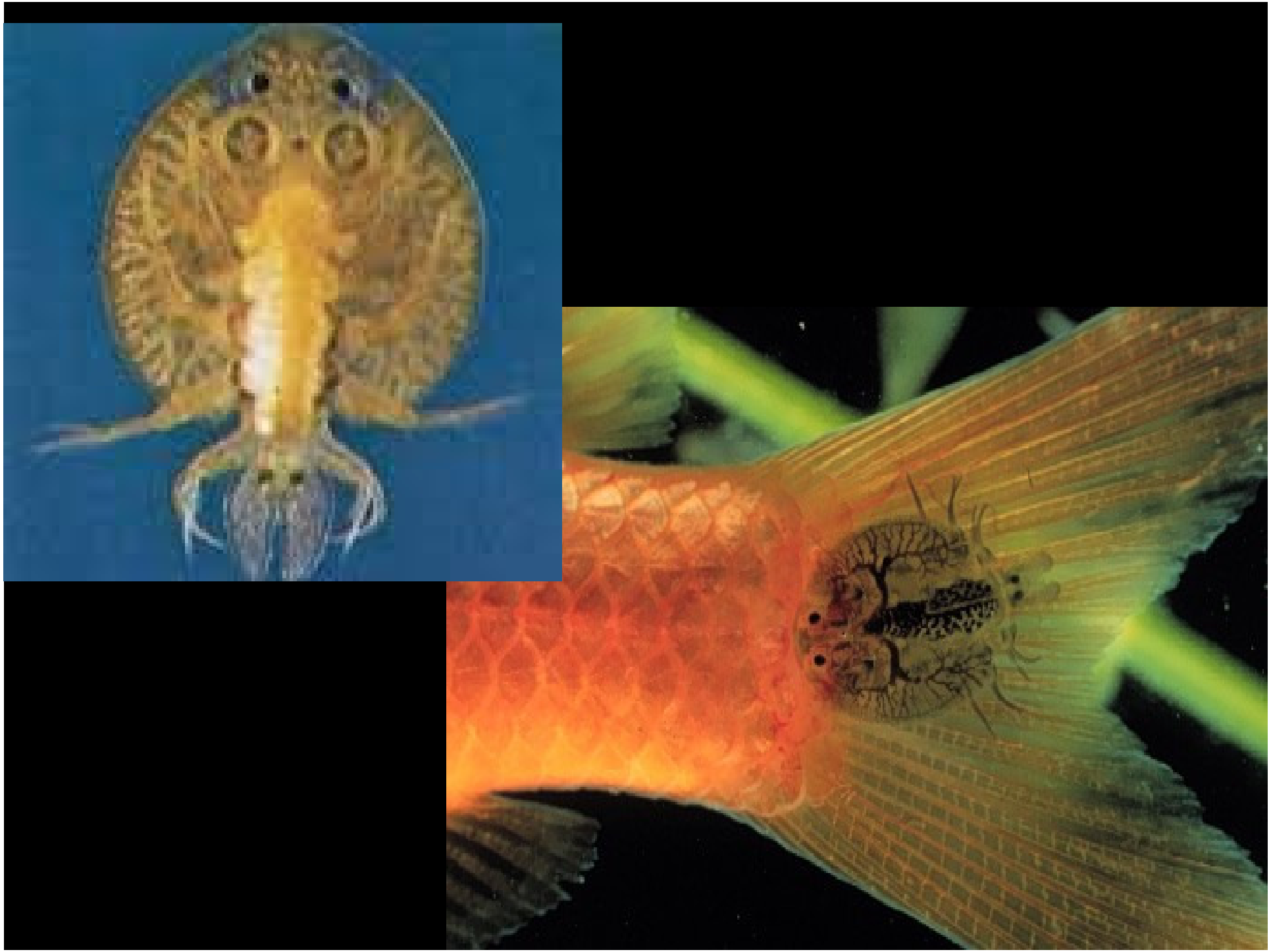
- Formalin – (Parasite-S,
  (Formalin-F, Formacide-B)
  250 ppm for 1 hour

Non-Food Fish (ornamentals)

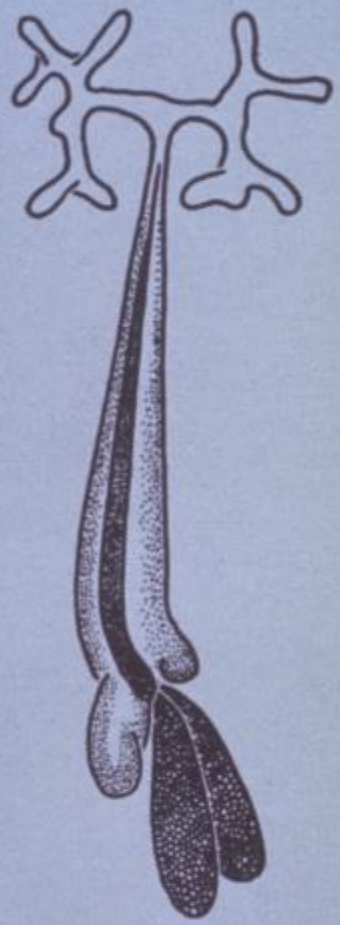
- Formalin – 250 ppm for 1 hr.
- Praziquantel (Droncit)
  - .25 ppm – 3.5 ppm
- Dylox (Trichlorfon)
  - .25 ppm – 4 ppm

Parasitic copepods

- Fish lice (*Argulus*)
- Anchor worm (*Lernaea*)
- Gill maggots (*Actheres* and *Ergasilis*)

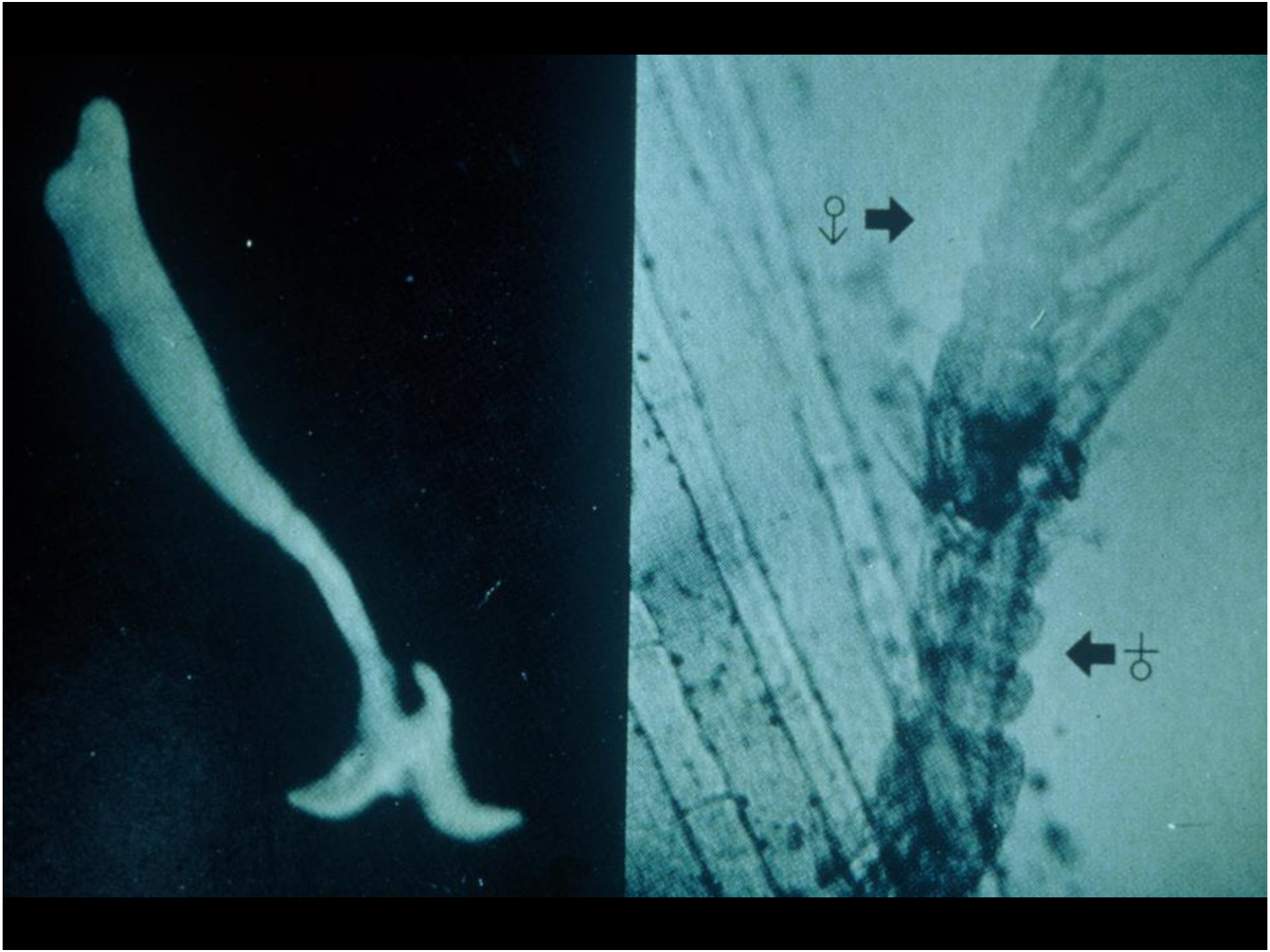


Anchor Worm (*Lernaea cyprini*)



THE
ADULT
PARASITE

ANCHOR WORM

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Treatment options for parasitic copepods

- Food fish – none in this country currently approved (salt?)
- Canada – Slice^{tm}
  - (Enamectin benzoate in feed)
- Non-food fish (ornamentals)
- Dylox (trichlorfon)-.25 ppm
- Slice^{tm}
- Insect Growth Regulators
  - Program (Lufenuron)
    - .13 ppm
  - Dimilin (Diflubenzuron)
    - .066 to .01 ppm

Hopefully this program helps to keep ART