TECHNIQUES FOR FISH HEALTH

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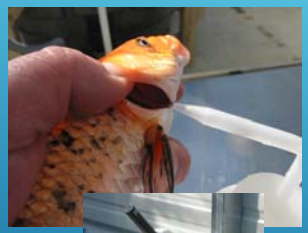
WHY YOU NEED THIS LAB

A scope on the counter
In your shop will
Inspire confidence in
You and your shop!

- Here's your patient
- It might be yours
- It might be a valued customers
- You can observe parasites on such a fish, saving it.
- You can save this ulcerated fish with injections.
- You can open the fish if it dies and gather valuable information.

INTRODUCTION



- Intent: To teach and demonstrate most of the vital techniques for diagnosing and treating disease in Koi.
- I have been a fish keeper since 1973, I earned my DVM from UGA in 1991 and have treated fish professionally since 1993.

There will be almost no information on medicine treatments.

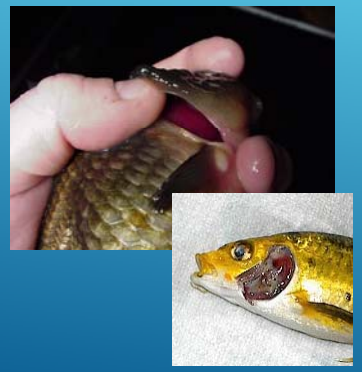
- Handling Fish
- Exam of fish
- Biopsy of fish
- Using a scope
- Injection of fish
- Anesthesia

TOPICS OF DISCUSSION

HANDLING

- Handling is a stressor.
- The body slime is home to the parasites.
- Do not touch the ventral surfaces of the fish to be biopsied.
- **Never** carry a fish in a net! Bowl it instead!

EXAM OF FISH

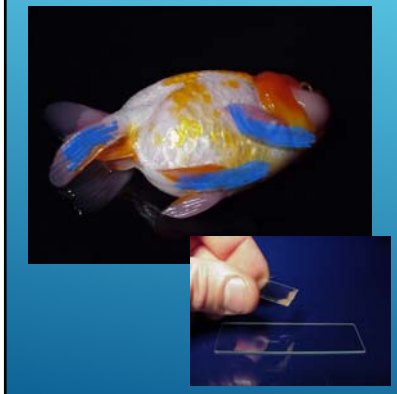


- Body should be uniform and firm.
- Examine at the base of fins for parasites.
- Examine gills: Steak red!
- Slime coat should be uniform – 100%
- Record your findings with a pen or camera

BIOI

- Touch fish as little as possible
- Nets and hands remove slime coat – where parasites live!
- Scrape aggressively
- Cannot cut yourself with broken coverslip.
- Plastic coverslips are preferable!

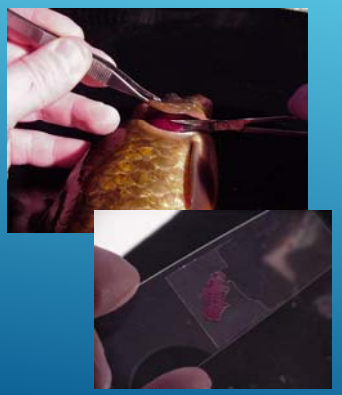
BODY SCRAPE



- Scrape on the bottom of the fish
- Scrape from head to tail
- Scrape from base of tail to tip of tail
- Put drop of water on slide.
- Longevity of slide prep!

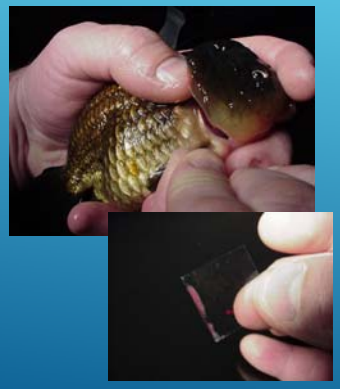
SCRAPES MOVIE

GILL SNIP



- Aggressive
- Fish can bleed
- Not usually necessary
- Take only the very tips
- Do not squash the prep under the coverslip

GILL SCRAPE



- Fast and relatively easy
- Nominal bleeding
- More surface area from gill is biopsied
- No cutting – Less Liability

THE SCOPE

- Moderate power
- Binocular is not necessary
- Start with lowest power
- Start with smallest ID aperture
- Make sure power is on
- Next: The **oculars**

- They provide PART of the magnifying power of the microscope
- Make sure they aren't steamed
- One of the oculars is adjustable in binocular scopes.
- Next: The **Optics**

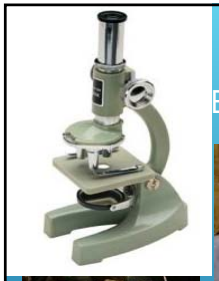
THE OCULARS

THE OPTICS

- The SMALLEST one is the lowest power
- The longest one is the highest power
- Start with the lowest for survey
- Switch to higher powers for detail.
- Next: **Adjustments**

THE ADJUSTMENT

- With most scopes there are two knobs
- Coarse adjust moves the optics up and down quickly.
- Fine adjust focuses the optics finely.
- Find these on your scope.
- Next: **Choosing a scope**



BUYING A SCOPE

- Monocular is fine
- Glass optics are nicer
- Disc diaphragm is okay
- No fine adjust okay
- BUILT IN LIGHT SOURCE – no mirrors
- Up to 400X power good
- Next: **The Iris Diaphragm**

THE ID APERTURE

- Not on "your" scope but you should know it anyway
- At left is an adjustable iris diaphragm
- Sometimes it's a disc with holes in it – choose the smallest for more contrast.
- Next: **More diaphragms**

LIGHT REDUCTION

- For contrast microscopy – smallest amount of light.
- But not all Iris diaphragms are the same.
- There are disc diaphragms and sliding shutters.

THESE SCOPES

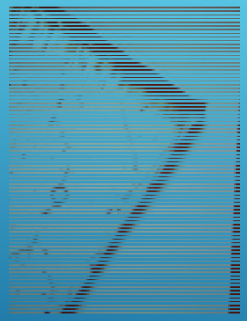
- These scopes are LED lit
- They have a frosted glass filter and they are set to be used for light contrast
- They do not require an iris diaphragm

THANKS, TOM!!!

- **Tom remembered to get "practice slides" I recommend that you use these. If you find the specimen on these, it means you're "okay" at microscopy.**

SETTING UP A SCOPE - RECAP

- Turn it on
- Adjust the light to the lowest setting
- With many scopes you have to adjust the Iris Diaphragm to the lowest or smallest aperture to allow the least light.
- Adjust the scope to the smallest (lowest power) Optic Turret.
- **Place sample slide on stage and Focus on the edge of the slide's coverslip.**



THE PARASITES UNDER THE SCOPE

- Minuscule
- Needs 100-400 x power to see it
- Hard to show with pictures. Need to see movie.

COSTIA

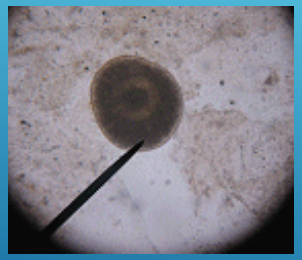
- Cause Ulcer Disease and Flashing
- Hard to kill
- SupaVerm
- PRAZI
- OP's
- Why not dips?

FLUKES

- Springtime Killer
- Not very small
- Highly motile
- Heart or onion shaped
- Dies FAST in preps

CHILODONELLA

- This rarely causes “White Spot” in Koi even though the fish are dying of the parasite
- “Rolls in place”
- Salt it away
- Doesn’t swim around.



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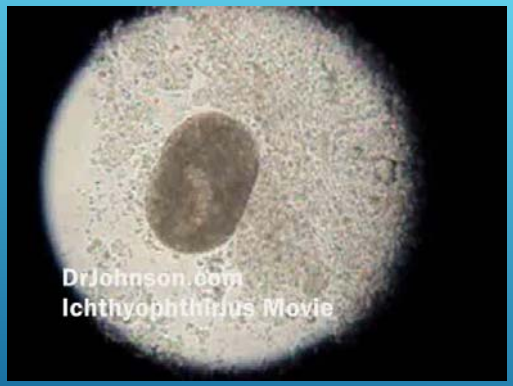


- Works in cold water
- Dirty ponds
- Highly motile
- Flying saucer shaped
- Binary fission & conjugation
- Salt usually works

TRICHODINA

TRICHODINA MOVIE

ARGULUS

- Crustacean parasite
- Microscope is not necessary for diagnosis.
- Easily cleared with Dimilin.
- Harms fish for a week before grossly visible.

ARGULUS MOVIES

- In order to administer medications
- Sick fish might not eat
- Baths ineffective
- Injections are fast and fast-acting
- Simpler than you think
- When not to inject?

INJECTION OF FISH

- One cc syringes usually okay
- Tuberculin Syringes easily available
- Flimsy needles
- Have to find **sweet spot**
- Air is okay!

MATERIALS

- Safer, cosmetically
- Easier
- Faster acting
- Sweet spot is under ventral fin, in "the pit" even on huge fish.
- No resistance!

IP INJECTION

IP INJECTION MOVIE

- Get a decent grip on the fish
- Insert the needle under the ventral fin
- Push the plunger
- Withdraw the needle
- Film by Steve Dutcher.

IM INJECTION

- You will see the needle going into the meat of the back – note the angle of the needle
- Also, I move further back and inject under the meat of the tail.
- Film by Steve Dutcher

USING THE SYRINGE

- Push the cap on, HARD.This makes the needle stick on the syringe tightly.
- Then pull the cap straight off, **without** twisting.
- **Overfill the syringe and expel the excess !**
- **Sharps note**

THE TECHNIQUE

- Invert bottle of injectable
- Draw up MORE than you need
- Expel excess back into bottle
- NEVER introduce a dirty needle into the bottle again
- You CAN use one needle on several fish in the same condition and collection.
- Never use a needle across collections.

ANESTHESIA

- Oil of Cloves
- IsoFlurane
- MS222 / Finquel
- Alka Seltzer
- Rubber hammer
- My biography

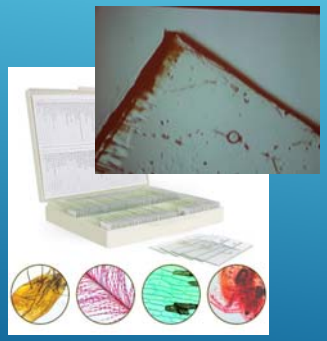
- Safest!!! By far!
- Gradual induction
- Emulsify!
- 5 drops per gallon Oil of Cloves
- Eugenol / 85% Toothache Remedy – 1-2 drops per gallon

OIL OF CLOVES

LET'S GET STARTED!

- Make sure your station has:
- Scope
- Glass slides
- Coverslips
- Box for fish

NOW YOU SHOULD BE…

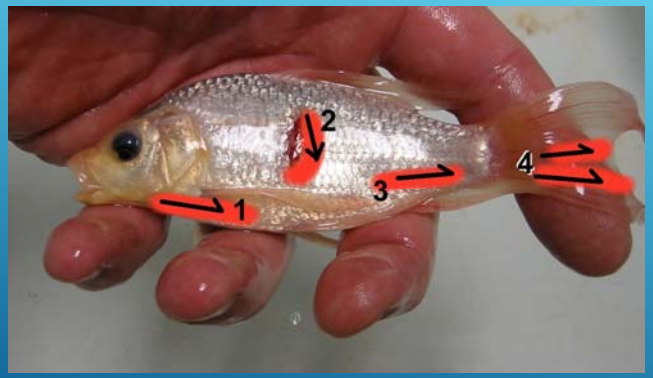


- Orient yourself to your scope
- Figure out the lowest powered optic.
- Set the ocular the way you want it – see image at left.
- Focus the scope on a slide and coverslip
- Yell if you're having trouble.

NOW YOU SHOULD BE…

- Don't box any fish yet.
- Go on over to the tank and get a fish up. Handle it very little. Collect a skin scrape.
- Put a drop of water on the slide and look at the scrape with your scope.
- Do a gill scrape, look at that.
- Consider a gill snip.
- Yell if you're having any trouble

Biopsy Sites – To Refresh Your Memory



IF YOU FIND A CRITTER

- Bring the slide to the projection table and we can put it on a screen for more people to see.
- Thank you

NOW YOU SHOULD BE…

- Go ahead and box a fish up for you and your table mate.
- MAKE SURE THE BOX HAS A COVER ON IT!
- DON'T FILL THE BOX UP
- Bring the fish to the table.
- Maybe do some more scrapes
- Consider anesthesia with Oil of Cloves

GO AHEAD AND INDUCE ANESTHESIA…

- With your fish in the box, with the lid on, emulsify five drops of Oil of Cloves in a water bottle or other closeable container (Ziploc). Pour in with the fish and recover the top.
- If you want to revive the fish simply get new water from the vat and move the fish into fresh water.