

WAYS TO REDUCE OR ELIMINATE "COLDWATER DISEASE"

Concepts For the Fish Culturist
(and all Fisheries
Professionals)



GRUMPY OLD MEN



Apologies to Clint Eastwood



Apologies to 111 year old man!

BACK TO CONTROLLING "COLDWATER" DISEASE!

- There is no "APP for That" – Darn!
- The disease can be complicated and complex
- **HOWEVER**, you can make progress!



HEALTH MANAGEMENT CONCEPTS



1. Intervention

- a) Drugs and Chemicals
- b) Surgical

2. Prevention

- a) Environmental (hygiene, stress reduction, etc.)
- b) Physiological (vaccines, nutrition, etc.)





AT FIRST, I WAS GOING TO TRY TO GIVE
A LIST OF PREVENTATIVE MEASURES

But I quickly realized that there is no
“single solution” to every situation





COLDWATER DISEASE SOLUTION PATHWAY

1. Identify problem (Yikes! I have a problem!)
2. Get help, don't try to solve this on your own...chances of success going "solo" are slim
3. Involve your Fish Health Professional, and Management from the start
4. Identify causative factors
 - a. Exposure to the pathogen
 - b. Water supply (quantity, quality, cleanliness)?
 - c. Facility structural problems?
 - d. Procedural practices?
 - e. Programming practices?
5. If you are serious about solving problems with any disease, you **HAVE** to focus on the disease solution. If there are "higher priorities" then you will not get a solution.



THE OLD SAYING "AN OUNCE OF PREVENTION..."

The challenge to all fish culturists is how to manipulate the environment to MAXIMIZE the health of your fish??

Water – Clean, plentiful, with the right chemistry and temperature

Space – Clean and plentiful for the appropriate life stage

Hygiene – Yes you do have to keep things clean!

Integrity of the Host – The ability of the fish to resist the bacteria

Nutrition – Pay attention to quality diets, delivered fresh and fed properly

This is a 24/7/365 proposition...your fish don't get a day off and neither do you!



EXPOSURE TO FLAVOBACTERIUM PSYCHROPHILUM

- From infected Spawning Adults through body fluids around egg that stick to that egg during incubation
 - Some researchers believe that the bacteria can actually get in the egg from highly infected females
 - From water supply which may have large numbers of fish that are infected or from indigenous populations of the bacteria
 - From nearby infected/diseased fish in the same rearing container
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WATER

- The “right” amount and exchange rate
- The “right” temperature range (i.e. 36° -55° F. or 2° - 12.5° C. for salmonids)
- The “right” chemistry (oxygen, dissolved solids, pH, etc.)
- The least amount of toxic chemicals possible (i.e. pesticides, heavy metals, etc.)
- Clean as possible – low sediments, low turbidity

Flow Index = Total Weight ÷ Flow ÷ Average Length

Exchange rate = Total volume of water exchanged in one hour
or to have a water velocity of 3.3 cm/sec.

FACILITY STRUCTURAL PROBLEMS





PROCEDURAL PRACTICES

- Spawning – hygiene and triage of “bad eggs”
- Egg cleanliness and disinfection
- Incubation – substrate and flow control (reduced turbulence), judicious use of hydrogen peroxide or formalin
- Early rearing – low densities, good flows, frequent picking off morts/moribund, and gentle handling
- Production rearing – continued best rearing practices and good hygiene along with aggressive moribund picking if signs of disease occur.



PROGRAMMING PRACTICES

- Work with management and co-managers to assess numbers of fish for each rearing unit to minimize stress and maximize survival
 - Maximum numbers for rearing container usually do not translate to maximum survival
 - Numbers in the pond and “out the door” should be a low priority. Quality of smolts or releases and numbers of adult returns should be the highest priority. In many cases “less” really does mean “more”.
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INTEGRITY OF THE HOST

- The external layer (skin) of the host is very important
 - Research has shown that for fish to fish transfer, abrading the skin can increase the development of the disease
 - Stress, space management and procedural methods are extremely important!
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REMEMBER!

- The solution(s) is/are best found using the Team Approach – everyone has a stake in the solution
- Coldwater Disease is not just a “hatchery problem”, it is also a Fish Health and Management problem.
- Determine the likely contributors to the disease
- Work together on solving each one of the problems found
- **THIS APPROACH IS VERY EFFECTIVE!!**
- **COLDWATER DISEASE CAN BE CONTROLLED!**

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QUESTIONS?

