

Moist Air Incubation (MAI)

OHRC Advisory Committee
Update

12/10/12



MAI Research Objectives

- 1) Evaluate the effect of incubation density on embryo loss, hatching success, and early development
- 2) Determine if the MAI will effectively thermal otoliths mark prior to the “eyed” stage of development

MAI Research Objective 1

Evaluate the effect of incubation density on embryo loss, hatching success, and early development

- Task: rear embryos at three densities (high, medium, low in triplicate) in the MAI and in conventional Heath trays & measure survival and early growth.



MAI Research Objective 1

Results/Summary

- Trial One...
 - 100% mortality
- Trial Two...
 - 100% mortality
- Copper chiller coils replaced and new chiller installed.



MAI Research Objective 1

Results/Summary

- Trial Three...

Group	Egg Loss
MAI Low	9.04%
MAI Med	12.29%
MAI High	16.62%
Heath Low	20.12%
Heath Med	21.87%
Heath High	18.64%
*MAI Extra High	70.35%

*MAI Extra High = FULL tray

MAI Research Objective 1

Results/Summary

- Trial Three...
 - Hatch/swim-up. No significant difference.
 - Early growth. No significant difference after 2months.



MAI Research Objective 2

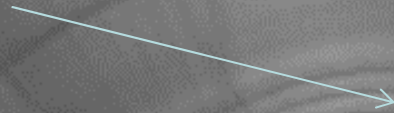
Determine if the MAI will effectively thermal otoliths mark prior to the “eyed” stage of development

- Determine how soon after fertilization otoliths can be thermal marked.

MAI Research Objective 2

- Started “marking” 10 days post fertilization (dpf)
 - One Cycle
 - 48 hrs at 10 C
 - 48 hrs at 4.5 C
 - 7 total cycles (finished at “eyed” stage)
- Yongwen Gao will analyze the otoliths

This is what we should see!!!



MAI Summary

- MAI mortality significantly lower than Heath
- MAI mortality density dependent (not seen in Heath)
- MAI produced “soft-shelled” eggs that are difficult to handle or ship

MAI Summary (MAI vs. Heath)

MAI	Heath
Low water use (5 gal/day)	High water use (5gal/min)
No chemical treatments	Eggs treated w/ Formalin for 4weeks
Lower mortality	Slightly higher mortality
Density dependant mortality	No density related mortality
Soft egg shells (lack of formalin use)	No soft egg shells
Relatively expensive and high tech (\$15,000)	Relatively cheap and low tech
Ok for salmon/steelhead (not trout)	Ok for all species
Ability to efficiently otolith mark (pending)	Requires heater/chiller to otolith mark