

Contaminants affect juvenile and adult Pacific lamprey and general thoughts about recovery planning

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Larval Lamprey Exposed to Portland Harbor Superfund Sediment



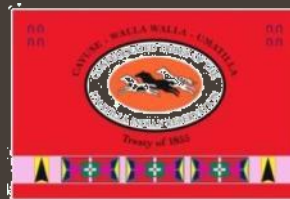
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² Stratus Consulting



Portland Harbor Lamprey Toxicity Study

Pilot Study Objective:

Methods to determine effects of contaminated Portland Harbor Superfund sediment on ammocoetes.



Long Term:

Growth & Physiology

Short Term:

Behavior

- Burrowing Time

Pilot Study Rationale

Life History Characteristics

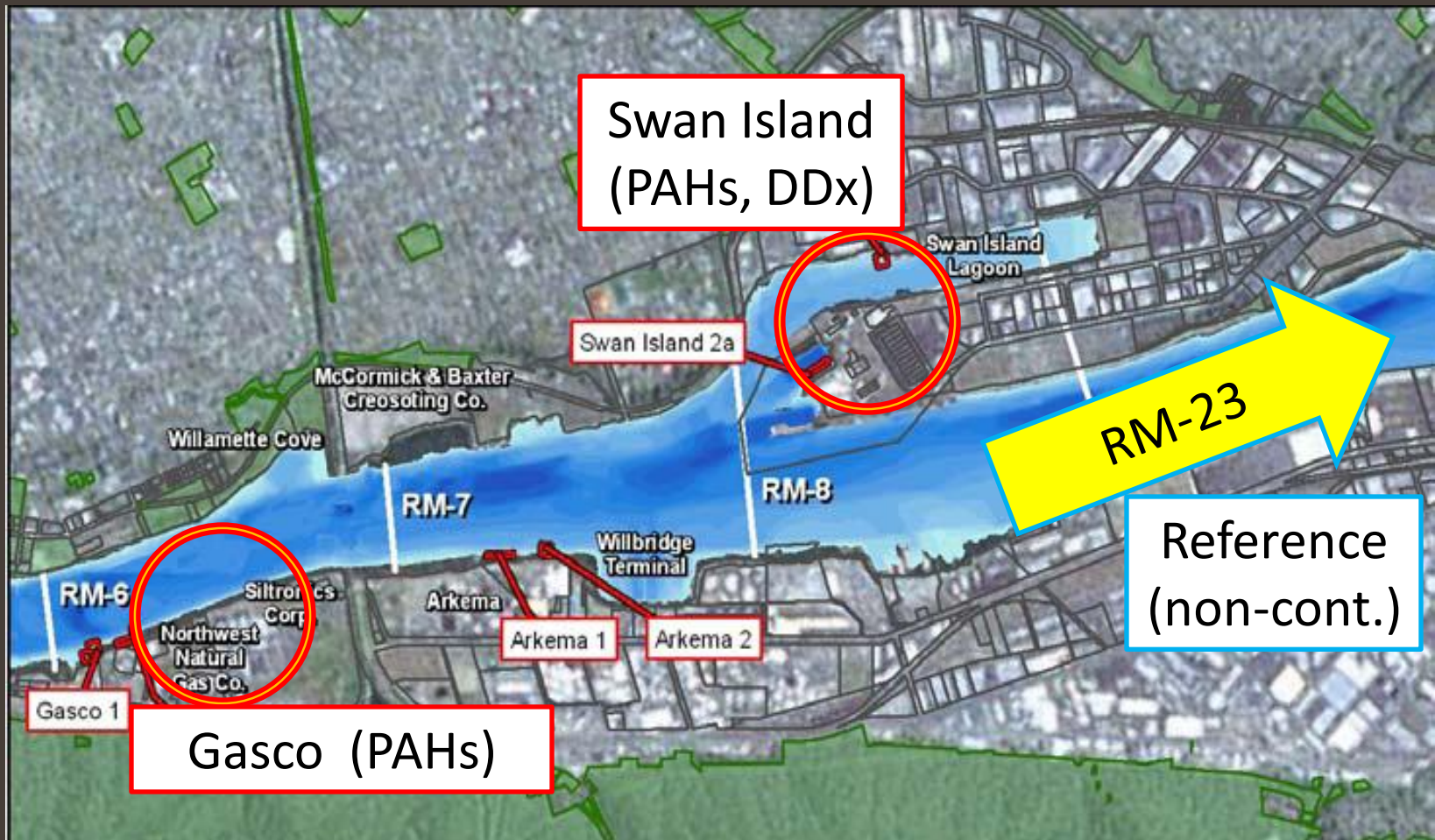
- Protracted larval period
- Fine sand & silt habitats
- Filter-feeding/sediment uptake



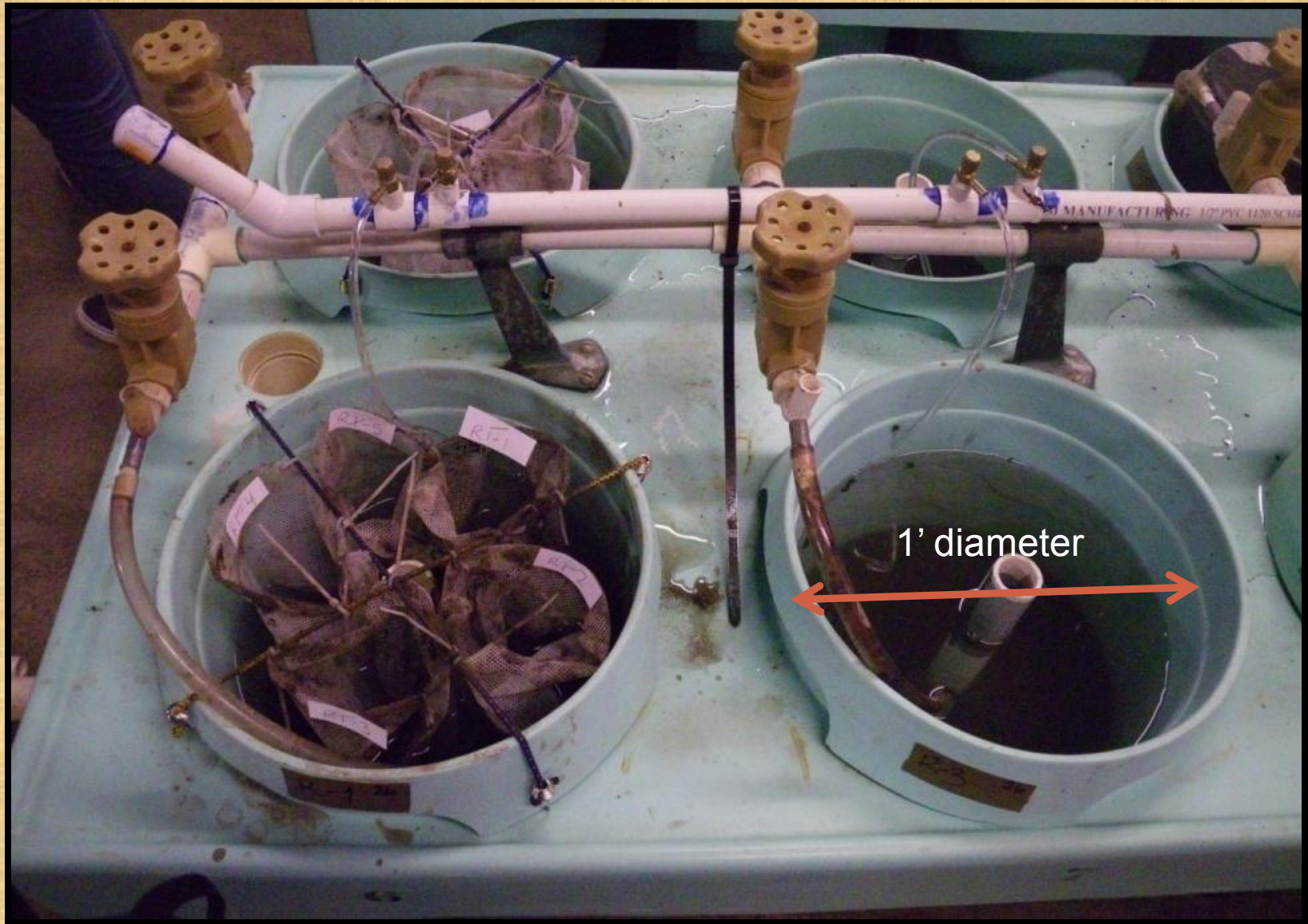
Conservation and Ecological Implications

- Effects of long & short term exposure unknown.

Lower Willamette River, Oregon Portland Harbor Superfund Site

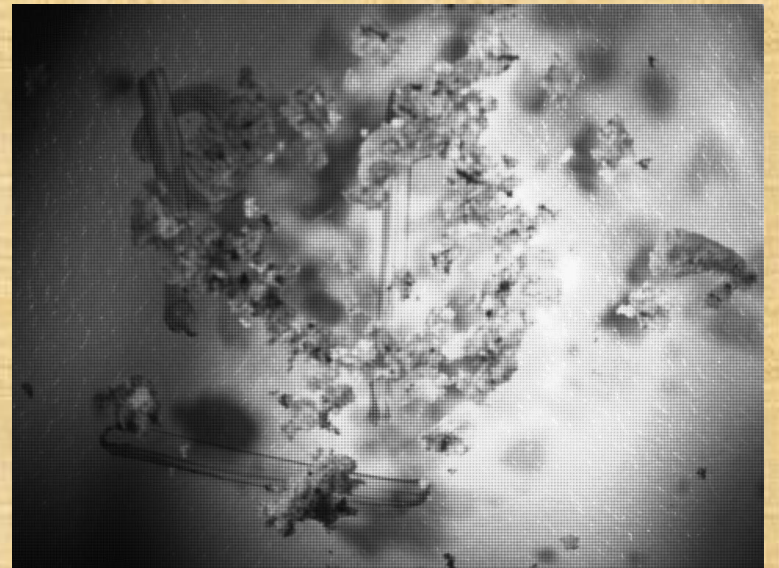
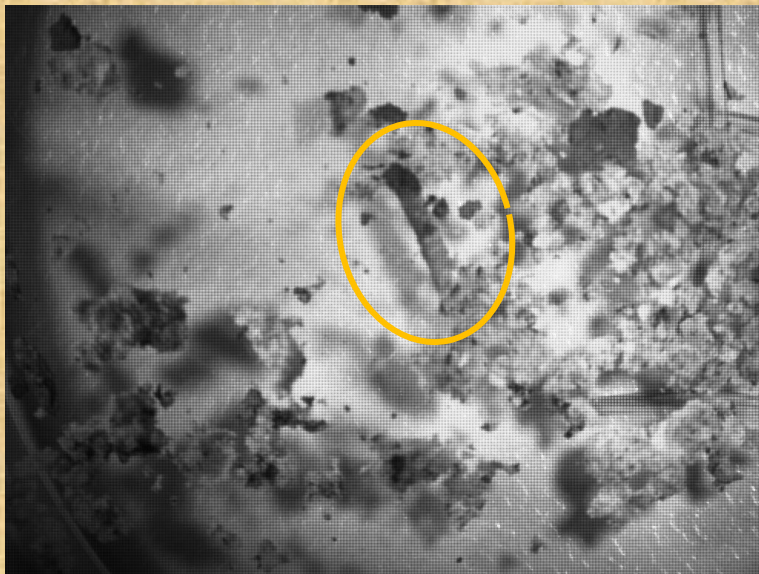
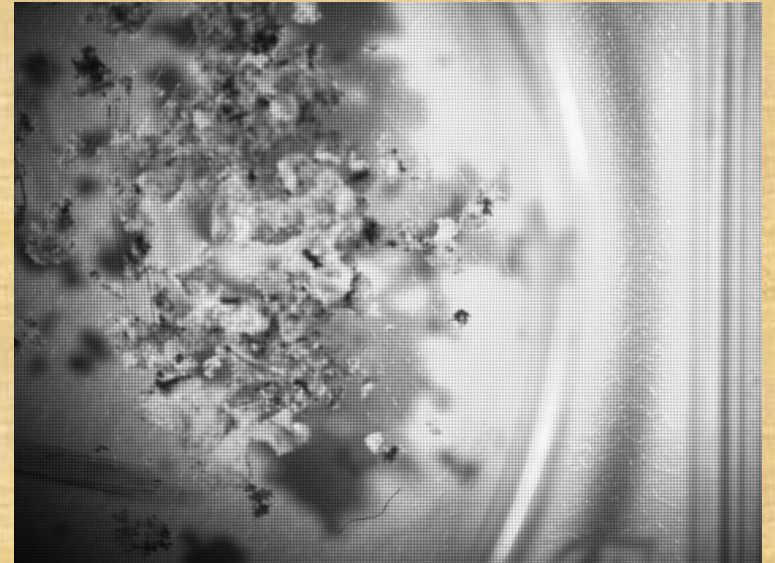


Corral Trial – Round Containers

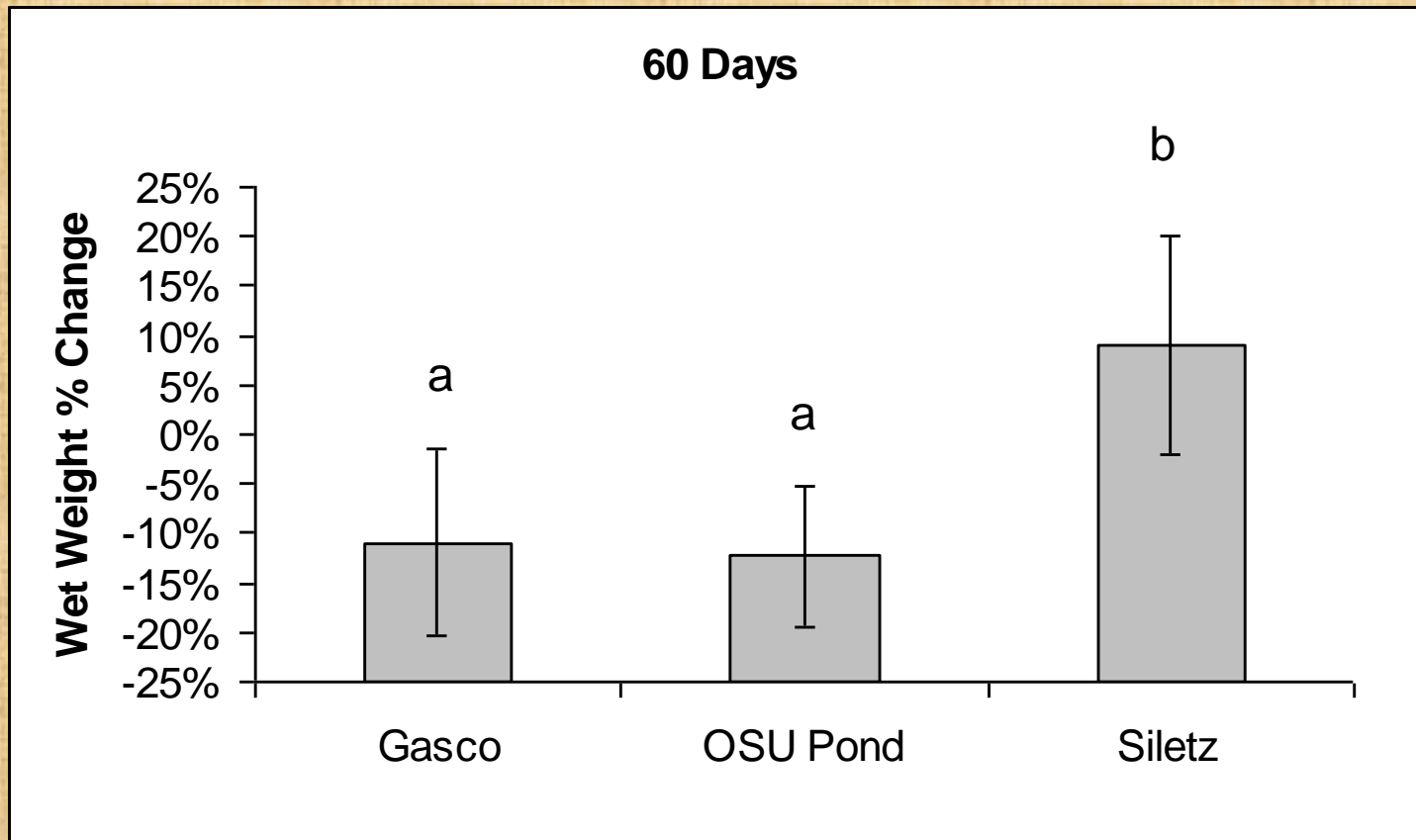


Non-depurated

Depurated

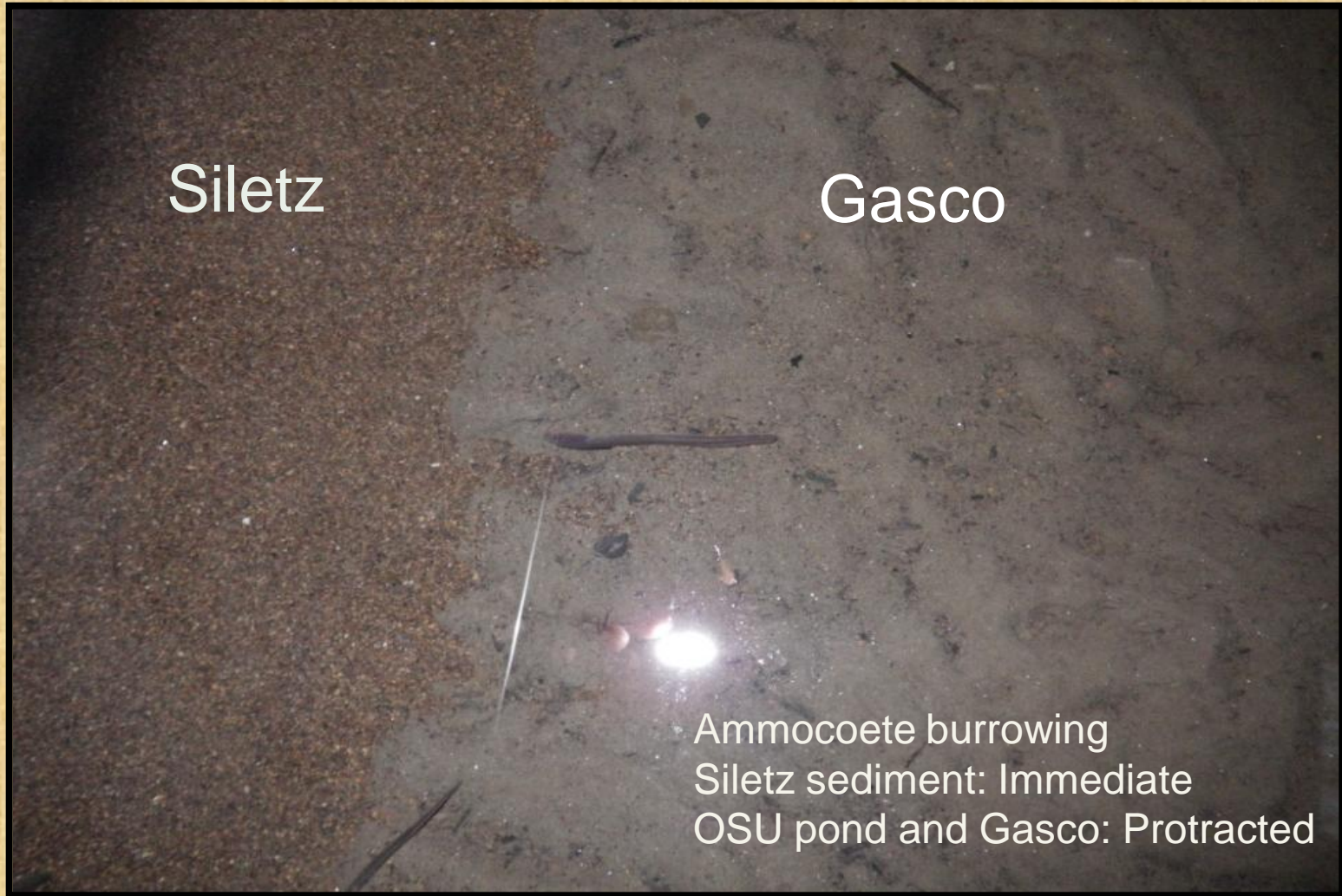


Contaminated Sediment 60 Day Exposure



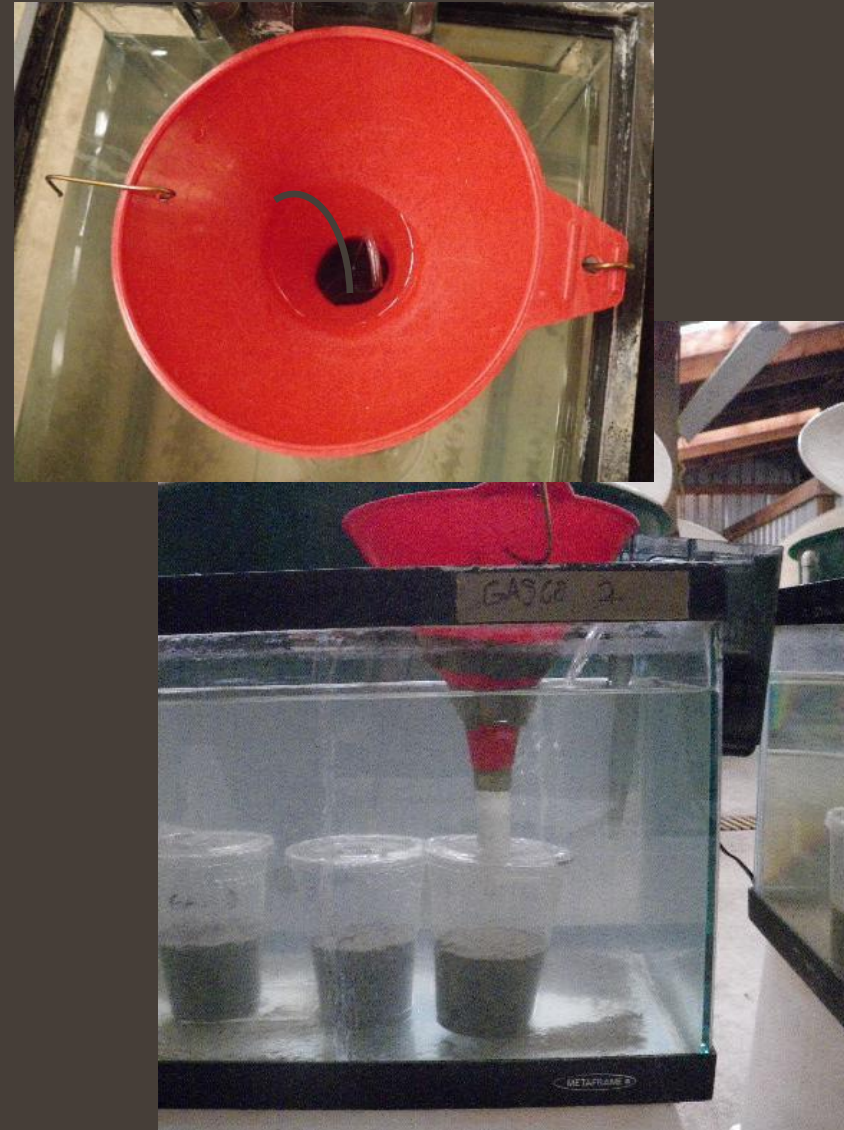
Sediment Preference Trial

Burrowing Behavior



Experimental Design: Exposure Trials

- 1 sed. type/tank
- Sed. Exposures rotated
- 30 min acclimatization
- Added serially to each tank
- 1 min. in plugged funnel
- Record time to initiate & complete burrowing
- Containers inspected after 24 hr

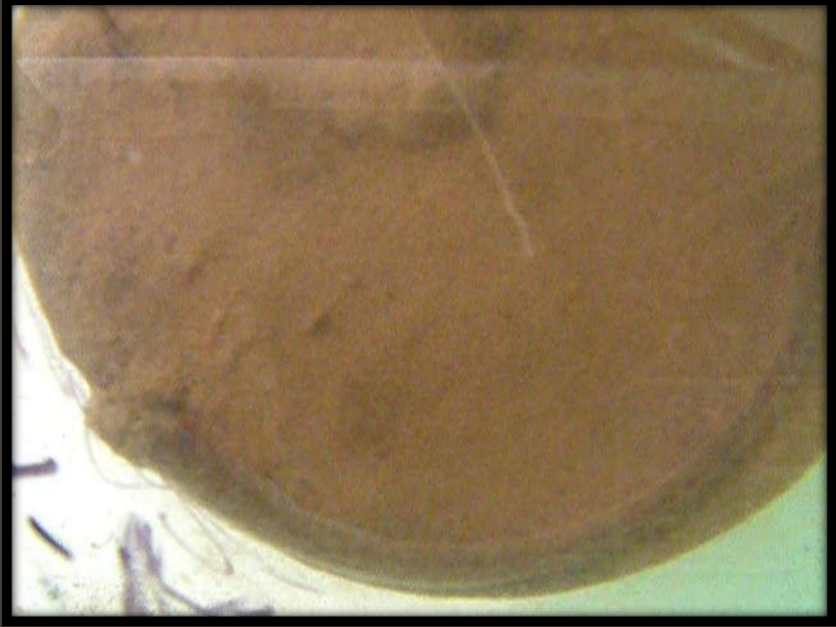


Burrowing Trials

Reference

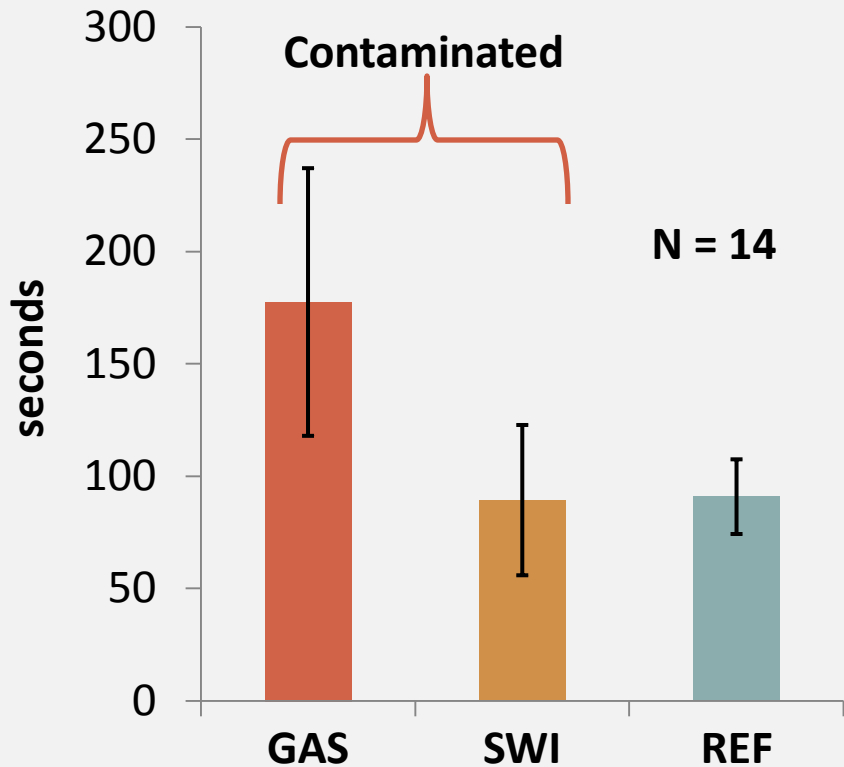


Gasco

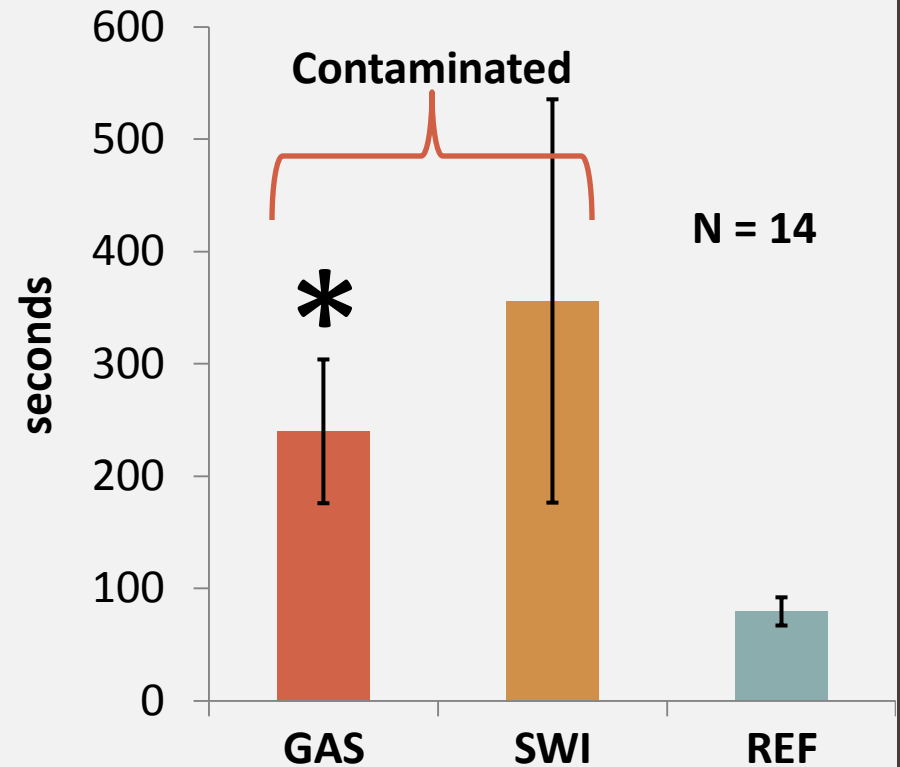


Burrowing Trial Results

Initiate Burrowing



Complete Burrowing



8 of 14 total individuals in the Gasco exposure group were found unburied after 24 hrs.

Atrazine's Effect on Pacific Lamprey (*Lampetra tridentata*) Olfaction



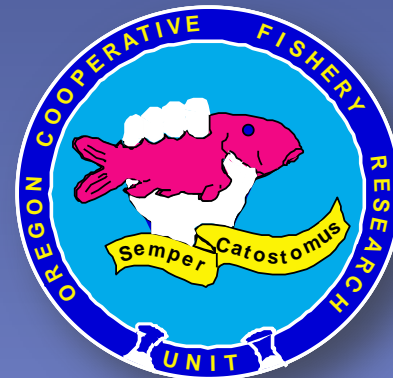
April Smith¹

Dr. Carl Schreck¹

Stan van De Wetering²

¹Oregon Cooperative Fish and Wildlife Research Unit and Oregon State University

²Confederated Tribes of Siletz Indians



Question of Interest

- Do forest herbicides (atrazine) affect lamprey's ability to migrate and spawn?

Objectives

- Does atrazine alter behavior?
- Does atrazine affect activity levels?



Model

- Paired
 - > Control vs. Atrazine
 - > Environmentally relevant conc.
- Attractant
 - > Effluent



2010/OCT/16 01:09:07

(SAT)

296.217GB

ADMIN



CH1

CH2

2010/OCT/08 00:23:18

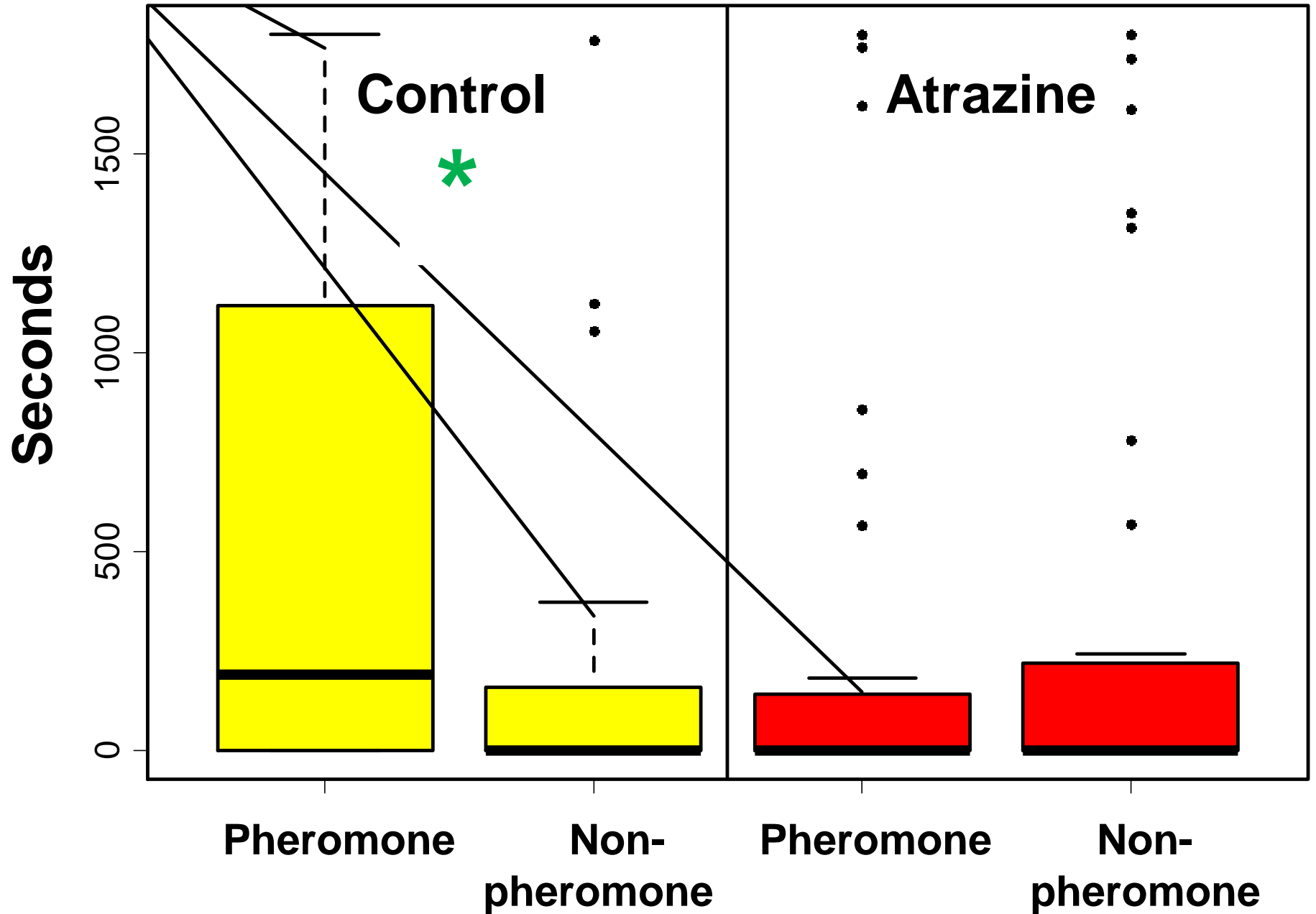
CH3

CH4

CIF PLAY



Time Spent in Arms of Y-maze

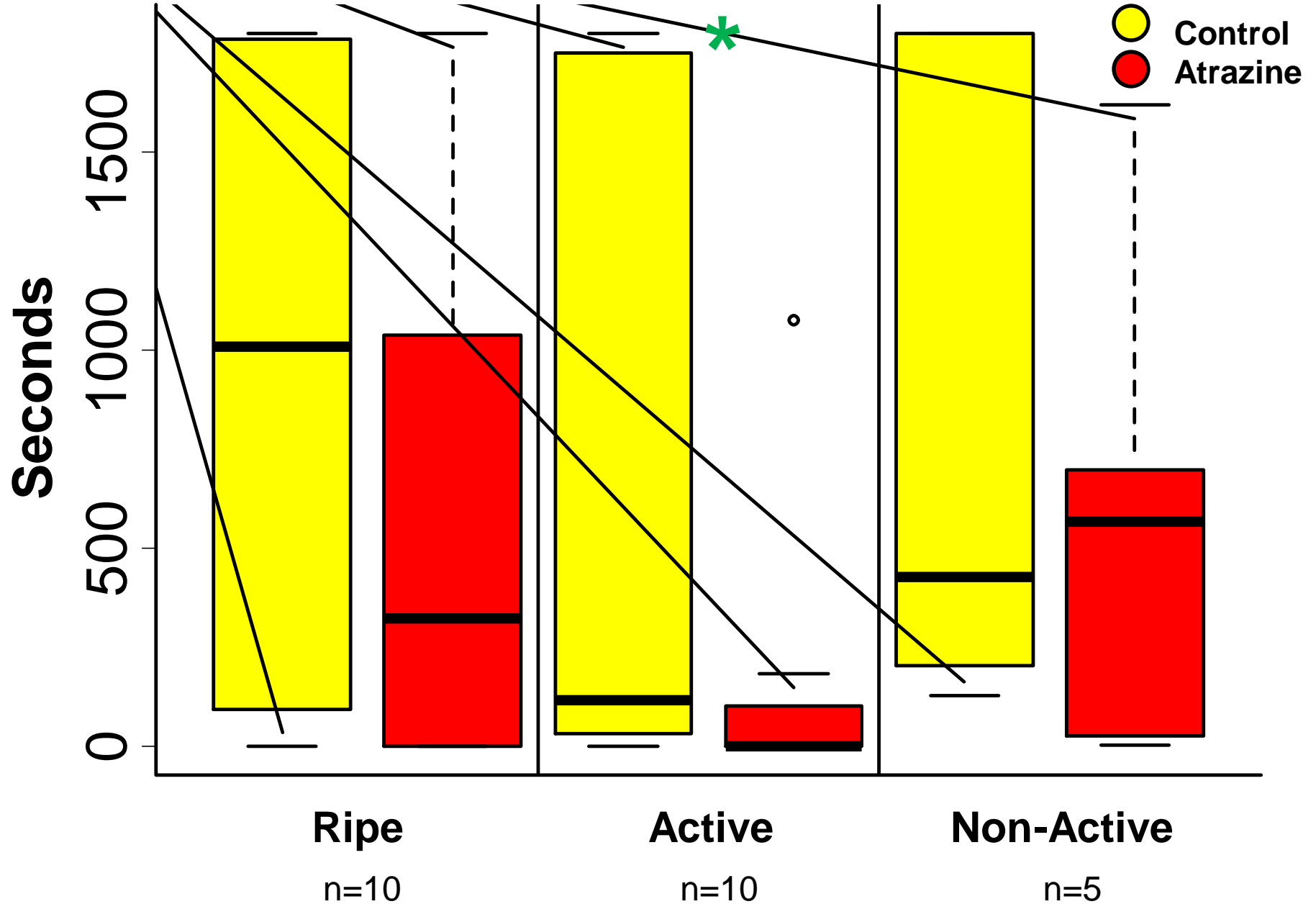


“Life History Stages”

- Ripe
 - > Females
 - engorged egg sack
 - > Males
 - penis
- Active
 - > Found swimming
 - > Wide Dorsal Distance
- Non-Active
 - > Never found swimming

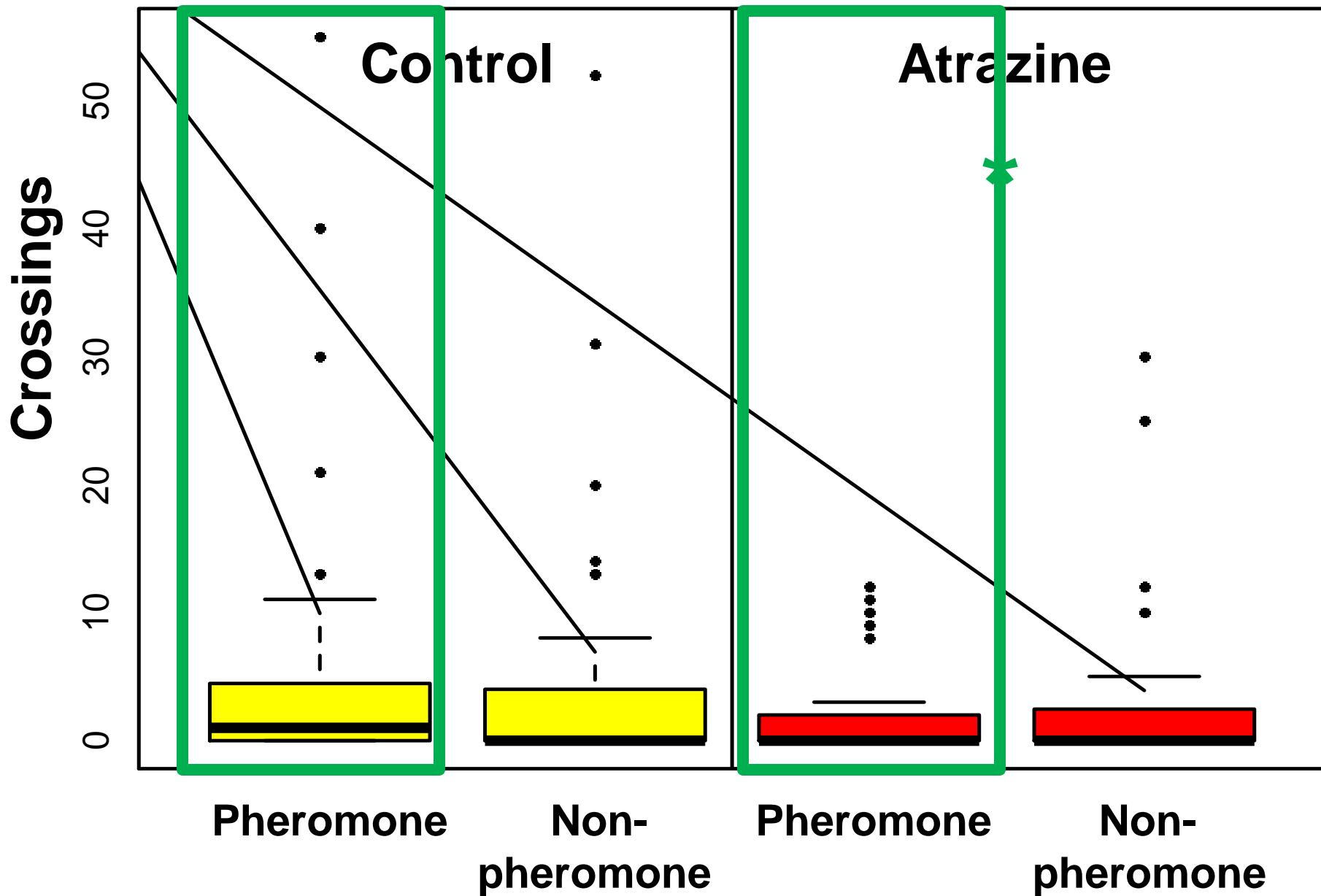


Time Spent in Pheromone Arm by Stage



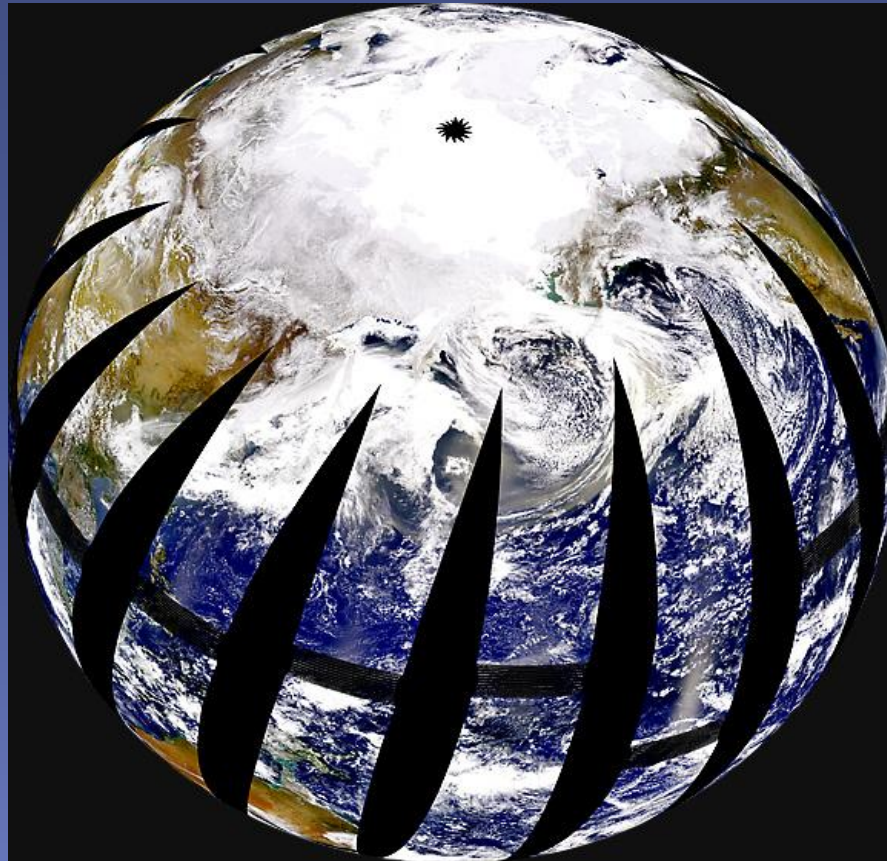
Activity

Crossing into Arms of Y-maze



Recovery/Conservation Plans

Independent Multidisciplinary Science Team
Plan Reviews



1. Climate change

Water temperature
Hydrological regimes



2. Human population & economic growth & impacts on natural systems

Futuring



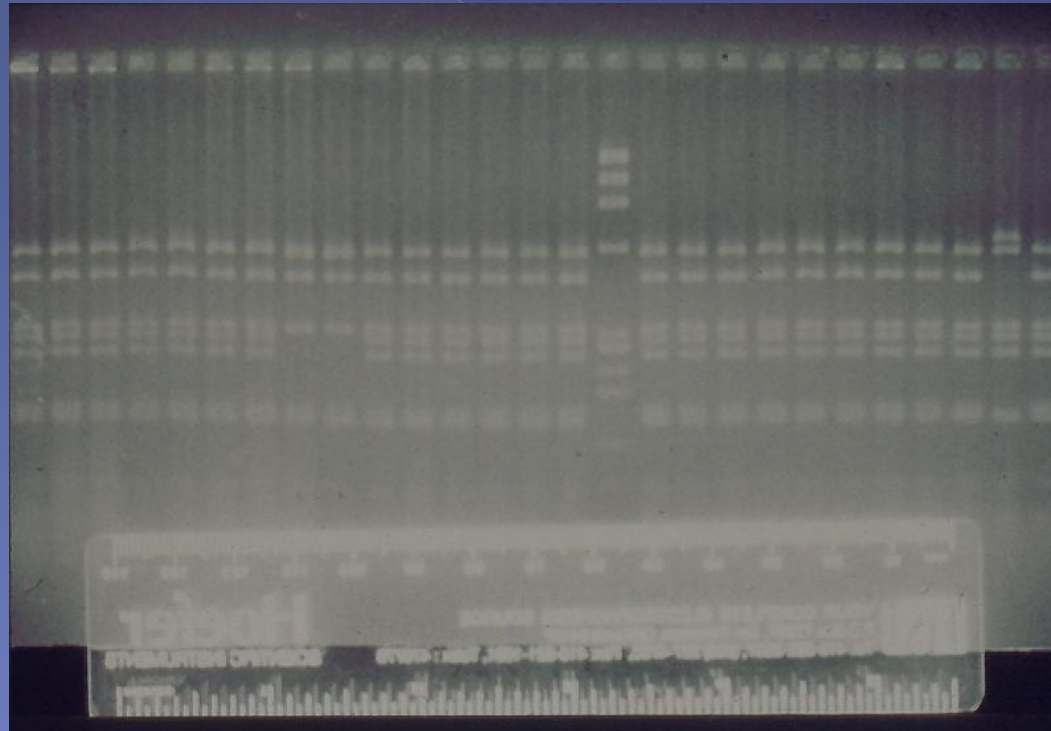
3. Ocean conditions

Regime shifts, predator, prey, productivity, hypoxia, acidification



4. Fish population definition rules

Genetic, life history,
dependent vs. independent populations



5. Monitoring

Detailed plans & designs,
spawners, recruits,
water quality, physical habitat structure,
prey base, indicators



6. Habitat rehabilitation

Catchment-scale, reach-scale



7. Predictive modeling

Alternatives

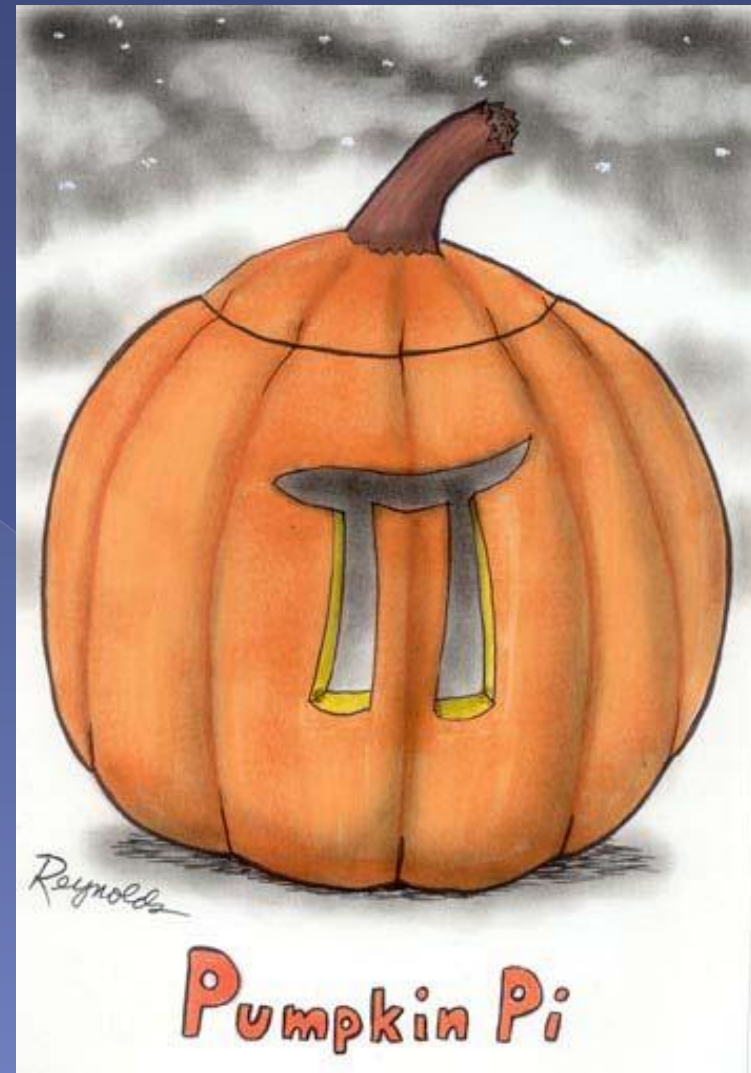
Selection process

Assumptions

Verification, Validation

Data needs

Confidence limits



8. Adaptive management

Detailed plans, action alternatives,
monitoring, action levels



Questions?

