



Mat-Su Symposium November 7-8, 2012

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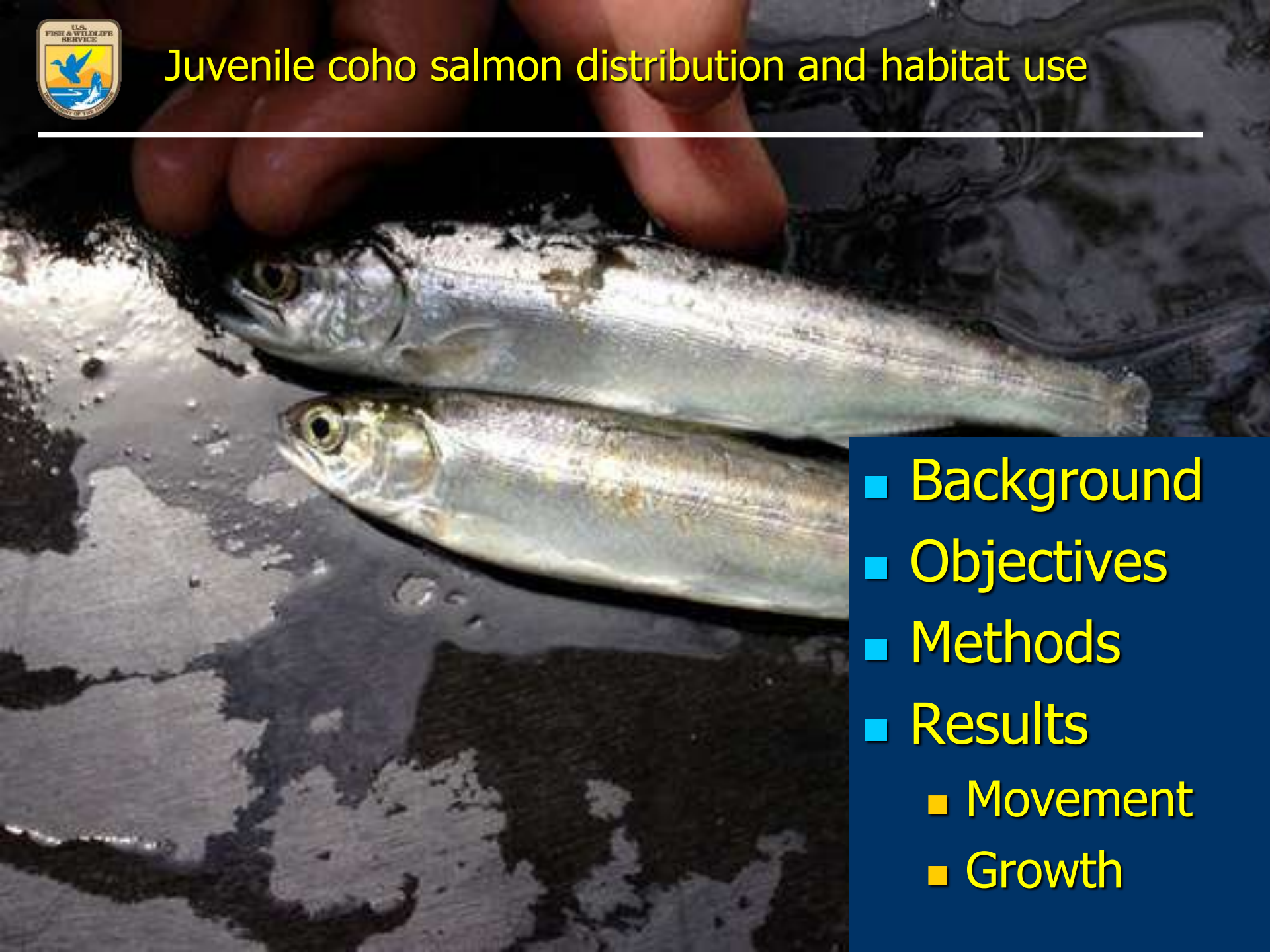
# Juvenile Coho Salmon Distribution and Habitat Use in Meadow Creek, AK

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US Fish and Wildlife Service - Anchorage



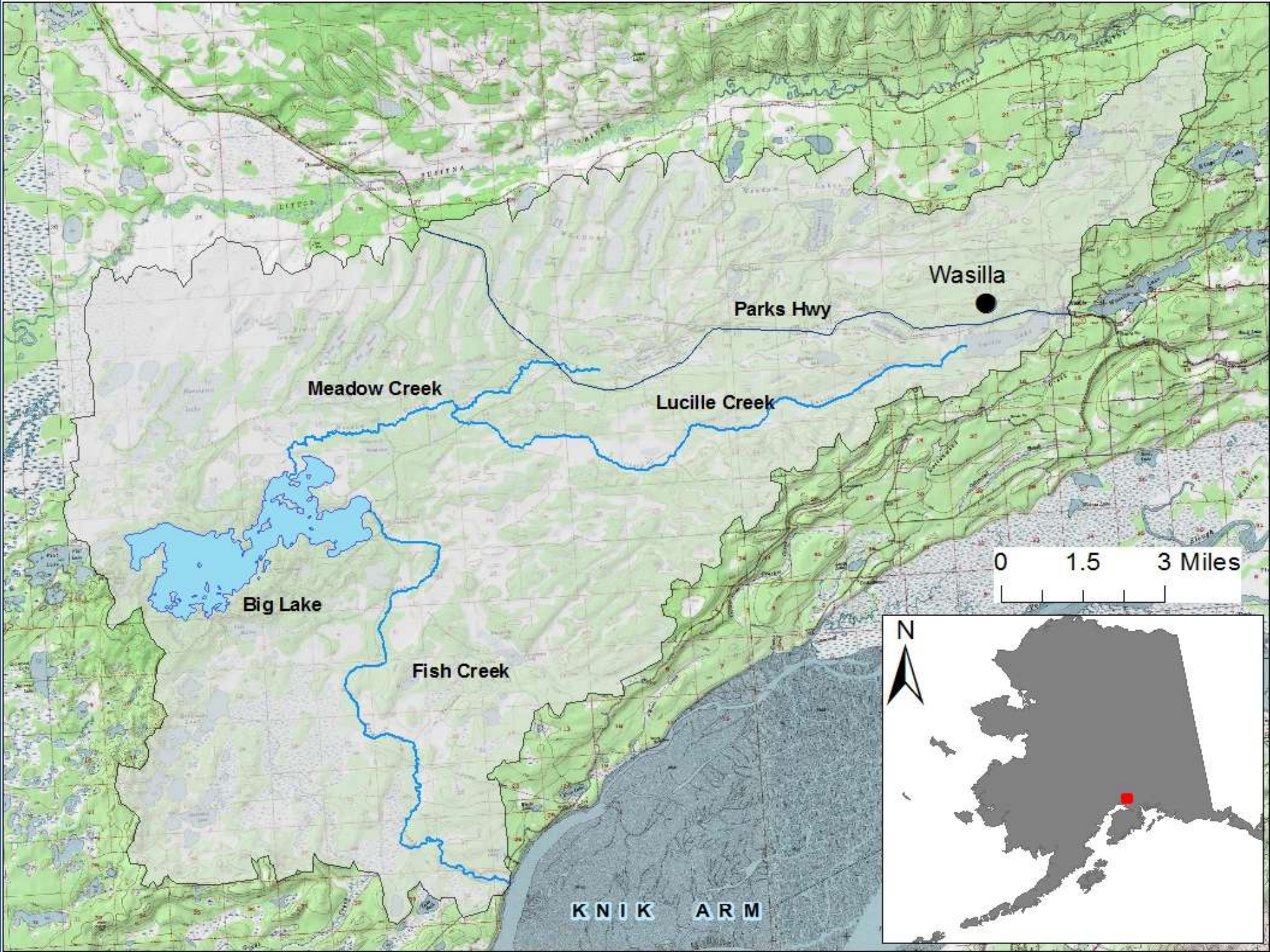
# Juvenile coho salmon distribution and habitat use

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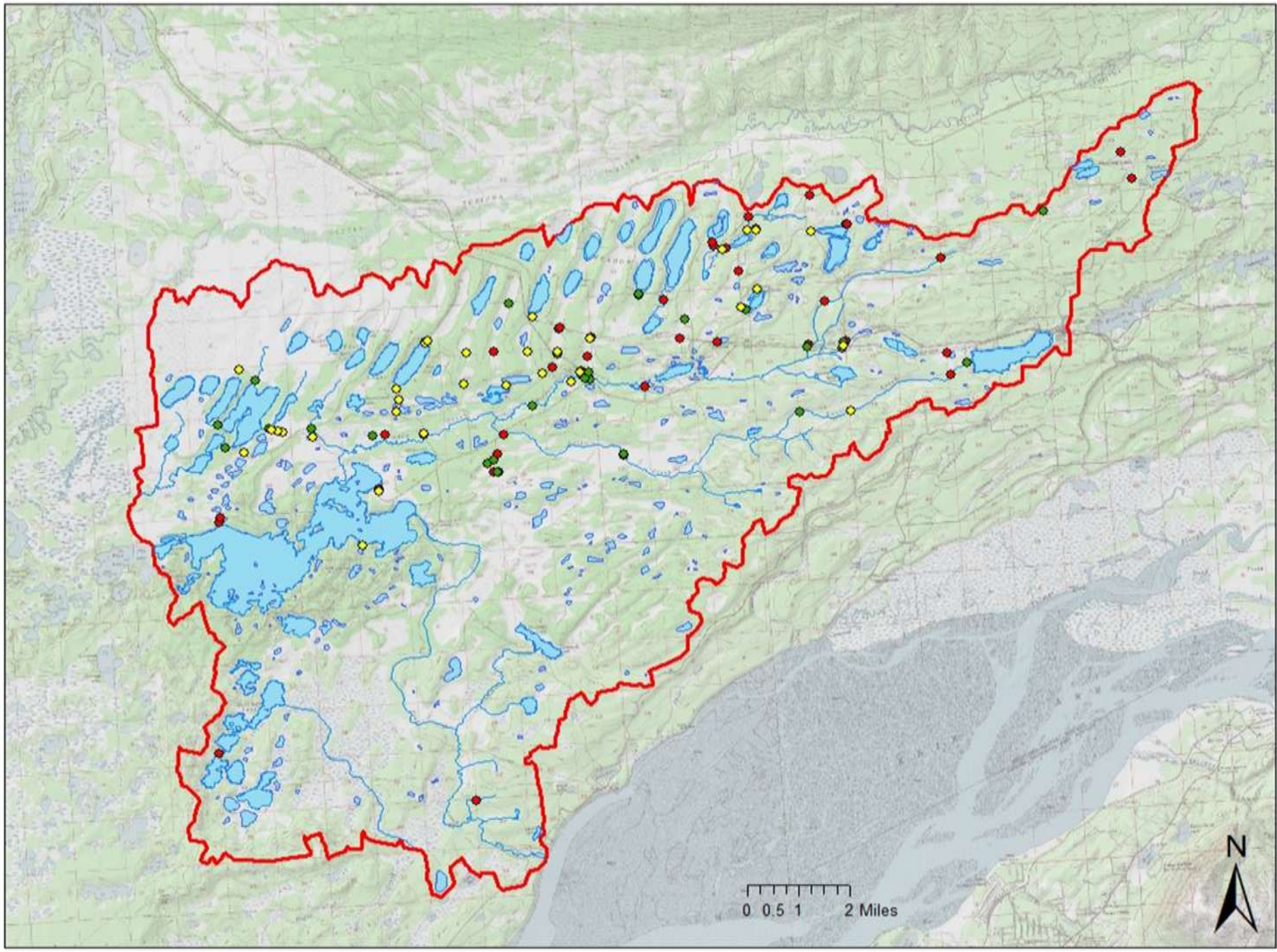


- Background
- Objectives
- Methods
- Results
  - Movement
  - Growth











## Objectives

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- Describe temporal and spatial distribution of juvenile coho salmon.
- Validate age-at-length of juvenile coho salmon by cohort.
- Estimate the instantaneous growth rate of juvenile coho salmon.





## Methods

- Three environments; lake, main stem, tributary.
- Proportional sampling between environments.
- Sample reaches randomly selected.
- Each reach sampled twice monthly.



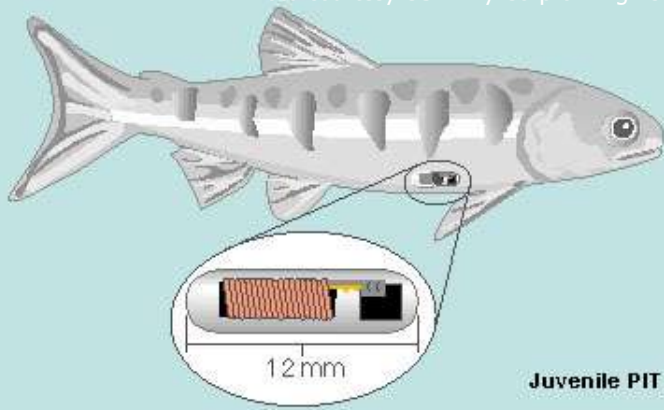


# Methods

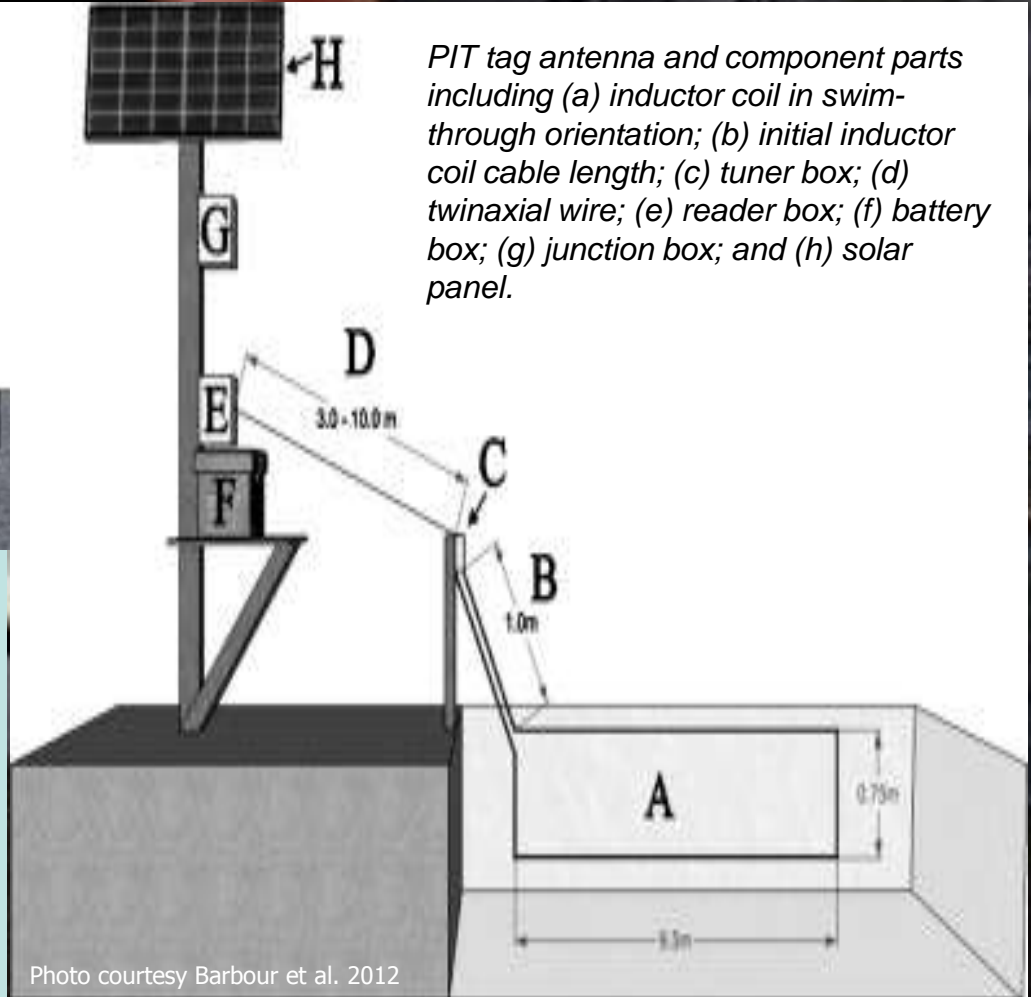
Photo courtesy Biomark



Photo courtesy US Army Corp of Engineers



Juvenile PIT Tag



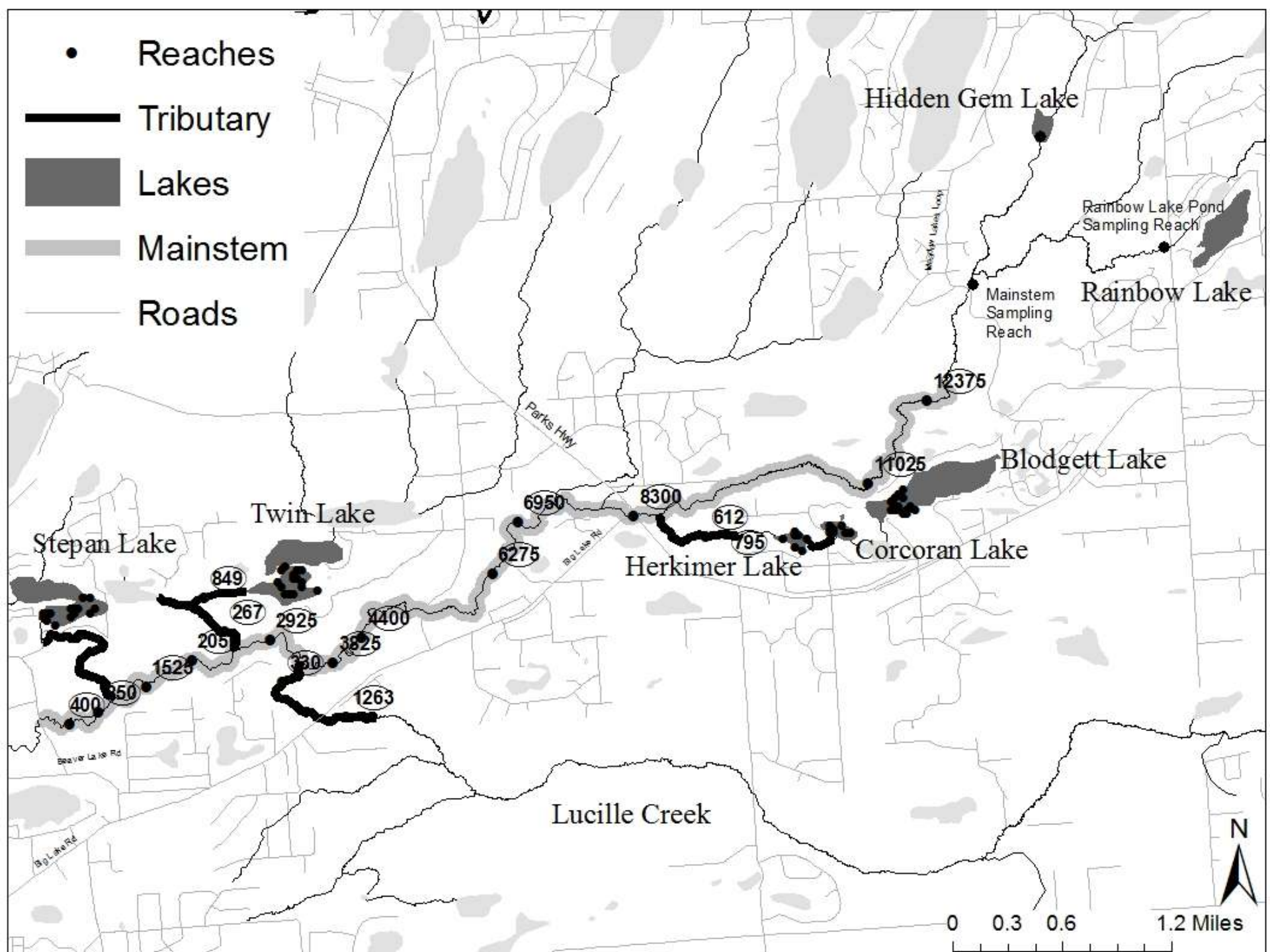
*PIT tag antenna and component parts including (a) inductor coil in swim-through orientation; (b) initial inductor coil cable length; (c) tuner box; (d) twinaxial wire; (e) reader box; (f) battery box; (g) junction box; and (h) solar panel.*

Photo courtesy Barbour et al. 2012

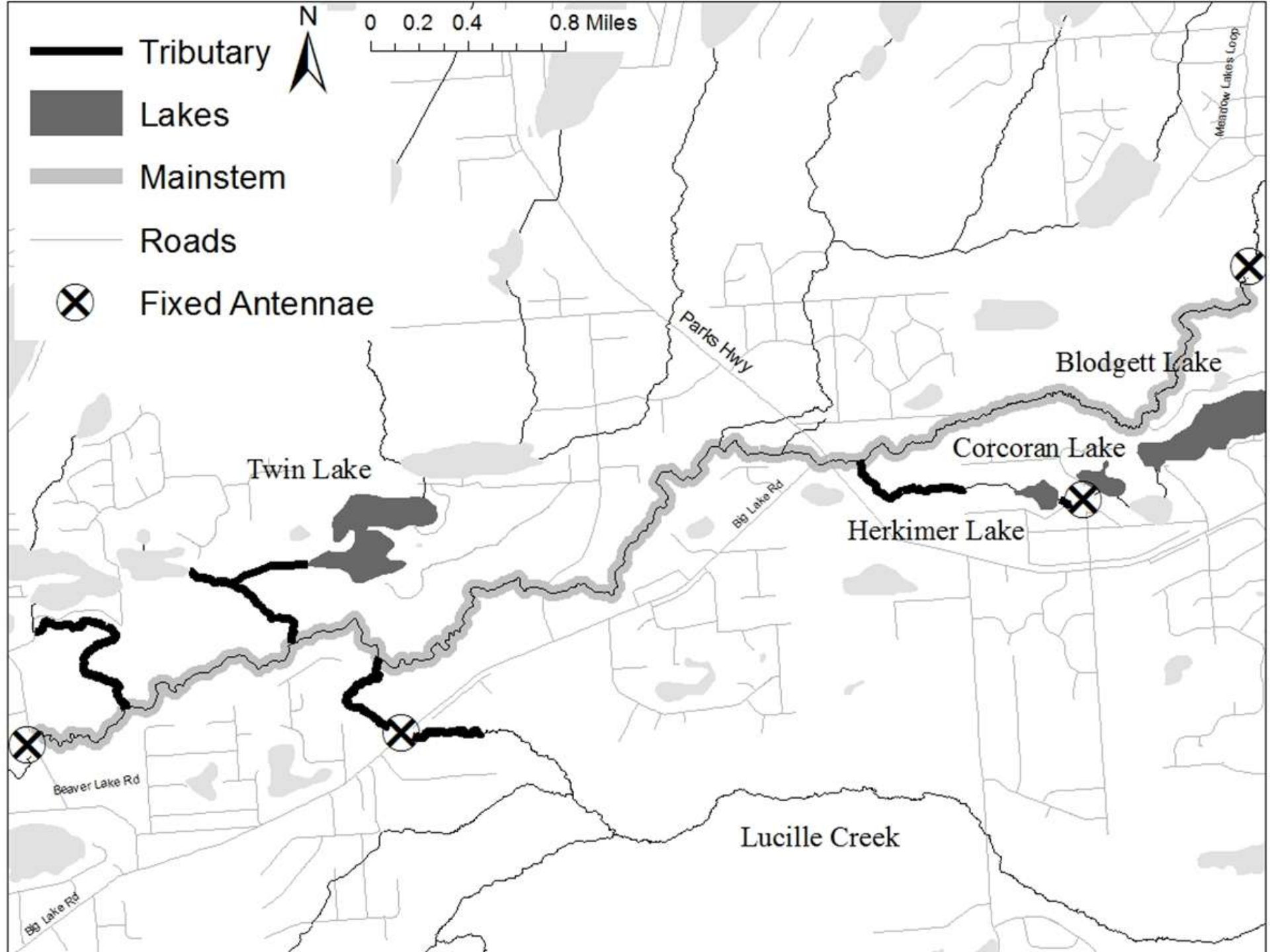
Barbour, A.B, A.J. Adams, T. Yess, D.C. Behringer, R. Kirby Wolfe. 2012. Comparison and cost-benefit analysis of PIT tag antennae resighting and seine-net recapture techniques for survival analysis of an estuarine-dependent fish. *Fisheries Research*, 120-121:153-160.



- Reaches
- Tributary
- Lakes
- ▒ Mainstem
- Roads





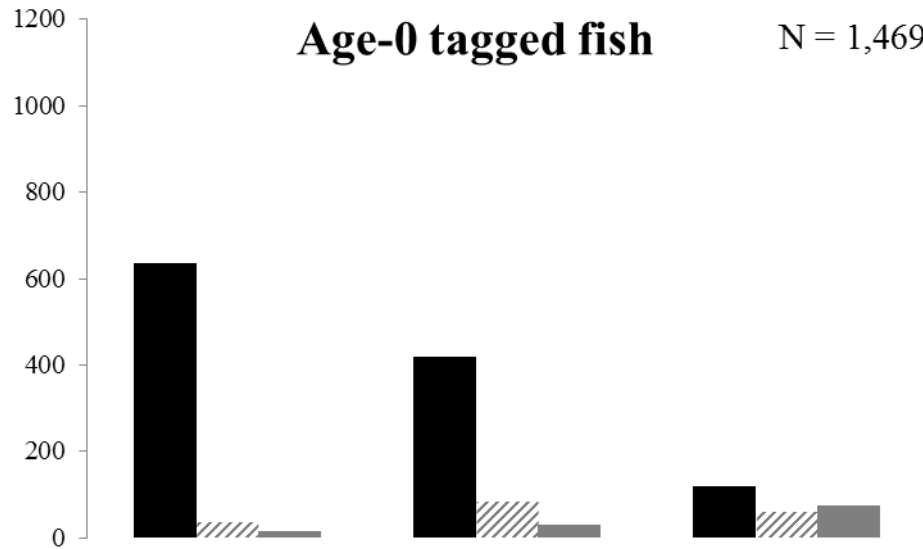




# Results - Tagging metrics

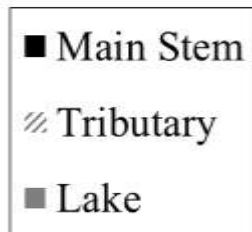
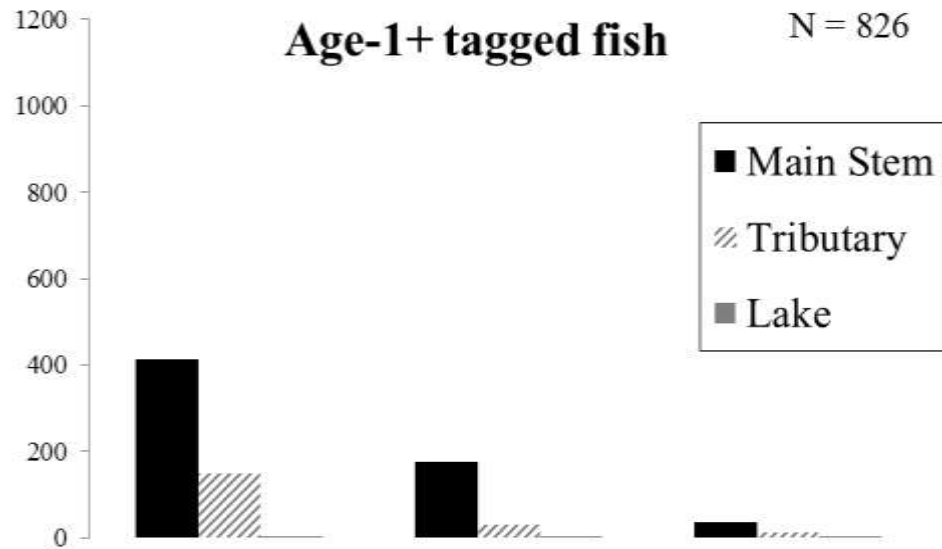
### Age-0 tagged fish

N = 1,469



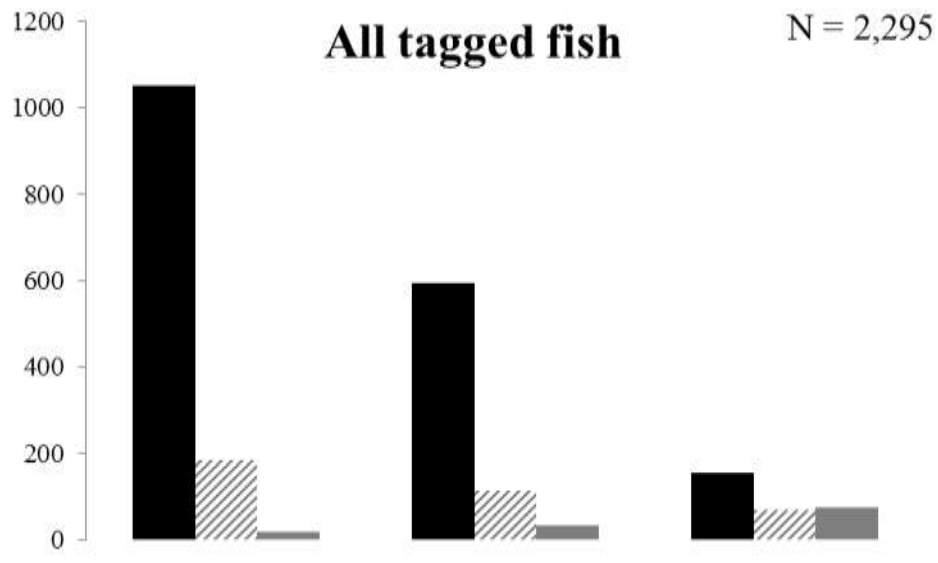
### Age-1+ tagged fish

N = 826



### All tagged fish

N = 2,295



July

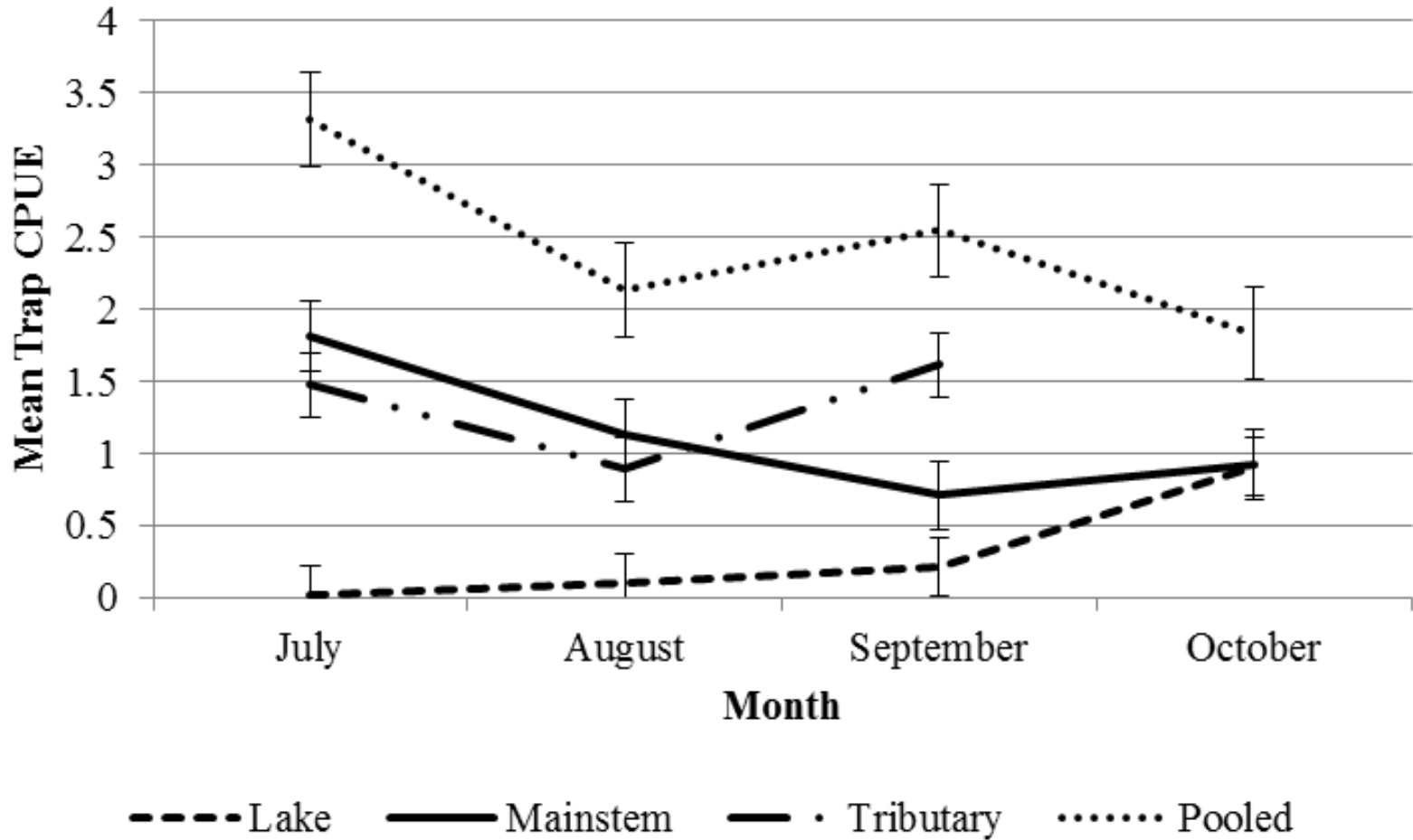
August

September



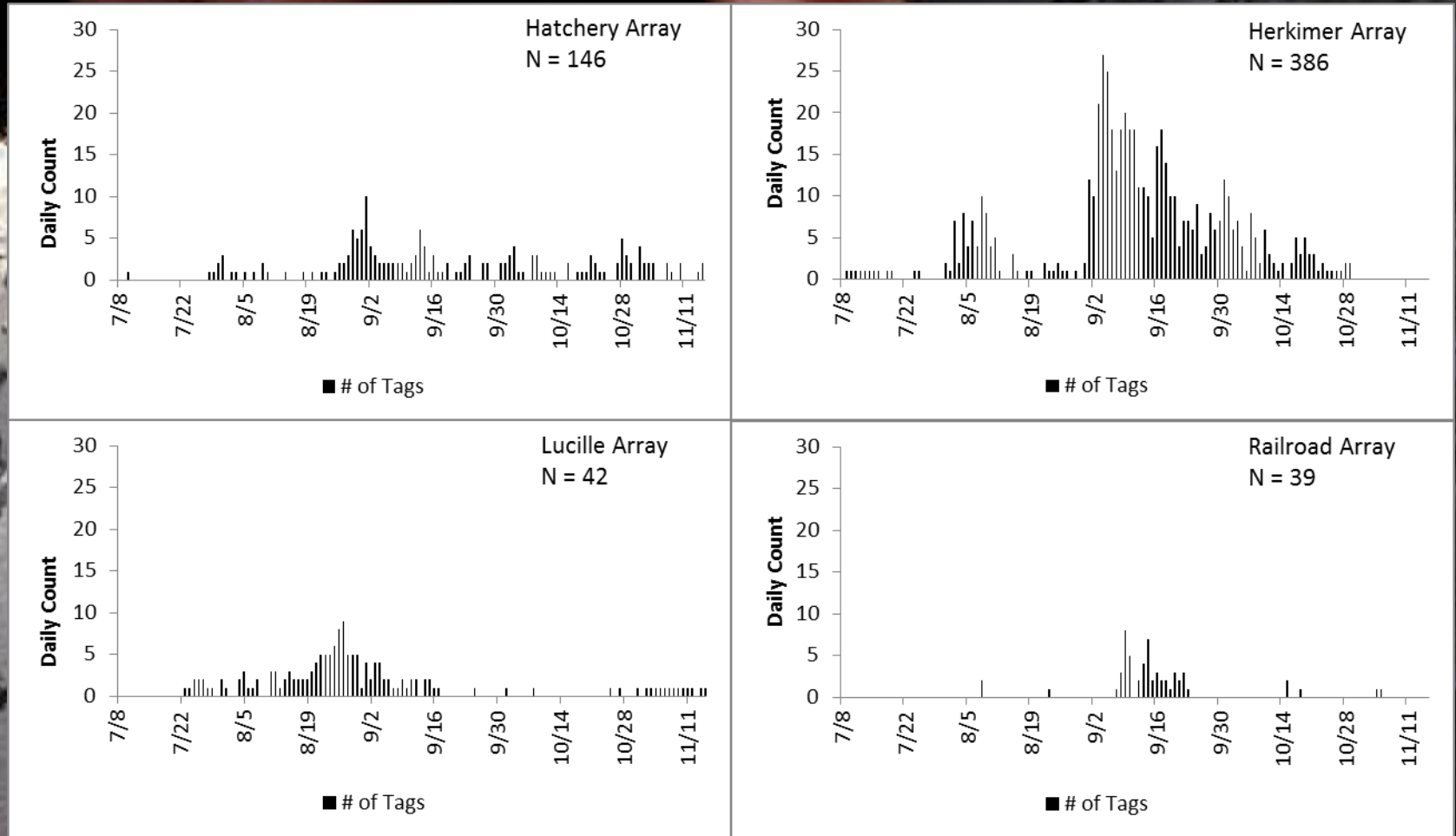


# Results – CPUE





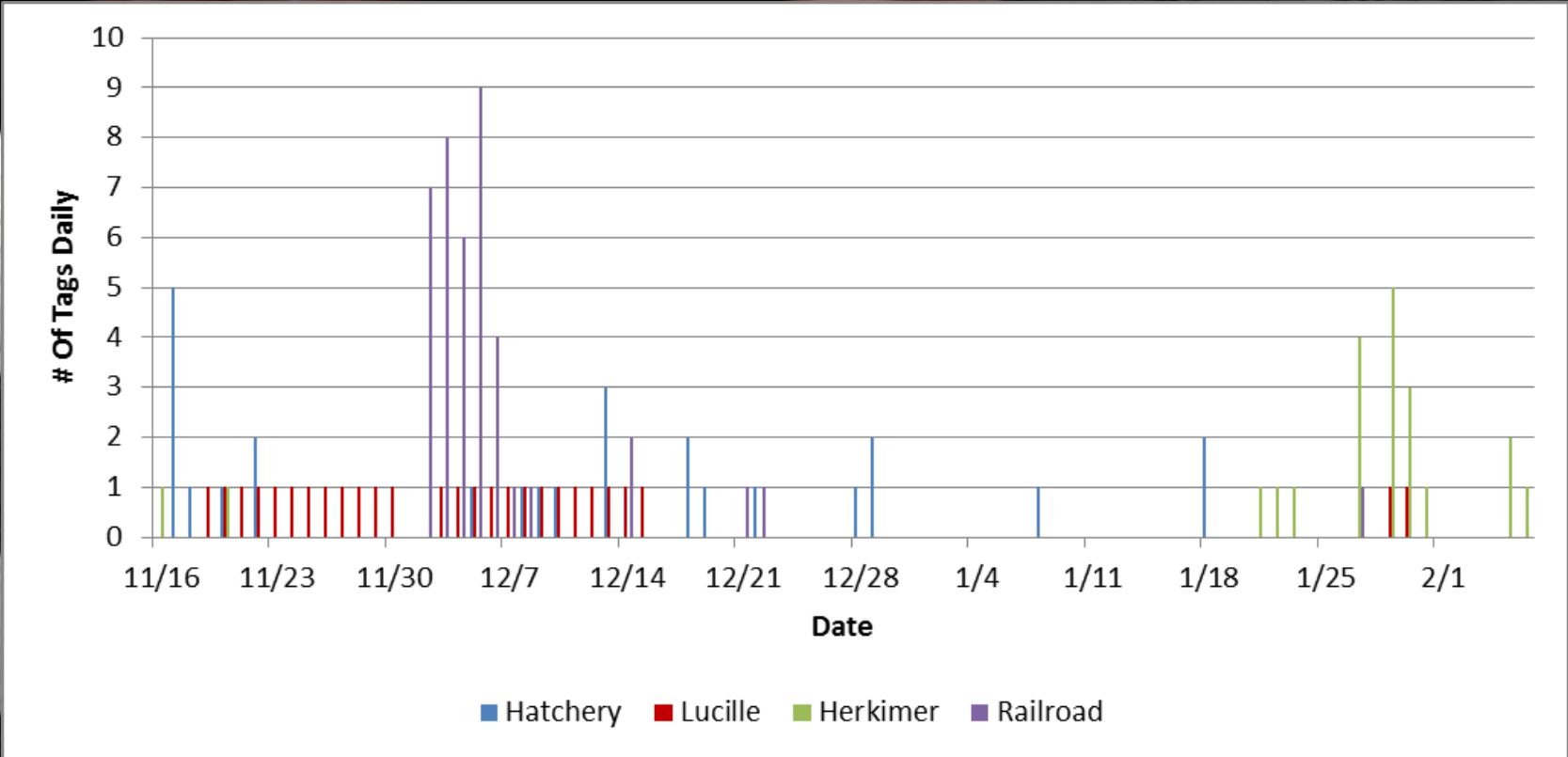
# Results – Summer Movement







# Results – Winter Movement





## Tale of the 331 outmigrant fish

Age-1 = 210 (63%) Mean Growth in mm – 56

(range 8 – 95, SD = 16)

Age-2 = 121 (37%) Mean Growth in mm – 39

(range 12 – 82, SD = 14)

$IGR = (\log FL_2 - \log FL_1) / (t_2 - t_1)$

Mean Age-1 = 0.00088 (SD = 0.00055)

Mean Age-2 = 0.00045 (SD = 0.00016)

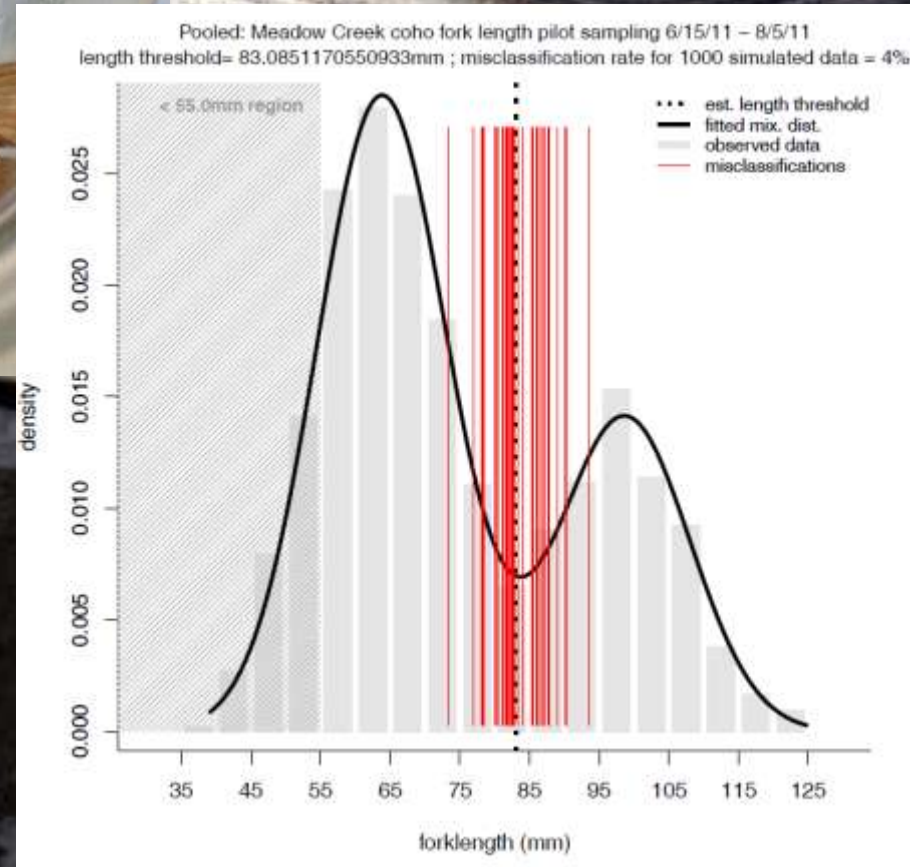
$P < 0.001$

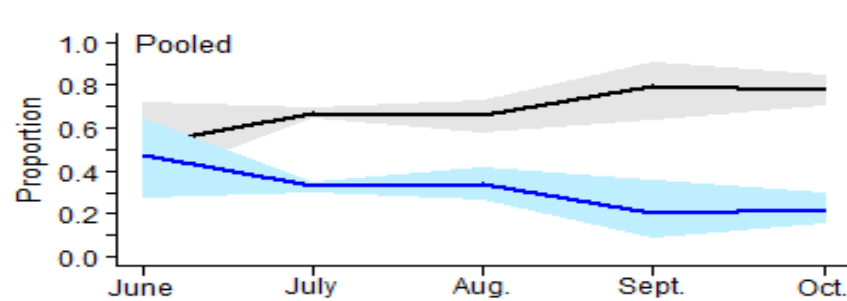
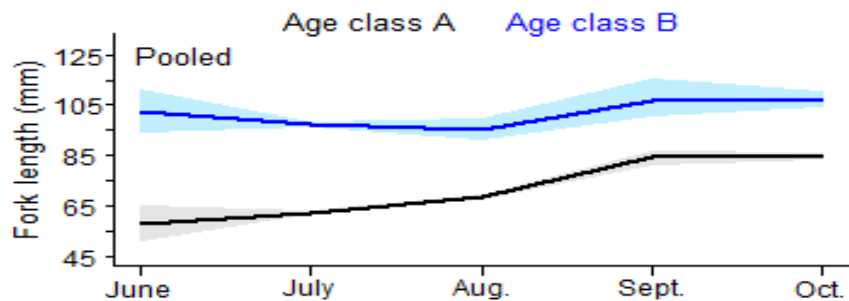
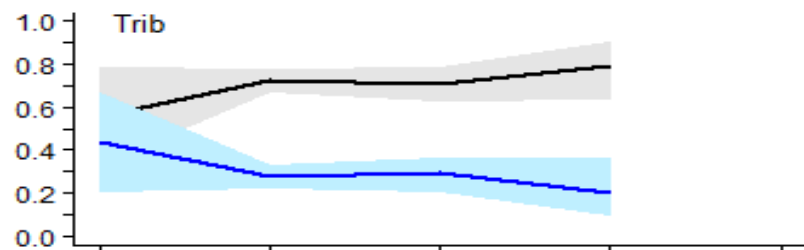
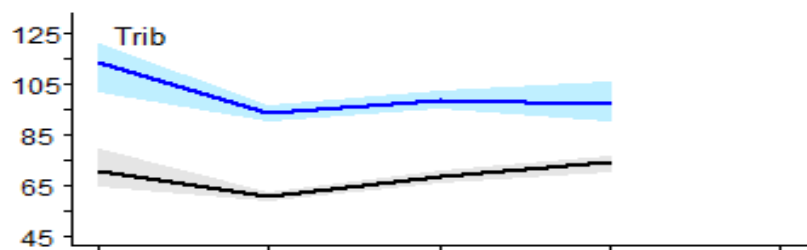
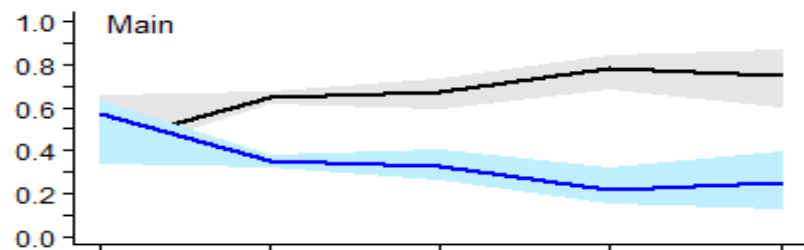
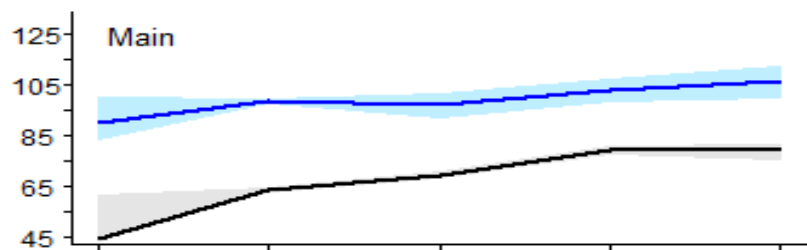
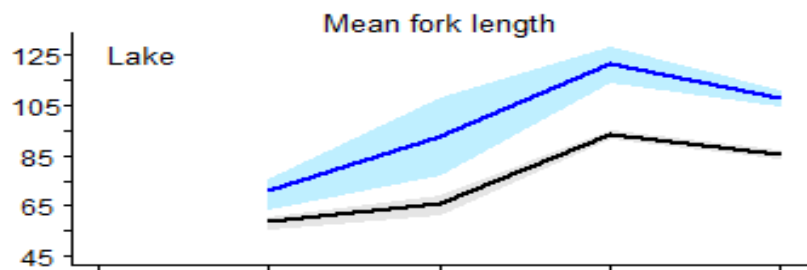
Mean no. of days to travel from Big Lake to ADF&G fyke net (16 rkm) was 9 days for both cohorts, approximately 2.8 rkm/day.





# Results – Age-at-Length by cohort









# Tale of the 31 outmigrant fish

## Summer IGR

Age	Mean	SD	mm growth/day
1	0.0036	0.0020	0.68
2	0.0016	0.0010	0.34

$P < 0.001$

## Winter IGR

1	0.0005	0.0002	0.13
2	0.0004	0.0002	0.13



## Conclusions

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- Residence in main stem environment in summer with movement to tributary and lake environments in fall.
- Growth is greater in younger fish in summer but winter growth is similar between age groups.
- Juvenile coho salmon outmigrant timing, movement, and downstream migration speed do not differ between cohorts.





# Acknowledgements

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## ■ Partners

- ADF&G
- Local Landowners

## ■ Funding

- AKSSF

## ■ Field Crew

- Josh Ashline, Kevin Foley, Steve Schwartz, Coby Sims, Phillip Taylor, Veronica Corbett, Dan Prince, Laura Smith, Casey Smith, Casey Balthrop, Adam Jaeckel, Mike Polchlopek, Chris Ringlee, Ryan Koch, Marshall Barrows, Holly Gittlein, Rachel Gittlein





# Questions

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