Fisheries Genetics in Alaska

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ADF&G – Gene Conservation Lab

The goal of fisheries management:
to make sure fish come back *and* allow for fishing

Fisheries catch fish from more than one place

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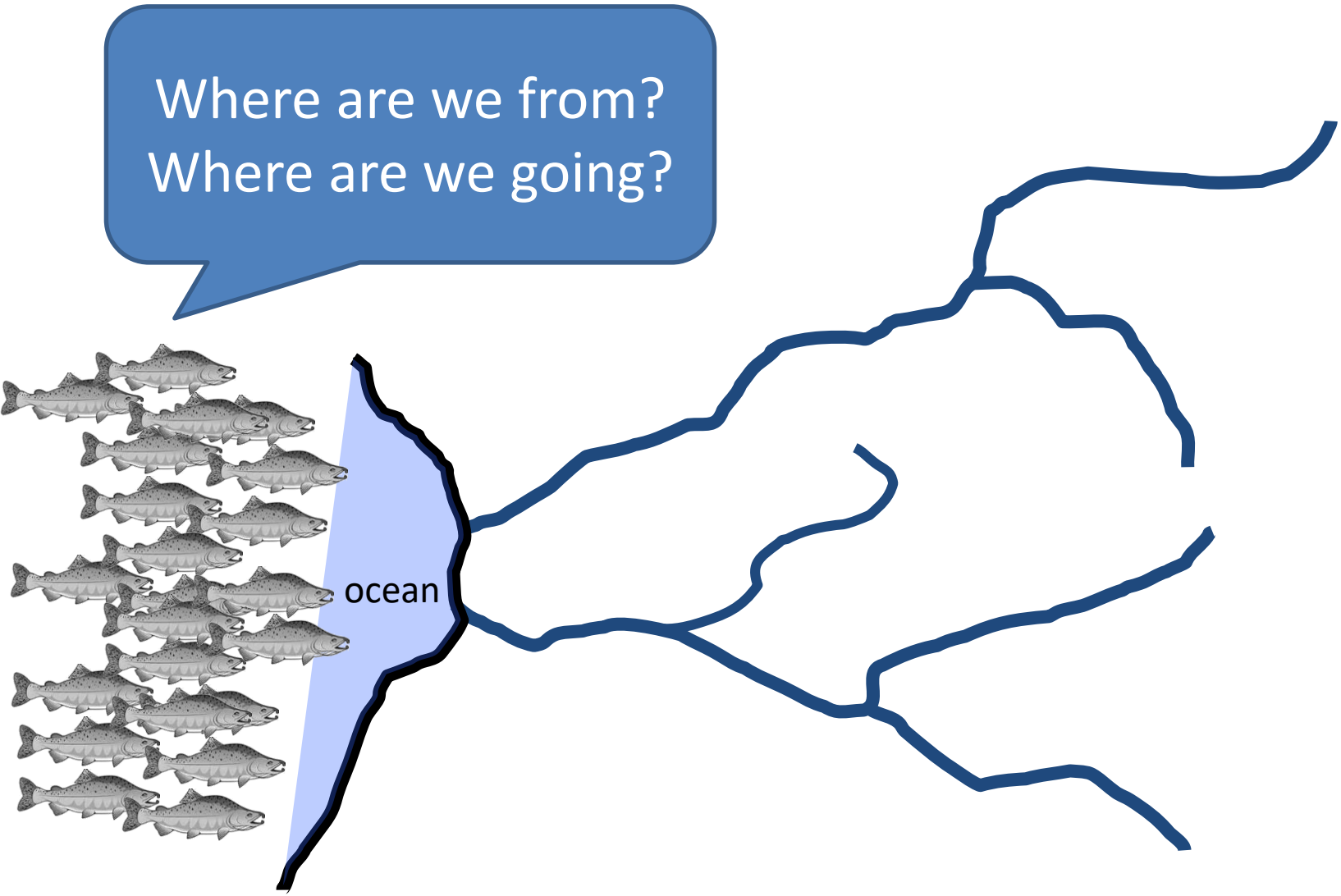
To ensure good management, need **information on what the fisheries are catching**

One way to do this…

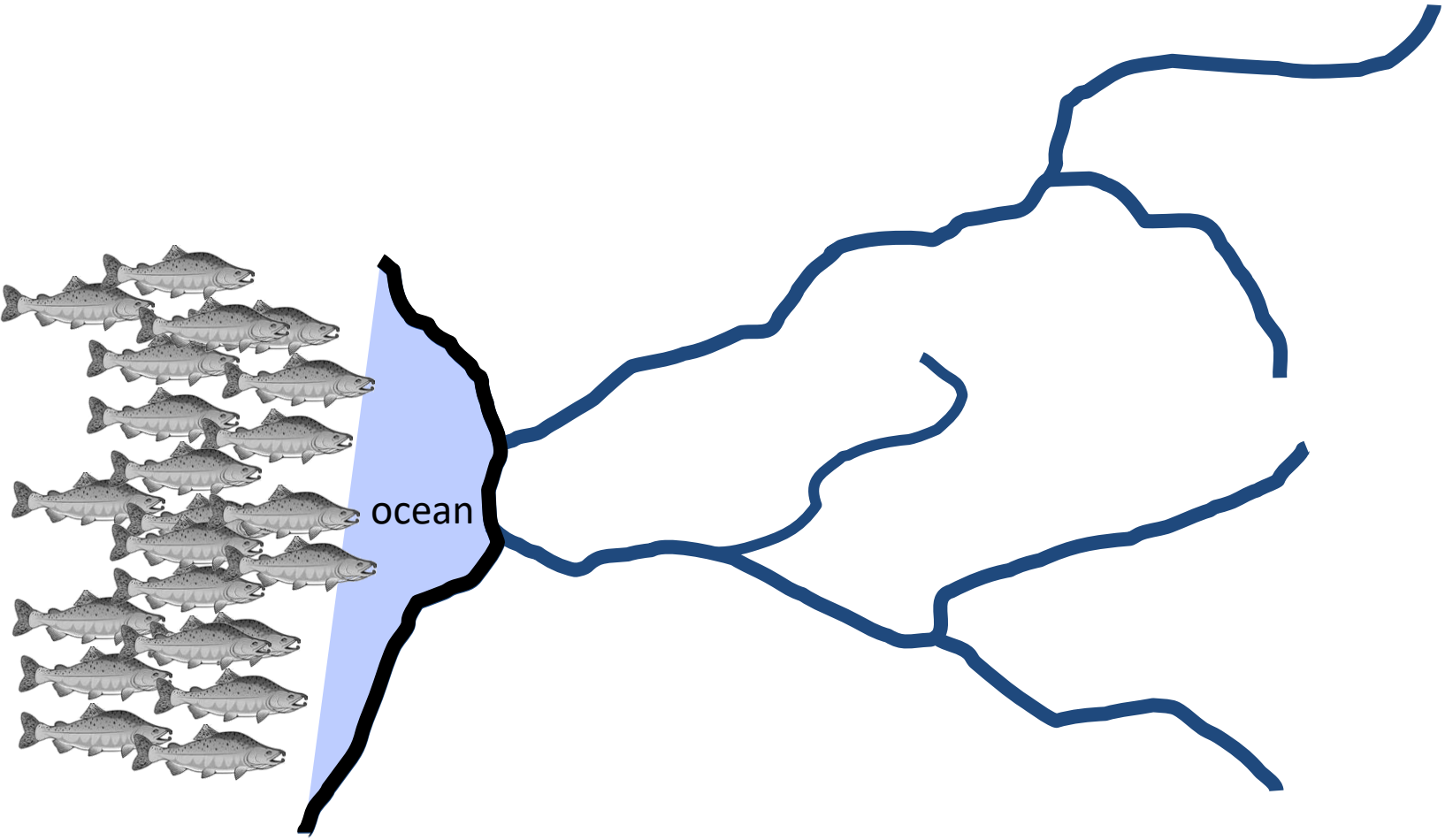
GENETICS!

How can we use **GENETICS**?



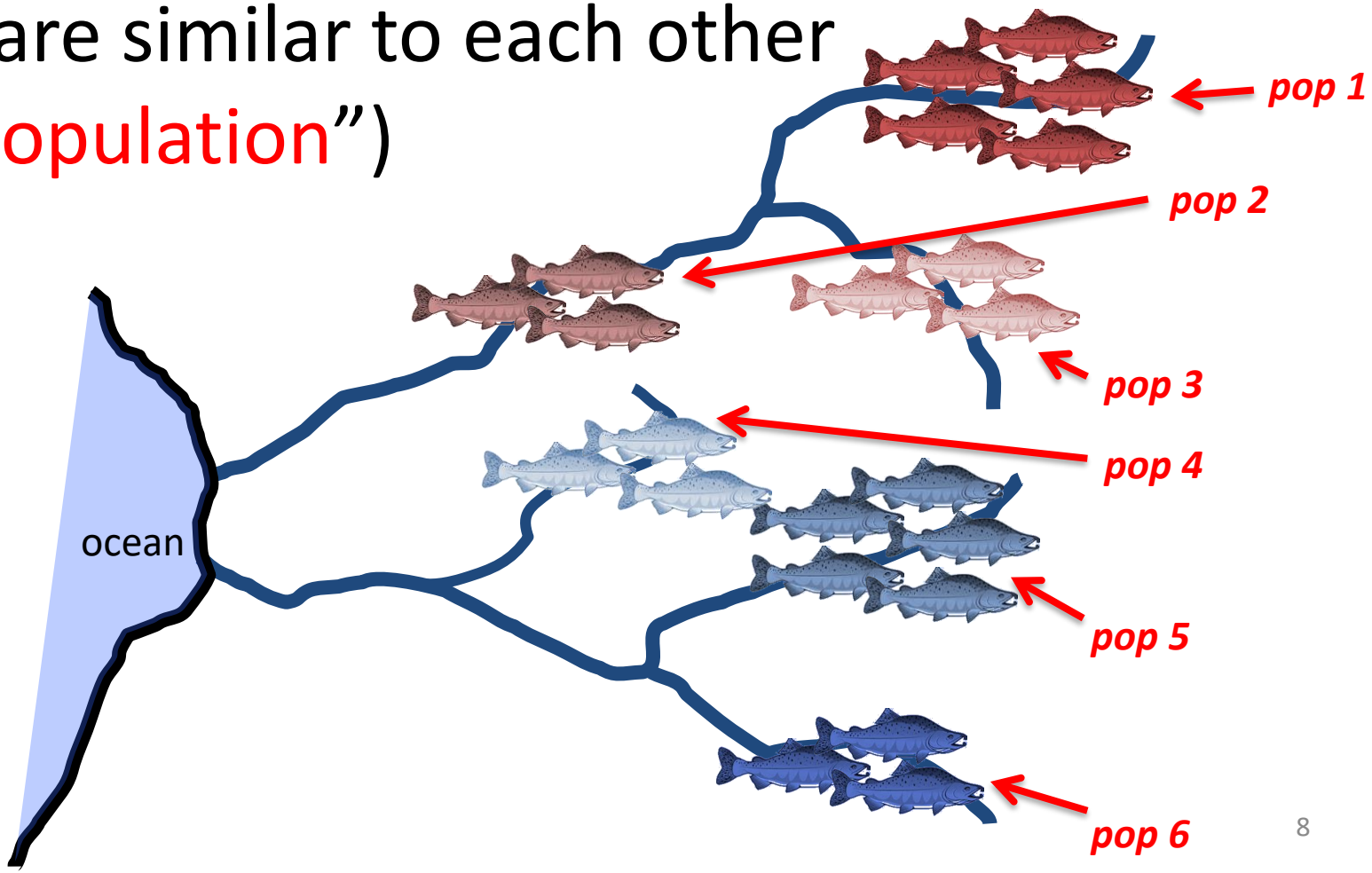
How can we use **GENETICS**?

- Salmon return to stream where they were born to spawn with their relatives



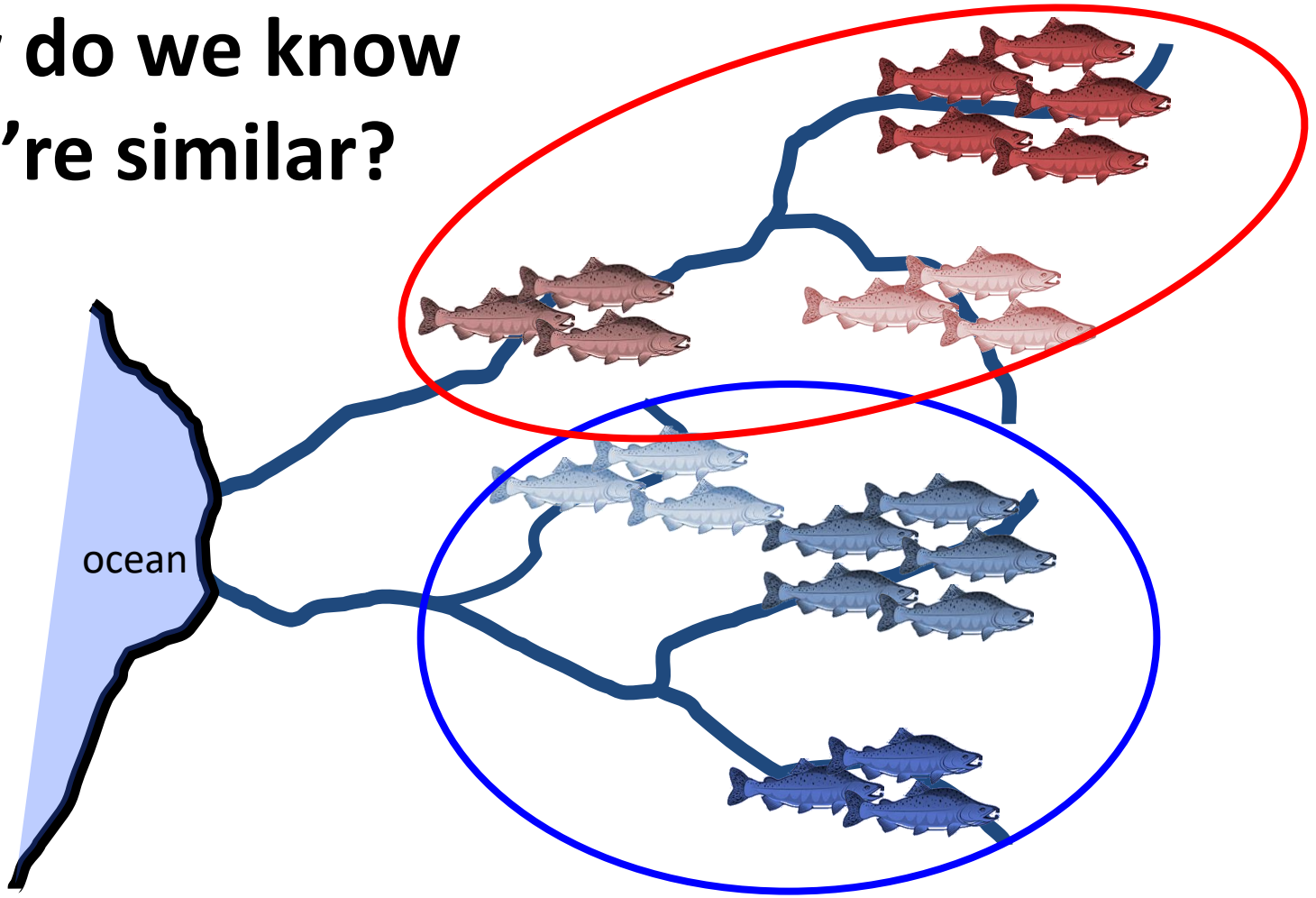
How can we use **GENETICS**?

- Salmon return to stream where they were born to spawn with their relatives
- Fish are similar to each other (a "population")



How can we use **GENETICS**?

- Populations *within* drainages are more similar to each other than *among* drainages
- **How do we know they're similar?**



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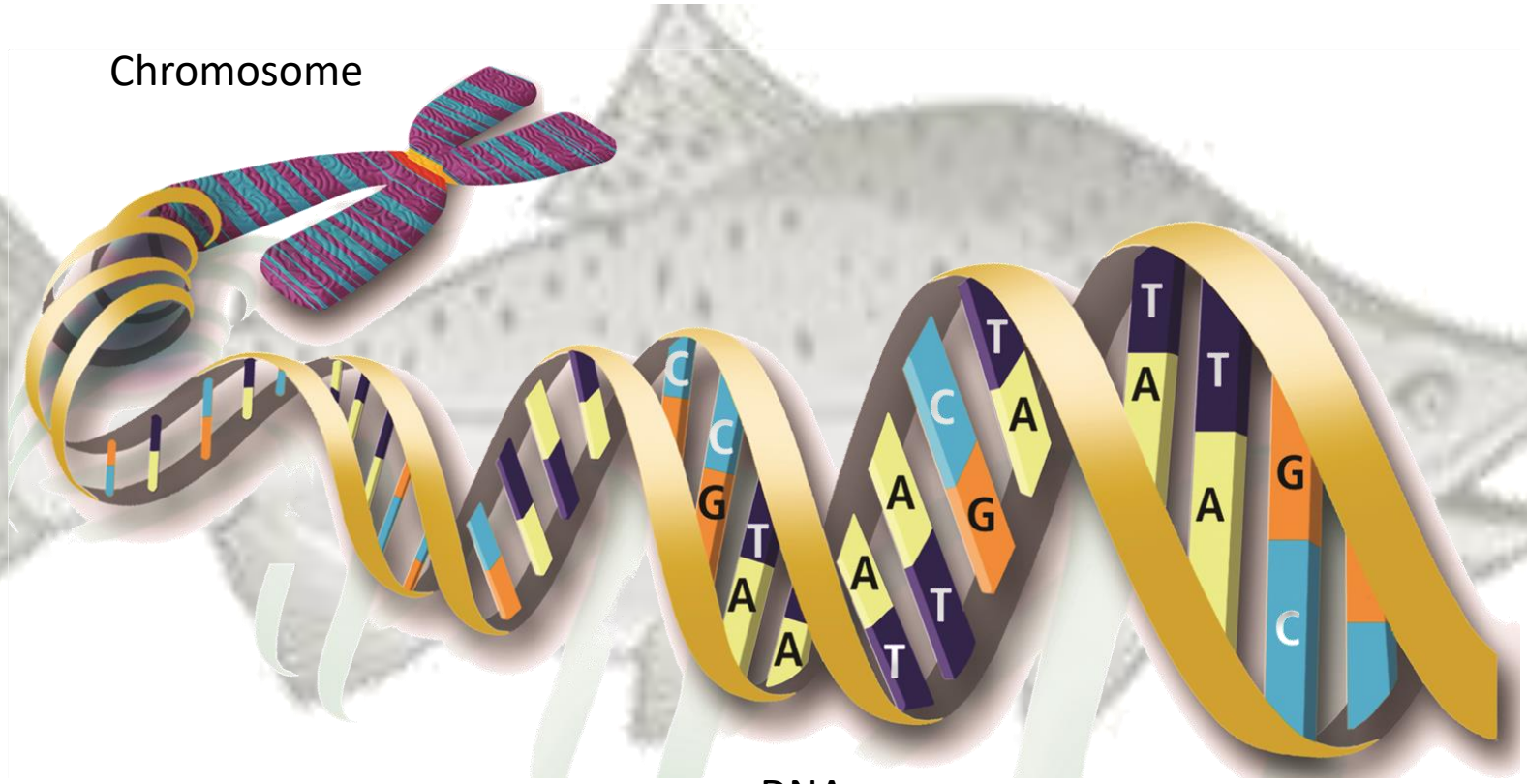
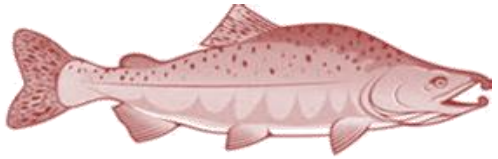


How do we know they're similar?

Codes for

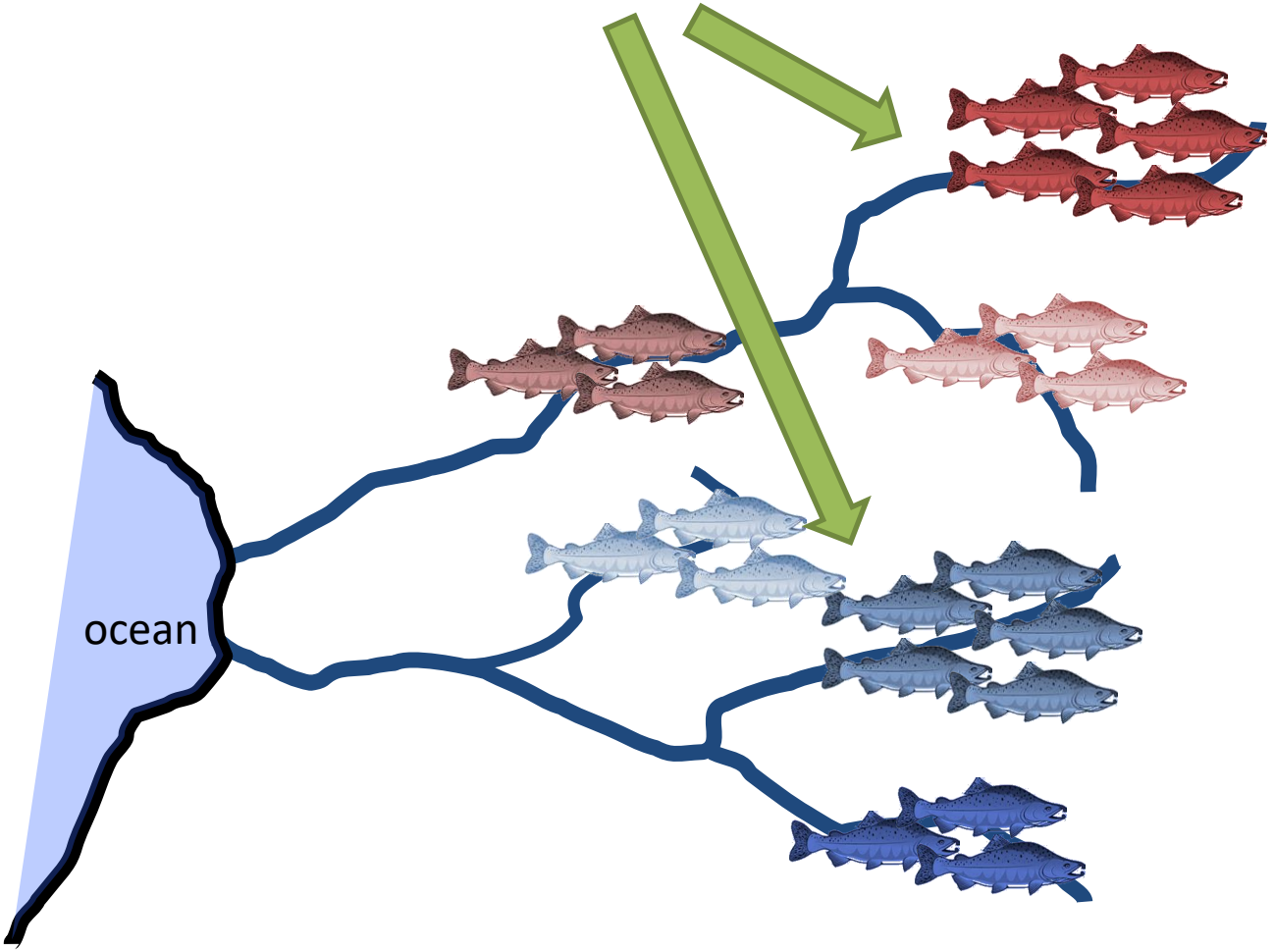


GENETICS

Differences we see
(and don't see)

How can we use **GENETICS**?

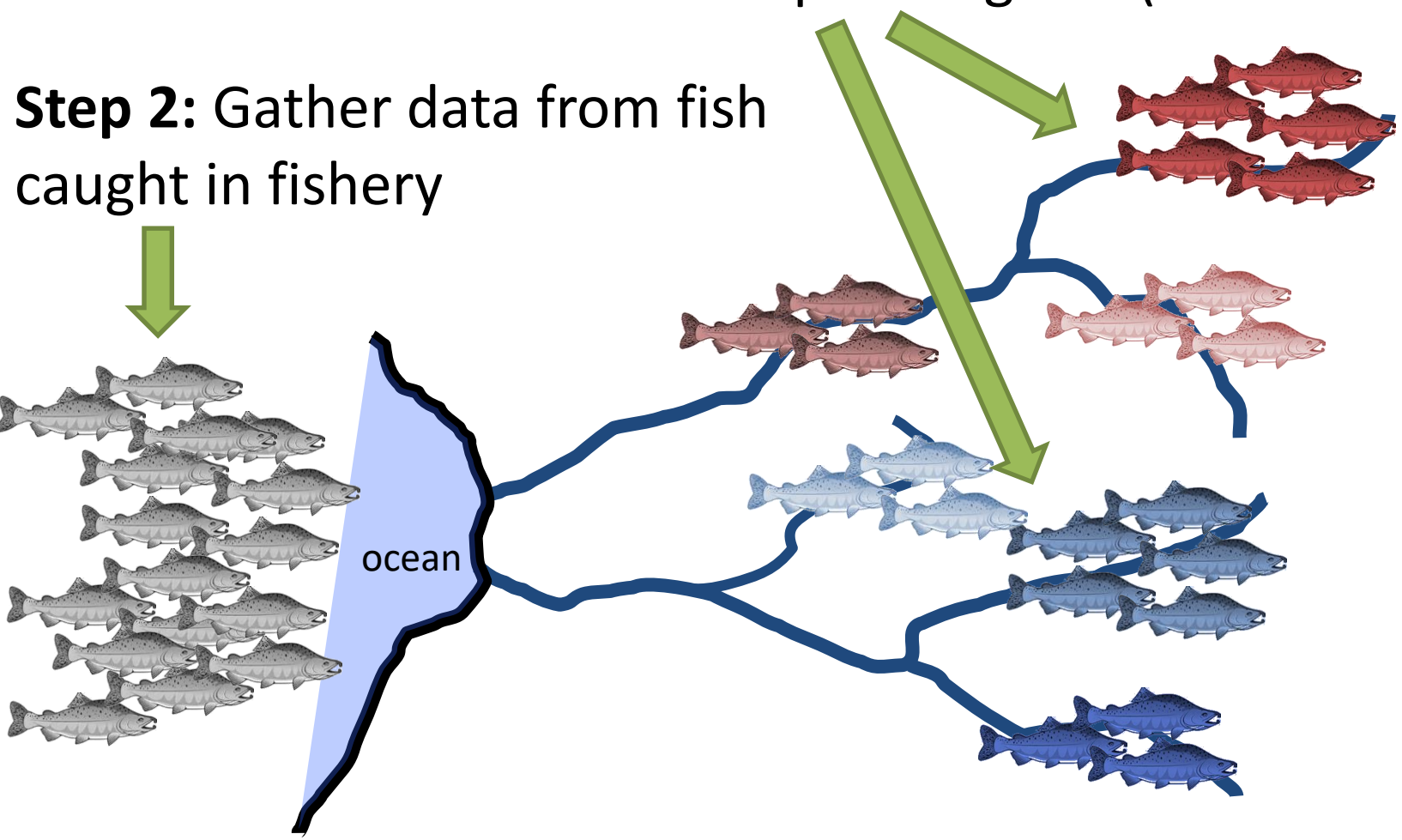
Step 1: Gather data from spawning fish ("baseline")



How can we use **GENETICS**?

Step 1: Gather data from spawning fish ("baseline")

Step 2: Gather data from fish caught in fishery



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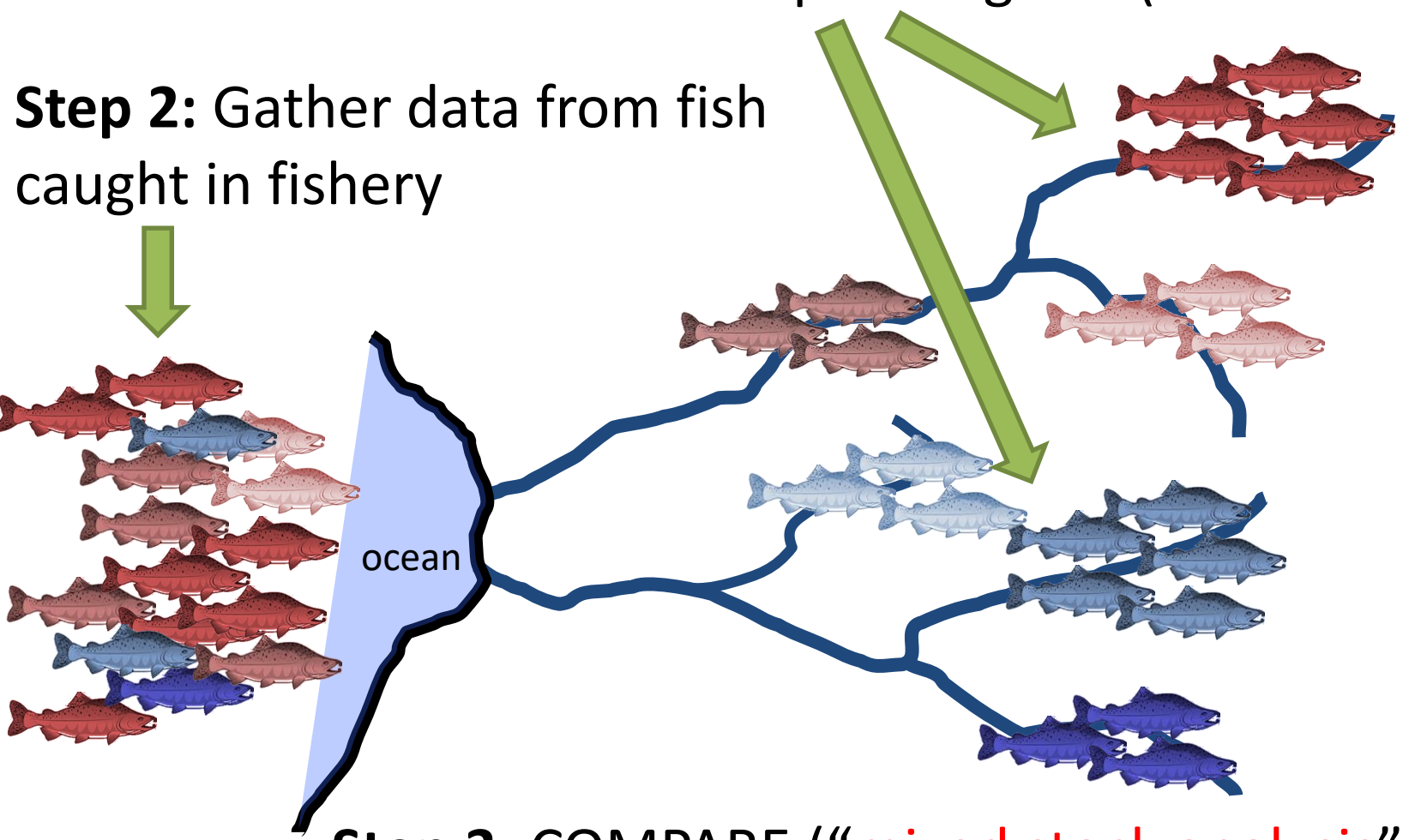

Step 3: COMPARE ("mixed stock analysis")

How Would This Work for Klawock Lake Sockeye Salmon?

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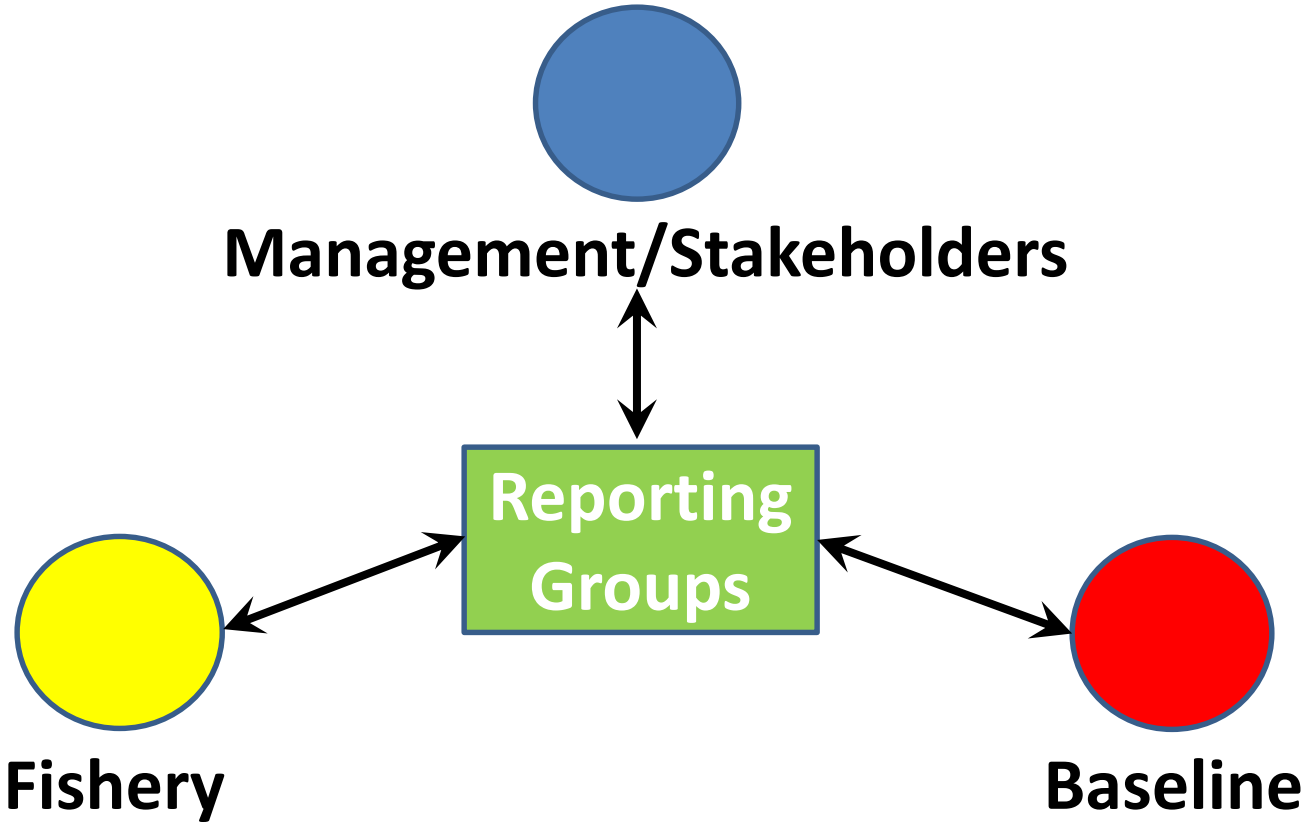
Best Practices for Fisheries Genetics



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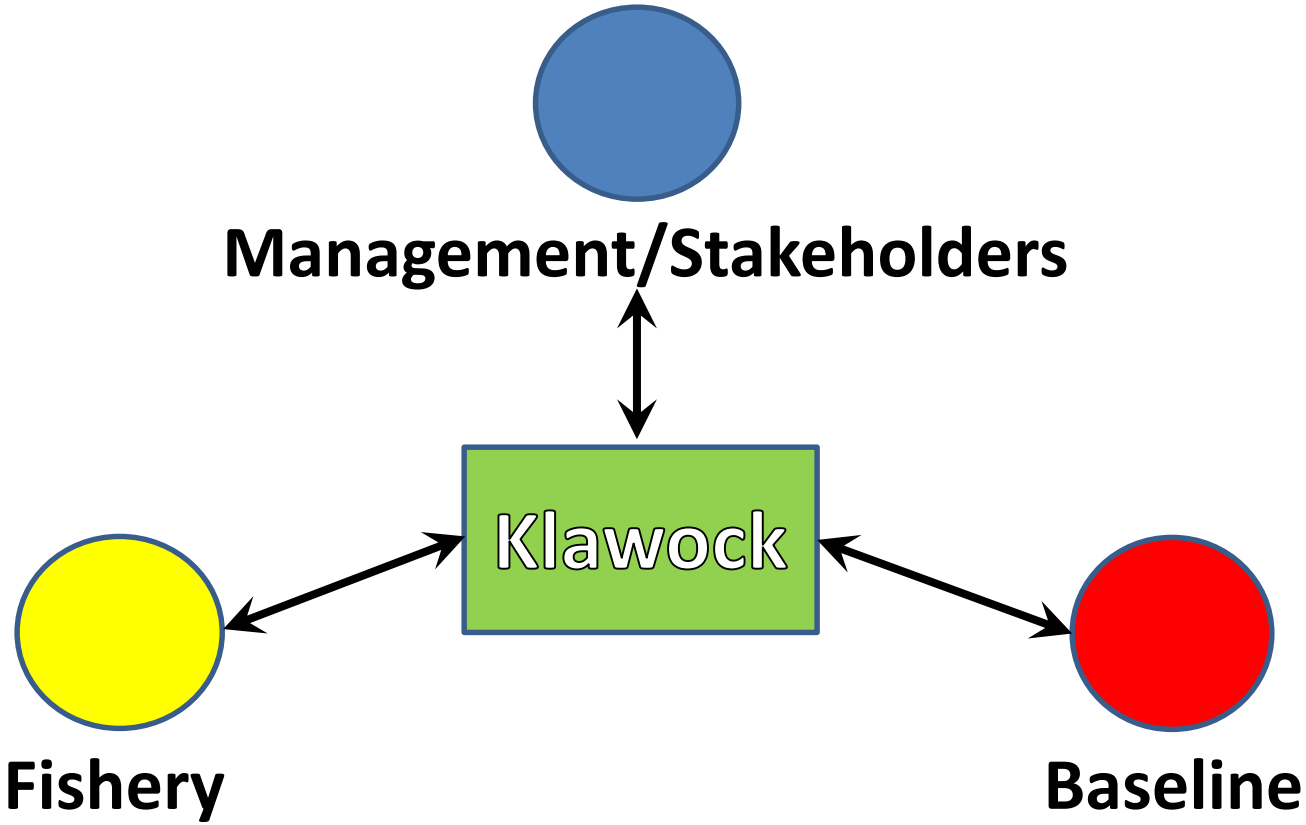

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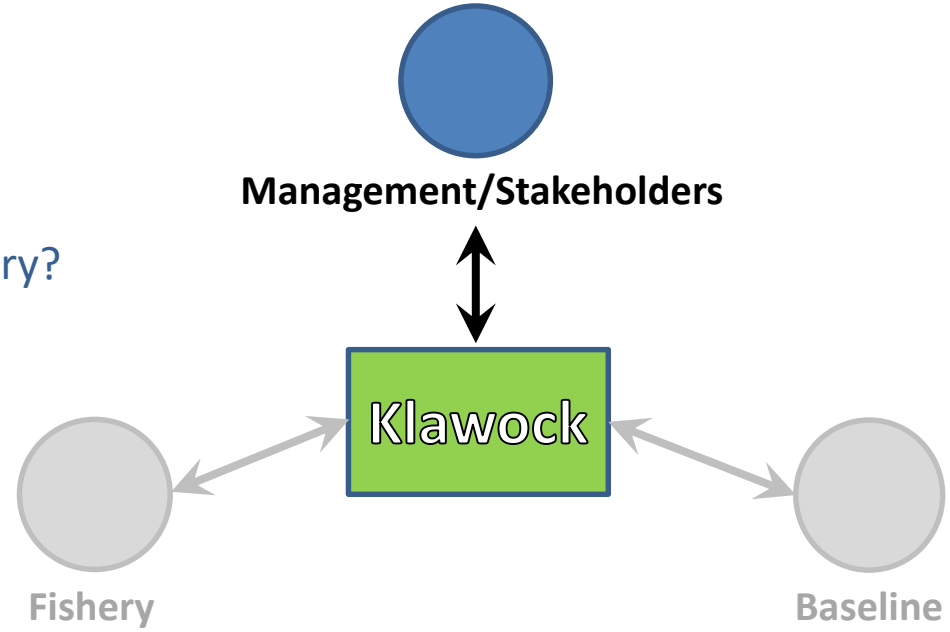

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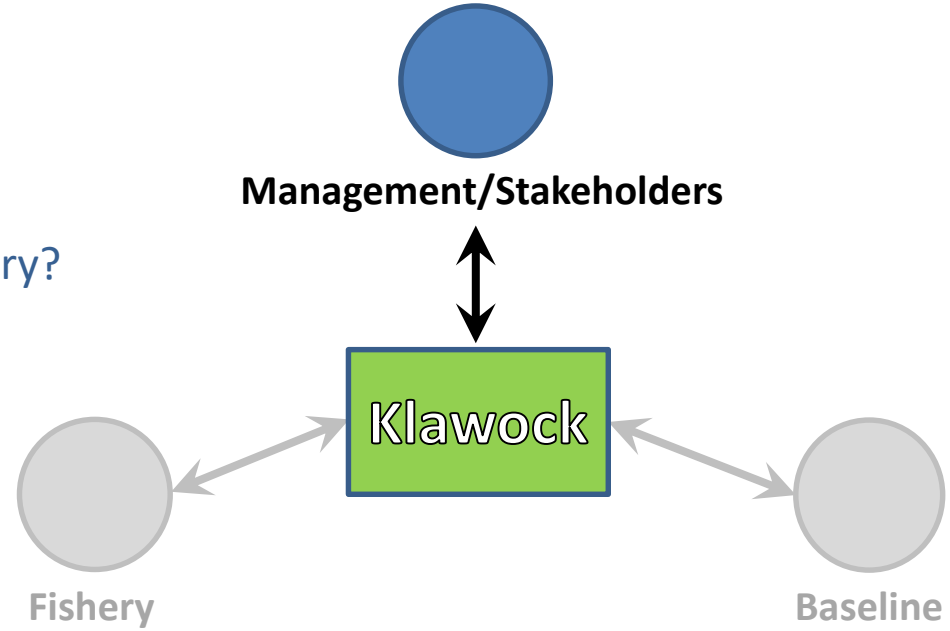

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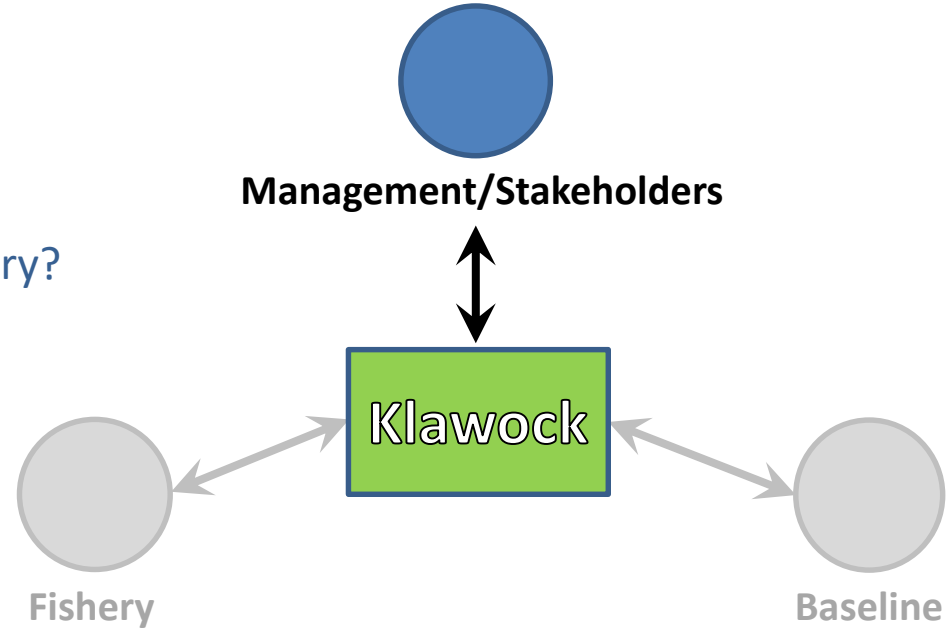

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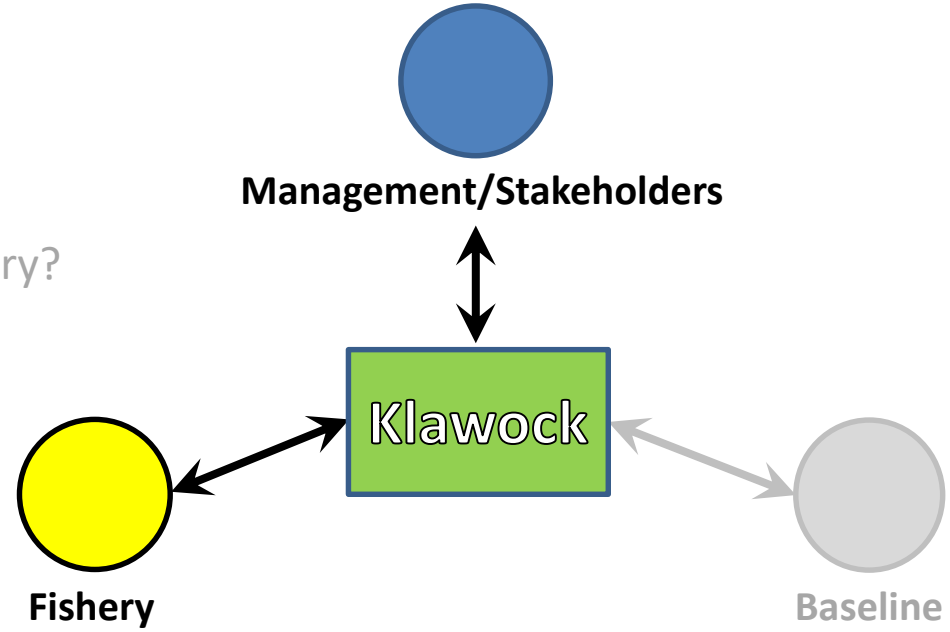

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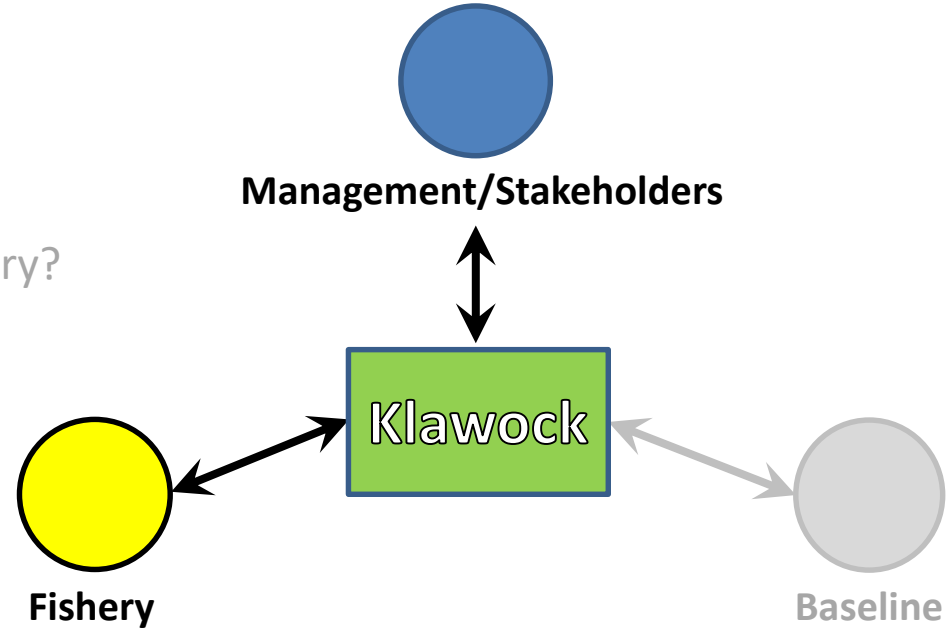

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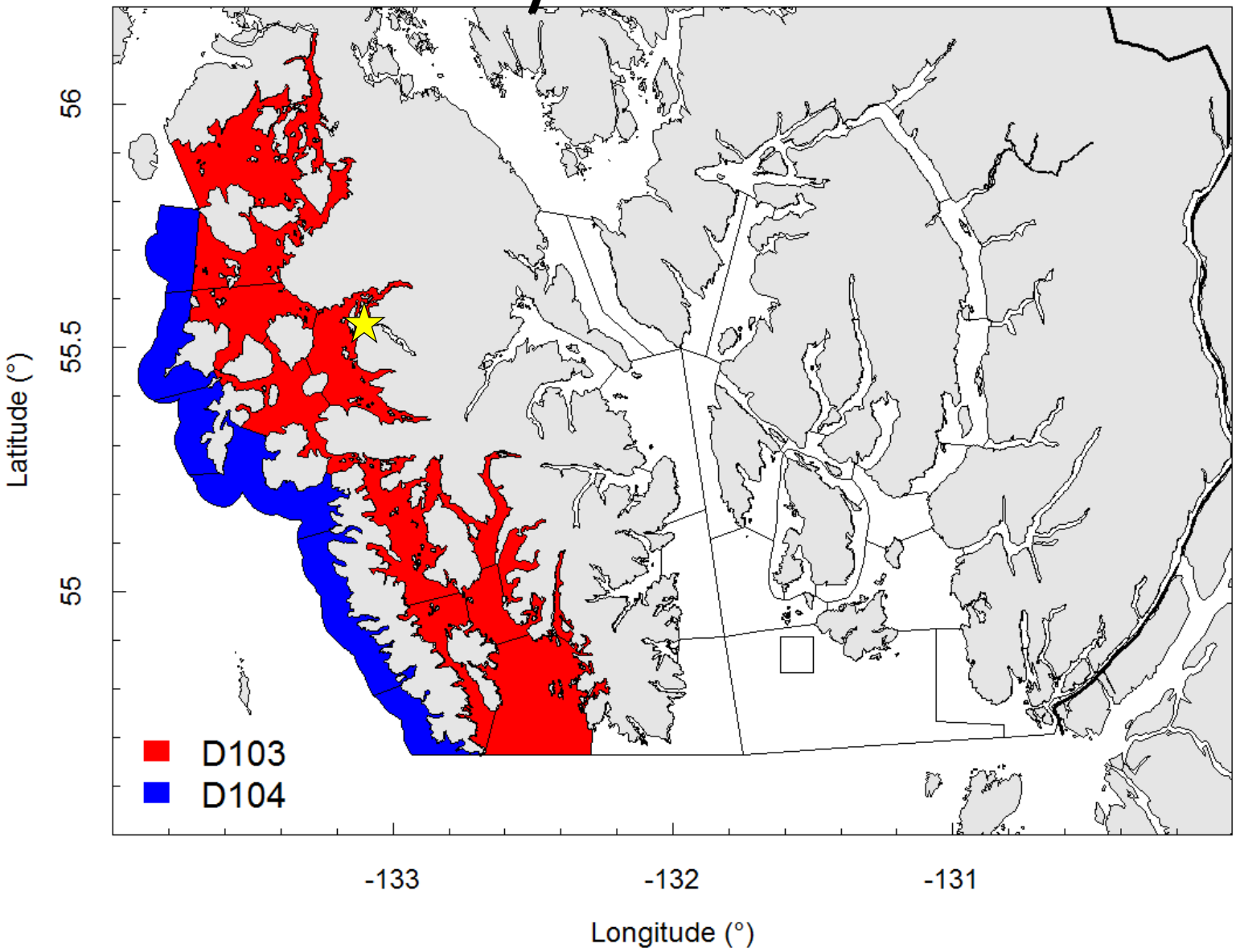

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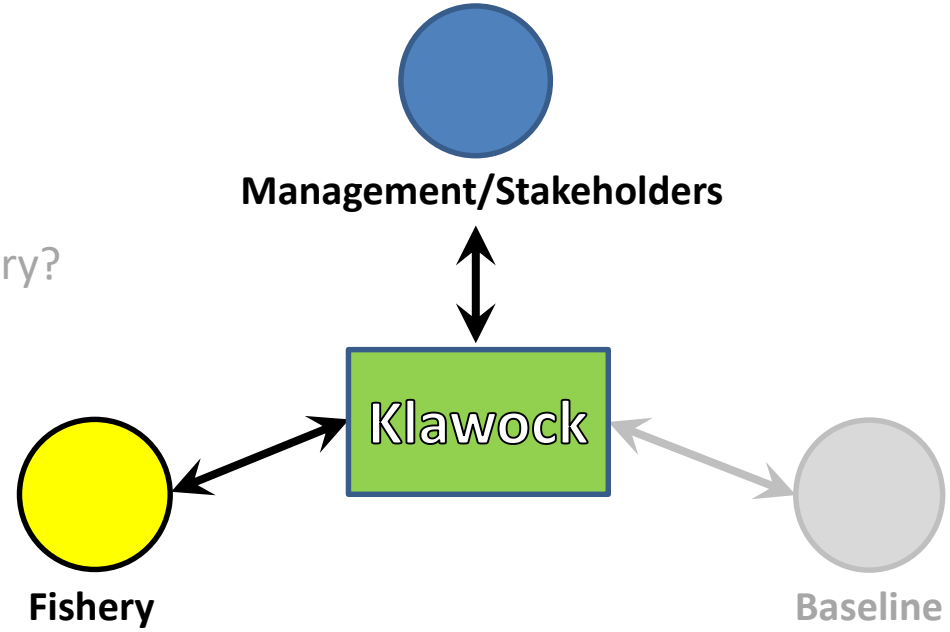

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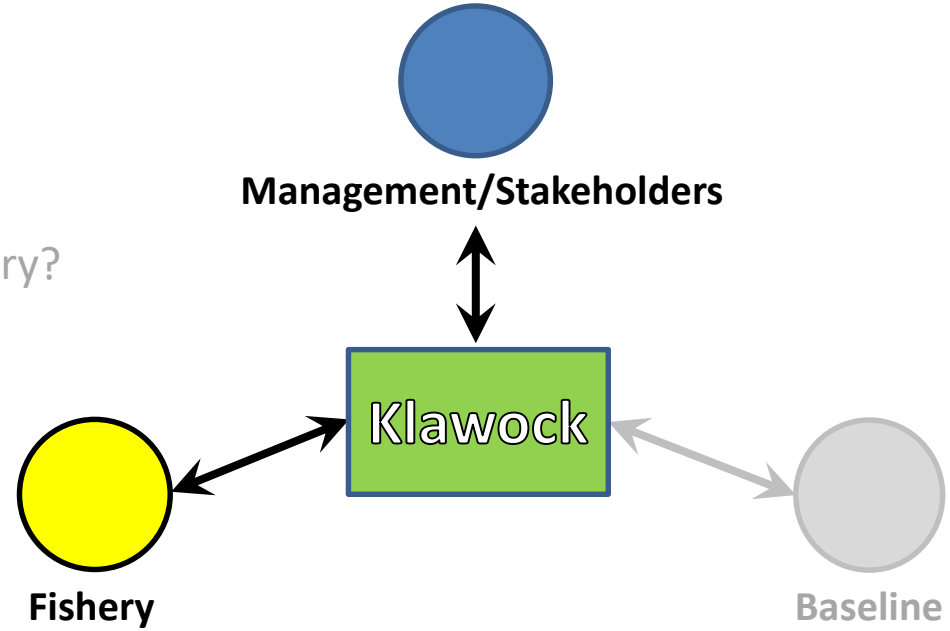

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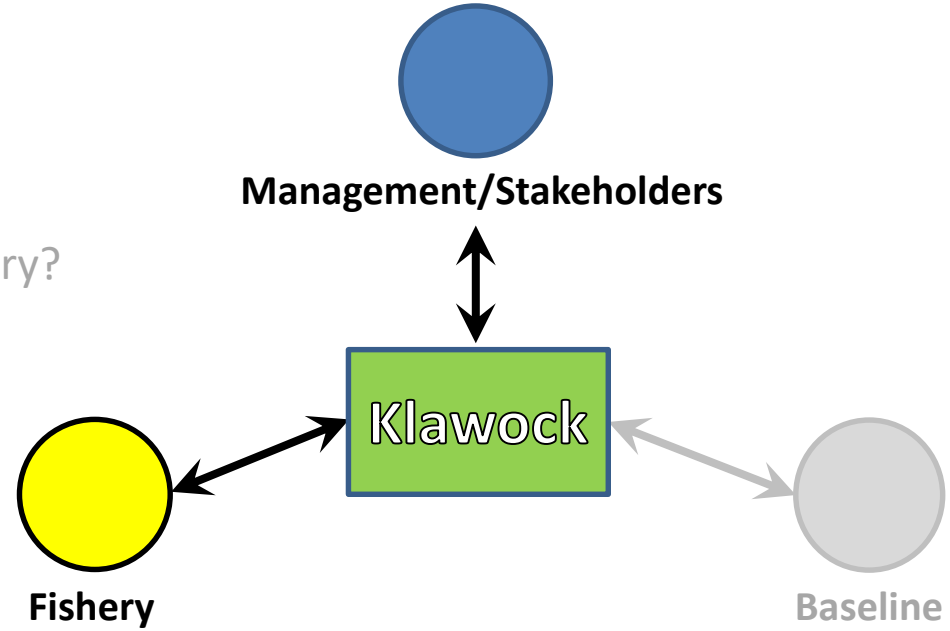

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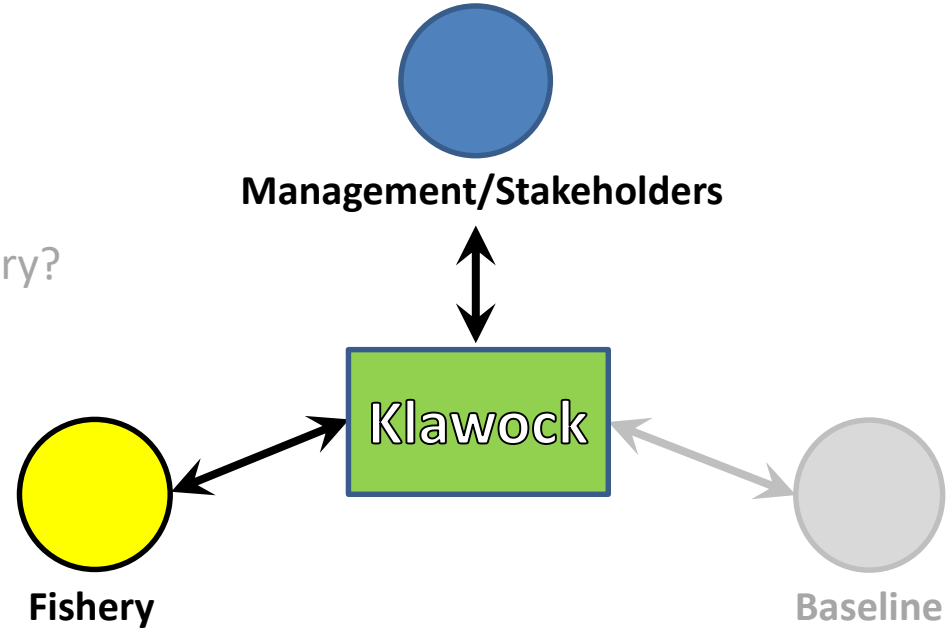

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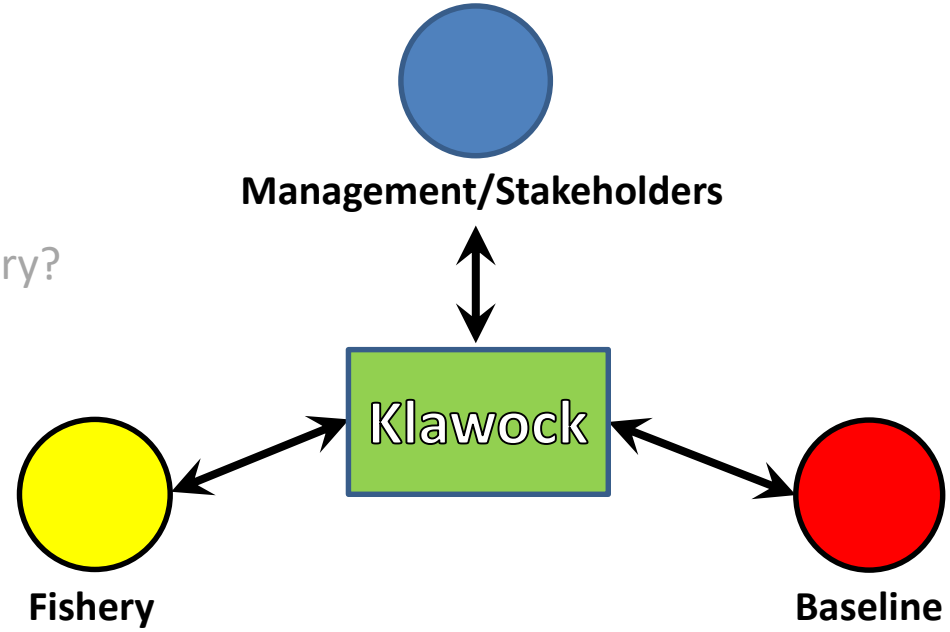

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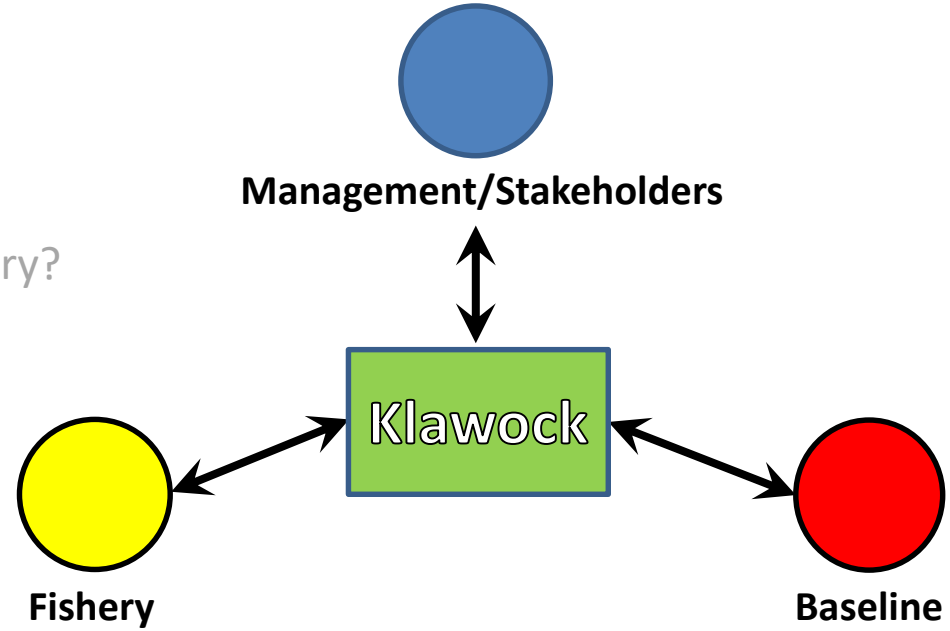

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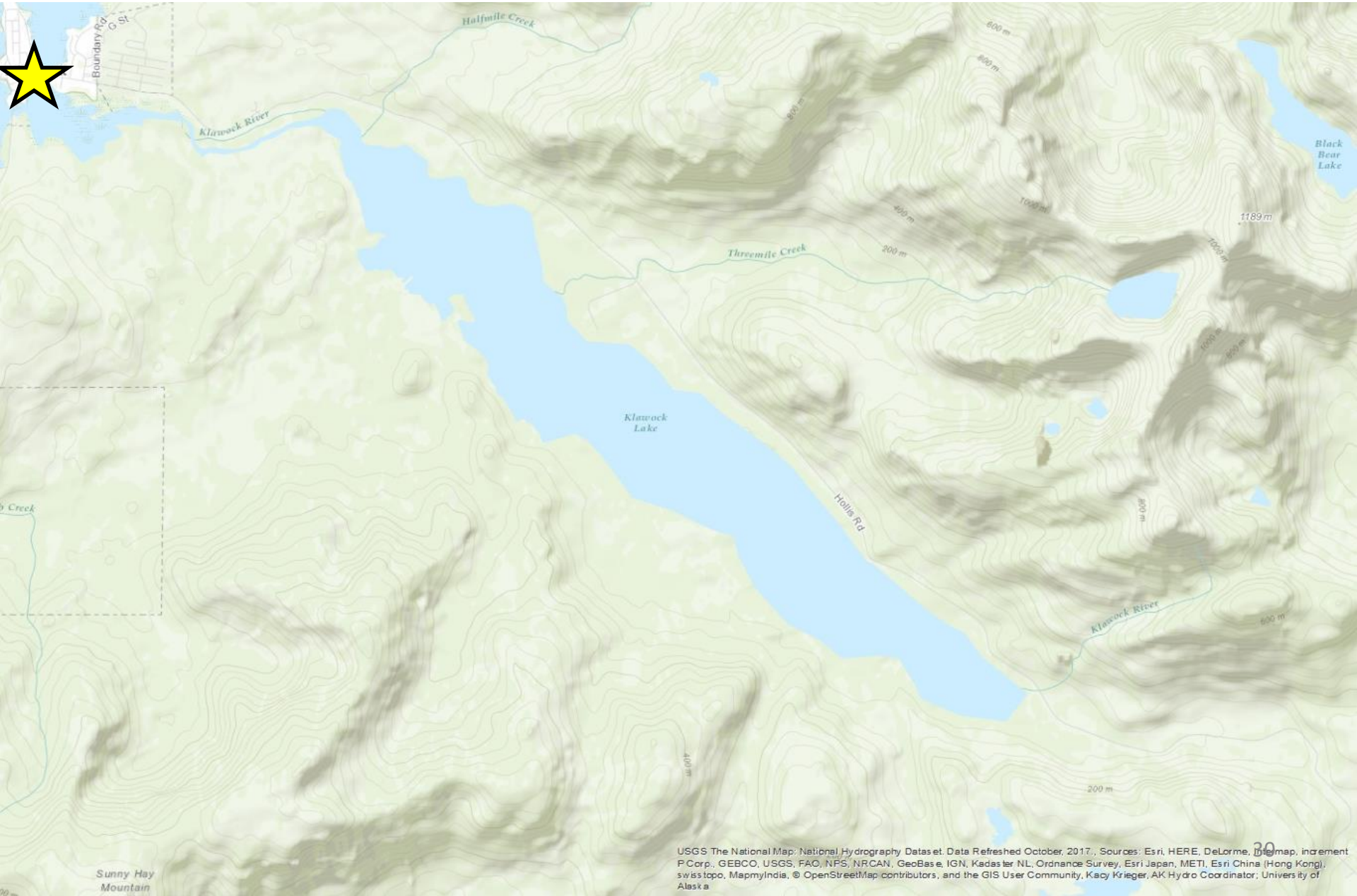
Klawock Baseline Samples



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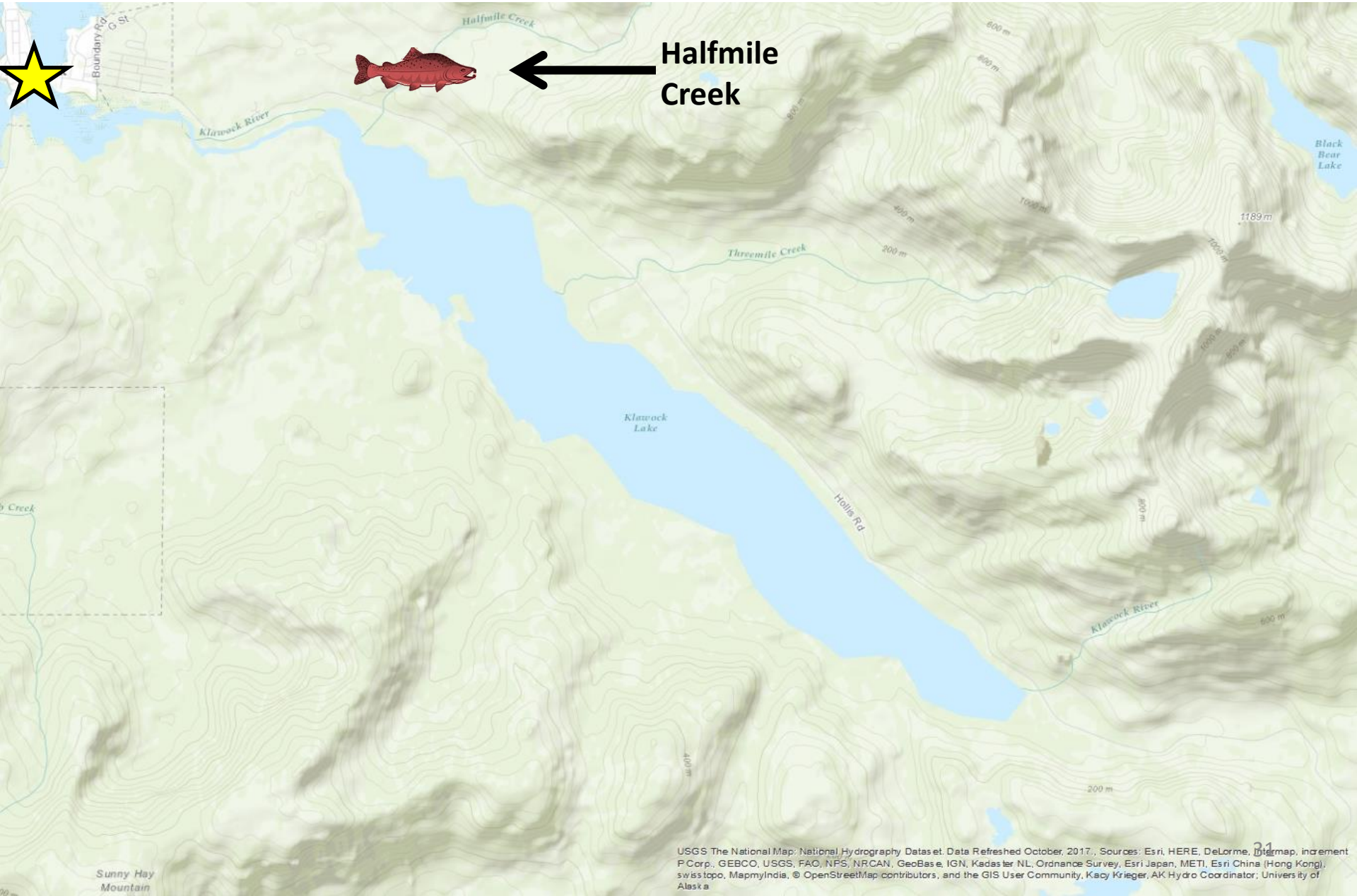

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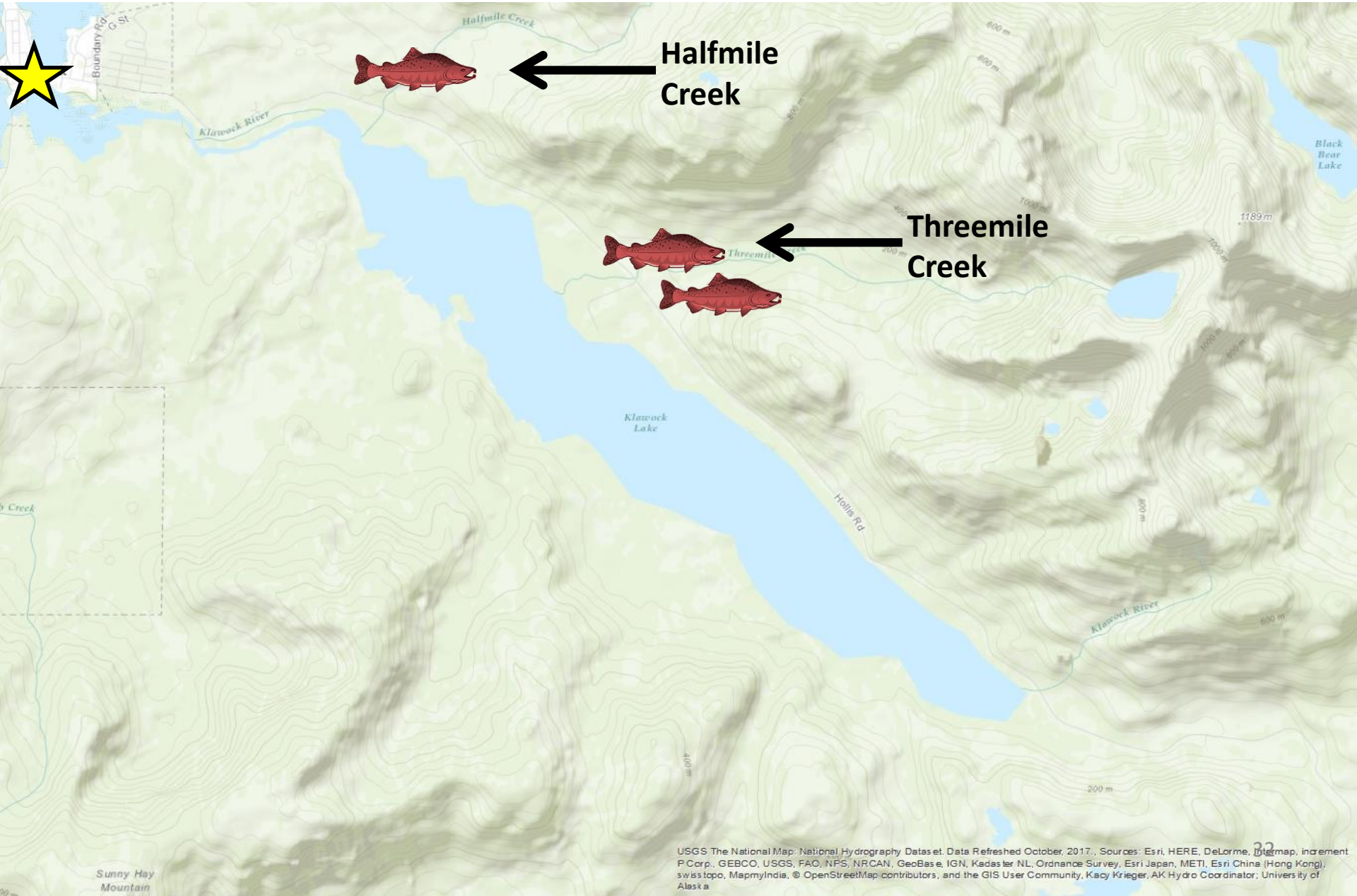

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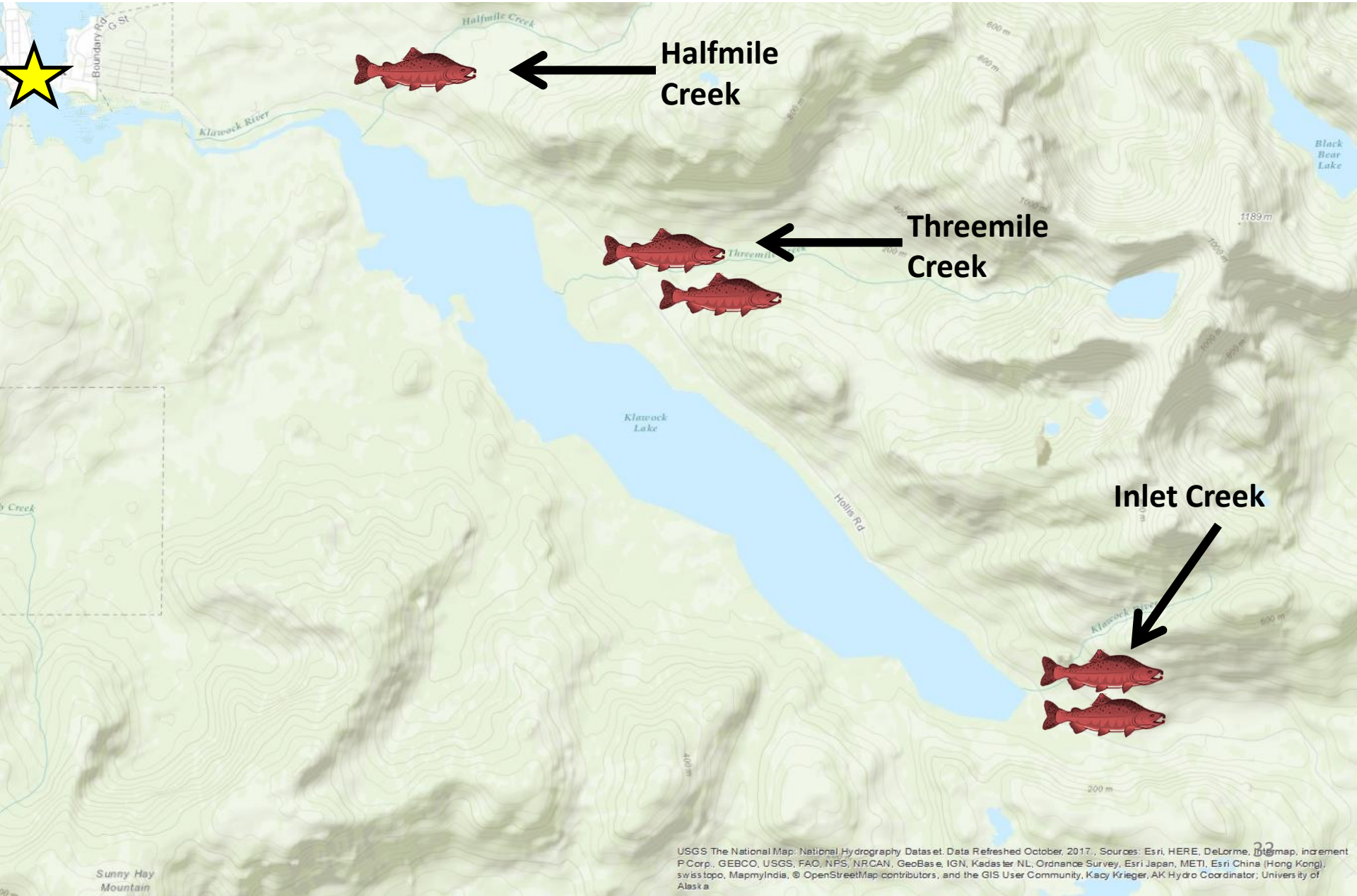

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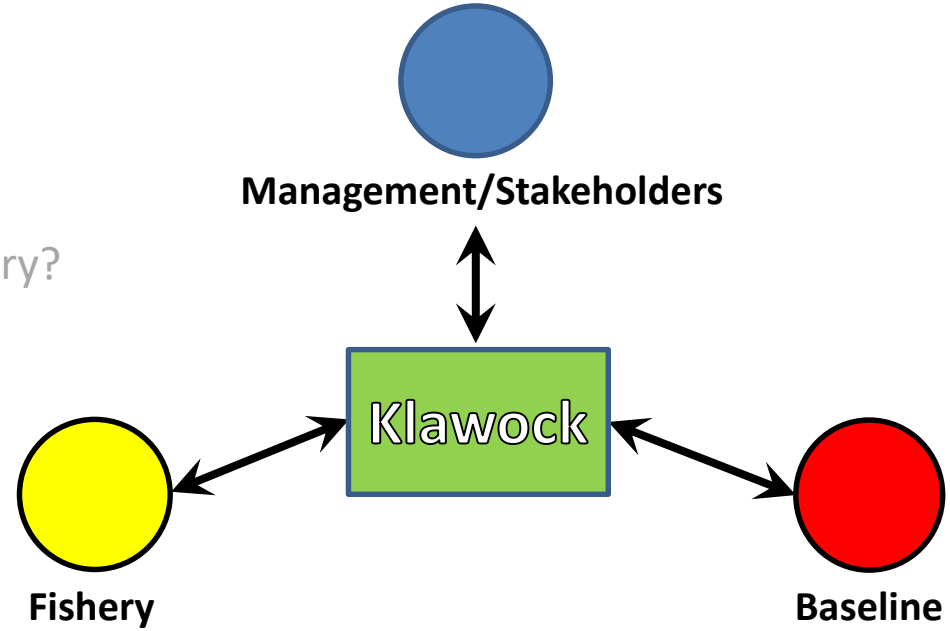

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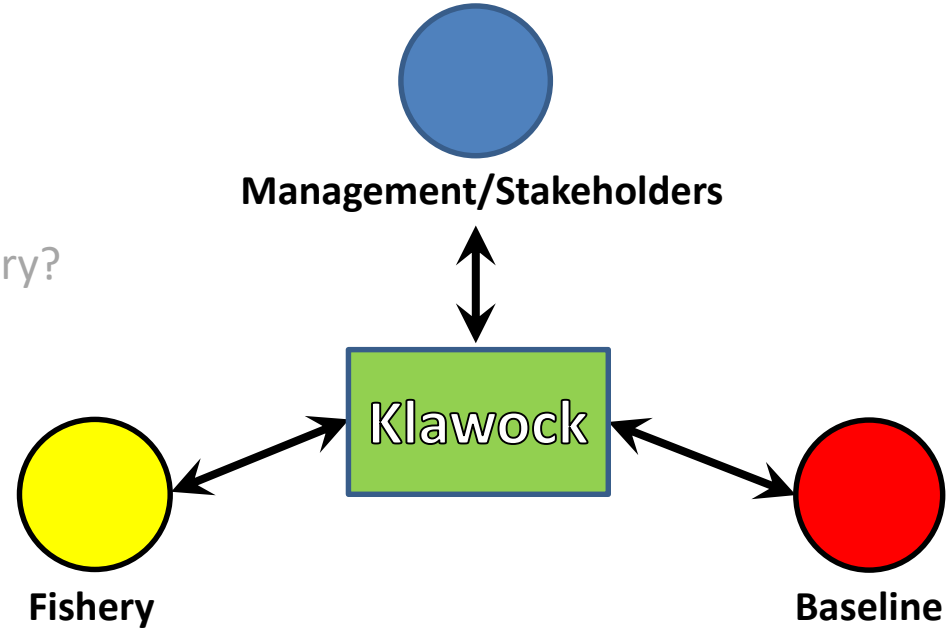

Baseline

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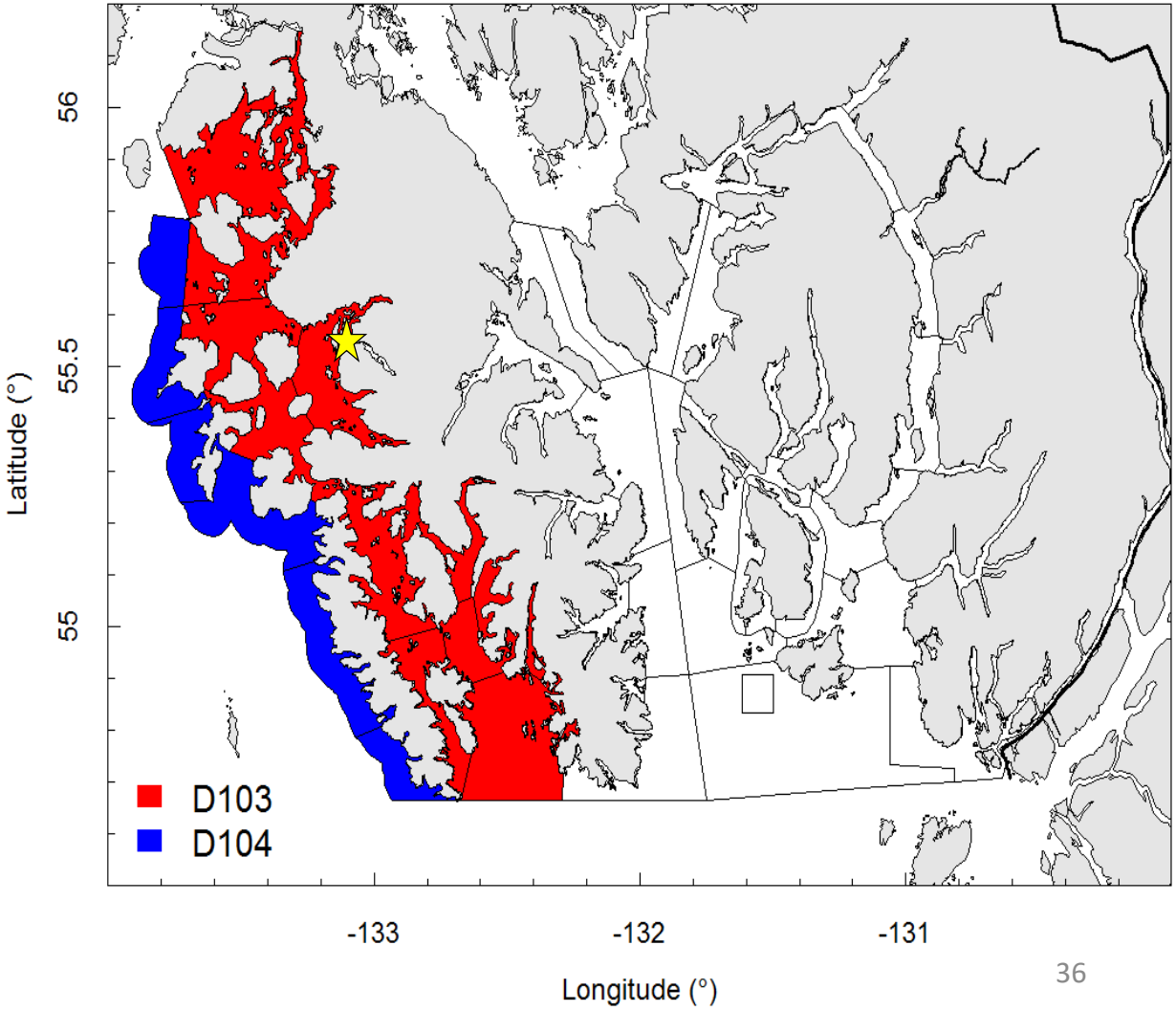
- Do the proposed groups meet testing requirements?
  - **Requires additional testing**

How Would This Work for Klawock Lake Sockeye Salmon?

We currently have sampling programs in District 104 and District 103



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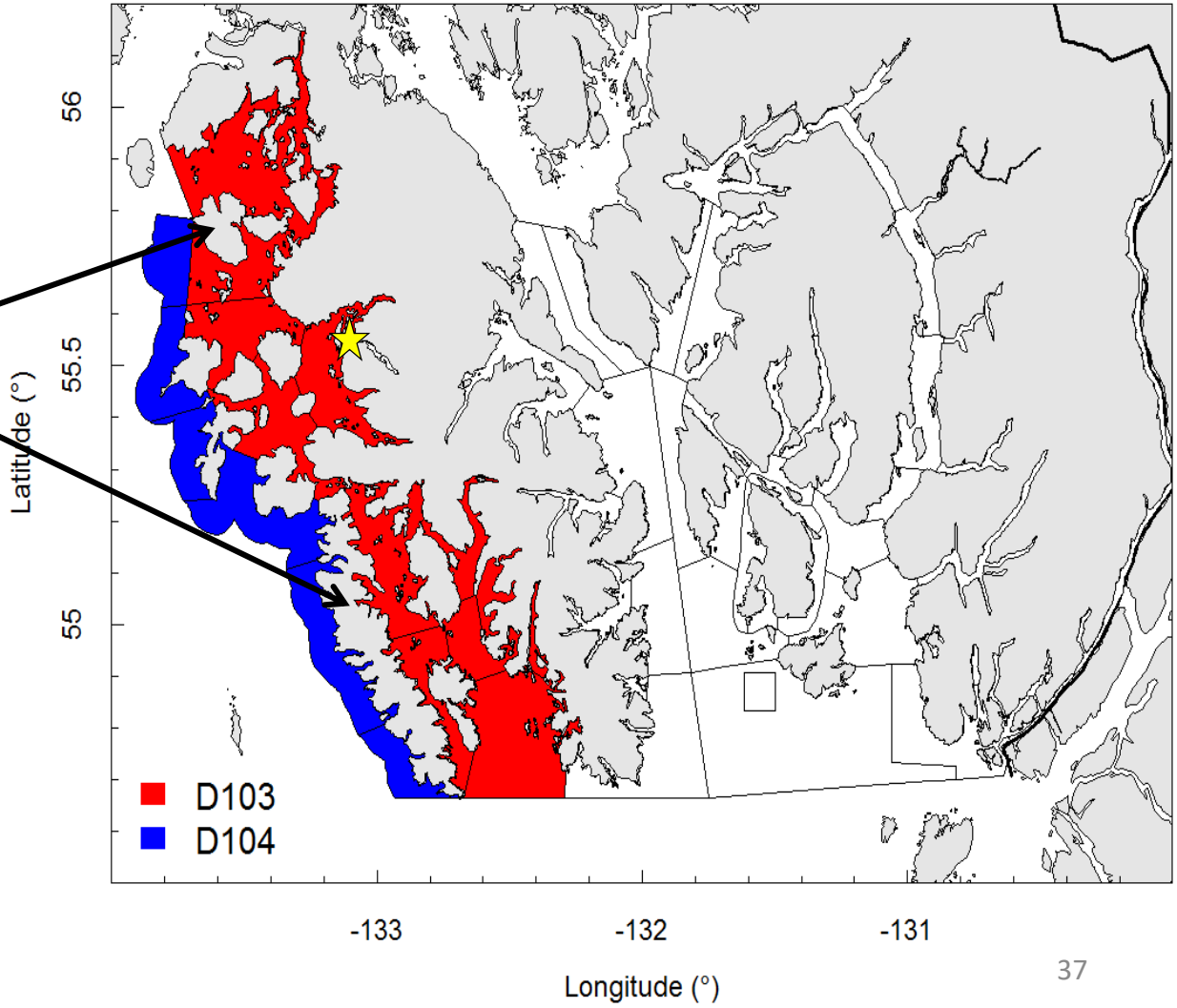
District 103

Outer Islands



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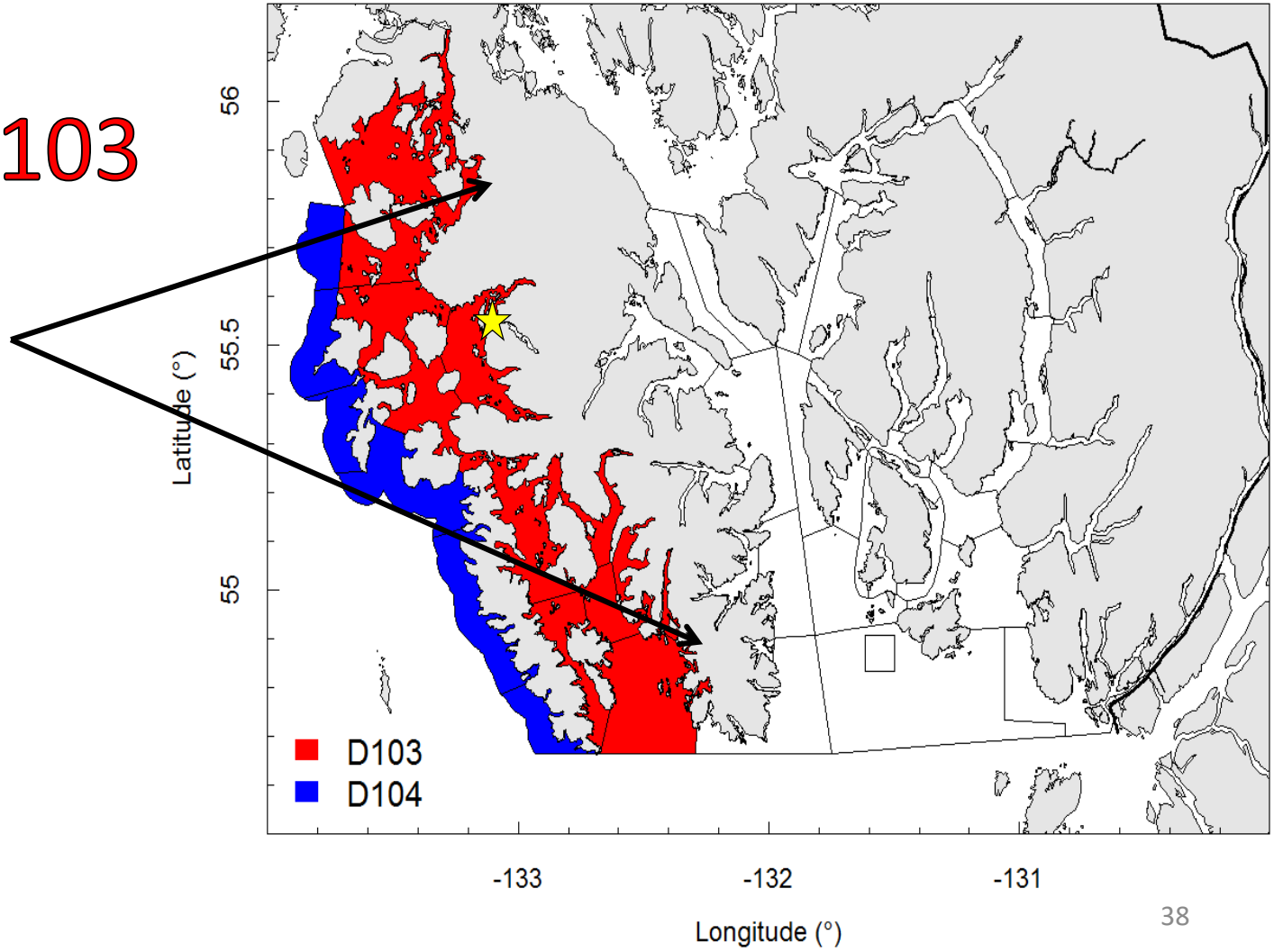
POW Island Shore



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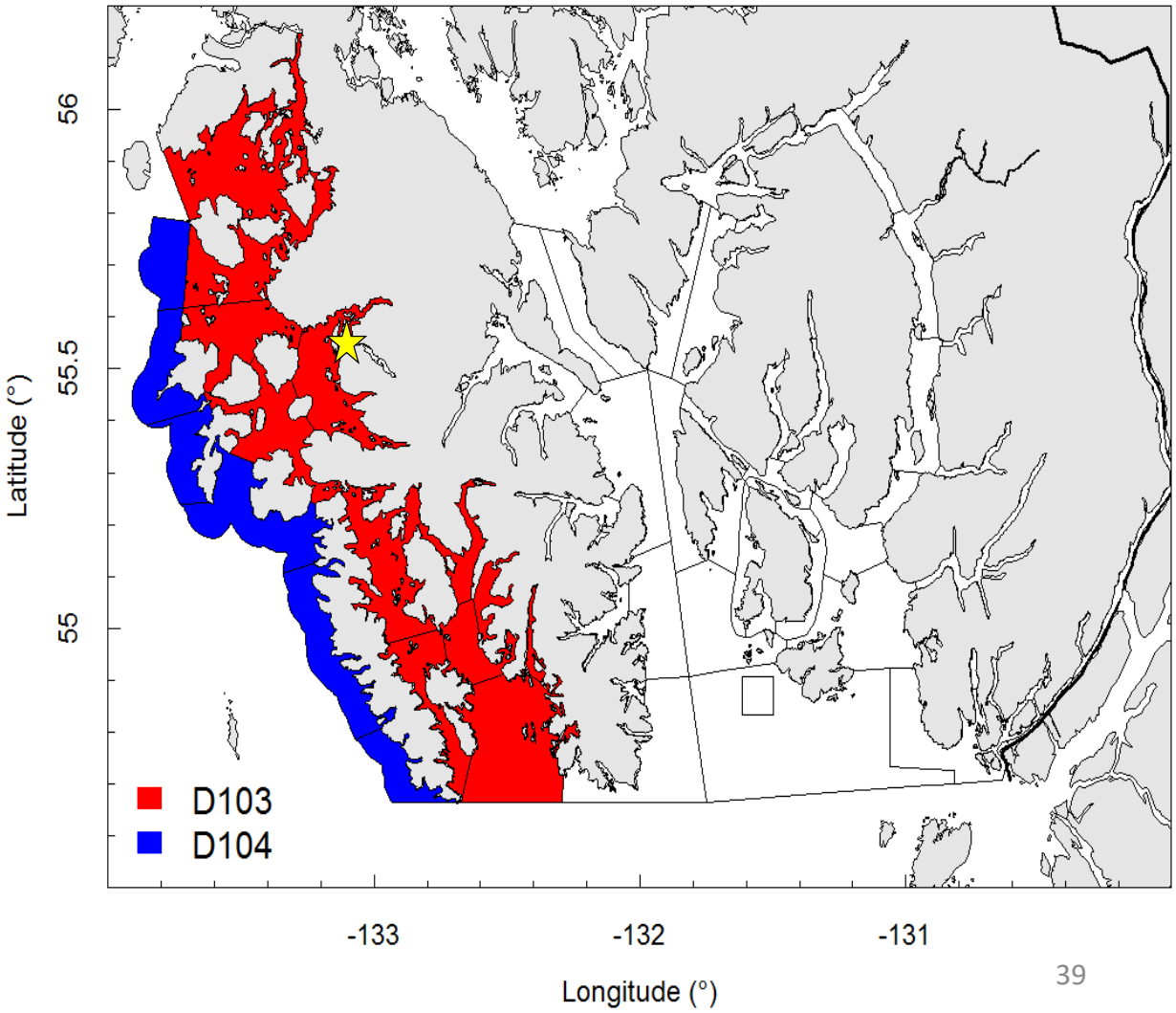

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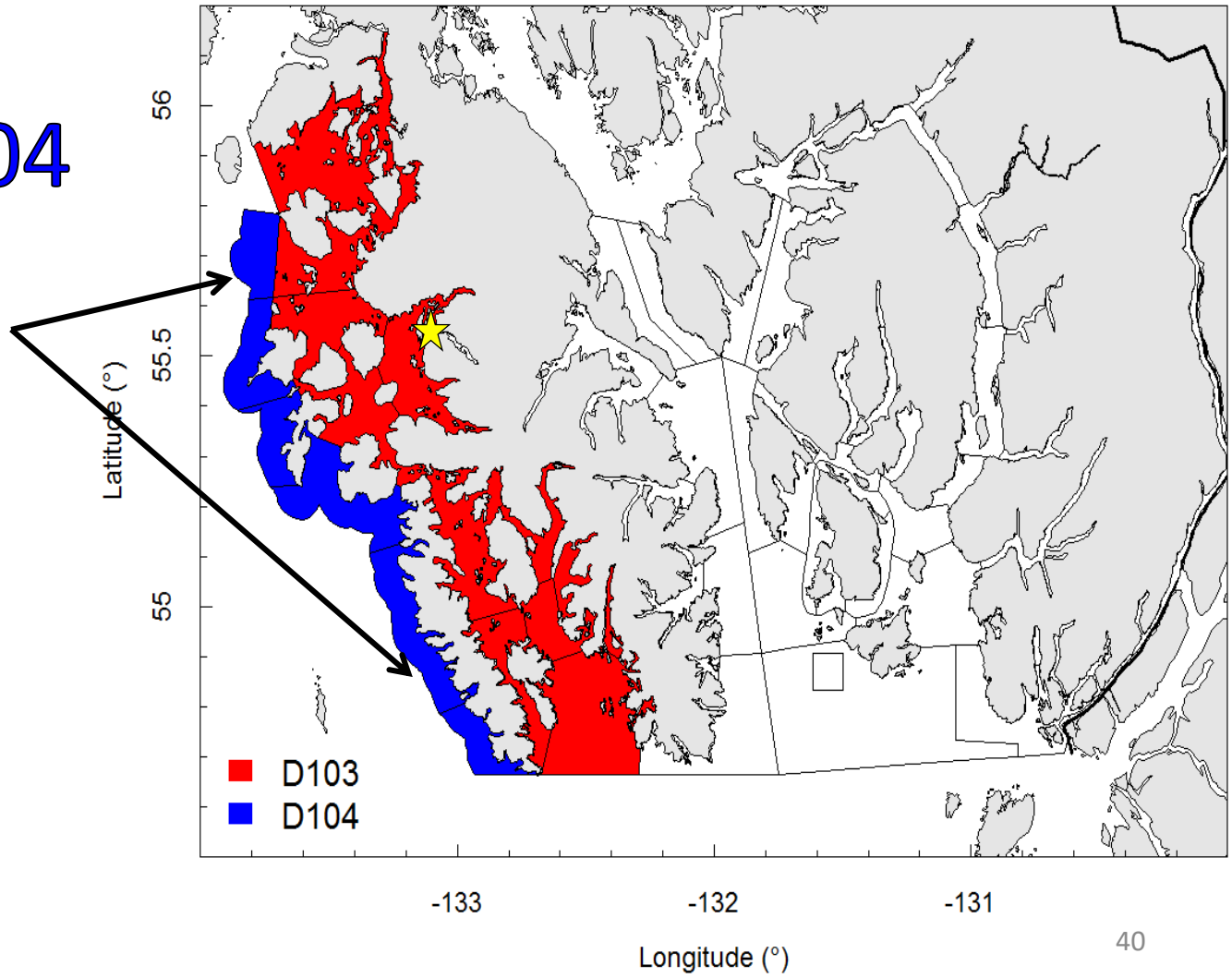
District 104

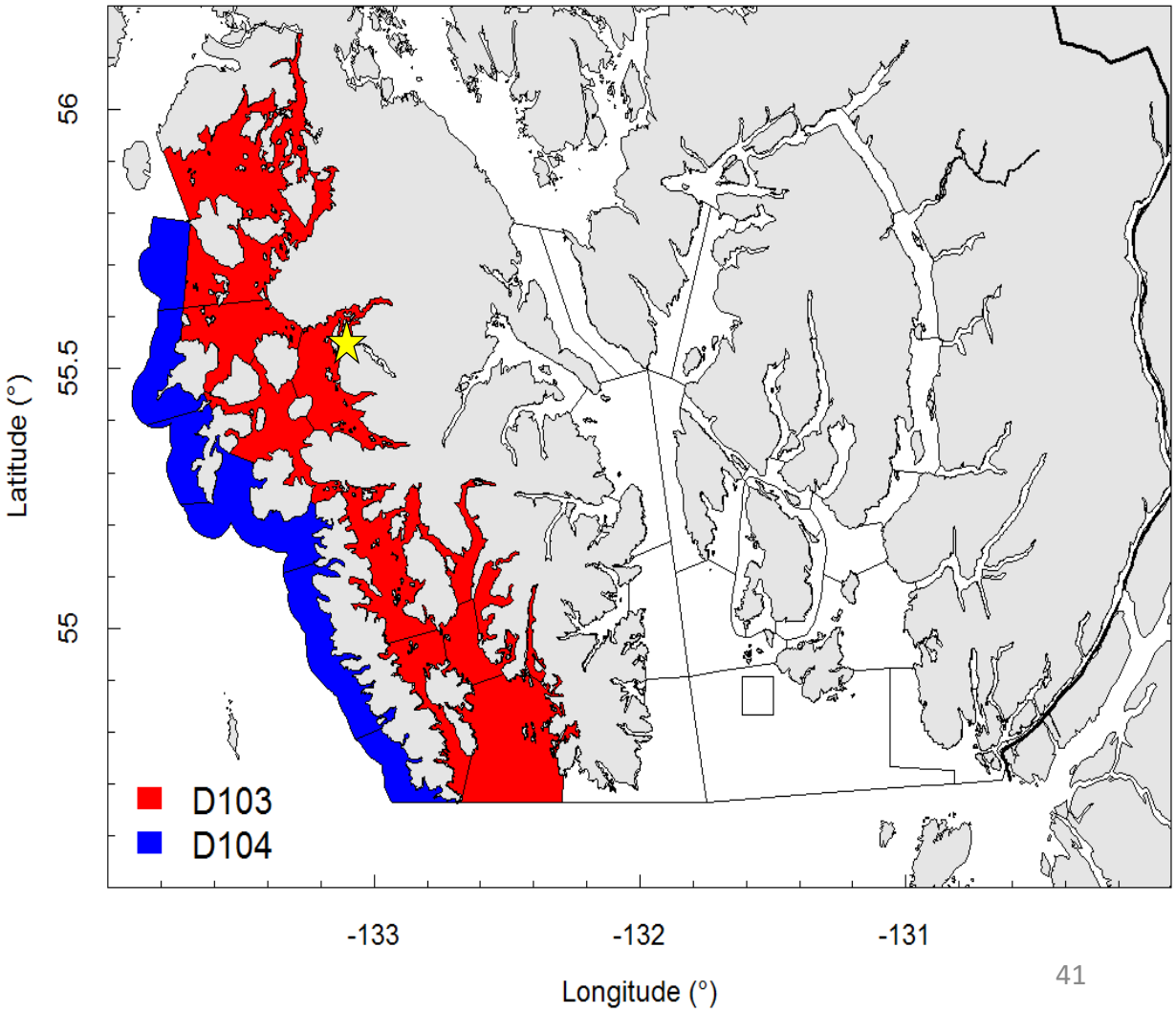
Waters offshore of outer islands



How Would This Work for Klawock Lake Sockeye Salmon?

Sampling programs developed for the Pacific Salmon Treaty

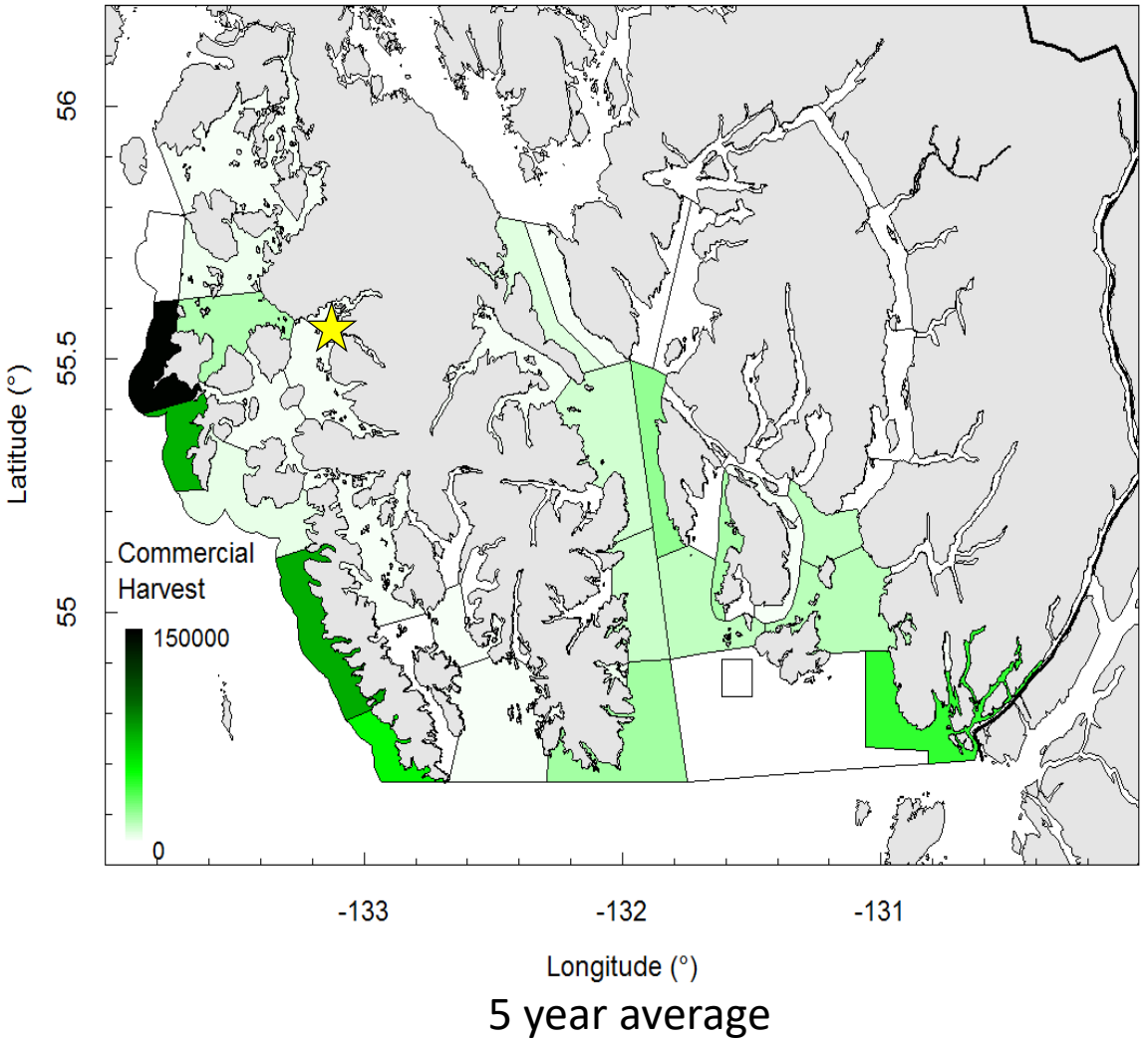
Alaska must keep track of the harvest of specific Canadian stocks to meet treaty obligations



How Would This Work for Klawock Lake Sockeye Salmon?

District 104

- Larger sockeye harvest
- Sample 260/wk
- Treaty weeks 28 – 31
- No additional sampling needed, unless weekly Klawock estimates are wanted
- Likely < 5% of harvest

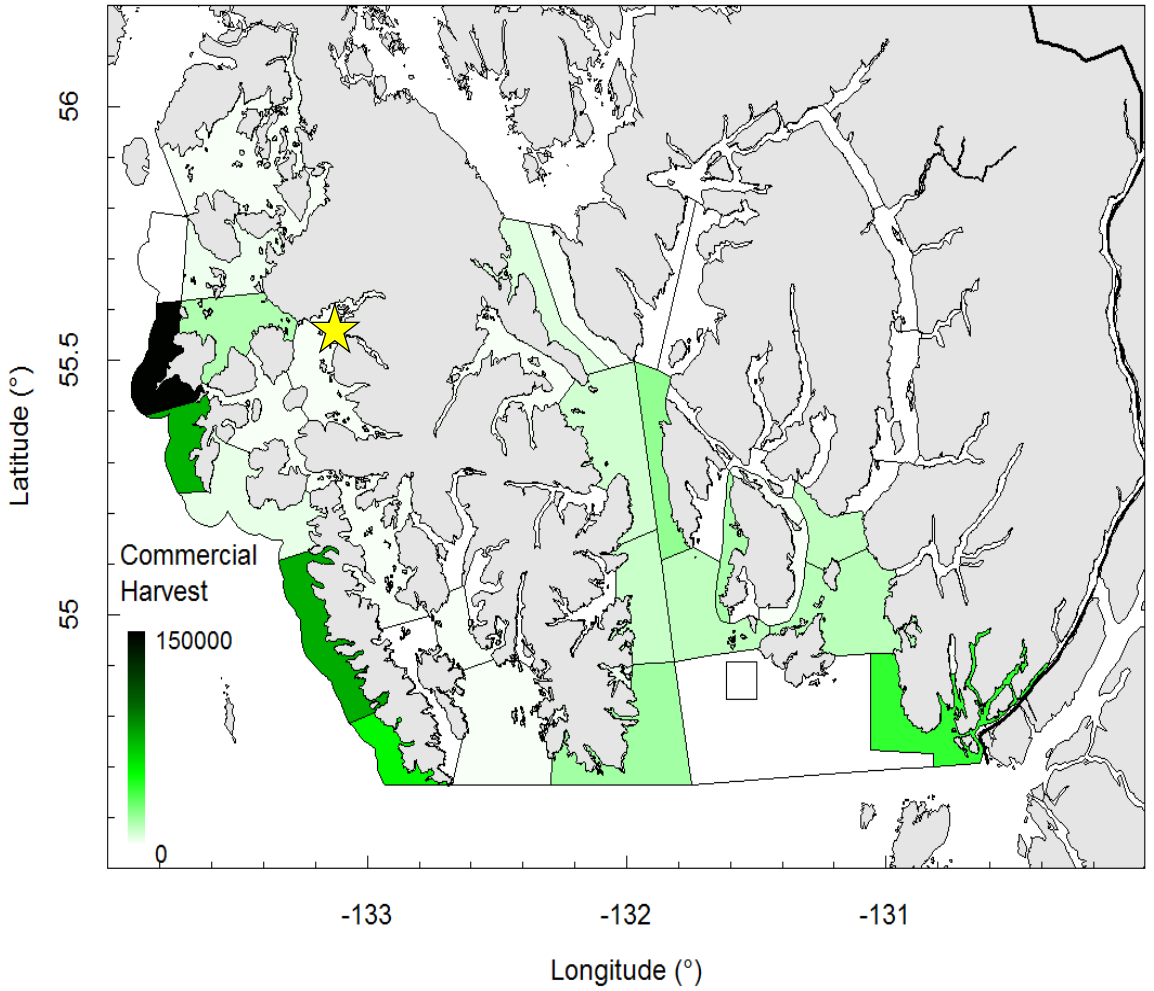


5 year average

How Would This Work for Klawock Lake Sockeye Salmon?

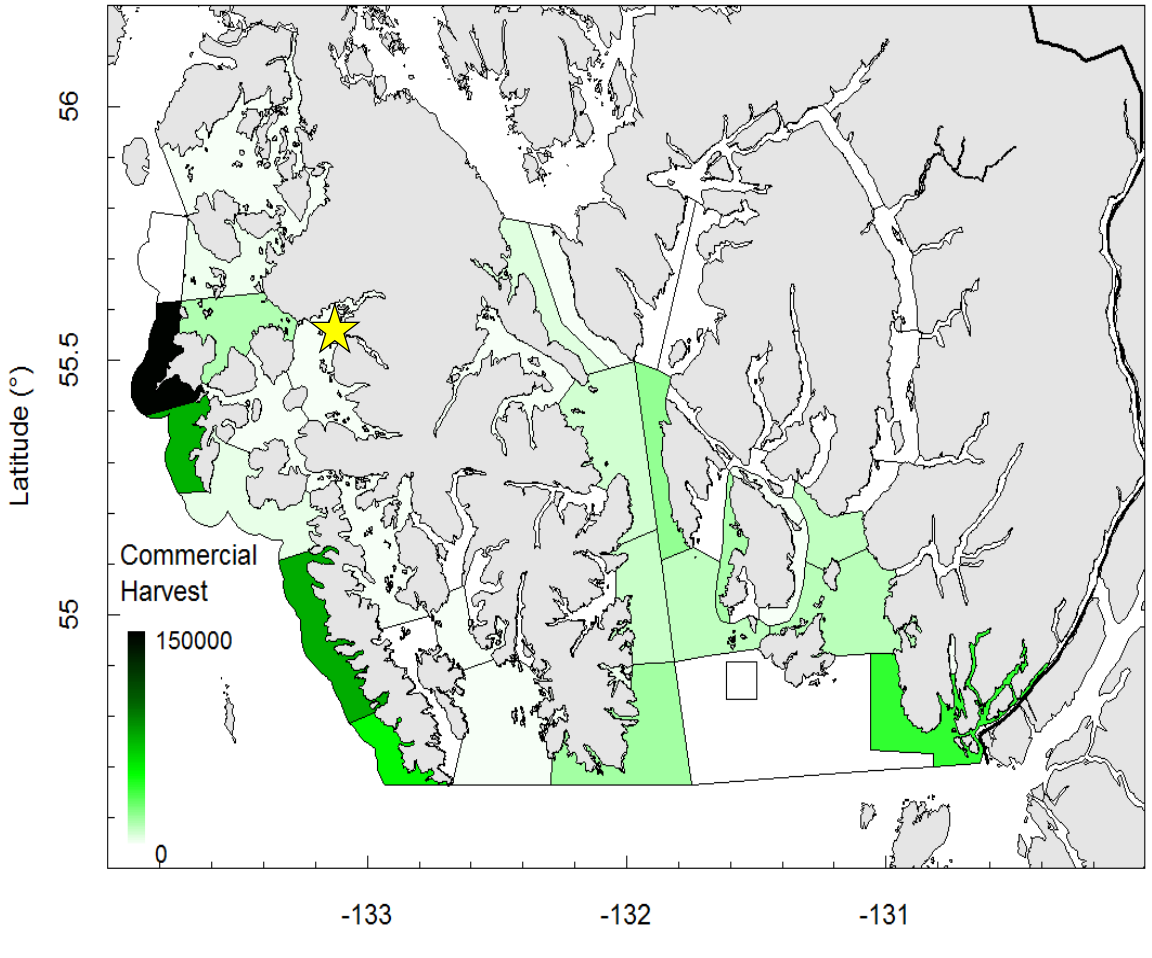
District 103

- Very difficult to sample
- Pink fishery later run timing (weeks 33 – 35) than Canadian sockeye
- Seasonal (not weekly) Canadian estimates



5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?



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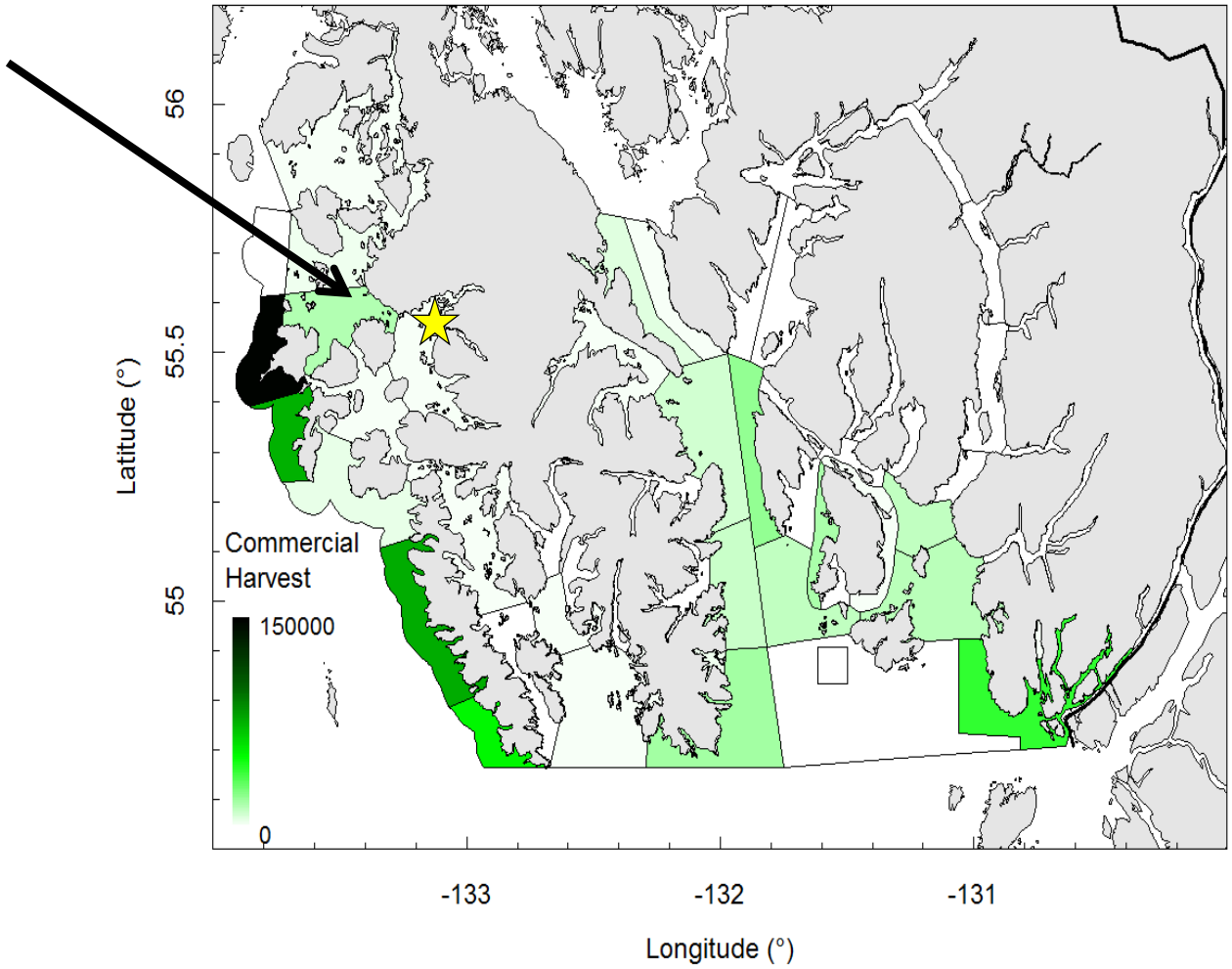
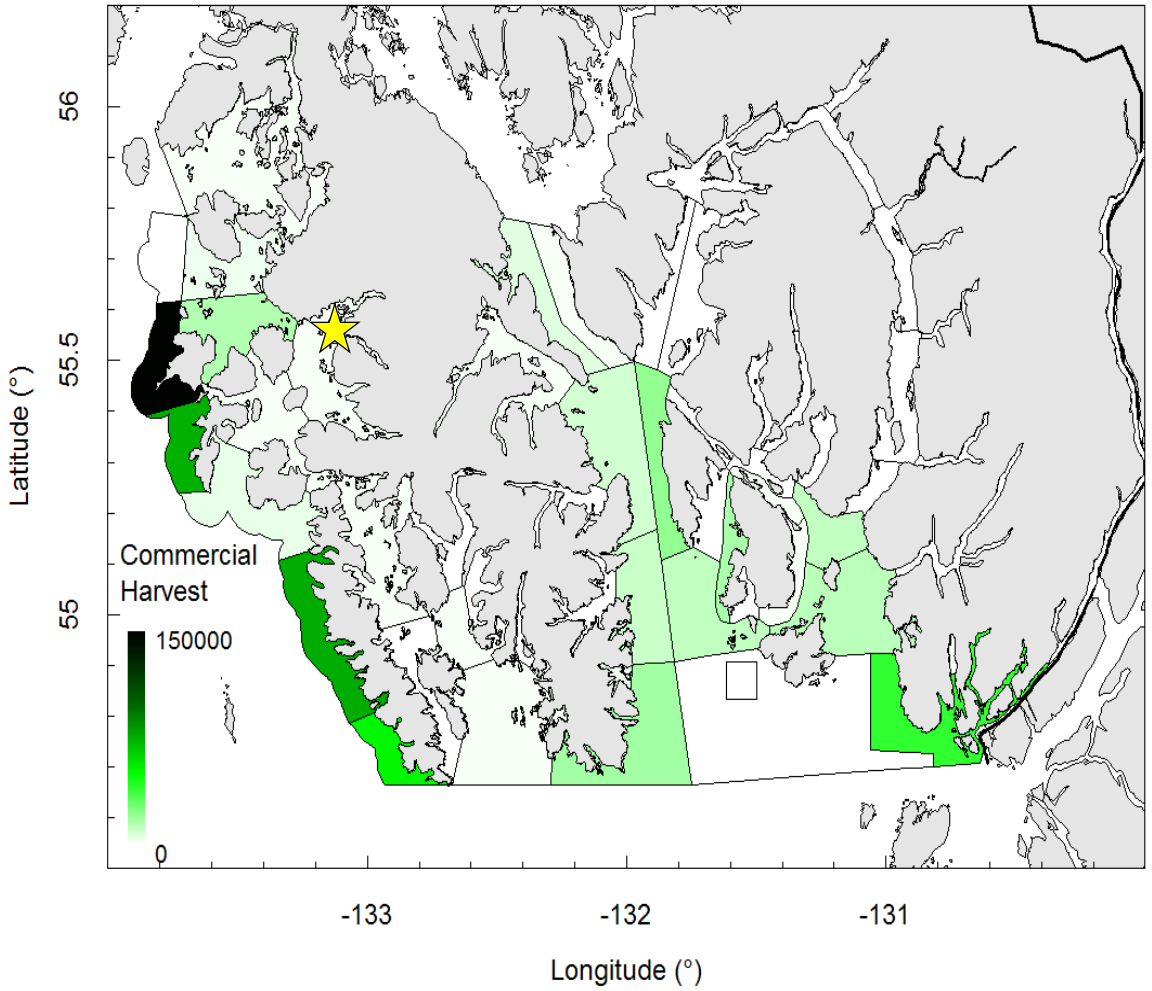


5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?

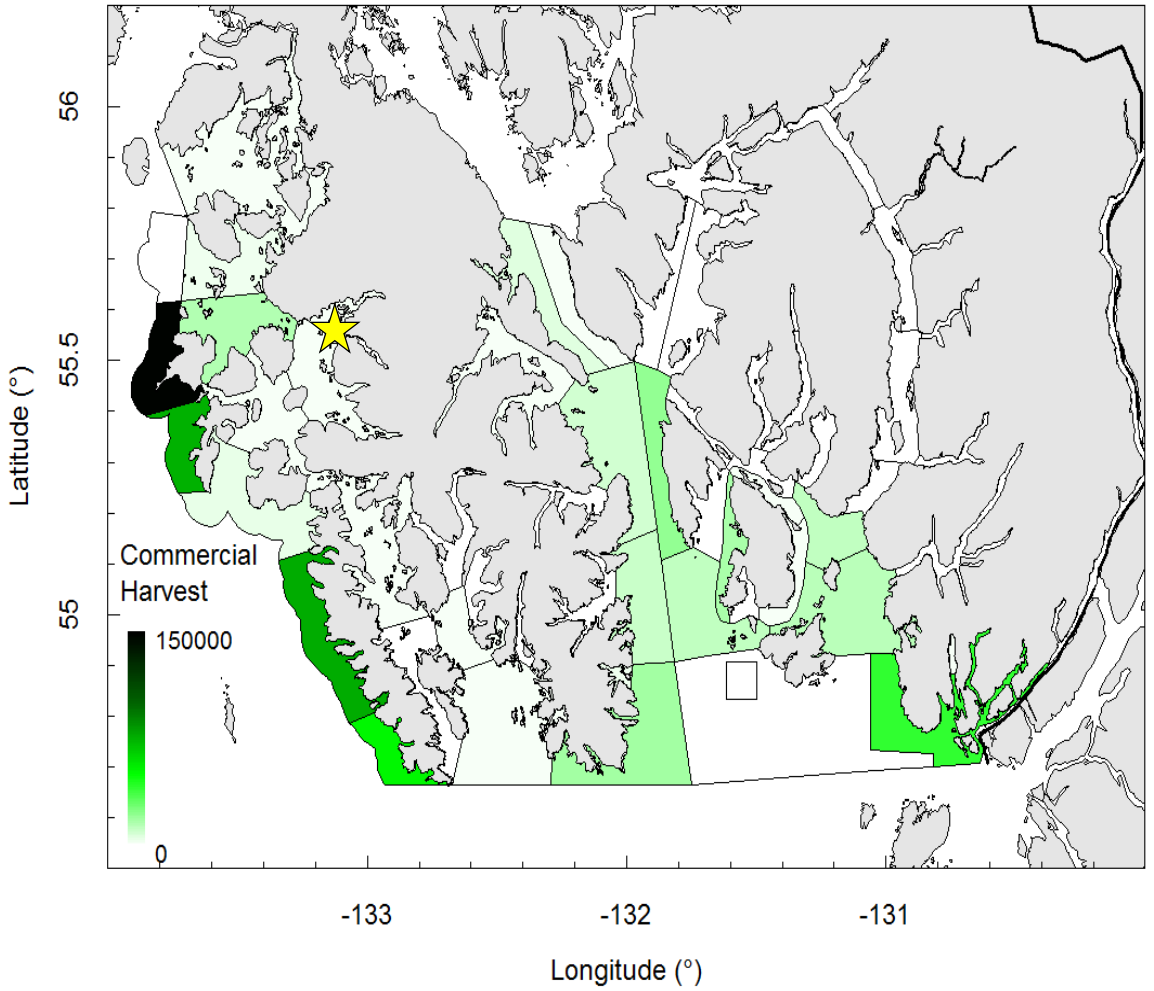
- 350 samples/season



5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?

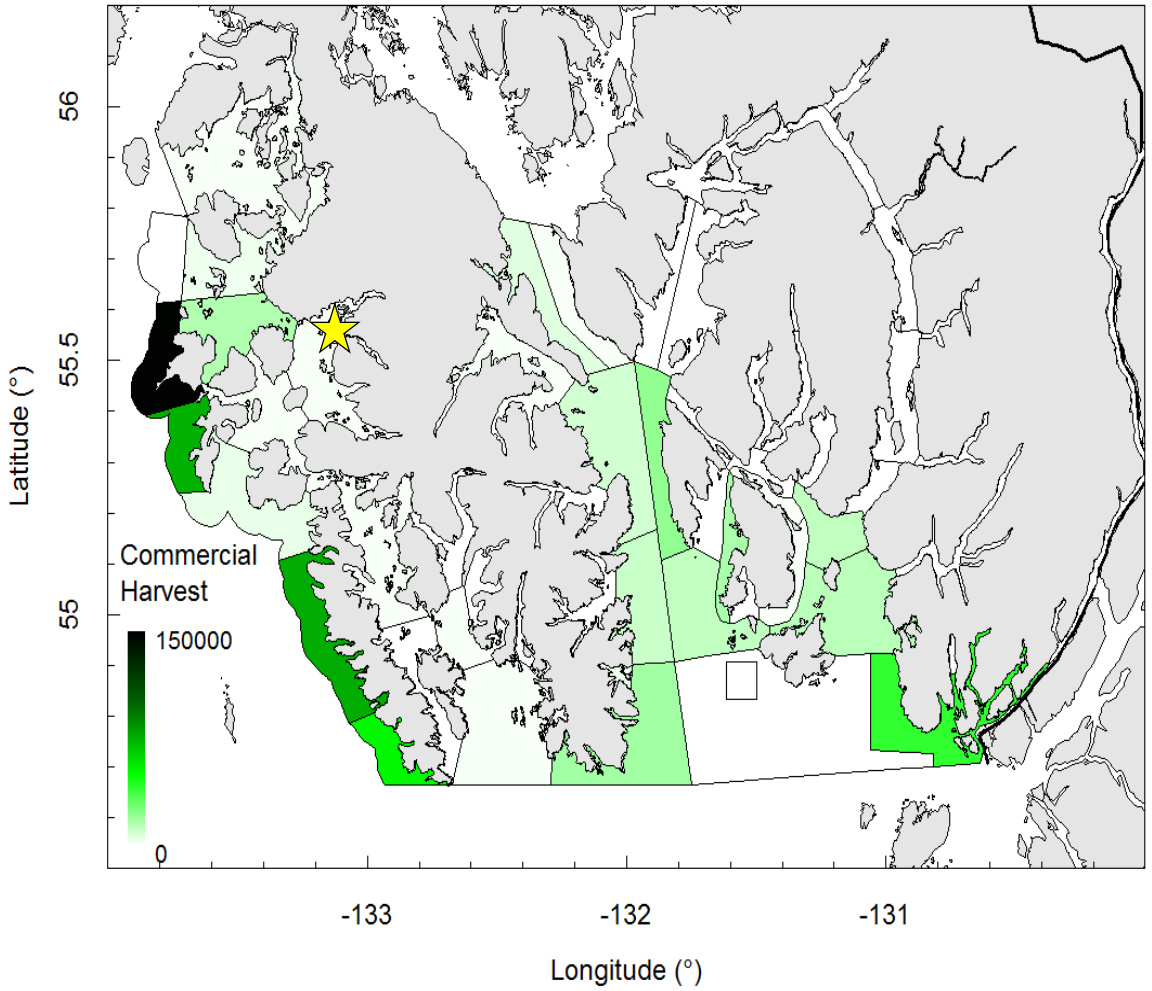
- 350 samples/season
- Increase sample size
- More statistical power



5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?

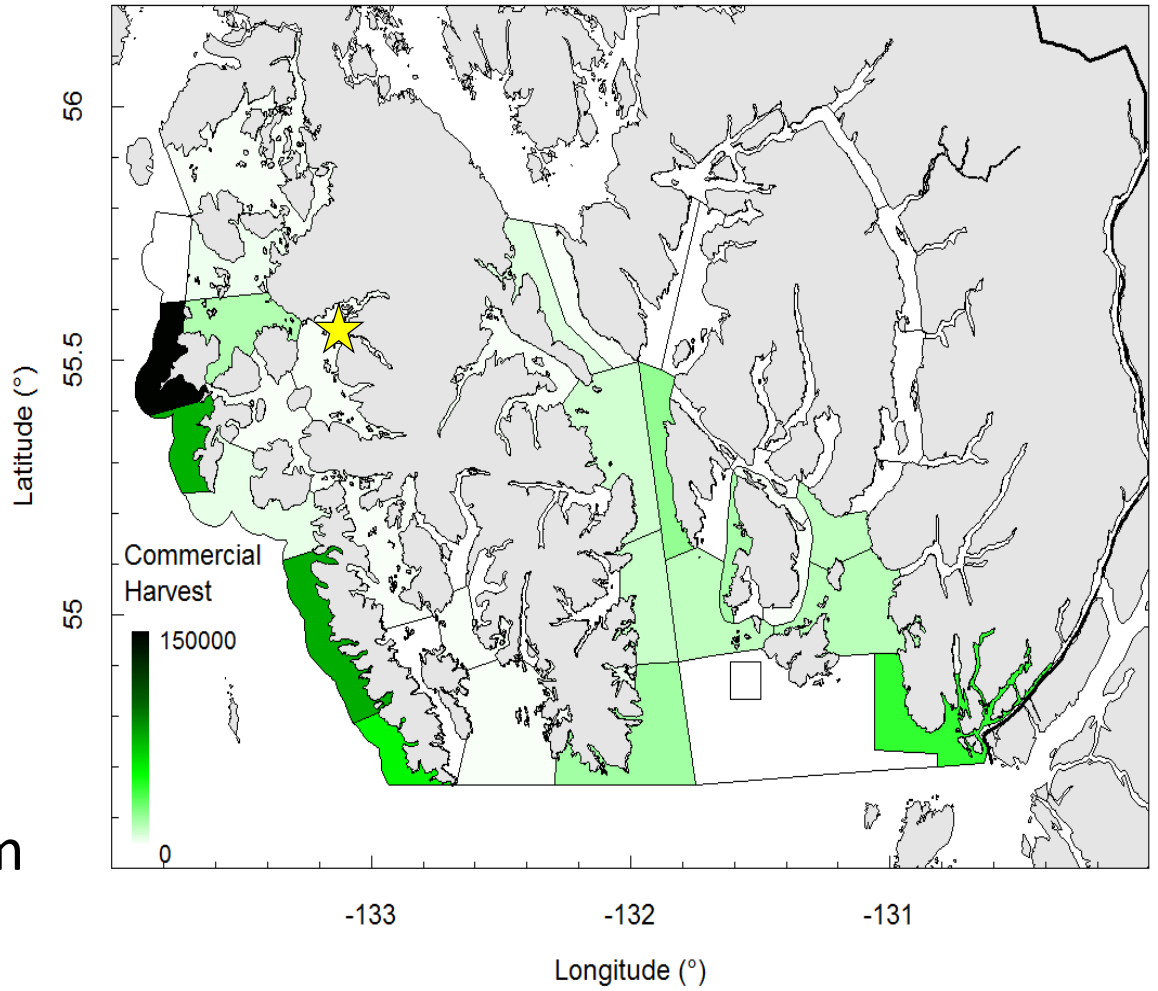
- 350 samples/season
- Increase sample size
- More statistical power
- Ideally, keep samples from north and south 103 separate



5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?

- 350 samples/season
- Increase sample size
- More statistical power
- Ideally, keep samples from north and south 103 separate
- 200 samples/wk minimum for temporal estimates

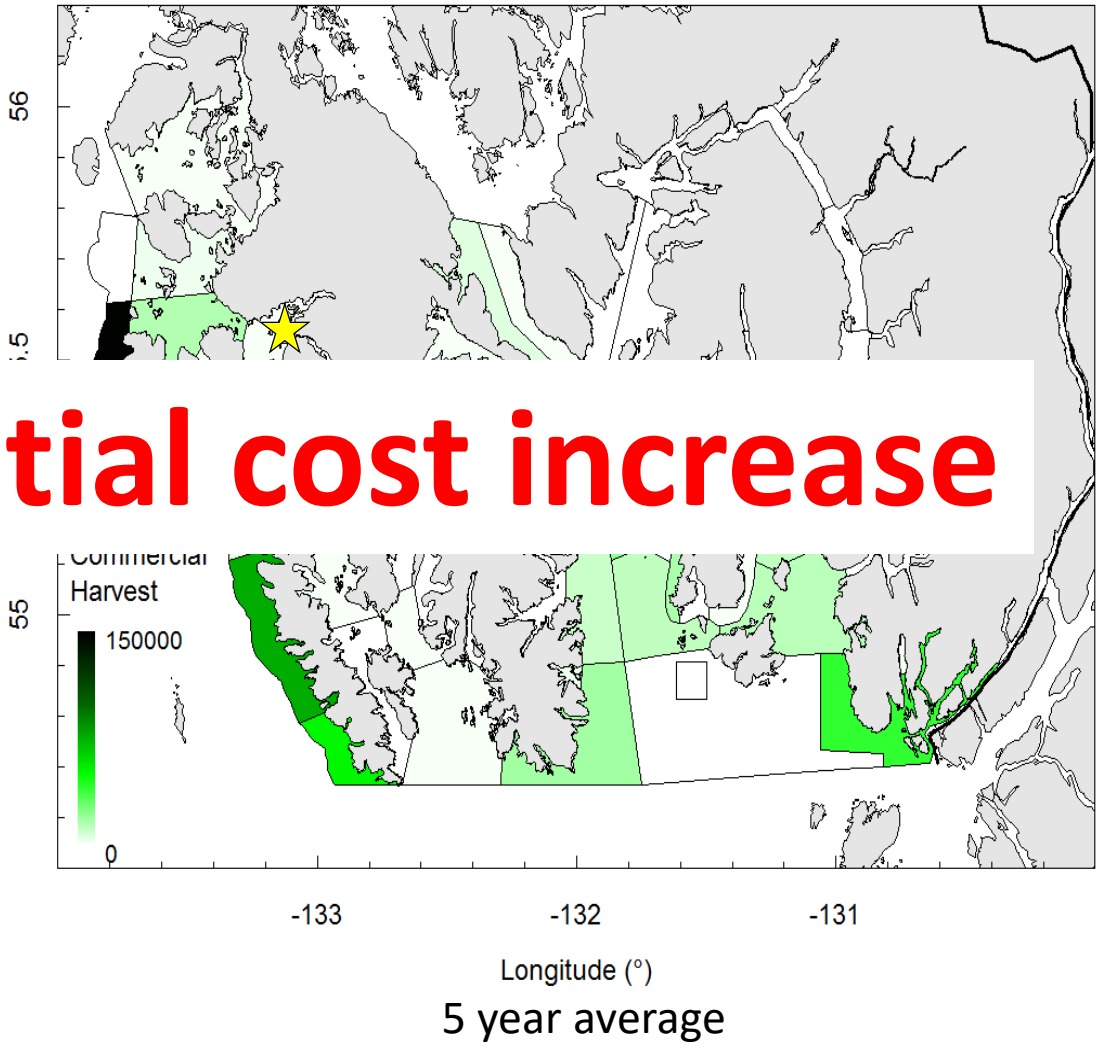


5 year average

Where and When are Klawock Sockeye Being Harvested in District 103?

- 350 samples/season.
- Increase sample size
- More stat
- Ideally, ke[illegible] samples from north and south 103 separate
- 200 samples/wk minimum for temporal estimates

Substantial cost increase



5 year average

District 103 Summary

- We are funded to run 1,500 samples divided among 3 districts (one of them is 103)
- The average number of samples we analyze for District 103 is ~ 350/year
- We recommend a minimum of 3 years of data


Questions?