

# Smolt abundance monitoring in the Chehalis River



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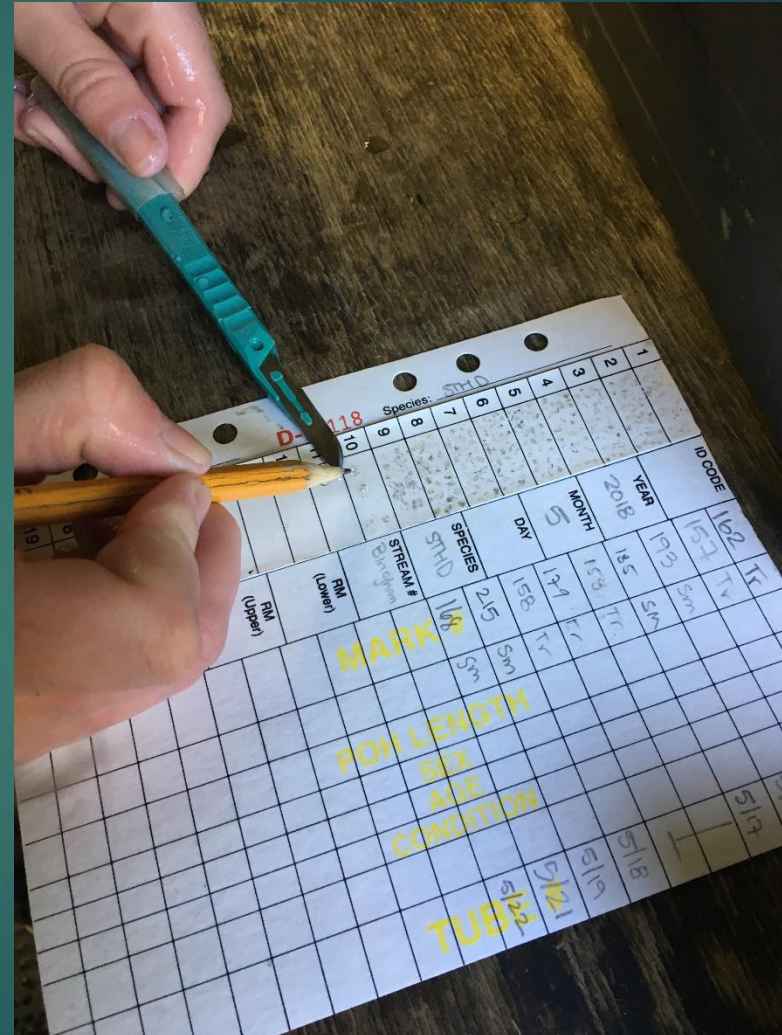


# Outline

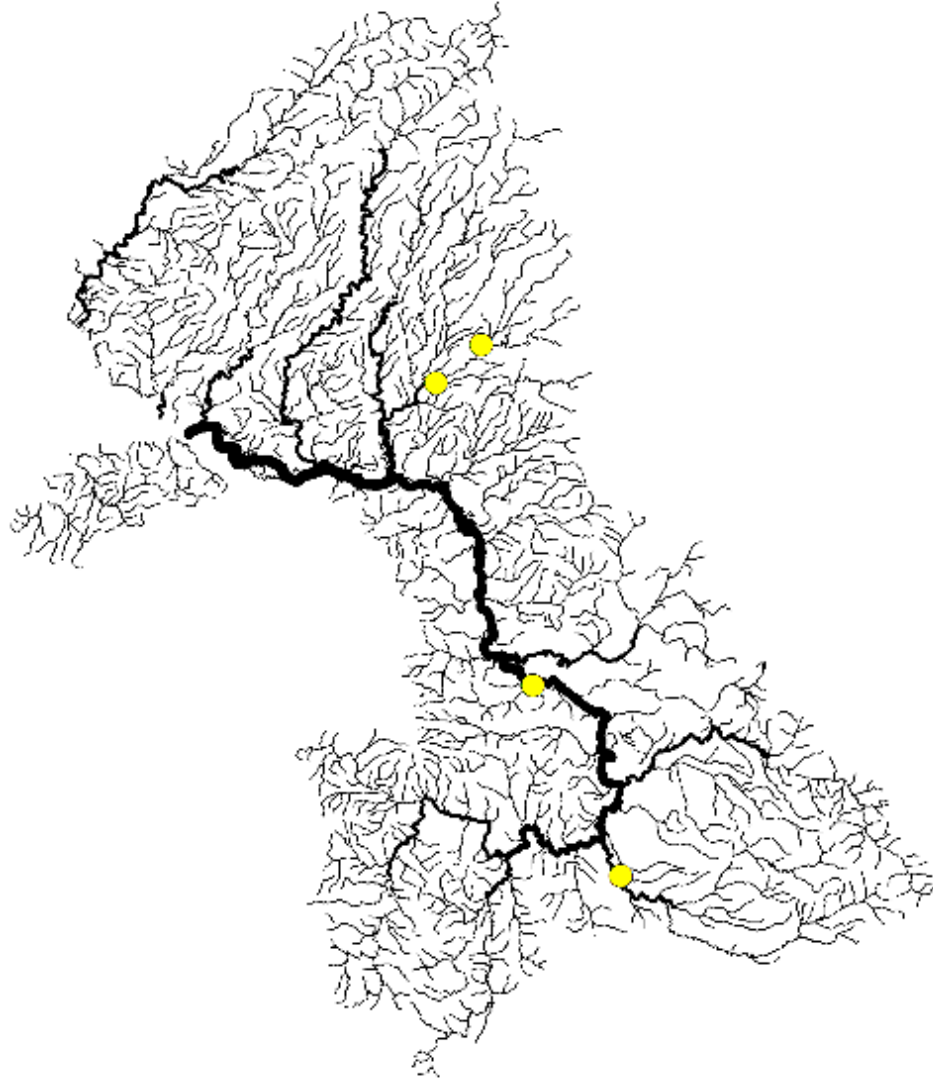
- ▶ Study Goals
- ▶ Trap details
- ▶ Methods
- ▶ Results
- ▶ Discussion
- ▶ Past and current reports will be available online under WDFW publications (<https://wdfw.wa.gov/publications>)

# Study Goals

- ▶ Describe freshwater production (abundance, timing, and diversity) of salmon and steelhead in Chehalis River and select tributaries.



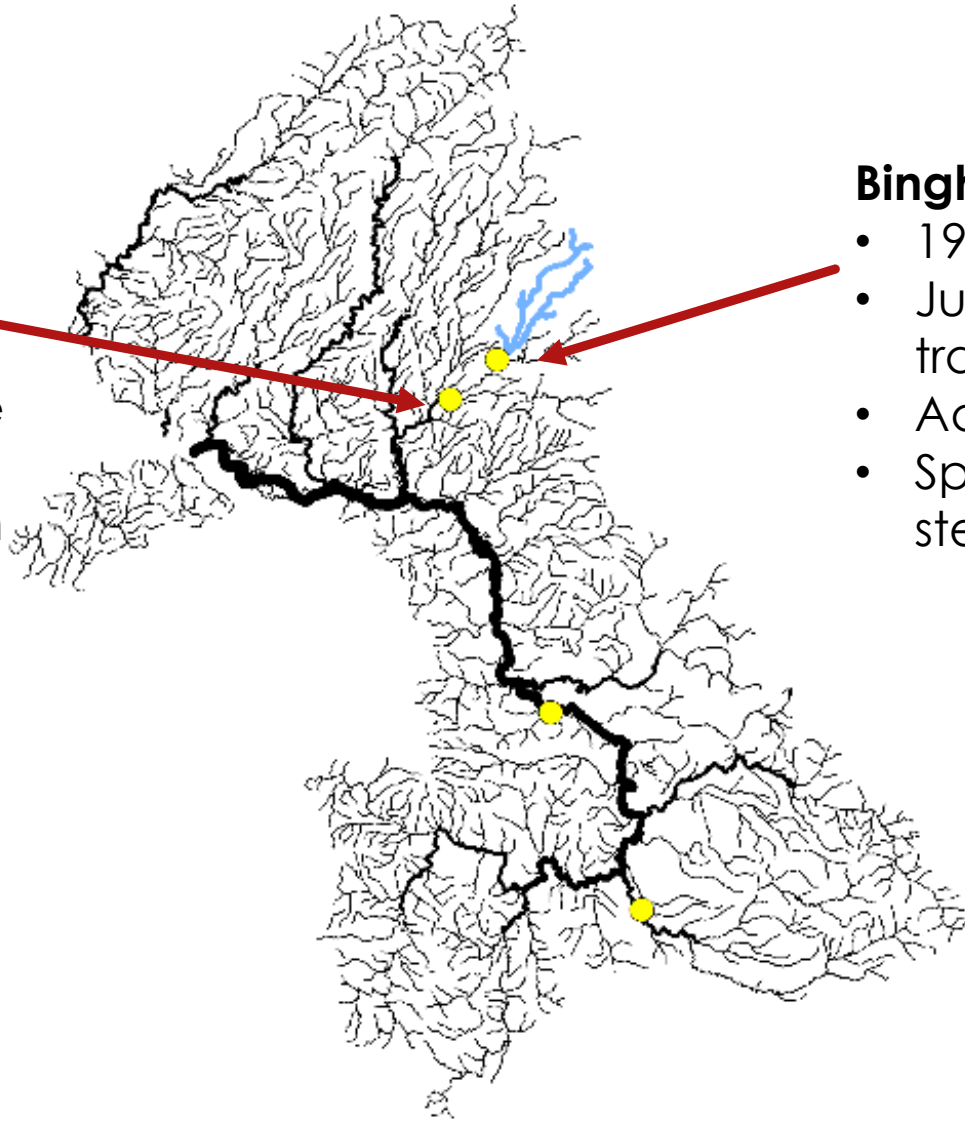
# Trapping Locations



# Trapping Locations

## Satsop Chum

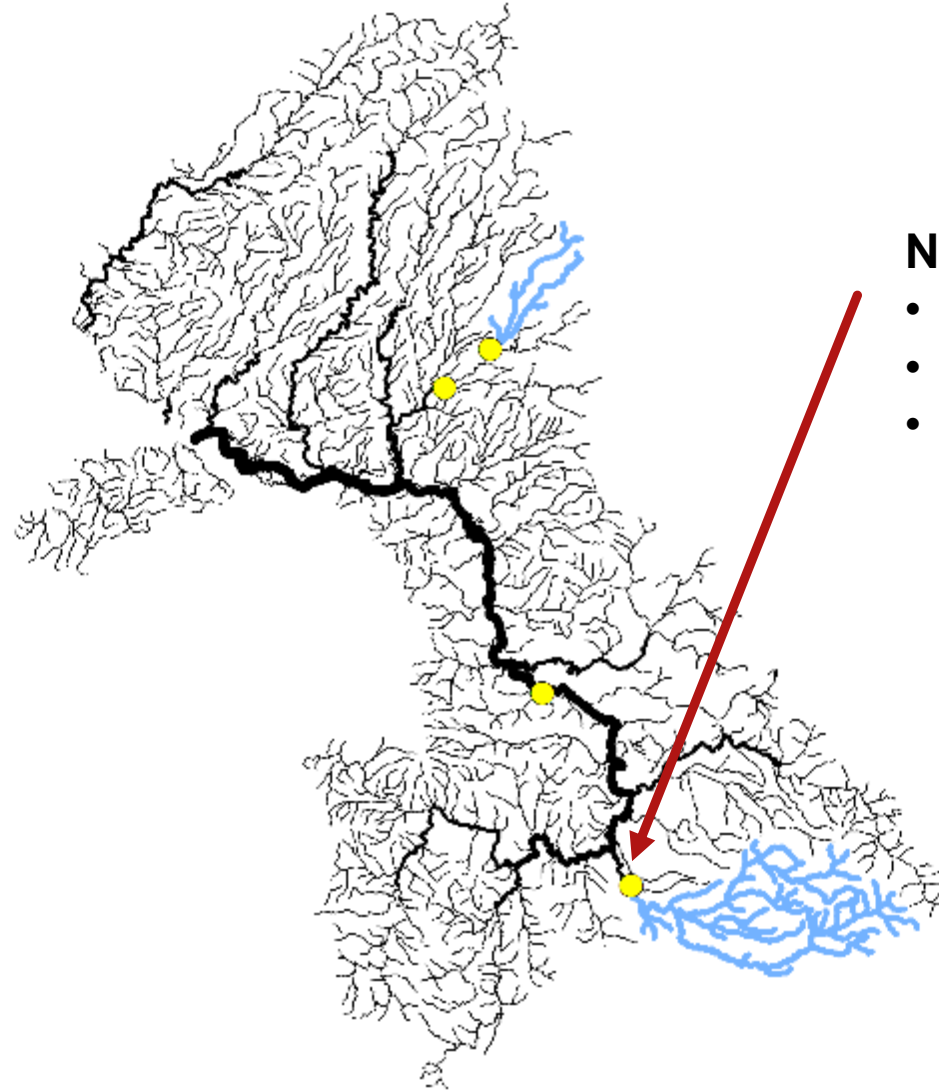
- 2019
- Juvenile fence weir
- Species: chum



## Bingham Creek

- 1982- 2019
- Juvenile fan traps
- Adult trap
- Species: coho, steelhead

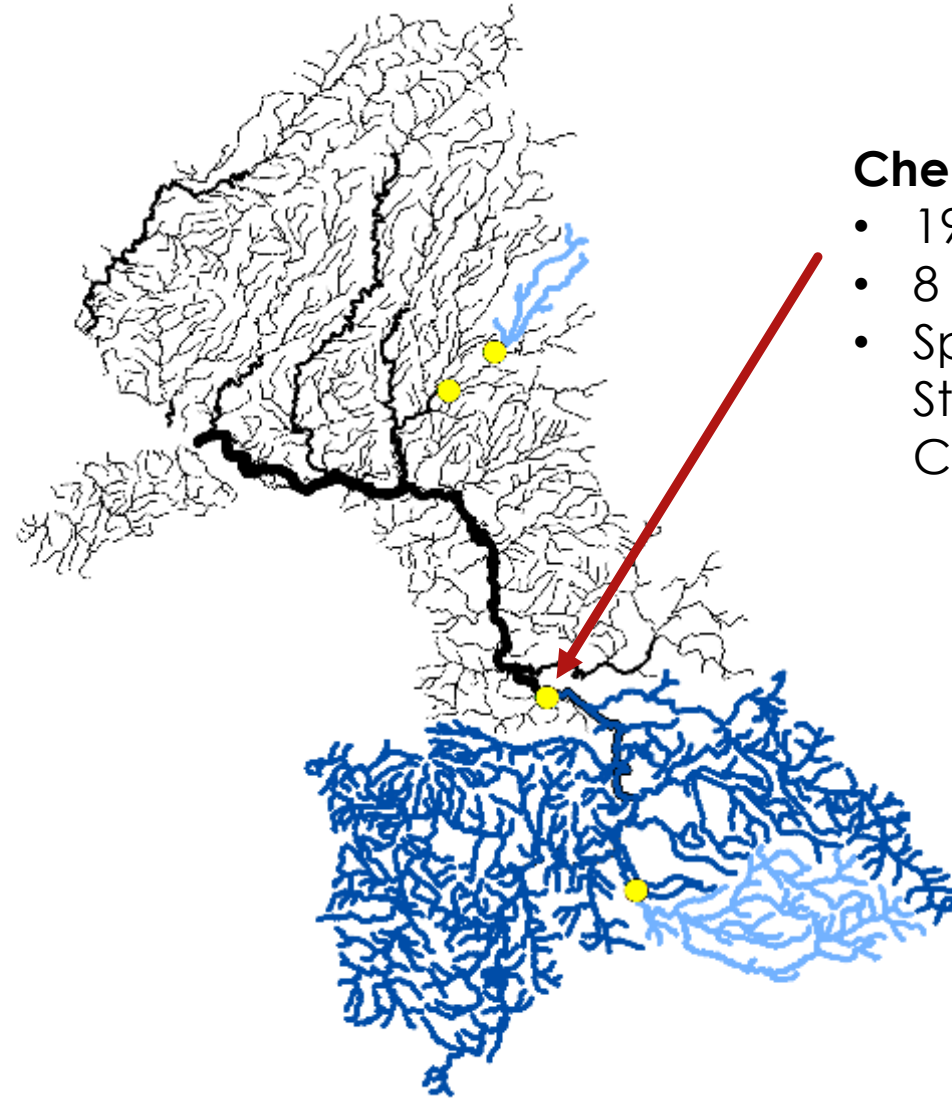
# Trapping Locations



## **Newaukum River**

- 2019
- 5ft Screw Trap
- Species:  
Chinook, coho,  
steelhead

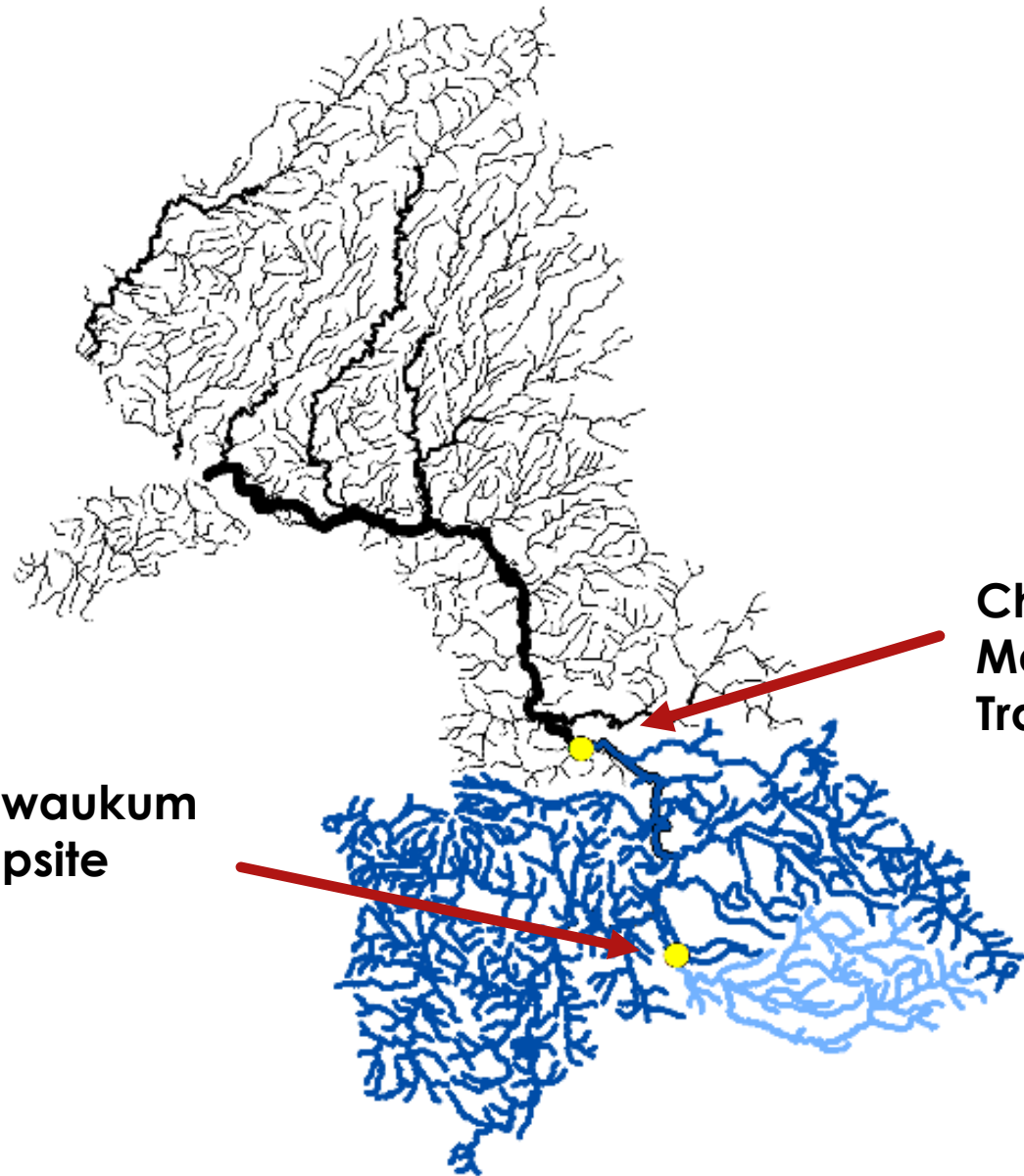
# Trapping Locations



## **Chehalis Mainstem**

- 1999-2019
- 8 ft Screw Trap
- Species: Coho, Steelhead, Chinook

**Newaukum  
Trapsite**



**Chehalis  
Mainstem  
Trapsite**



# Tools for the job

- ▶ Rotary Screw Traps
- ▶ Chehalis & Newaukum Rivers



# How we produce abundance estimates

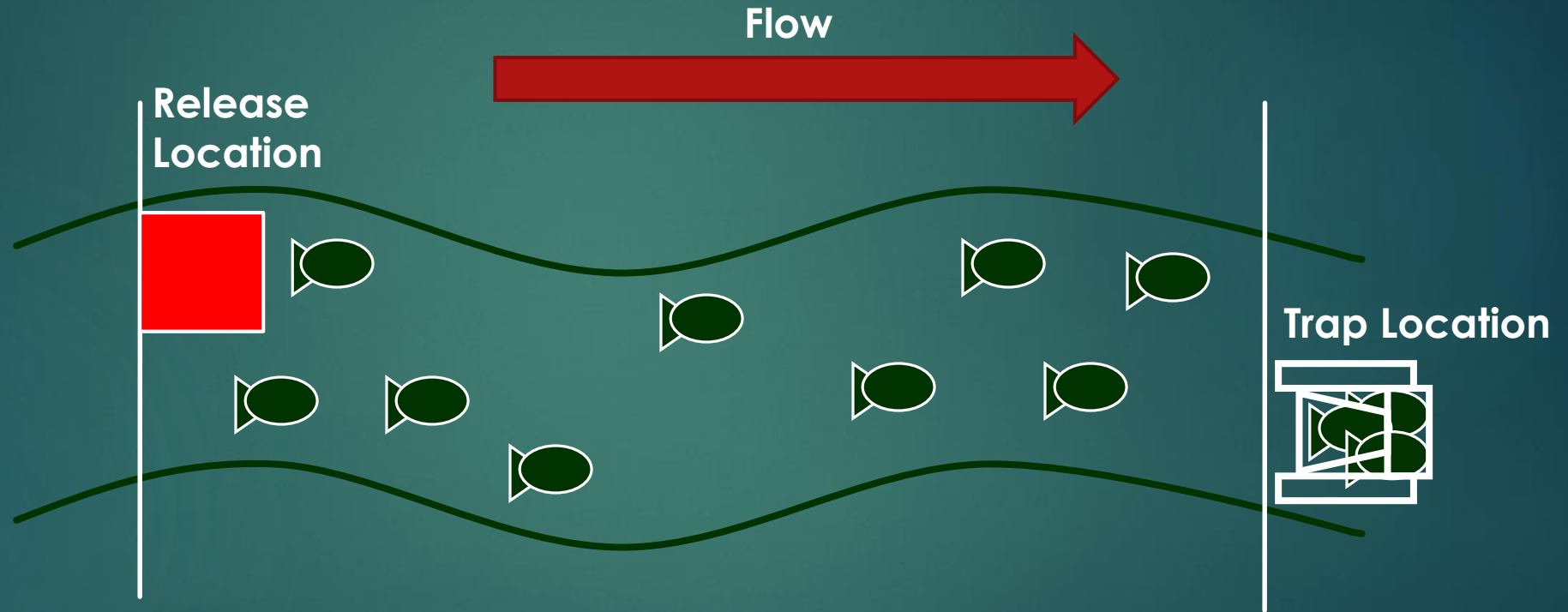
## Efficiency Trials

- Mark Recapture (VIE, PIT, PCC)



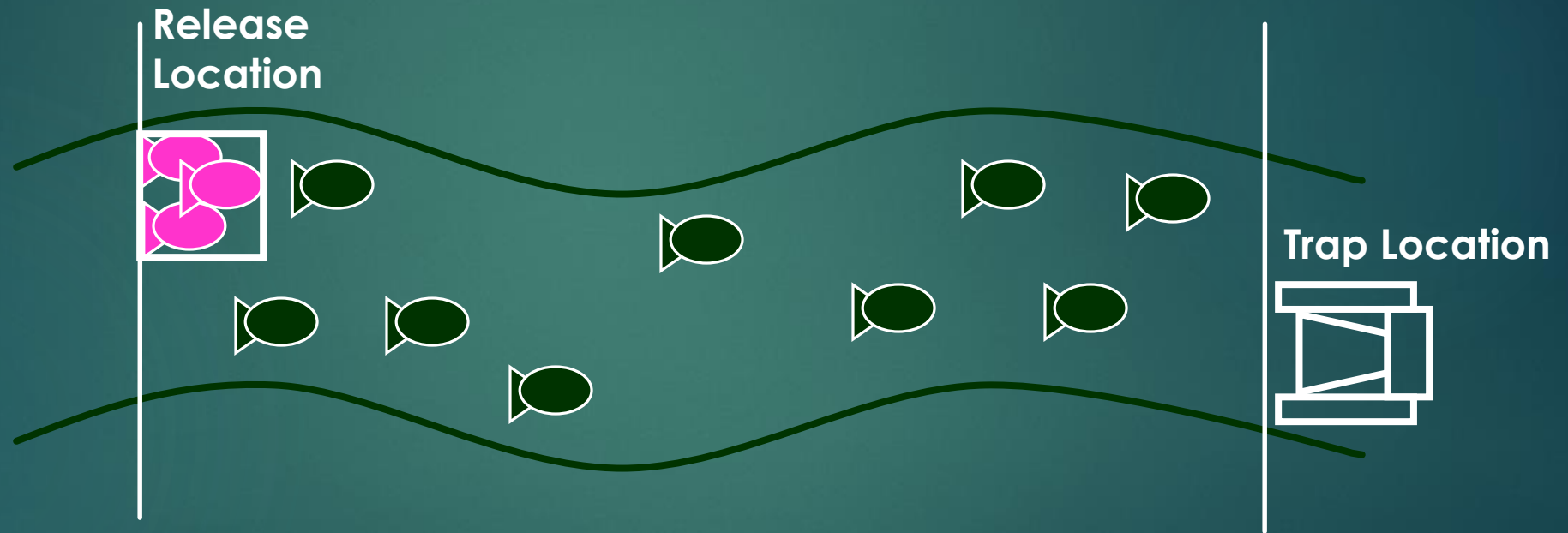
Photo credit: Dan Olson

# Trap Efficiency



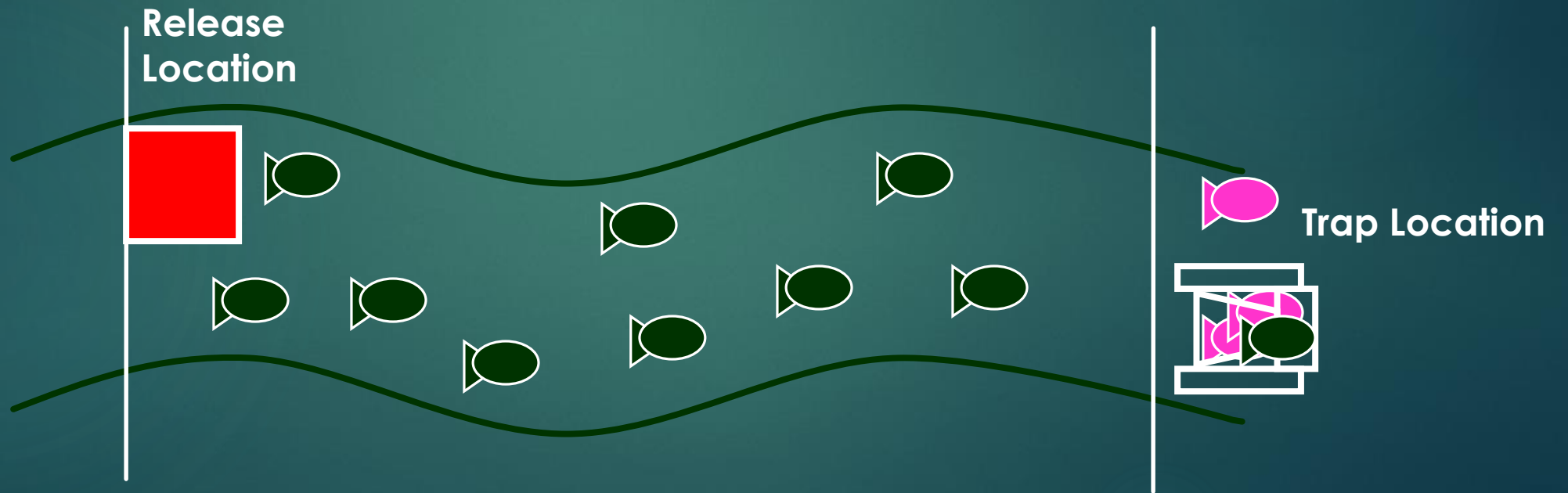
# Trap Efficiency

marked fish are released

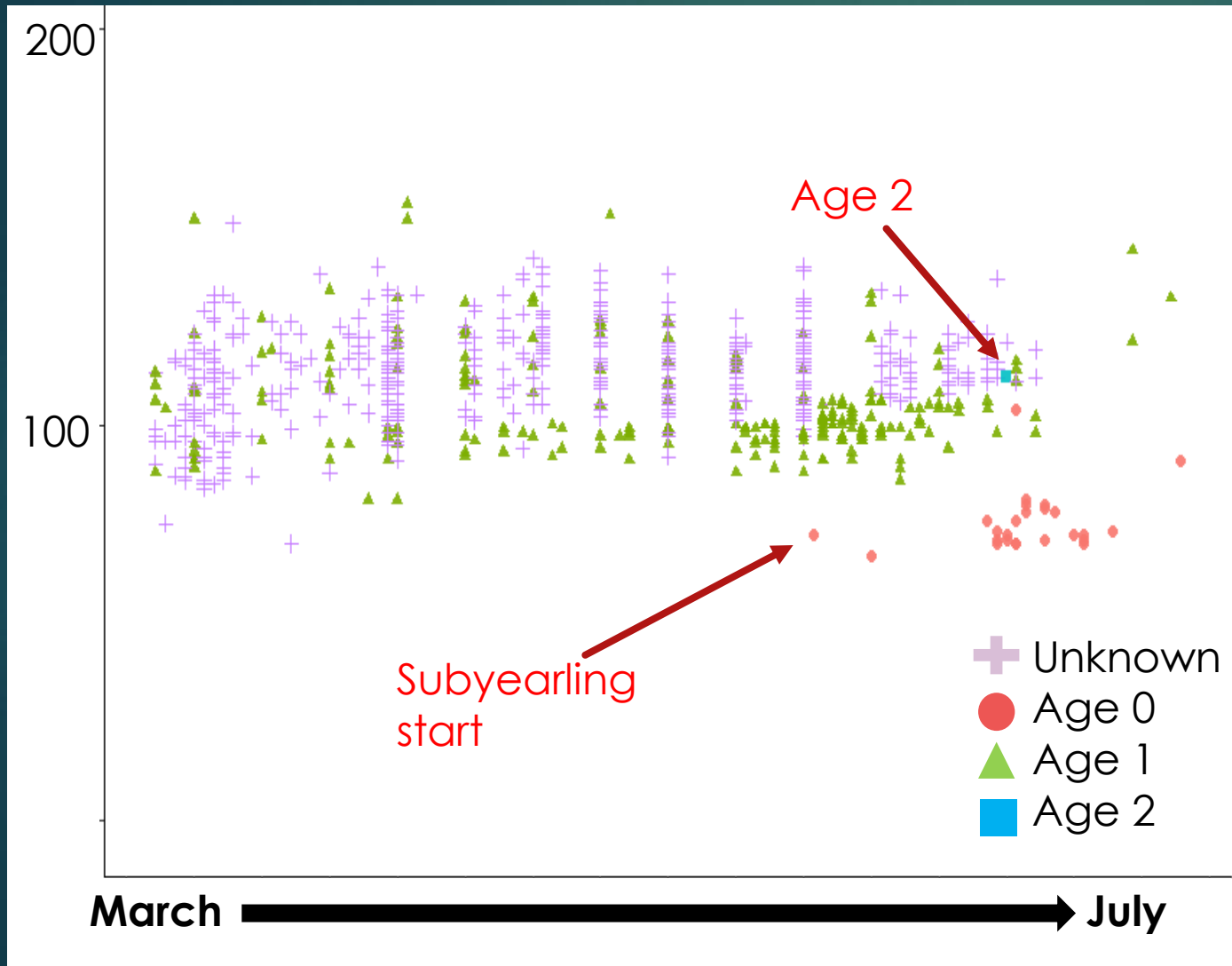


# Trap Efficiency

some portion of marked fish are recaptured

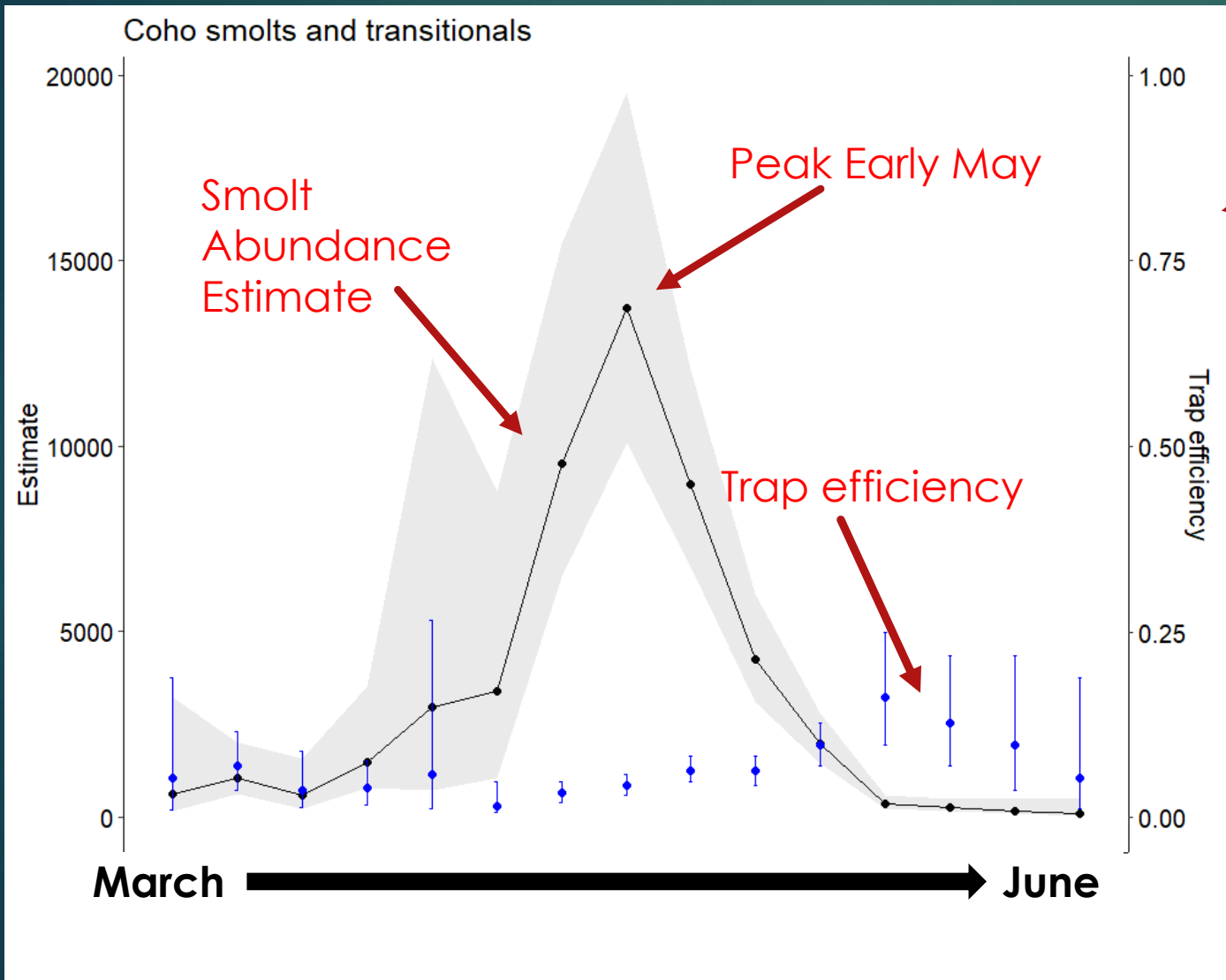


# Newaukum 2019 Scale age data by length and date for coho smolts



- Predominantly age 1 outmigrants
- Subyearling outmigrants starting in May
- Size Range ~80-140 mm Fork length

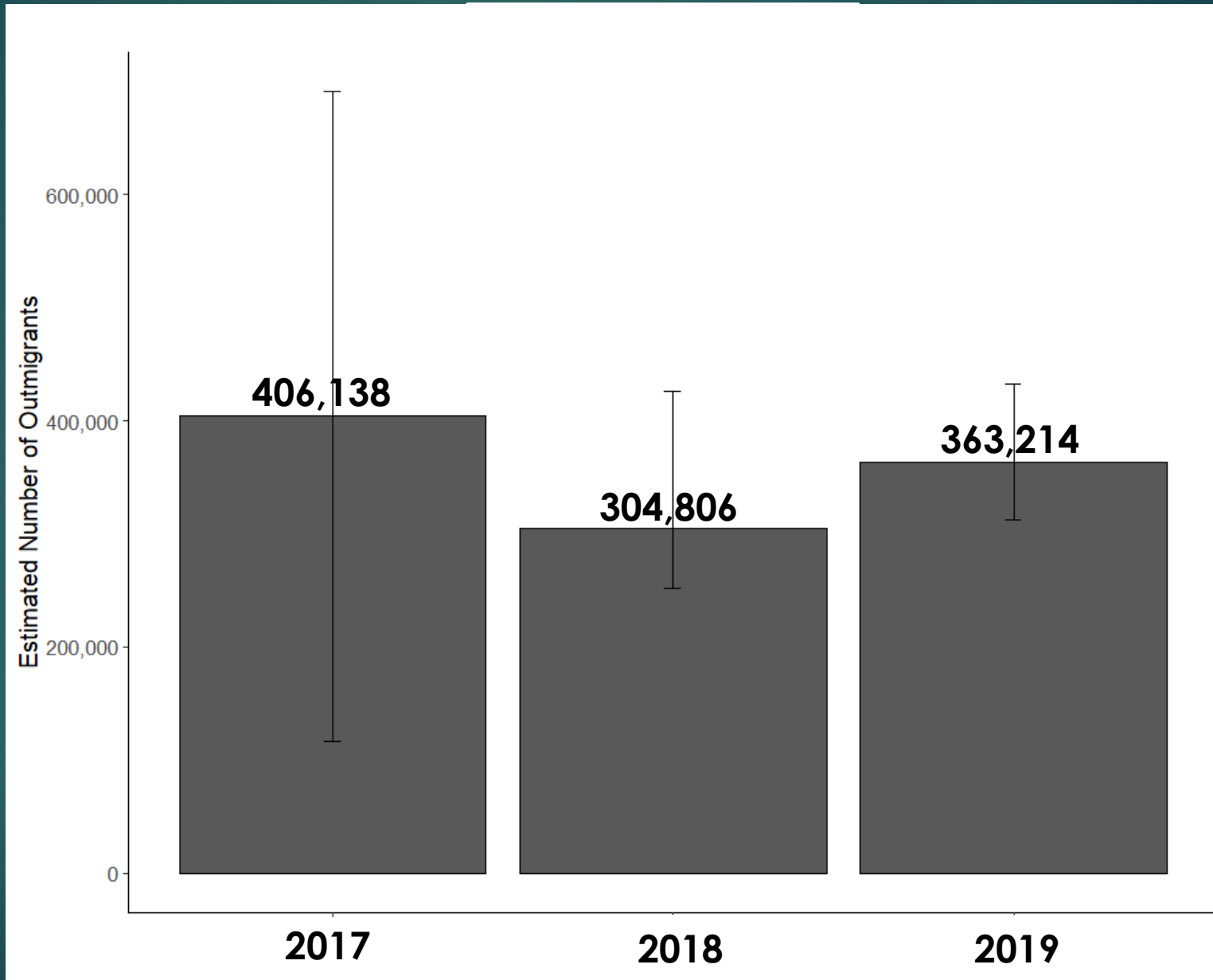
# Estimating Newaukum 2019 Coho Smolt Abundance



Newaukum = 51,228 ± 3,820 SD

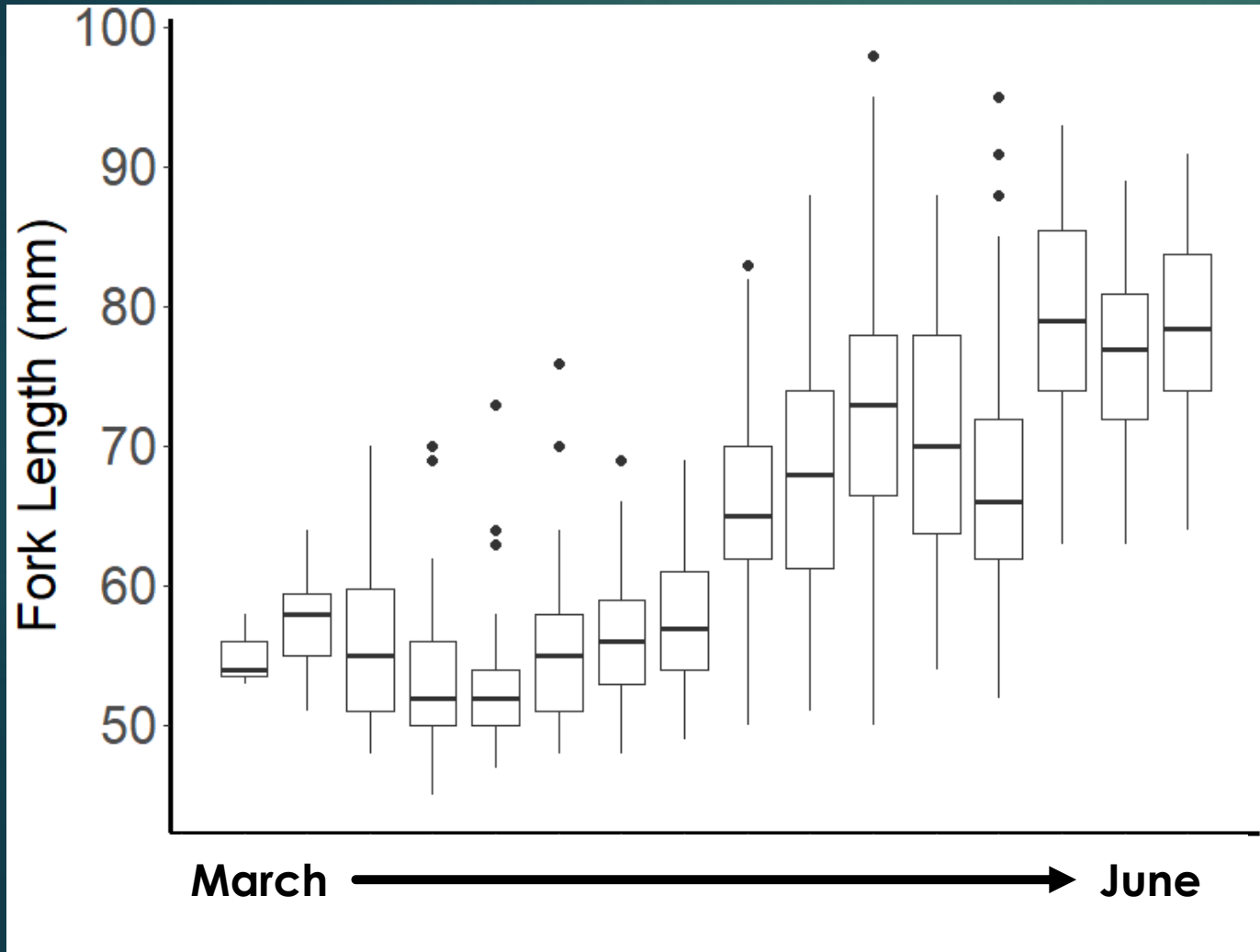
Chehalis mainstem = 363,214 ± 31,169 SD

# Chehalis mainstem coho estimates



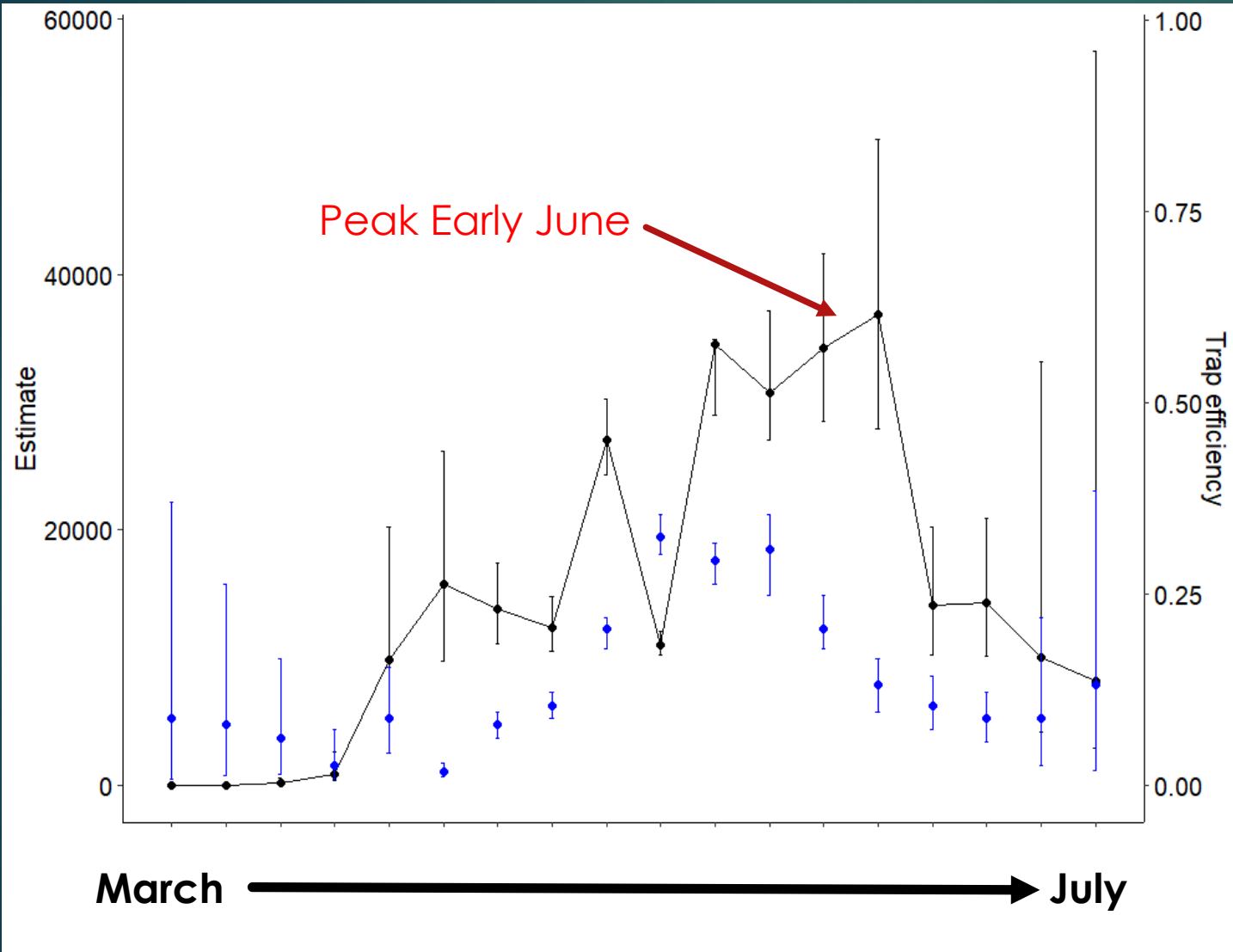


# Newaukum 2019 Fork length and date plot for Chinook Smolts



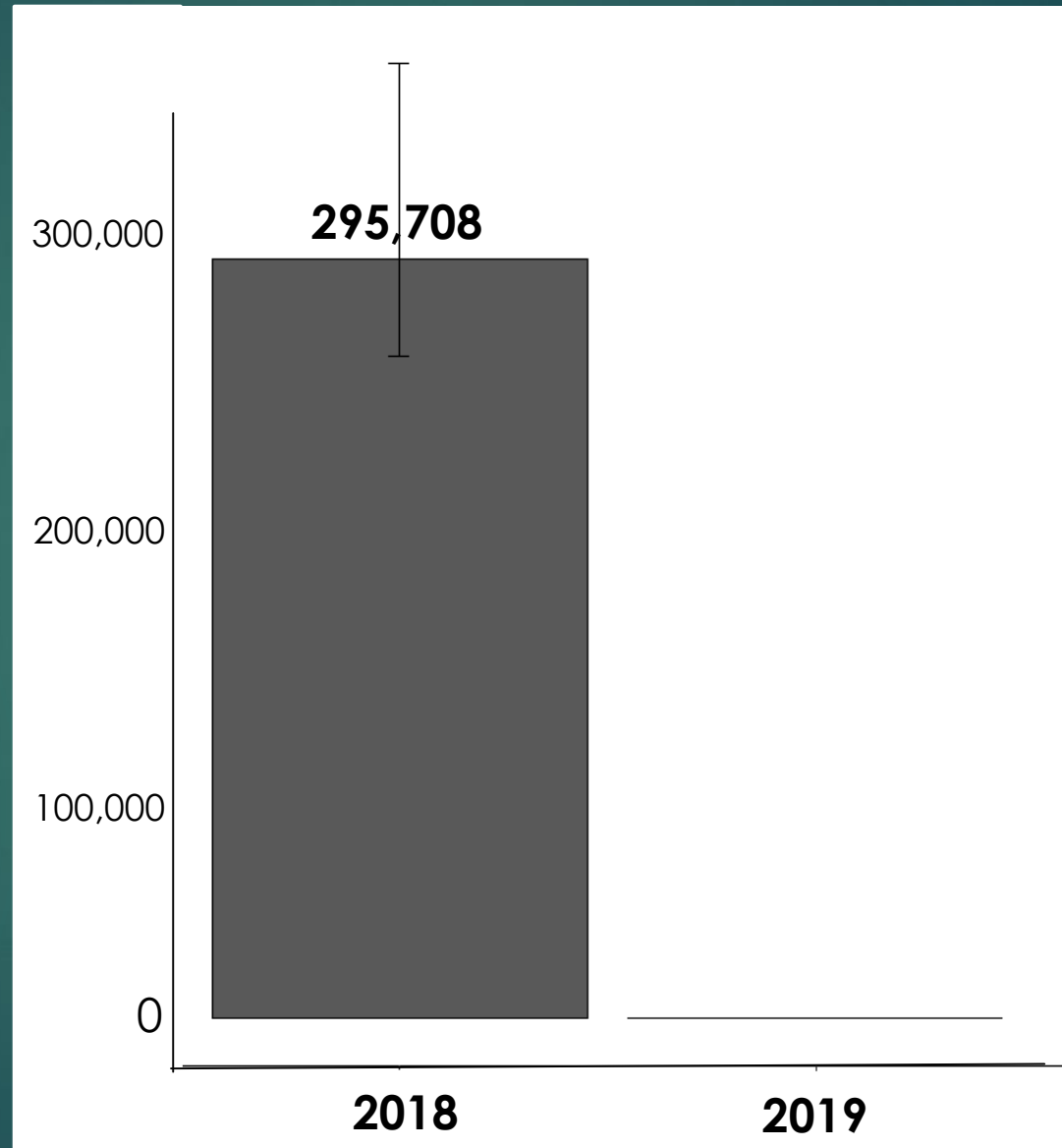
- Not aged, all assumed to be subyearling
- Chinook smolts increased steadily in size over the trapping season
- Size range ~50 – 80 mm
- First weeks average 55 mm  
Last weeks average 78 mm

# Estimating Newaukum 2019 Chinook Smolt Abundance

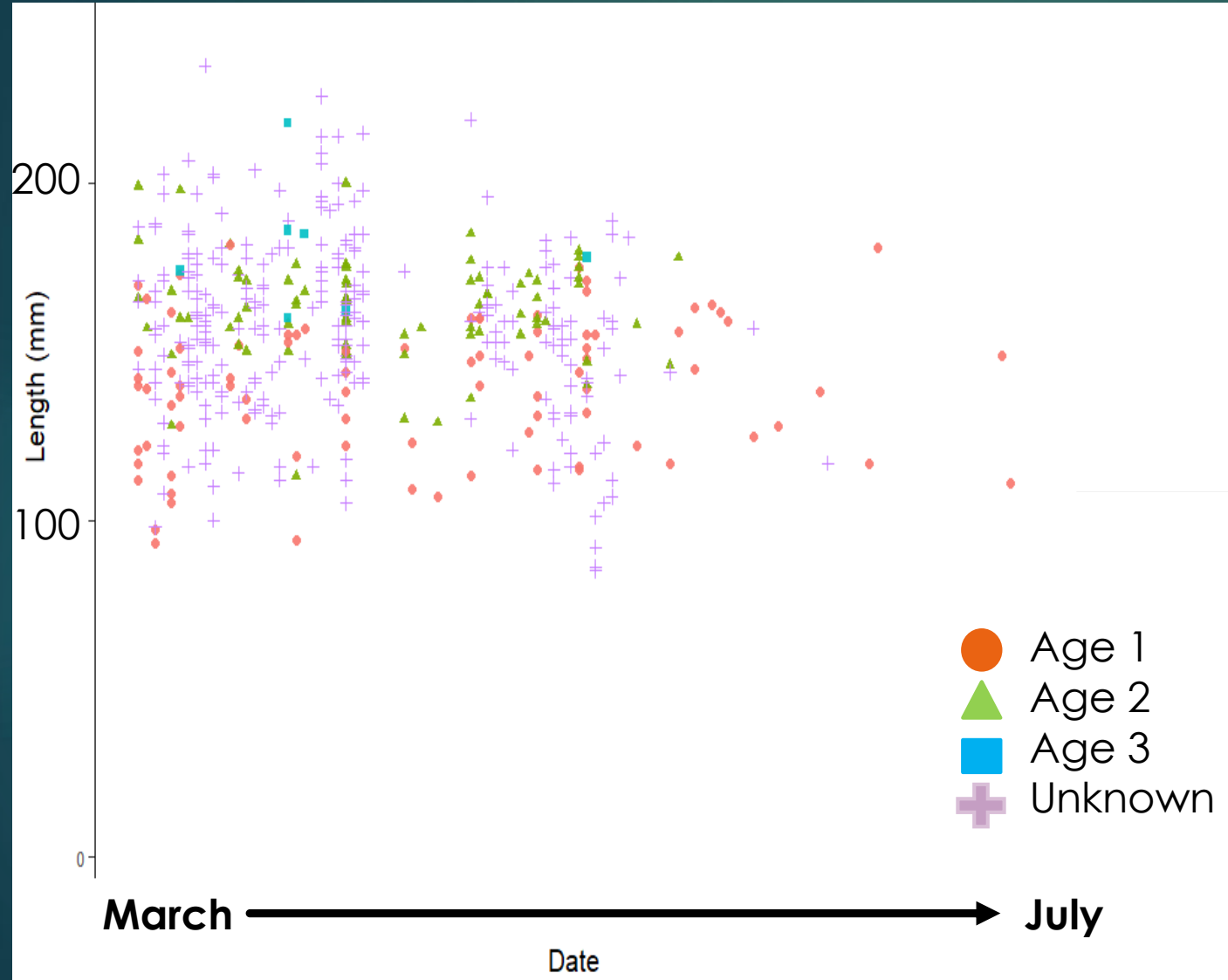


**Newaukum River  
Abundance Estimate  
= 277,109 ± 33,482 SD**

# Chehalis mainstem Chinook estimates



# Newaukum 2019 scale age data by length and date for steelhead smolts



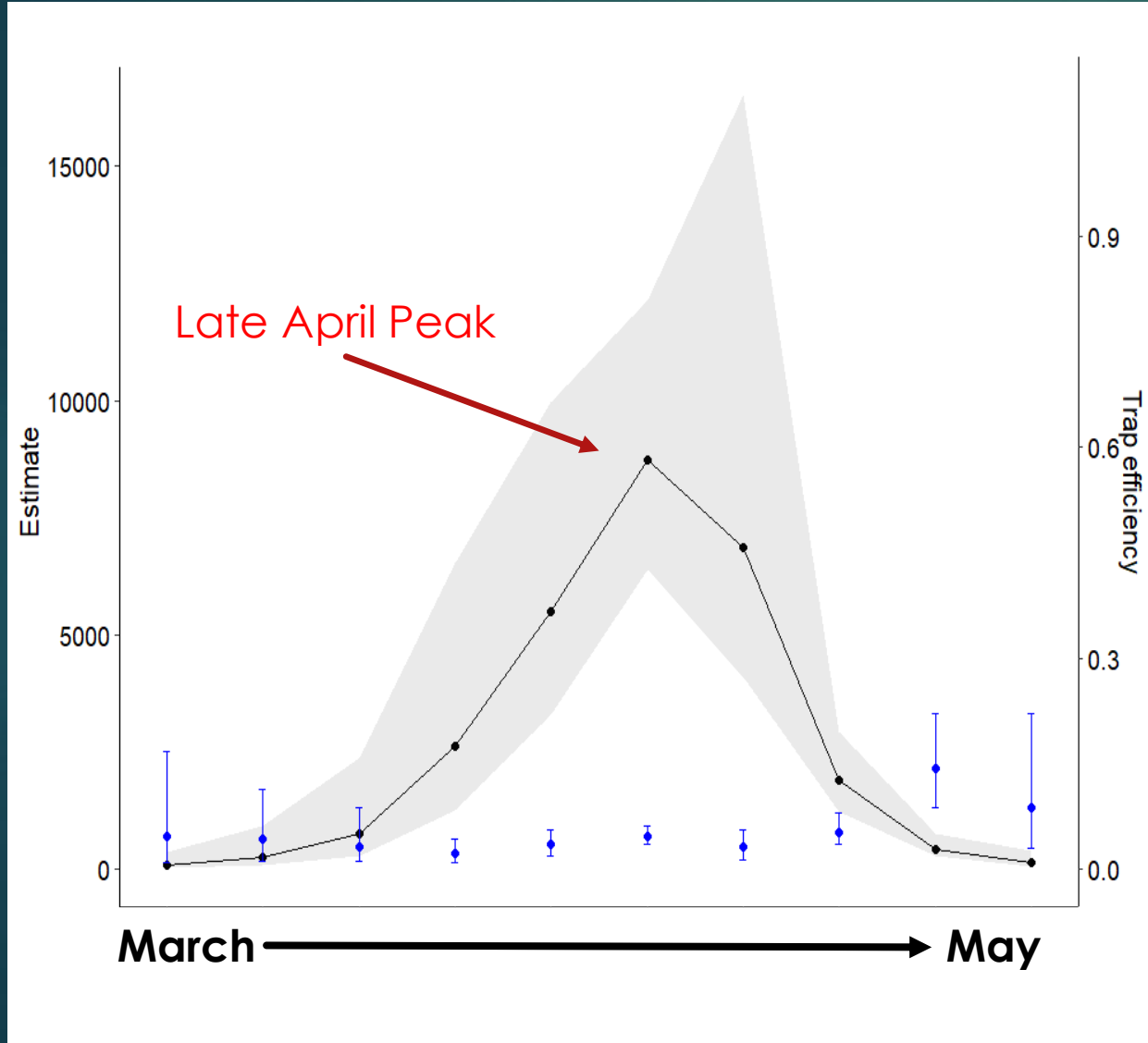
Age 1 - 51%

Age 2 - 45%

Age 3 - 4%

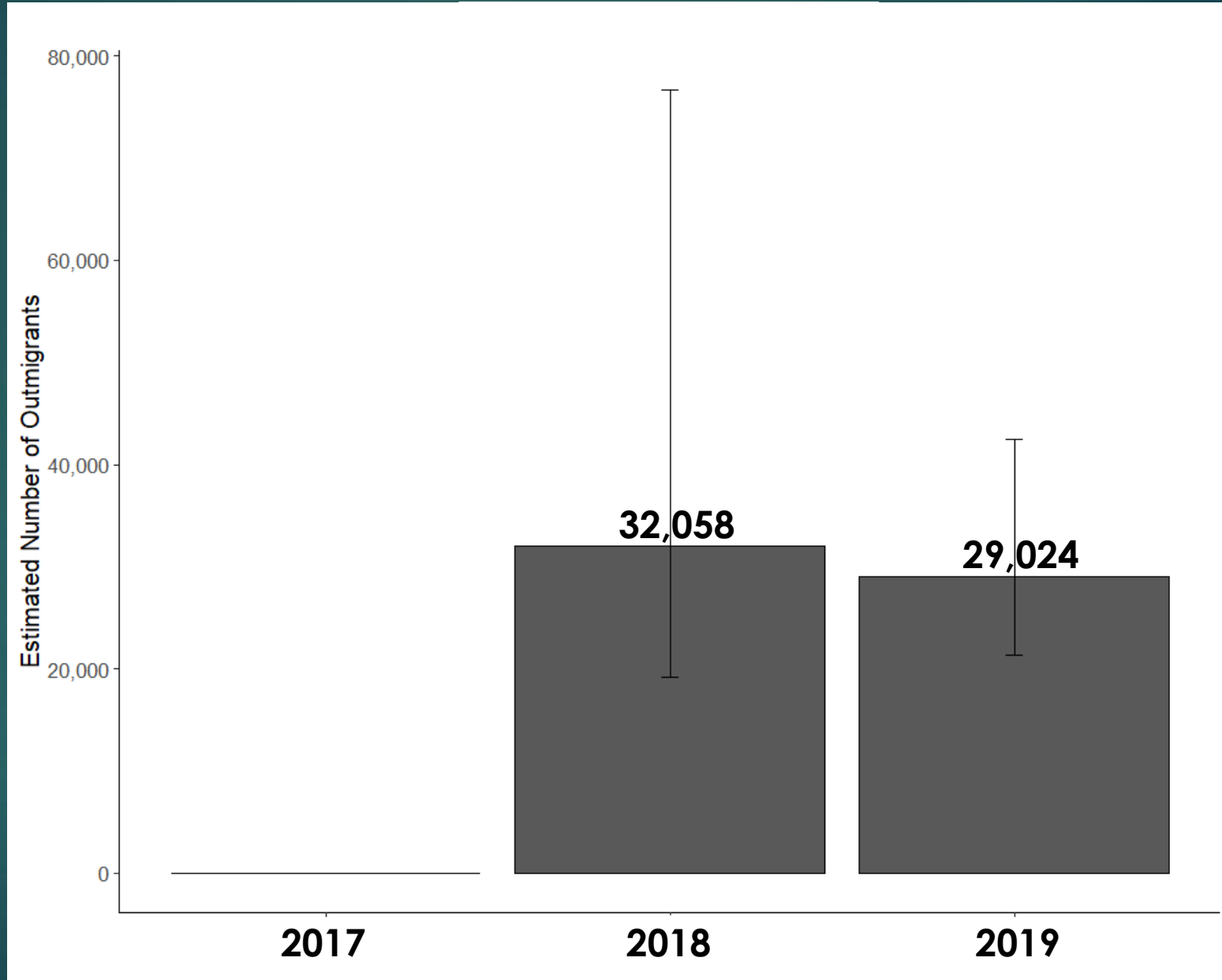
Diverse age structure

# Estimating Chehalis 2019 Steelhead Smolt Abundance



**Chehalis Mainstem  
Abundance Estimate  
= 29,024 ± 5,343 SD**

# Chehalis mainstem steelhead estimates



# Discussion

- ▶ Status and trends of salmon and steelhead smolt populations
- ▶ Gathering baseline information prior to restoration or other habitat alterations
- ▶ Monitoring biological response to restoration or other habitat alterations
- ▶ Partitioning population estimates by sub basins or eco regions
- ▶ Life cycle monitoring : Smolt + Adult data = Marine and freshwater survival.



# Acknowledgments

- ▶ Chehalis Tribe and private land owners for site access
- ▶ Thanks to Washington State Legislature for funding
- ▶ Thanks to all our technicians : Bryan Blazer, Samuel Williams, Shayne Noble, Andrew Kirwan, Daniel Olson, Tony Bielinski, and Caitlin McNamara, Allison Pardis, Brent Haverkamp, Jordon Erlenbach, Steven Fredrickson



# THE END

## QUESTIONS?



Photo credit: John Winkowski