# Grays Harbor Fall Chum
## Abundance and Distribution

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# Background

- Why are Chum important to Grays Harbor?
  - Marine derived nutrients!
  - Fisheries management implications

# Background

- "In order to meet management needs a broader based more representative methodology to estimate chum salmon escapements is required."

  *- Rick Brix, **1978** Grays Harbor Chum Salmon Escapement Estimation WDFW*

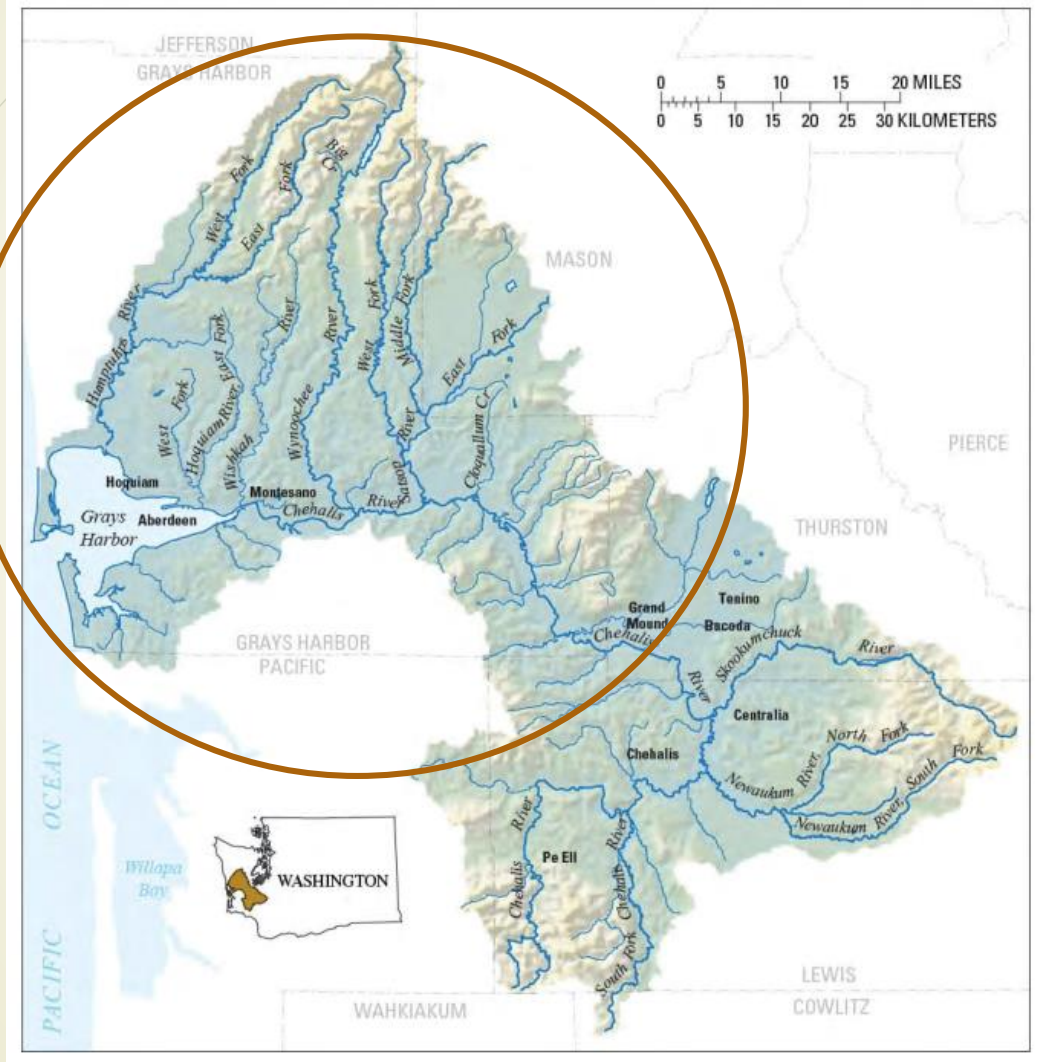
- What is missing with existing methodology?
  - Abundance
  - Distribution

# Project Goals

Photo by Thomas Kline, Salmonography

- Derive a Chum spawner abundance estimate
- Determine distribution of Chum spawning
- Inform restoration planning models
- Update historical estimates and future protocols

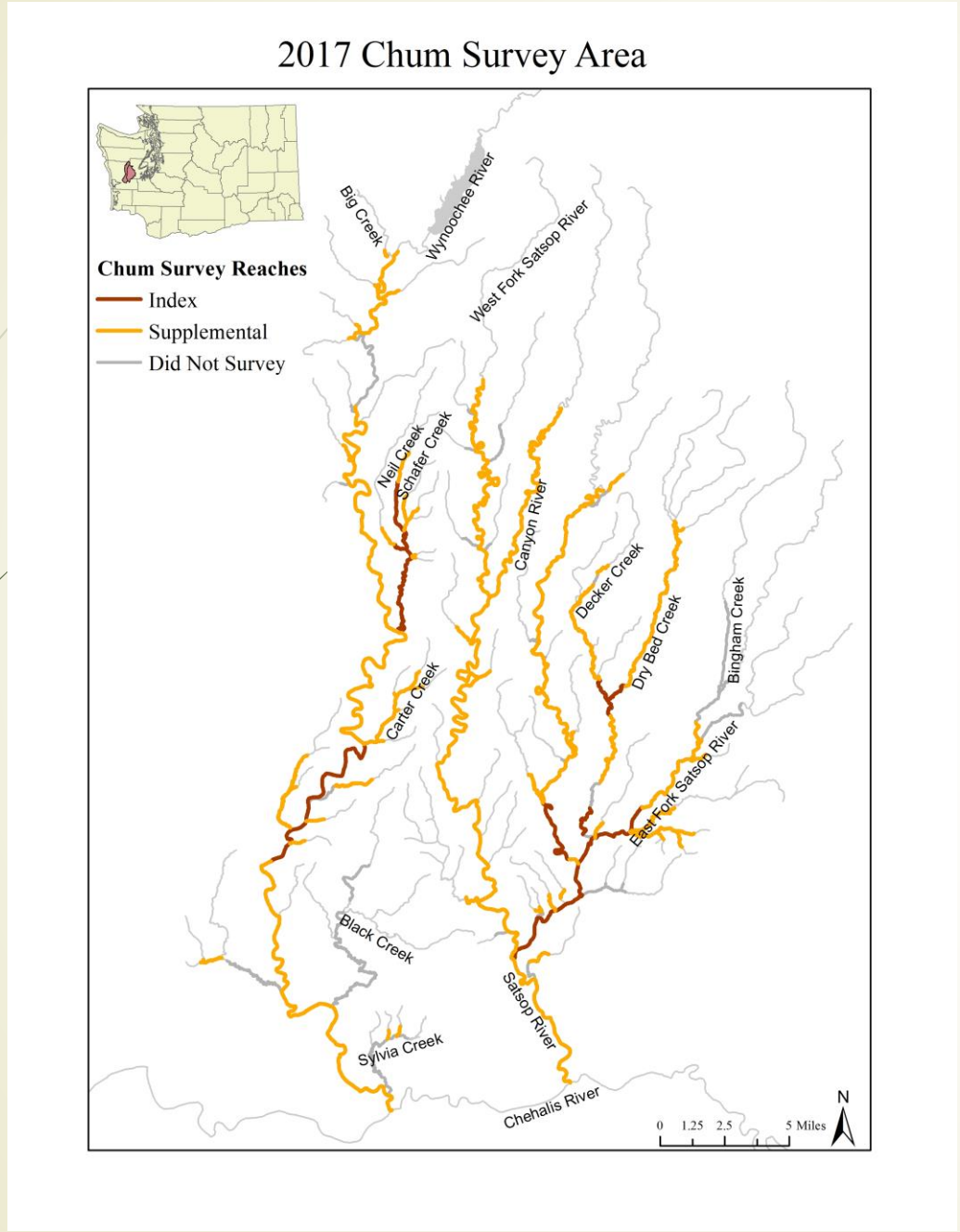
# Where to Survey for Chum?




*The Chehalis River Basin (Chehalis Basin Flood Hazard Mitigation Alternatives Report, 2012)*

Schafer Creek

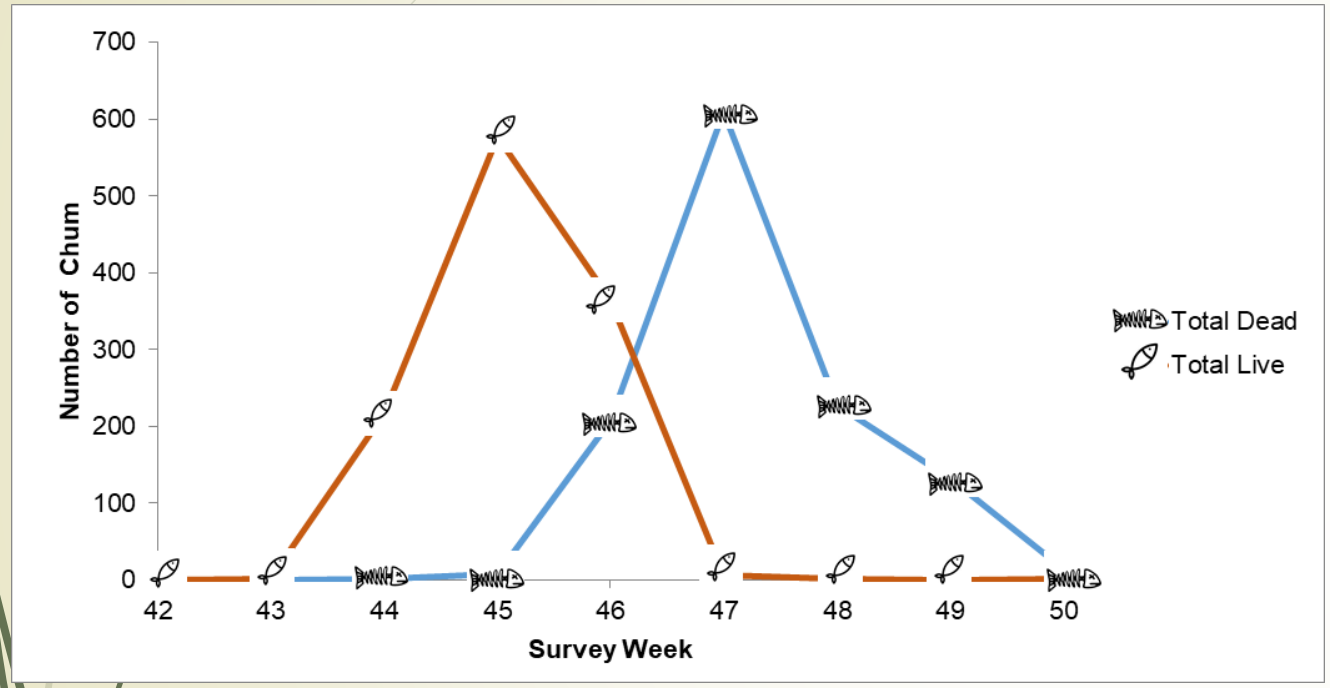
Wynoochee River




# How do we count Chum?

- Index reaches surveyed weekly
- Supplemental reaches surveyed one time during peak spawning

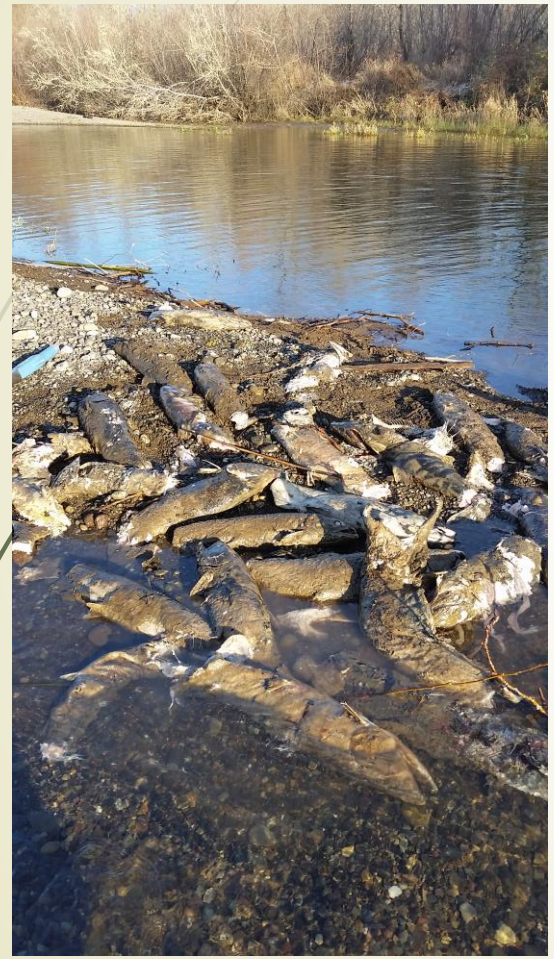
# Chum Counts in Index Reaches




- 24 indexes successfully surveyed in 2017
- Wynoochee: 8 indexes covering 14.2 miles
- Satsop: 16 indexes covering 16.6 miles

Photo by McQ Travels

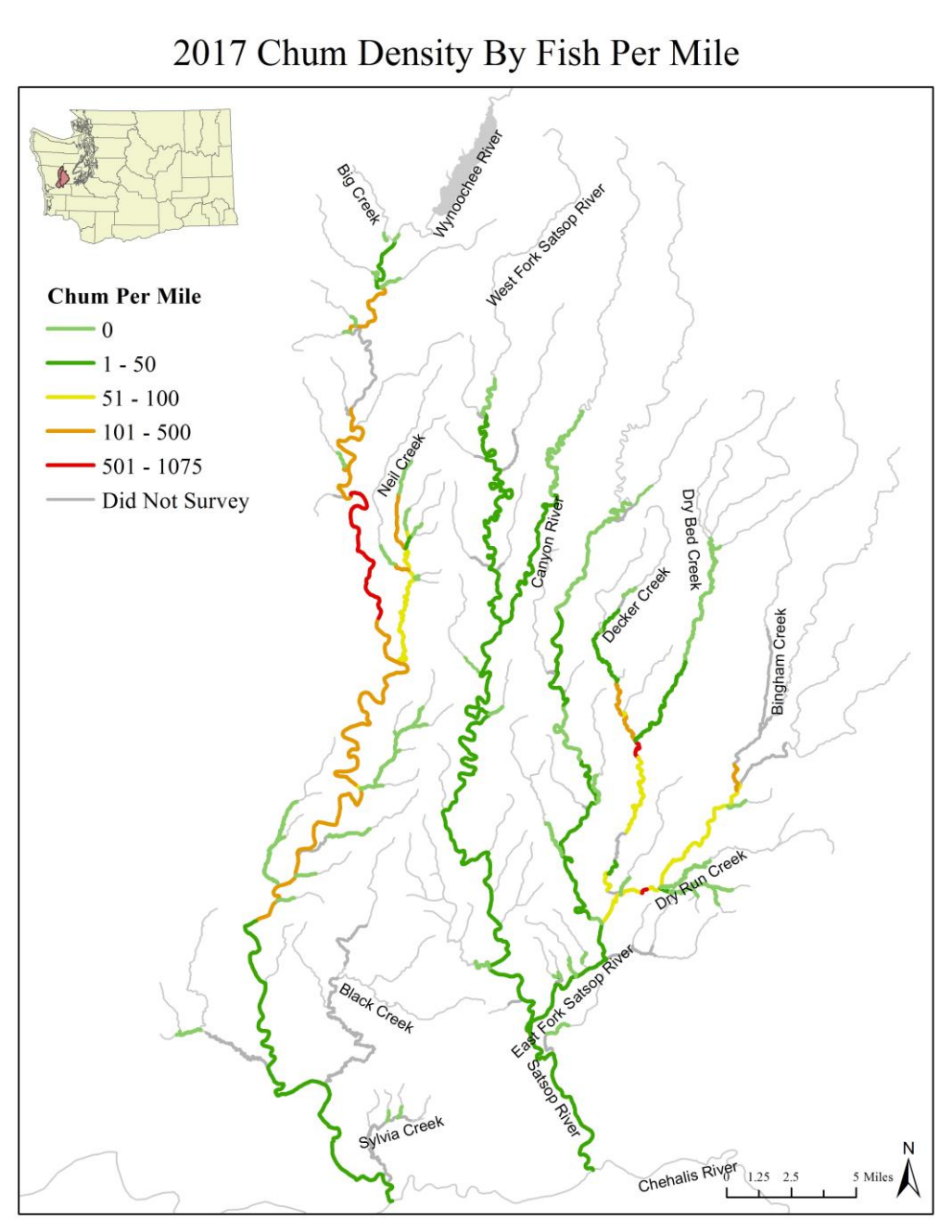
# Chum Abundance in Index Reaches



- Carcass Tagging
- Mark & Recapture estimate abundance
- Provides independent abundance estimate to compare to live counts

# Application to Historical Estimates

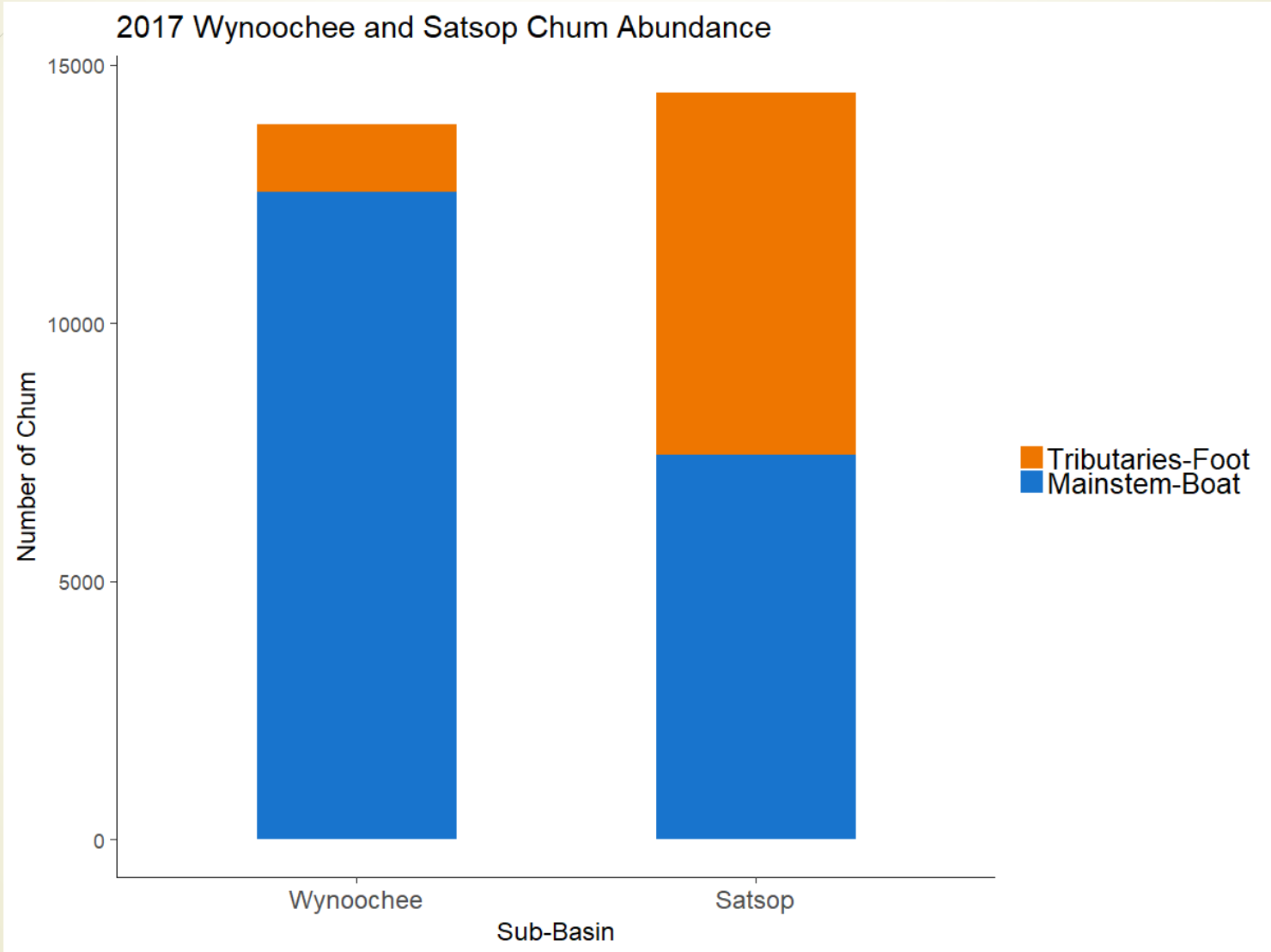
$$\text{Apparent Survey Life} = \frac{\text{Sum of Live Counts}}{\text{Carcass Tagging Estimate}}$$

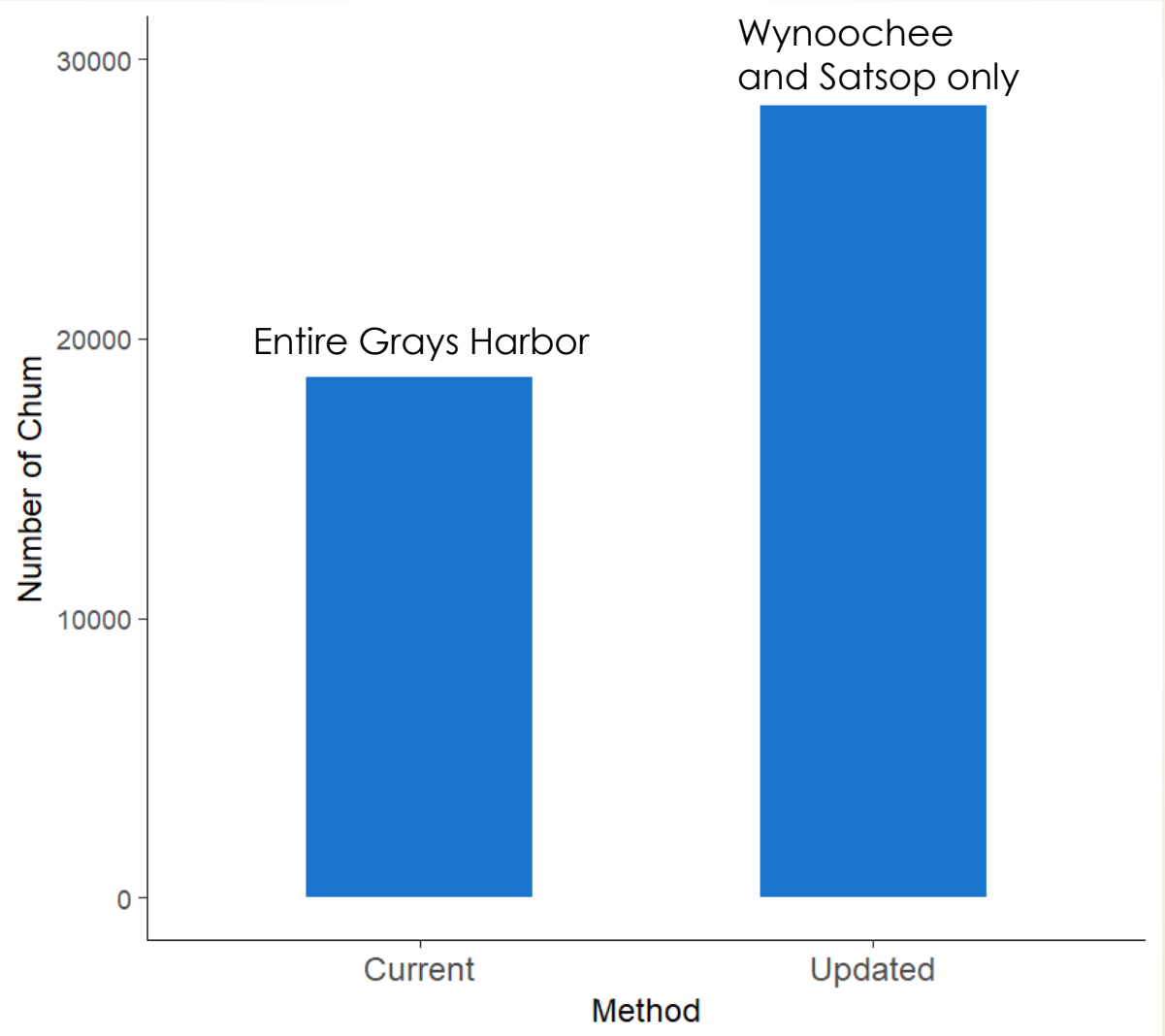

# Chum Distribution

- Wynoochee: 51.1 miles of spawning observed
- Satsop: 81.0 miles of spawning observed
- Spawning concentrated in 'hot-spots'
- New and old 'hot-spots' identified

# Chum Abundance Estimates



# How similar are the two methods?



# What have we learned?

- Current estimate of Chum abundance appears to be low
- Chum use the Wynoochee and Satsop sub-basins extensively
- High densities of spawning are in concentrated areas

# Moving Forward with Grays Harbor Chum

Photo by Pat Clayton

- Cover the rest of known Chum spawning areas (ex. Humptulips)
- Identify additional areas of high density spawning in different stream sizes
- Develop new protocols to improve future estimates

# Acknowledgements and Questions

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