INFORMATION NEEDS FOR MANAGING NATIVE WINTER STEELHEAD IN THE UPPER WILLAMETTE RIVER

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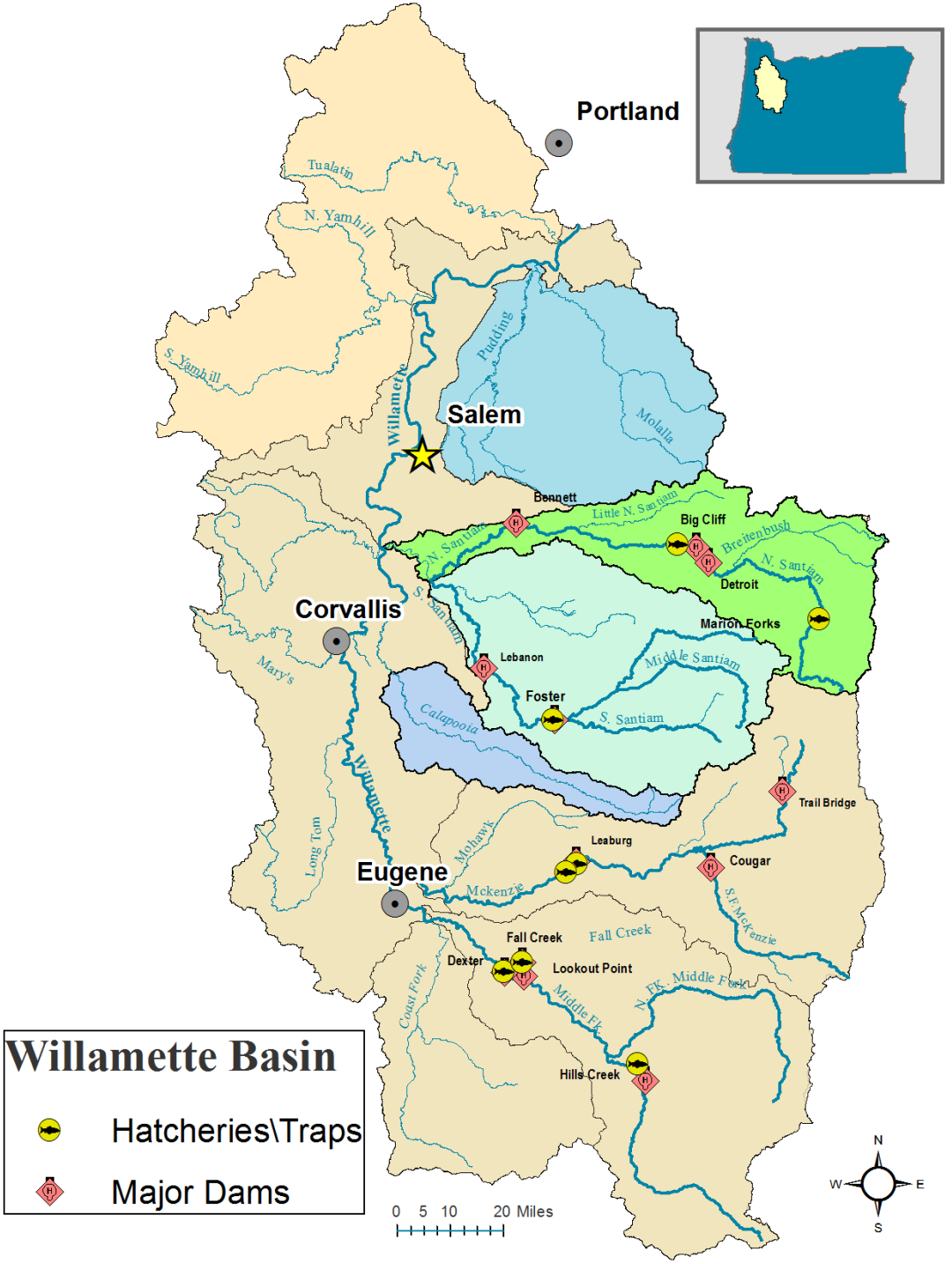
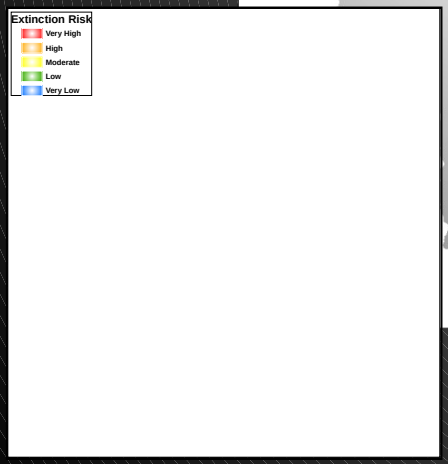
Background

- Most populous basin in Oregon
- Flood control dams on mainstem North and South Santiams
- Winter steelhead and spring Chinook native upstream of Willamette Falls
- Summer steelhead, Coho, and fall Chinook introduced
- Winter steelhead listed under the ESA as threatened in 1999
- Molalla, North Santiam, South Santiam, and Calapooia
- Hatchery program for summer steelhead
- Legacy of stocking early run winter steelhead (Big Creek stock)



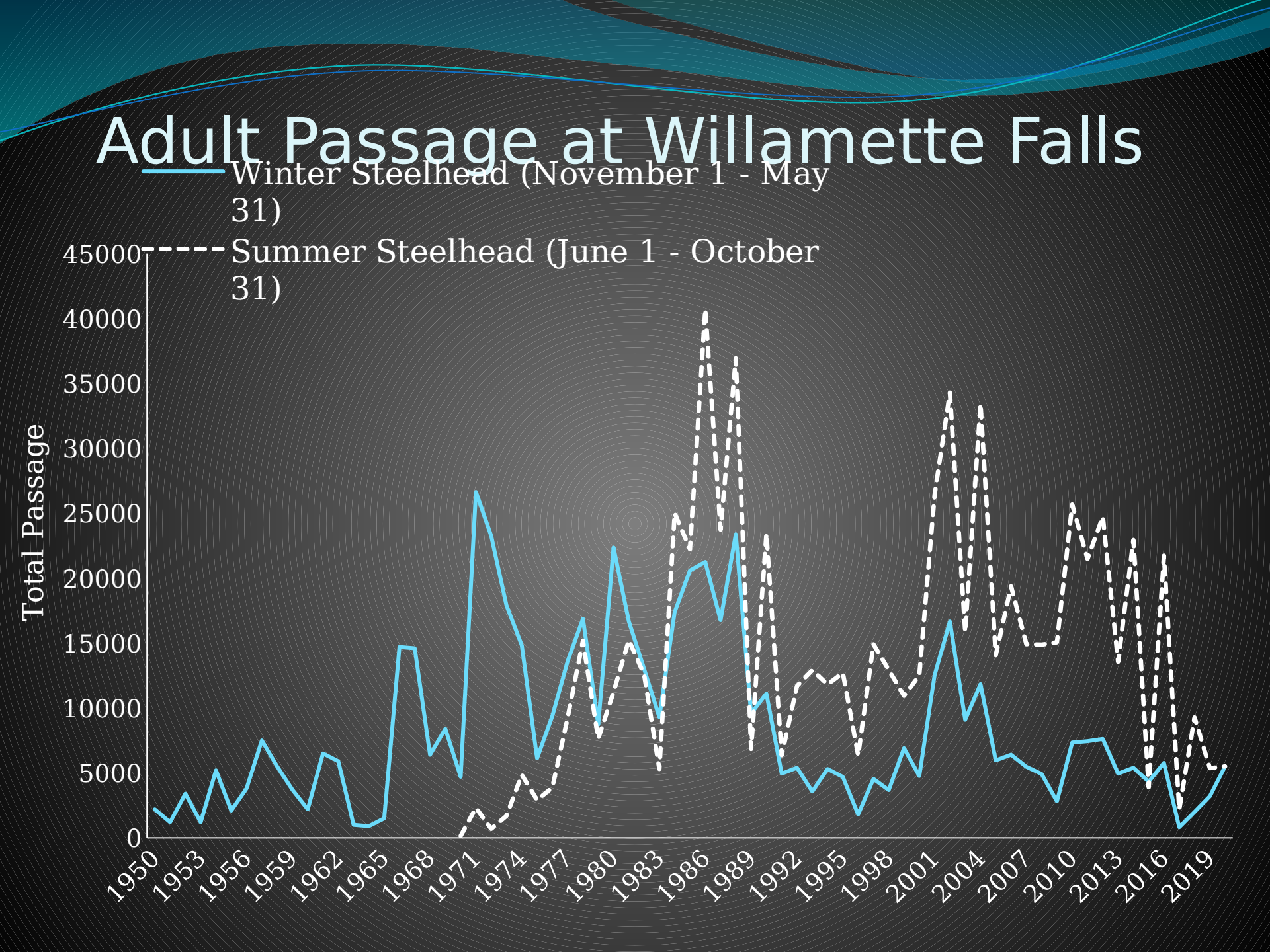
Current Status



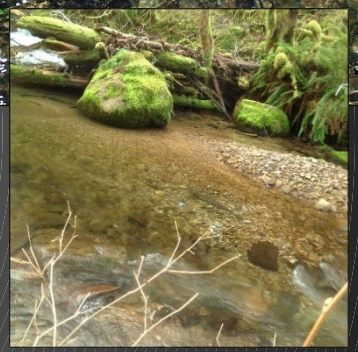
Desired Status

Upper Willamette River Conservation and Recovery Plan – 2011*

Adult Passage at Willamette Falls



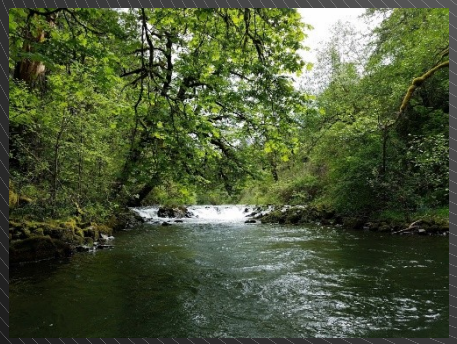
Adult Winter Steelhead



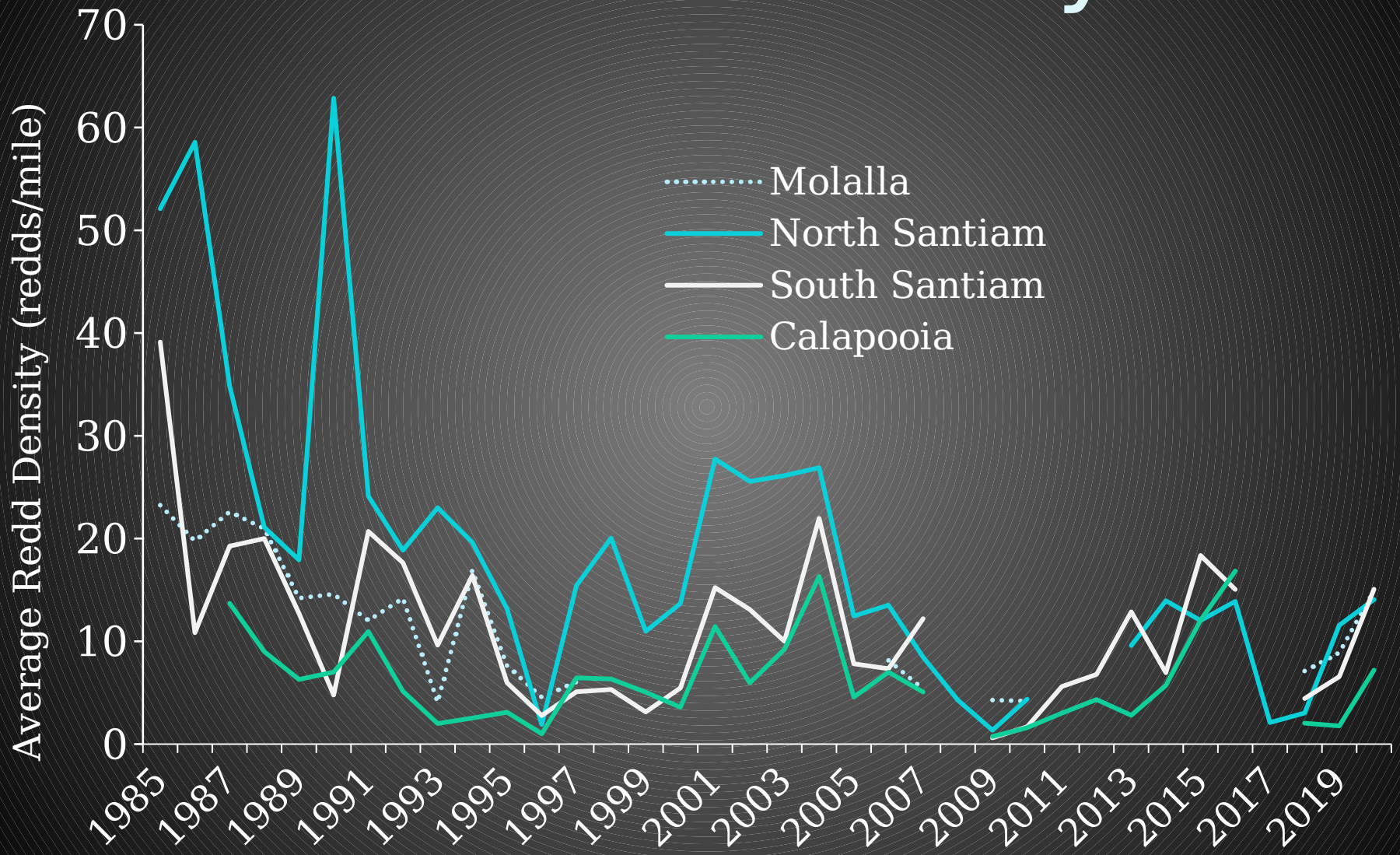
- Native late run
  - migrate February – April
  - spawn in April and May
- Most spawning in smaller tributaries
- Unknown number of kelts and repeat spawners
- Current Monitoring:
  - Index surveys in each basin
  - Genetic monitoring every 5 years
  - Video counts at Willamette falls and Bennett Dams (North Santiam)
  - Passage at Minto Dam (North Santiam)
    - Wild fish only between Minto and Big Cliff dams
  - Trap and haul at Foster Dam (South Sasntiam)

Index Redd Surveys

- Established in the 1980s
  (likely because of high abundance and easy access)
- Short sections (0.5-8 miles) in each spawning tributary
- Spotty effort for many years, now more consistent
- Redd densities used to estimate proportions of adults spawning in each tributary (Falcy 2017)



Index Redd Surveys



North Santiam Basin

39% of Habitat Above Dams

Inaccessible

STAYTON

MEHAMA

Little North Fork

Elkhorn Creek

Bennett Dam/
Camera Trap

North Santiam

MILL CITY

Minto Fish Trap/
Minto Dam

Wild Fish Sanctuary

Breitenbush

Mad Creek

Big Cliff Dam

DETROIT

Rock Creek

Detroit Dam

North Santiam River

Blowout Creek

Marion Fork Hatchery

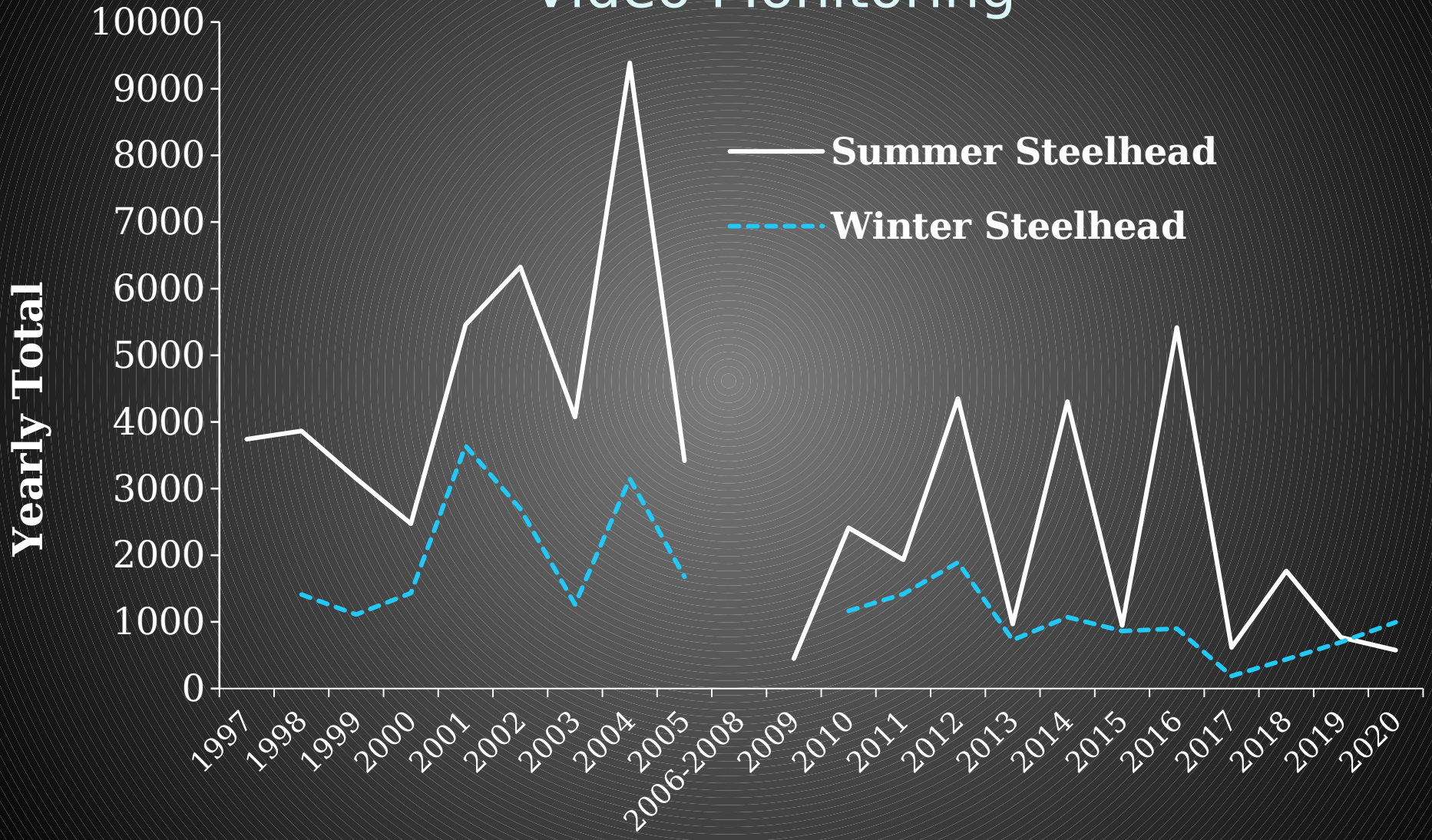
Legend

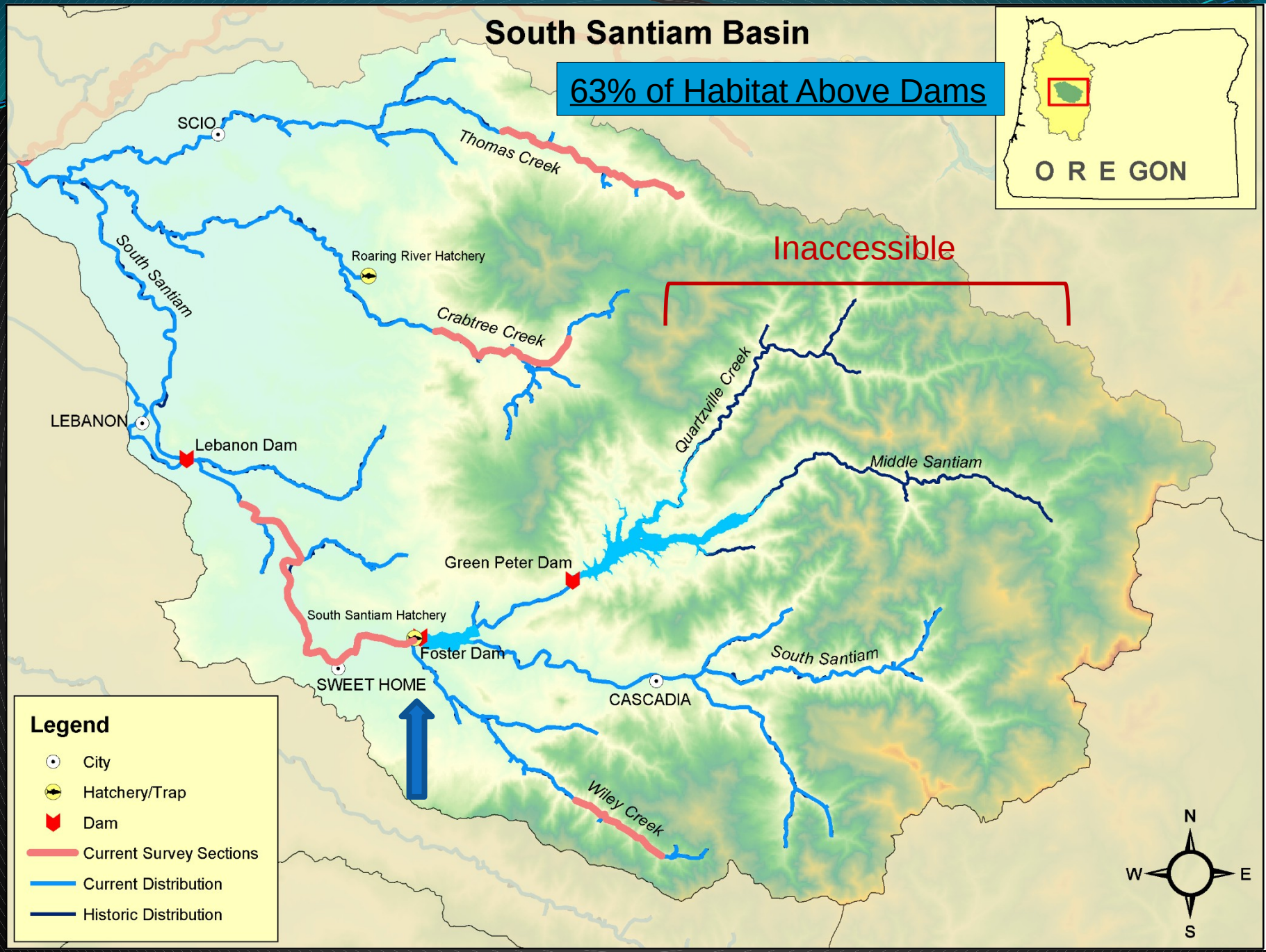
- City
- Hatcher
- Dam
- Current
- Current Distribution
- Historic Distribution

N
W E
S

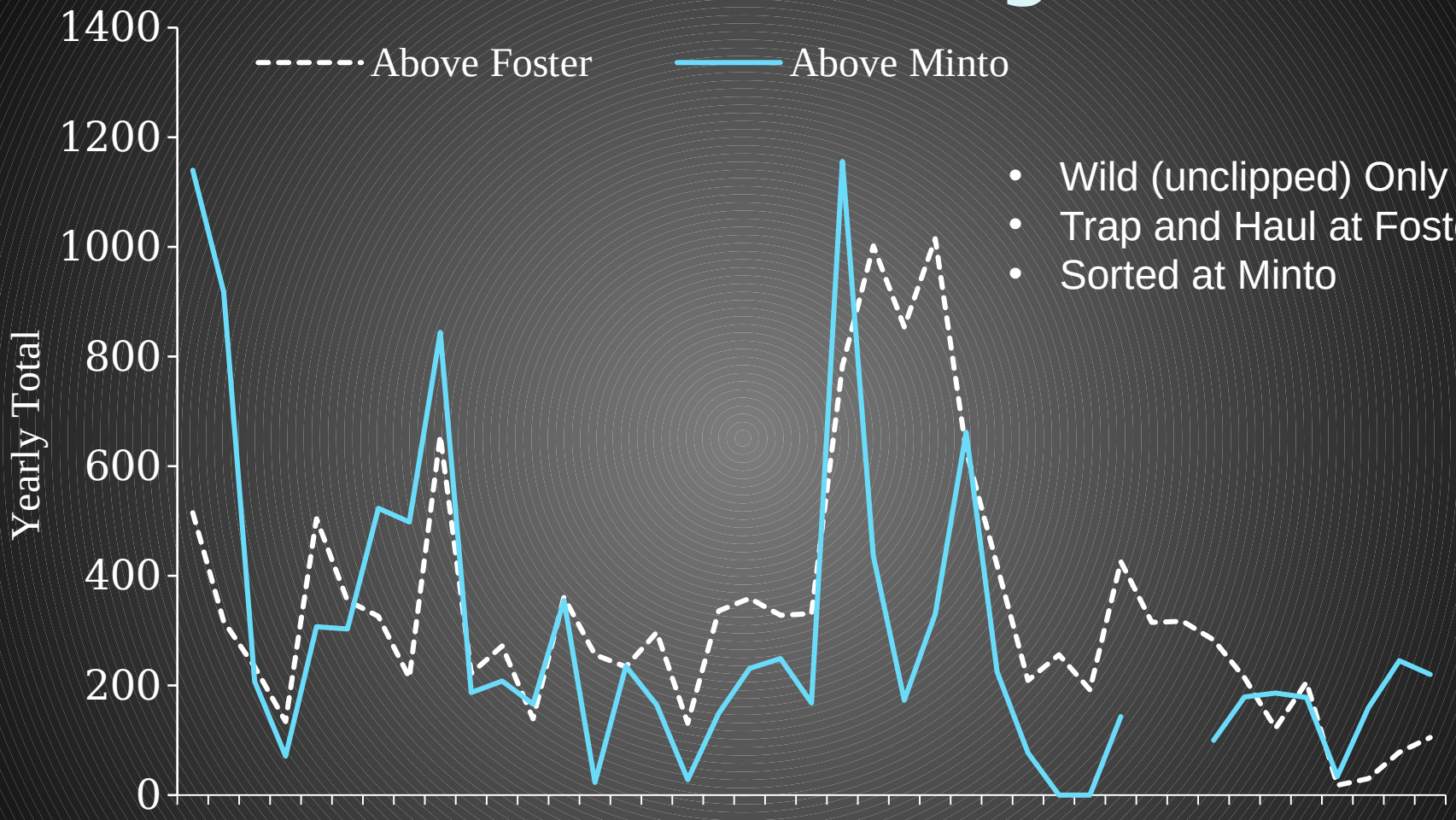
Upper and Lower Bennett Adult Passage

Video Monitoring




South Santiam Basin
63% of Habitat Above Dams
O R E GON
Inaccessible
SCIO
Thomas Creek
South Santiam
Roaring River Hatchery
Crabtree Creek
LEBANON
Lebanon Dam
Quartzville Creek
Middle Santiam
Green Peter Dam
South Santiam Hatchery
Foster Dam
SWEET HOME
CASCADIA
South Santiam
Wiley Creek
Legend
City
Hatchery/Trap
Dam
Current Survey Sections
Current Distribution
Historic Distribution
N
W
E
S

Adult Dam Passage



- Wild (unclipped) Only
- Trap and Haul at Foster
- Sorted at Minto

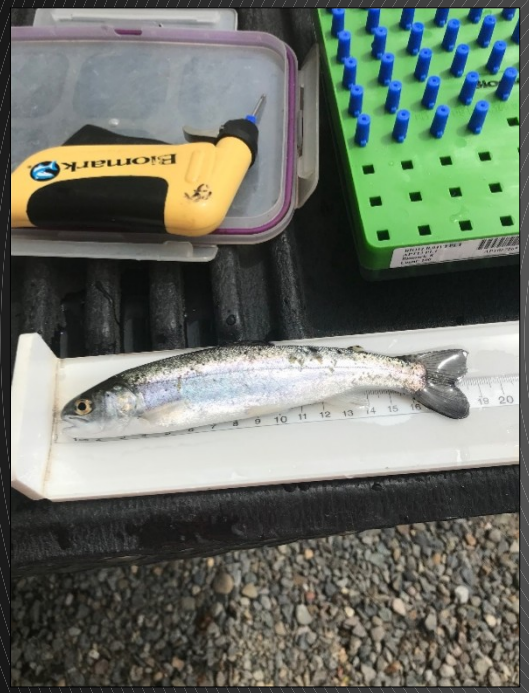
Juvenile Winter Steelhead

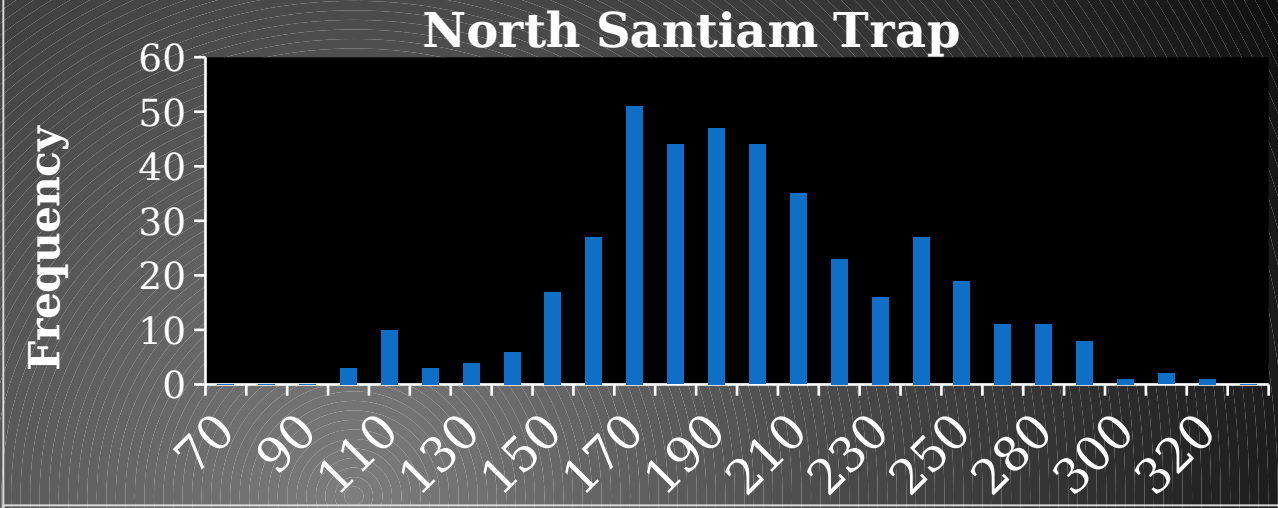
- Life history pathways are likely complex, including resident population (sympatric, very important to the population)
- Rearing 1 - 3 years in spawning tributaries (most Age-2?)
- Smolts migrate quickly through the mainstem in April and May

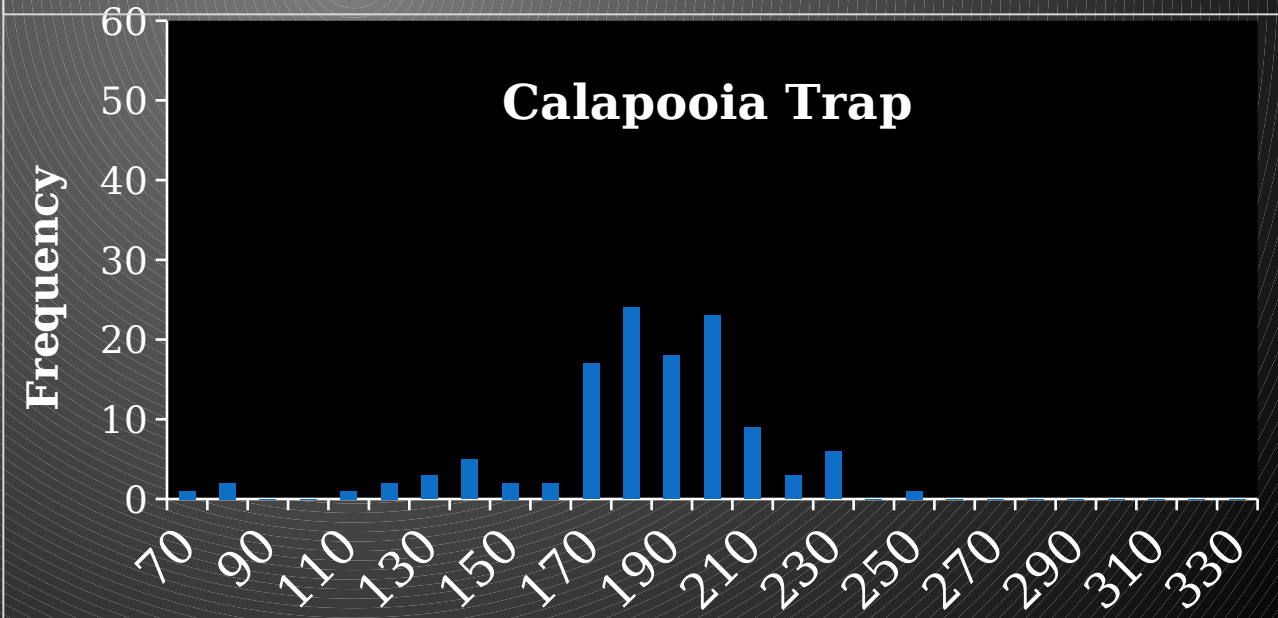
Stayton Trap Catch - 2020

Calapooia Trap Catch - 2020

O. mykiss length (mm) frequency







Future Research and Monitoring

- Continue monitoring sub-basins with redd survey and genetics
  - May expand redd surveys
- Add video monitoring at Lebanon Dam – South Santiam
- Expand and update life history data
  - Adult and juvenile age composition (scale analysis)
  - Habitat connectivity needs (tag studies and repeat sampling)
- Add SARs data where possible, tag smolts closer to the estuary
- Confirm run timing of adult winter and summer steelhead

Challenges with Field Sampling

- Large area, dynamic river conditions
  (high flows, turbidity, etc.)
- Difficult to recover sample adults or recover carcasses
- Difficult to determine origin of adults
  - video counts or recovered carcasses
- Smolts can avoid rotary screw traps and are dispersed

Winter Steelhead Recovery

- Maintain habitat and connectivity in the tributaries for spawning and rearing
- Provide river flow to allow for smolt migration
- Continue habitat restoration projects in the tributaries
- Improve passage at flood control dams
  - Large areas of excellent habitat upstream
  - Need adult and juvenile passage

Acknowledgments

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- Bob Mapes

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http://odfw.forestry.oregonstate.edu/willamettesalmonidrme/spring-chinook