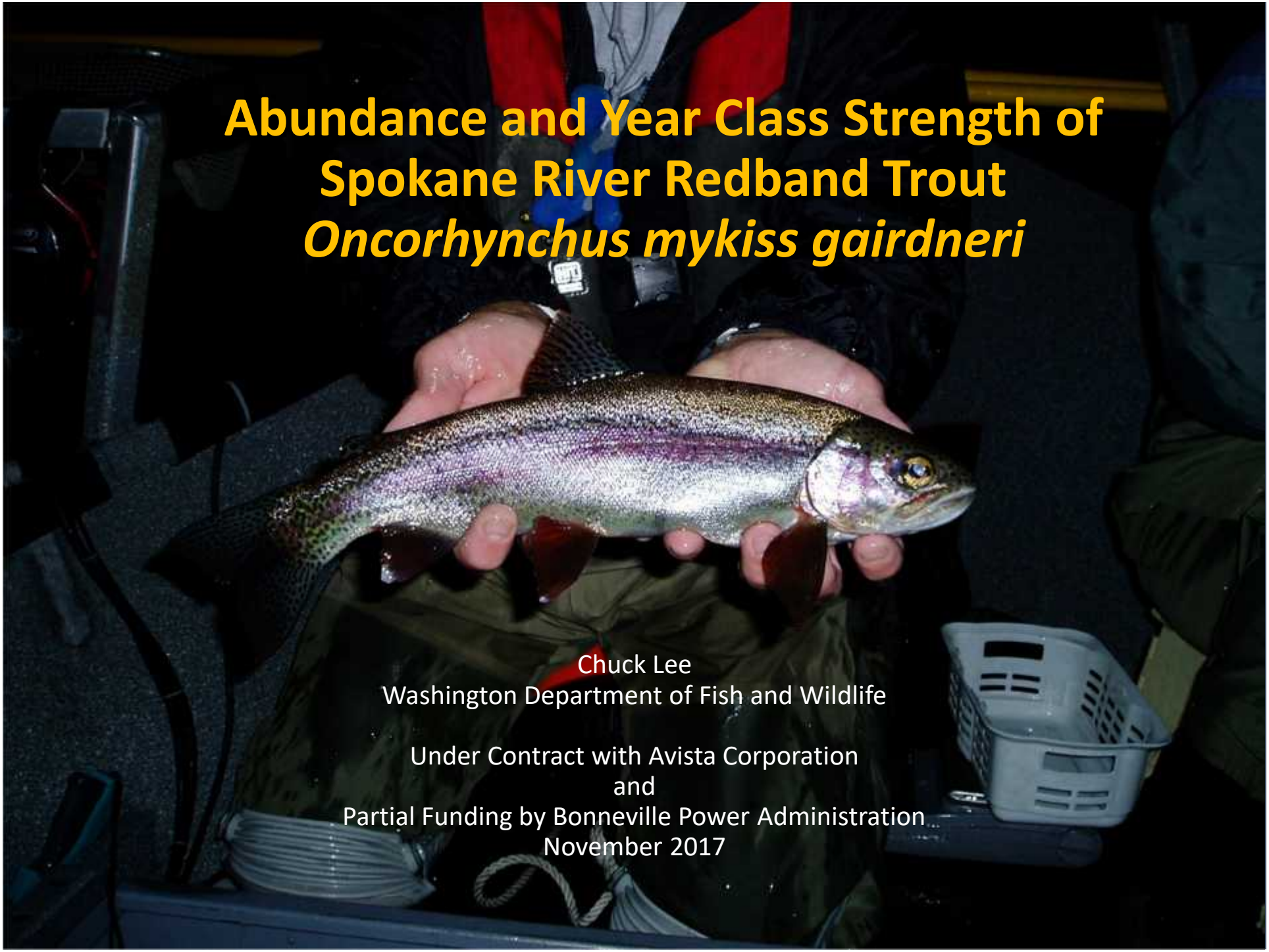
Abundance and Year Class Strength of Spokane River Redband Trout *Oncorhynchus mykiss gairdneri*



Chuck Lee
Washington Department of Fish and Wildlife

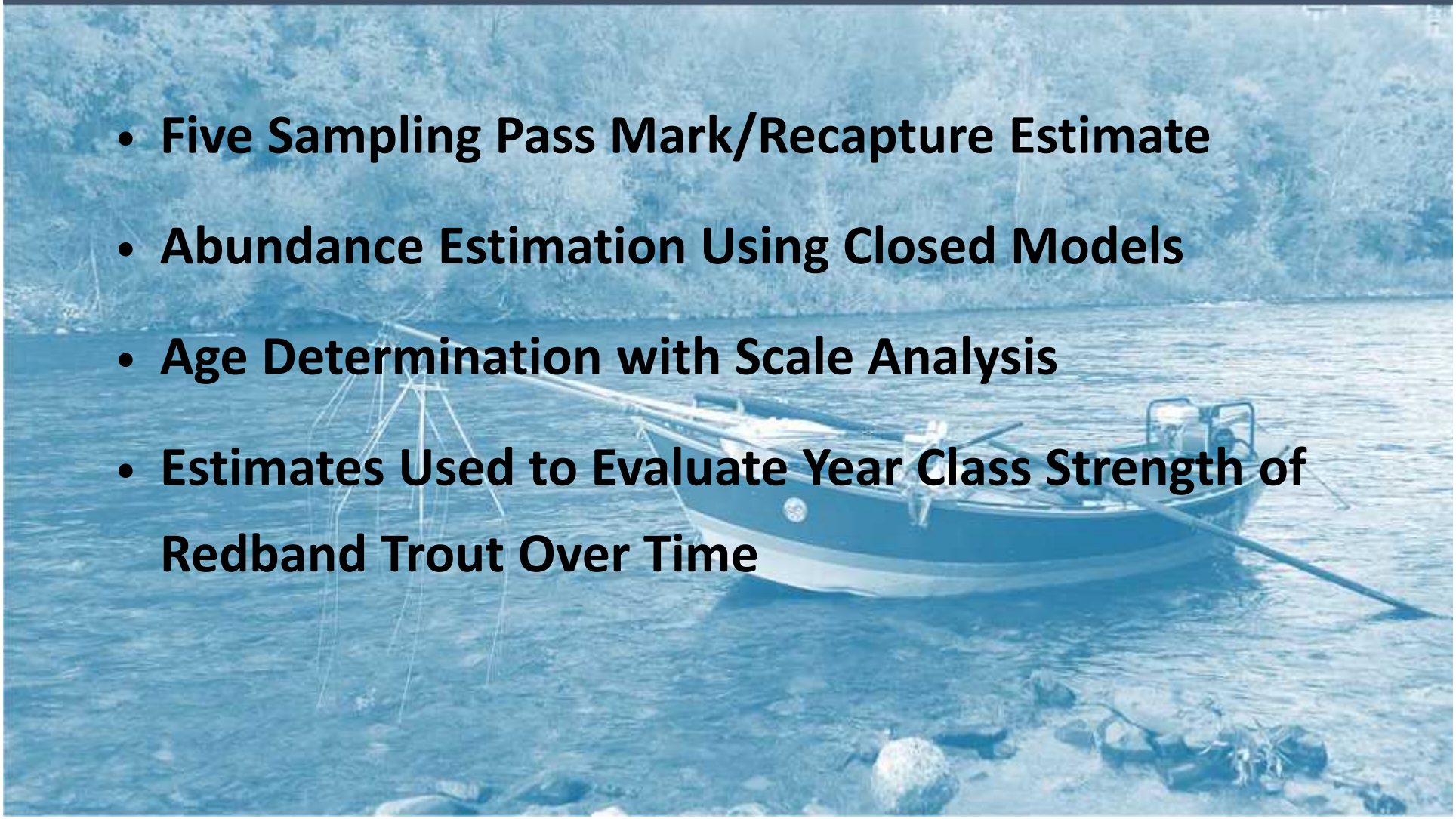
Under Contract with Avista Corporation
and
Partial Funding by Bonneville Power Administration
November 2017

Redband Spawning, Abundance and Discharge Flow Study

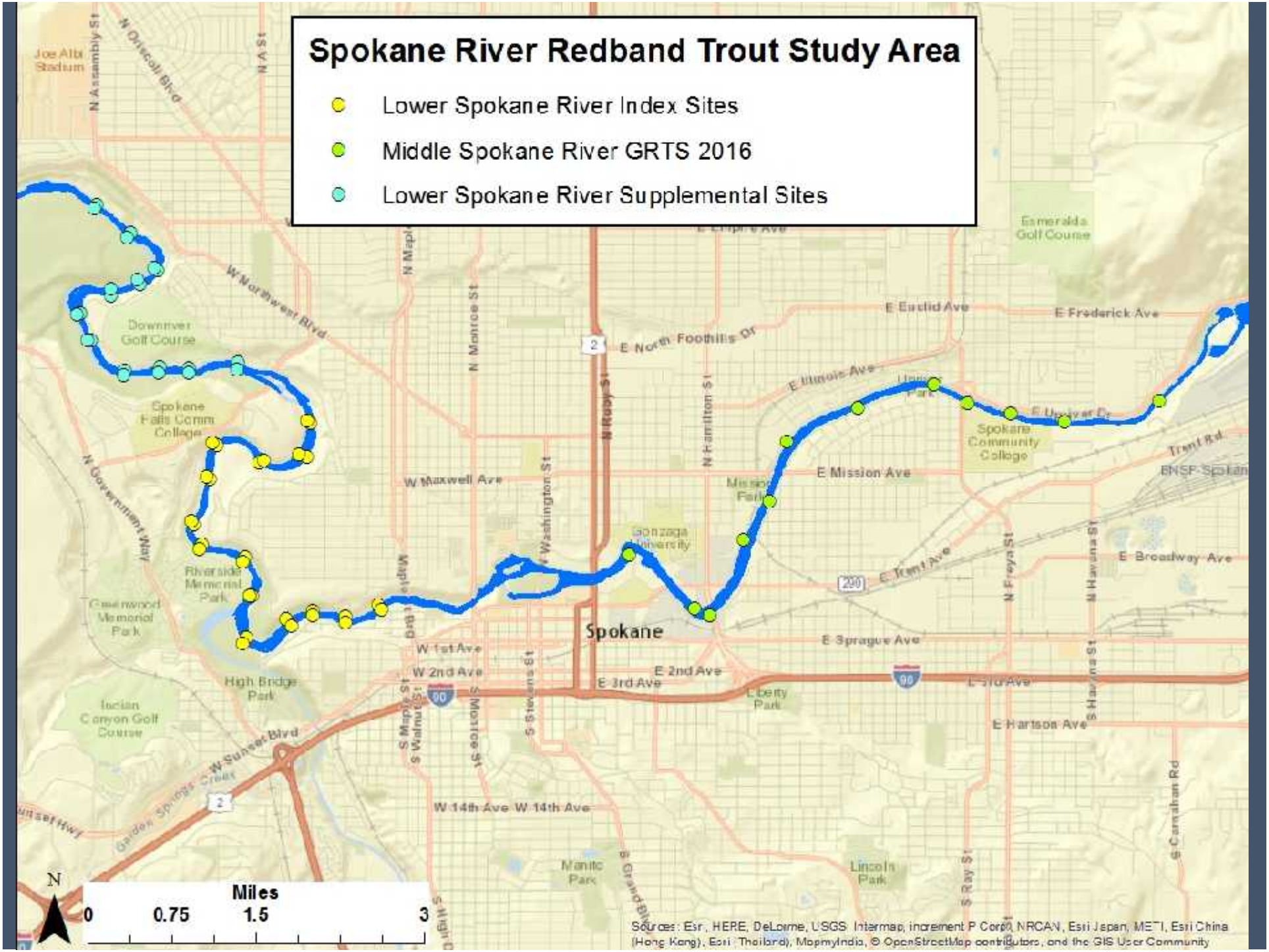
Cardno-ENTRIX, West Fork Environmental, WDFW

- Spawning Patch Inventory (Completed)
- Redband Spawning Observations (Completed)
- Effective Incubation Habitat Modeling (Completed)
- **Redband Abundance Estimates (WDFW 2010 - 2019)**
- Correlate Year Class Strength to Flow (Next)

Redband Abundance Study Elements
Washington Department of Fish and Wildlife (WDFW)



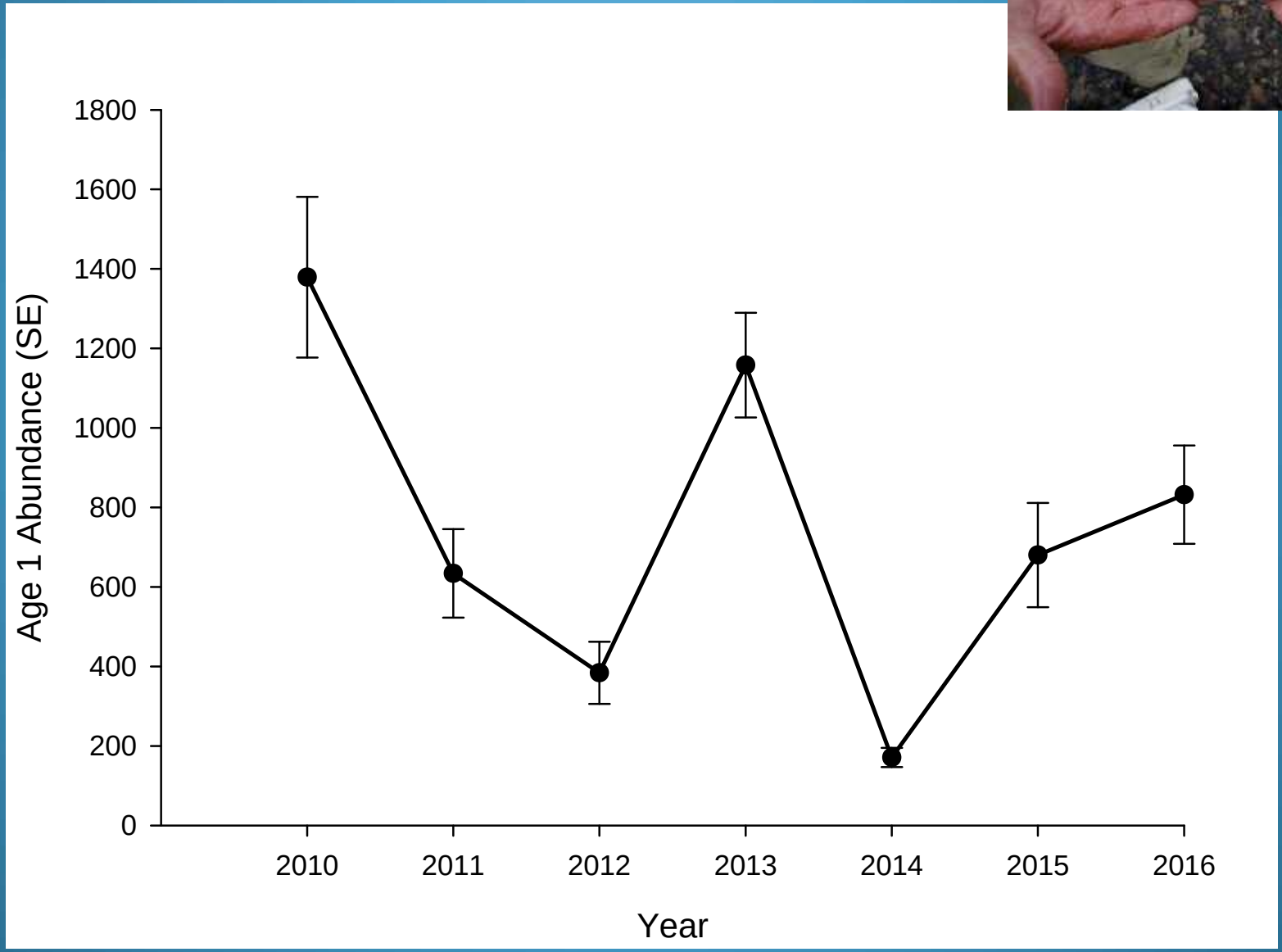
- Five Sampling Pass Mark/Recapture Estimate
- Abundance Estimation Using Closed Models
- Age Determination with Scale Analysis
- Estimates Used to Evaluate Year Class Strength of Redband Trout Over Time


Spokane River Redband Trout Study Area
Lower Spokane River Index Sites
Middle Spokane River GRTS 2016
Lower Spokane River Supplemental Sites
Spokane
Miles
0
0.75
1.5
3
N
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Thailand, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

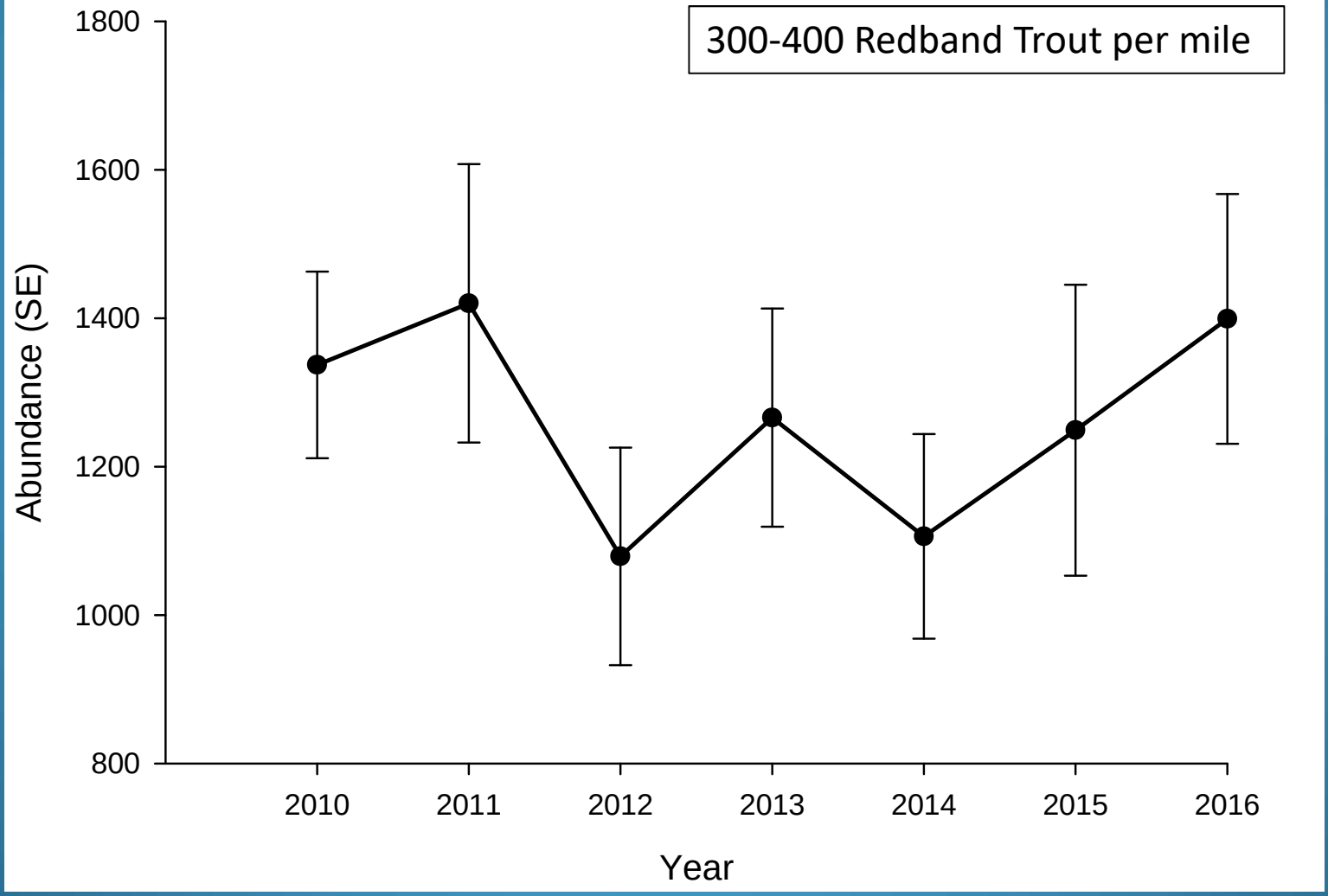
Fish Processing and Data Collection

Courtesy of fishbio.com

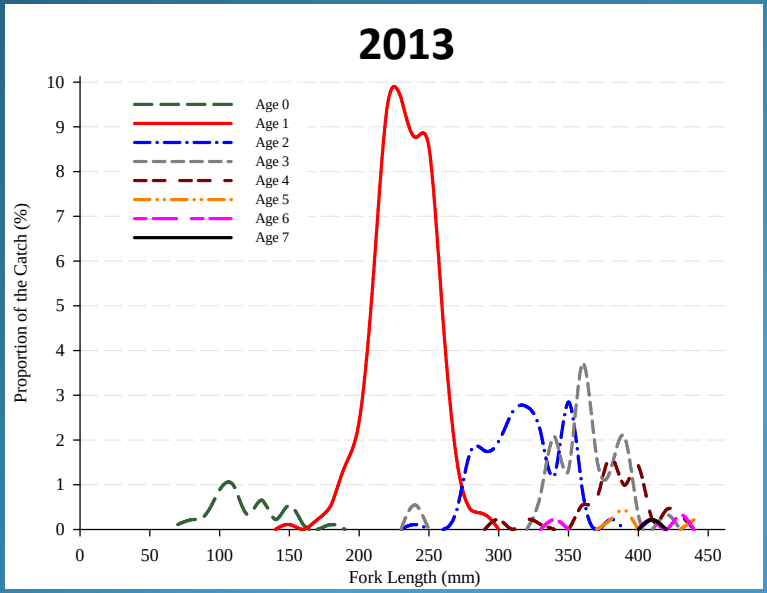
Redband Trout Age 1 Abundance Estimates

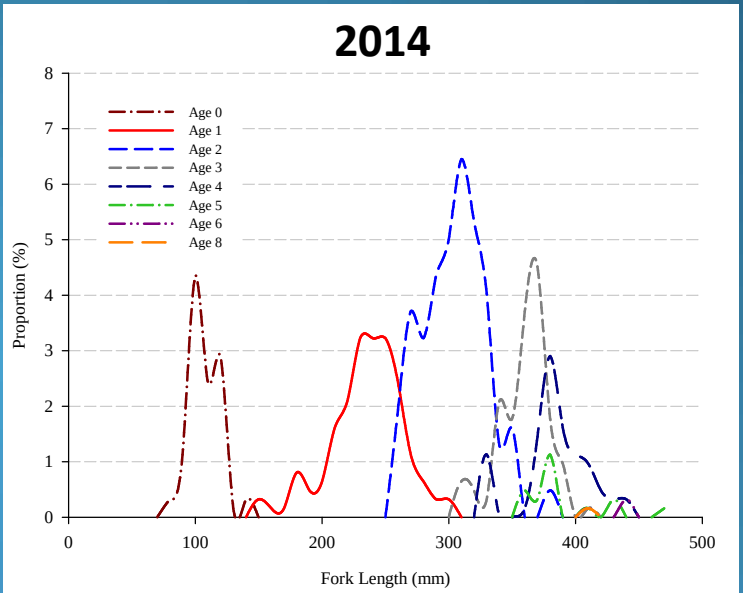


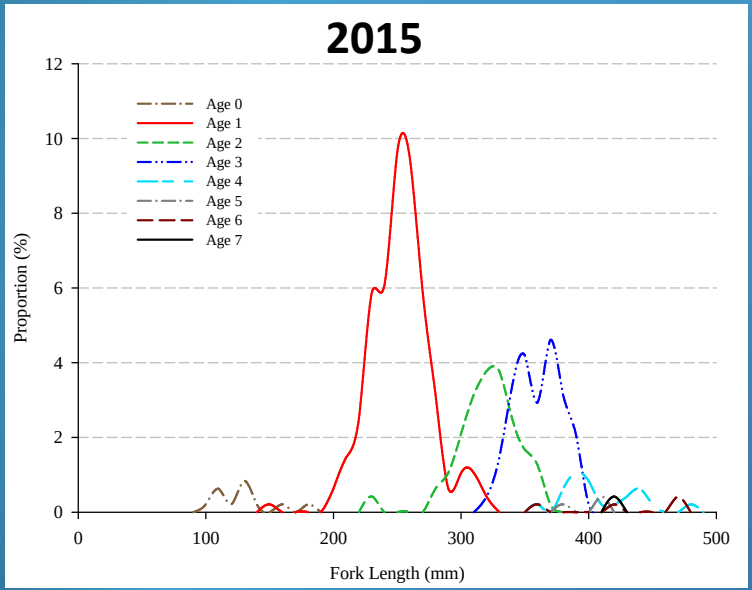
Redband Trout ≥250 mm Abundance Estimates

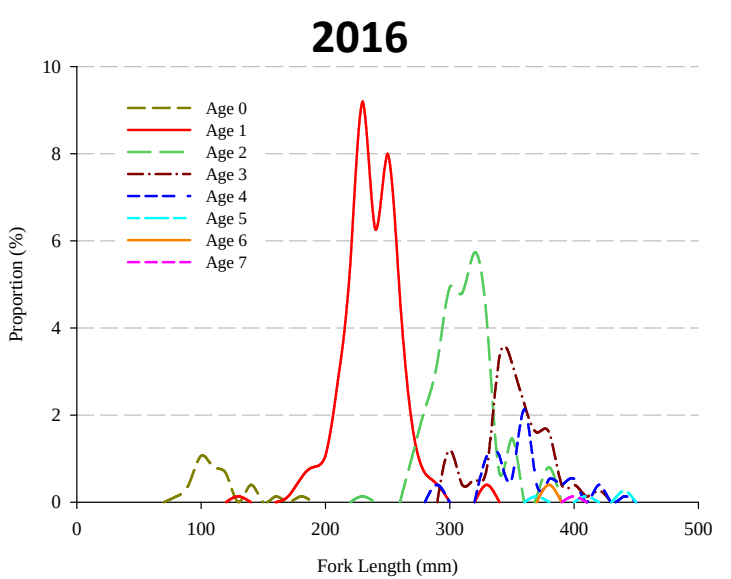


Age and Length Frequency Distribution









Abundance Results

- Capture 400 - 750 Redband Trout Annually (Index Area)
- Age 1 Estimates Reduces Potential Error and Provides a Reliable Indication of Year Class Strength
- Estimates Relatively Unbiased
- Year Class Strength Validated Over Time
- Abundance of Larger Trout (≥250 mm) Relatively Stable
  *May Indicate Carrying Capacity under Current River Conditions
- Majority of Redband Spawners are Age 3 and 4

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Acknowledgements
Jason McLellan, Colville Confederated Tribes
Upriver Dam Staff
City of Spokane Parks
WDFW Staff

References

Lee, C. D. 2017. Redband Trout spawning and fry emergence study: abundance and year class strength component, annual progress report 2016. Report prepared for Avista Corporation, Spokane, Washington.

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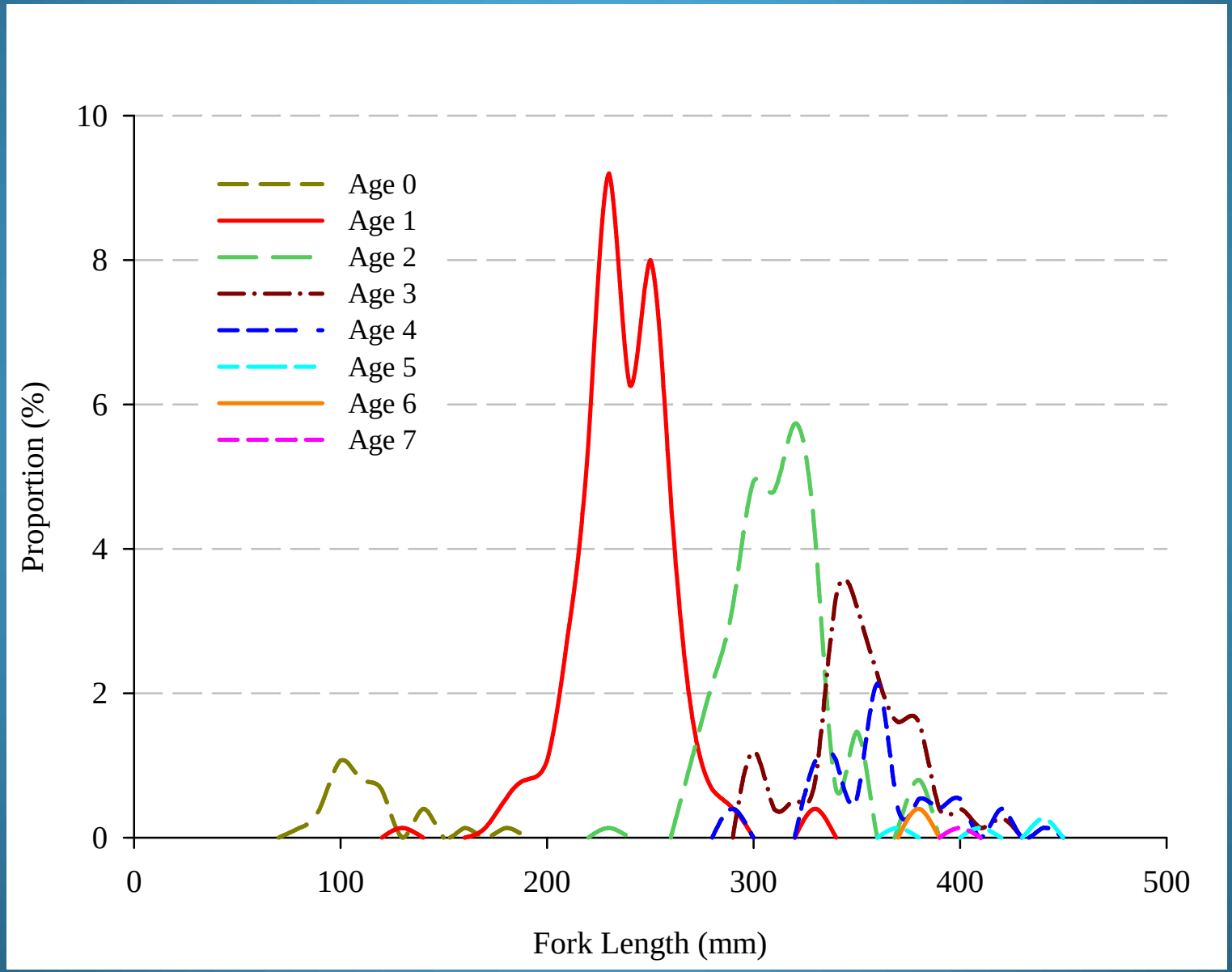
McLellan, J. G. and C. D. Lee. 2011. Redband Trout spawning and fry emergence study: abundance and year class strength component, annual progress report 2010. Report prepared for Avista Corporation, Spokane, Washington.

Length and Age Frequency Distribution (2016)