

Chehalis River Aquatic Species - Preliminary Results

Chehalis Basin Strategy
“Reducing Flood Damage and Enhancing Aquatic Species”
Policy Workshop
November 13, 2013

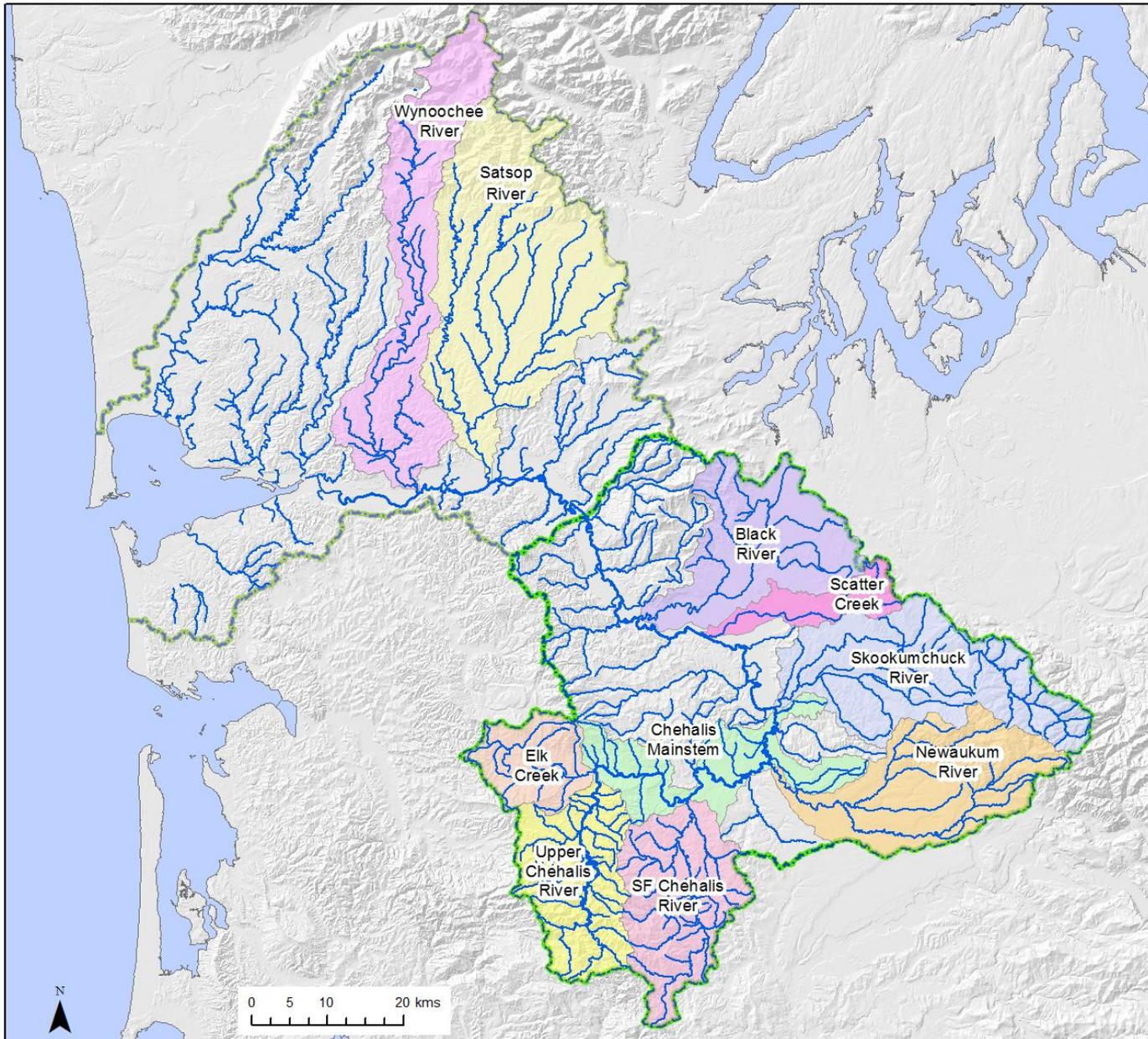


Presentation Outline

- Aquatic species in the basin
- Data gaps relative to dam assessment
- Fish and habitat studies
- Information collected to date



Chehalis River Subbasins



- Chehalis Mainstem
- Anadromous Streams
- Subbasin**
- Black River
- Chehalis Mainstem
- Elk Creek
- Newaukum River
- SF Chehalis River
- Satsop River
- Scatter Creek
- Skookumchuck River
- Upper Chehalis River
- Wynoochee River

Native fishes in the Chehalis Basin



- Mountain whitefish
- Eulachon (?)
- Pacific lamprey
- River lamprey
- Western brook lamprey
- White Sturgeon
- Green Sturgeon
- Peamouth
- Speckled Dace
- 3-spine stickleback

Exotic fishes in the Chehalis Basin

Smallmouth bass



Rockbass



Largemouth bass



Brown bullhead



Stillwater-Breeding Amphibians in Chehalis Basin

Northern red legged Frog



Oregon Spotted Frog



Pacific Treefrog

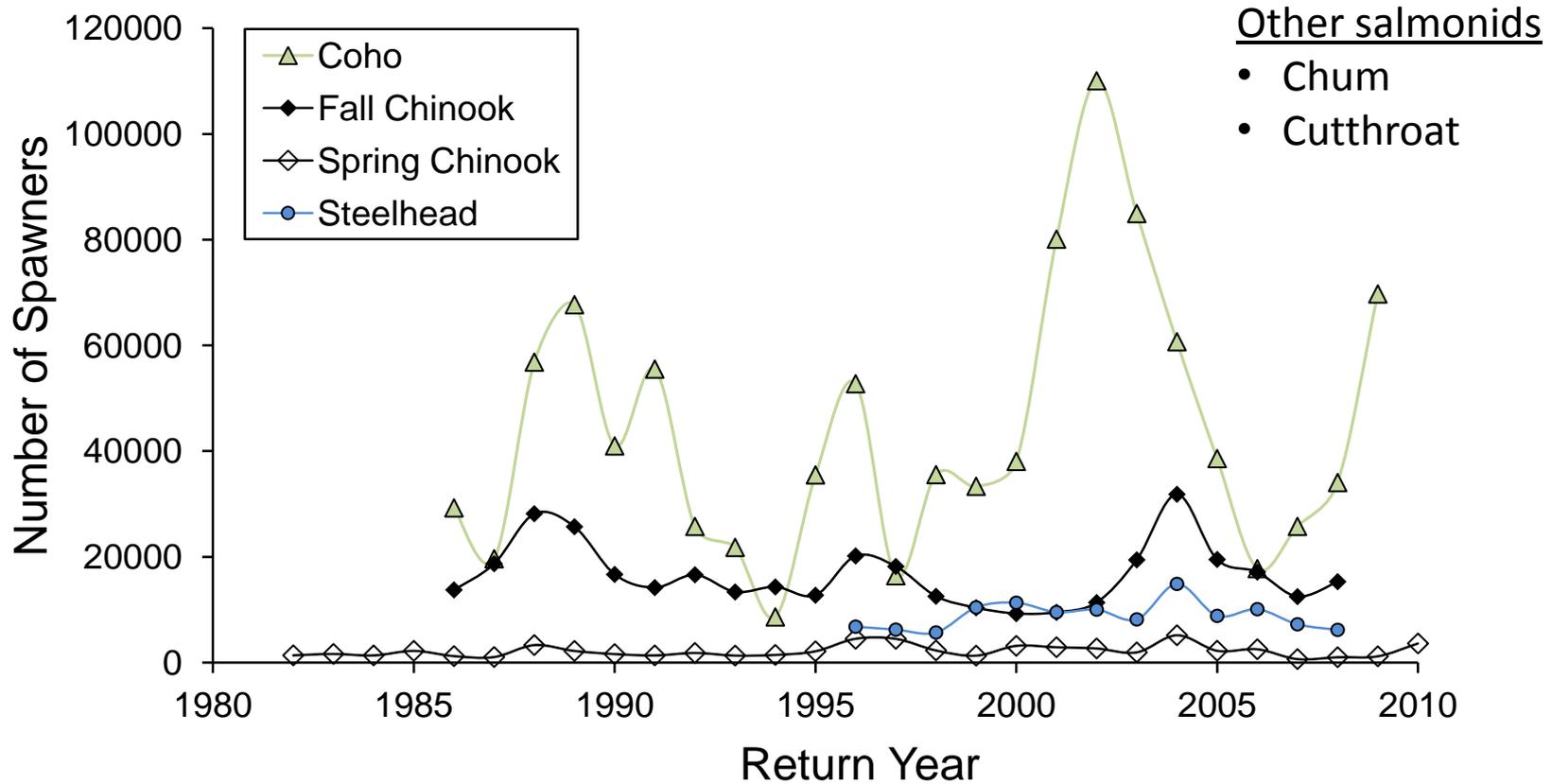


Western Toad

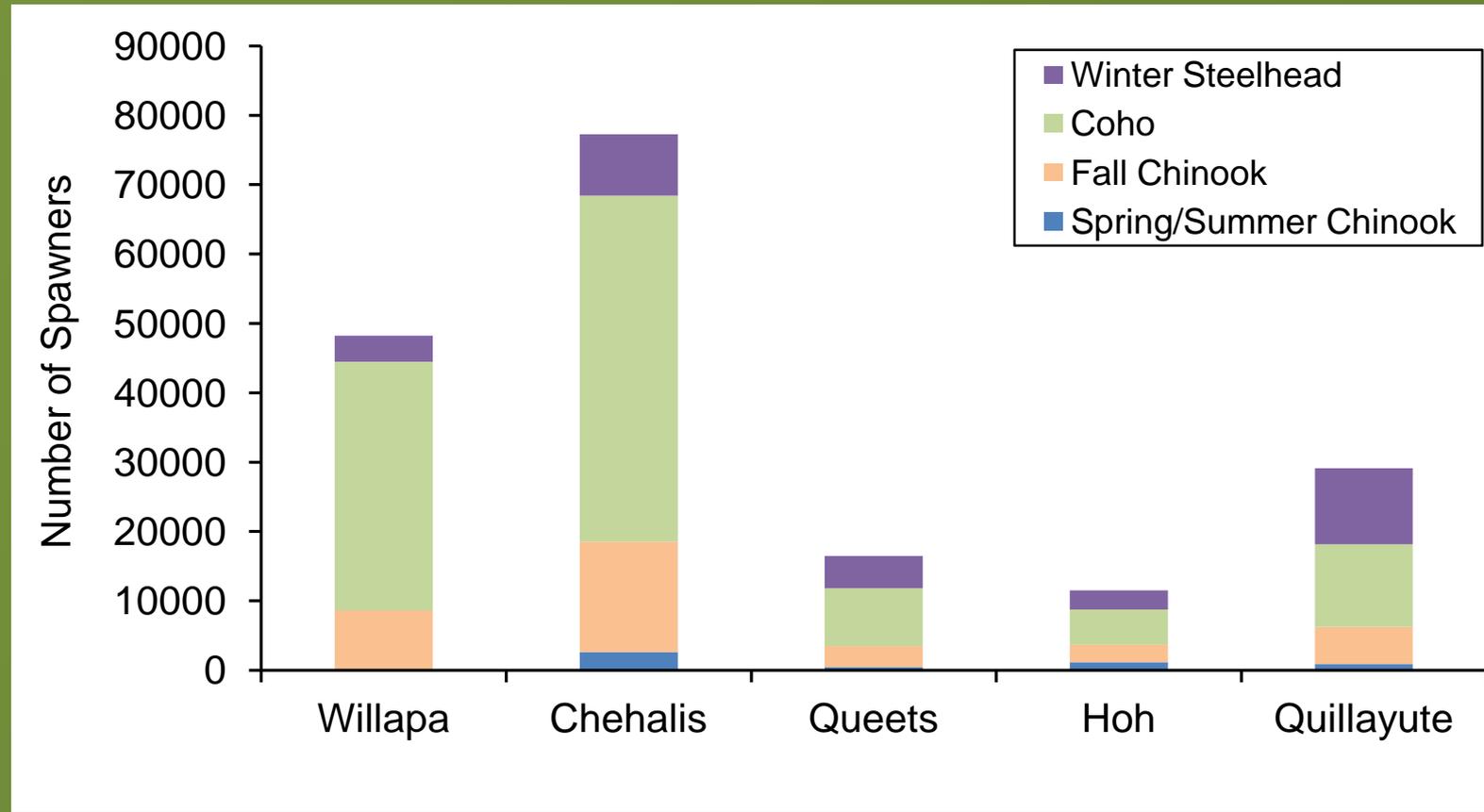


Northwestern Salamander

Salmon and steelhead in the Chehalis Basin



Chehalis Basin Contribution to WA Coast



Data are average spawner escapement, 1996-2012.

Fish species in the Upper Chehalis Basin

- Limited information on all fish distribution, especially around and upstream of proposed dam site.
- Field studies in 2013 improve measure of salmon and steelhead above dam site (spawner and smolt). Will be compared to entire basin.
- Upper Chehalis is not in a steady state. Re-colonization occurring following flood events.

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Data Gaps Relative to Dam Assessment

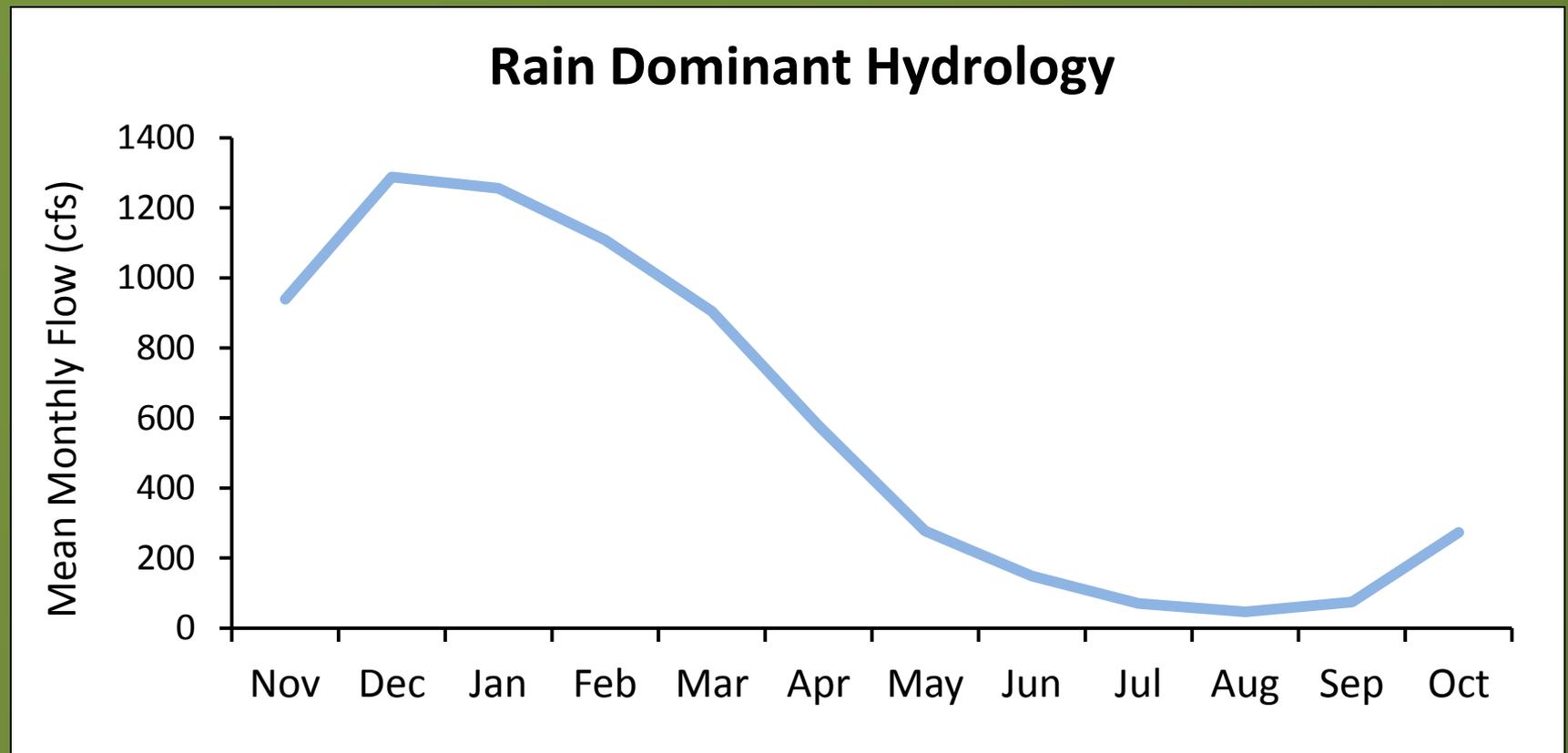
- What will be lost in impoundment area?
- What will change in river below dam?
- What will the impact be to fish spawning and rearing above impoundment?
- What kind of fish passage allowances are needed?
- How would changes in river temperature affect fish?

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Fish habitat influenced by river flows



Data source: USGS 12020000 (Doty gage)

Fish and habitat studies

- Adult spawners
 - Smolt abundance
 - Riverscape fish & habitat
 - Reach scale fish & habitat
 - Fish movements (summer & winter)
- Area above dam site
- Area above Skookumchuk
-

ADULT SPAWNER SURVEYS

What is adult fish abundance, timing, and distribution?

- Spawner counts, timing, location, age composition
- Chinook (spring & fall), Coho, Steelhead



SMOLT TRAP

What is outmigrant fish abundance, timing, and diversity?

- Abundance, migration timing
- All species moving downstream including salmonid smolts



Chehalis River smolt trap is operated near river mile 108 (Picture is not Chehalis).

RIVERSCAPE SURVEYS

Where does summer rearing occur for what species?

- Snorkel (fish) & foot (habitat) surveys
- Include species observable using snorkel methods



**Downstream snorkel surveys on the
Chehalis River**

REACH SURVEYS

Which habitats are associated with which fish species?

- Snorkel, electrofish, seine
- All fish species



Seine collections of fish in the Chehalis River

FISH MOVEMENTS (SUMMER & WINTER)

Importance of cool water refugia for summer rearing and mainstem for overwinter rearing

- Juveniles tagged and released
- Tag detection arrays
- Chinook, Coho, Steelhead



**PIT antenna array
near RM 108 on
Chehalis River**



**Field crew tagging
juvenile salmonids**

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Fish-Habitat Studies During Summer Rearing Period

- Riverscape surveys
- Summer movements



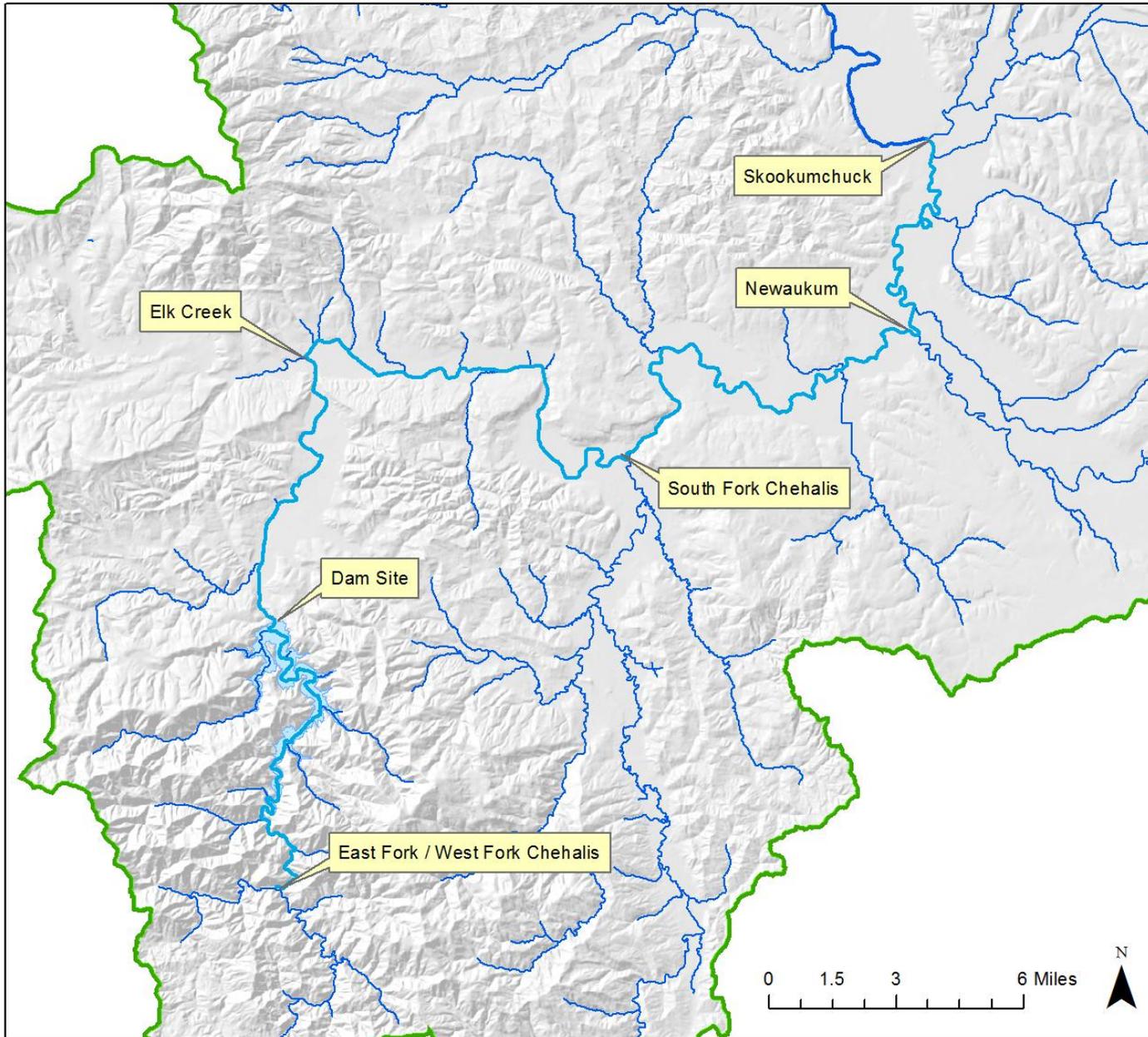
Data collection period July 15 – October 25, 2013

Riverscape View: Patterns of Fish and their Habitat

Describes which fish and how many fish are using mainstem during summer flows above and below dam site.



John Winkowski, WDFW
Mara Zimmerman, WDFW



-  RiverScape Snorkel Reaches
-  Chehalis Mainstem
-  Anadromous Streams
-  Multipurpose Inundation

















Summer Fish Distribution

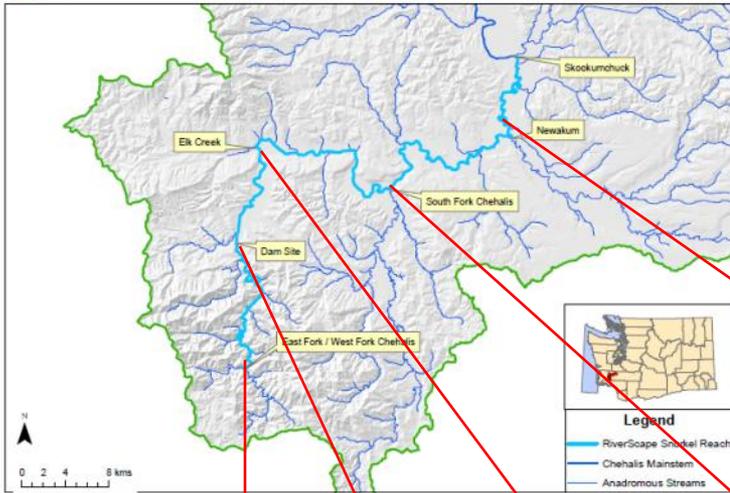
- Counts by species and life stage
- Limited to pelagic species



Photo by Pete Caster, The Chronicle

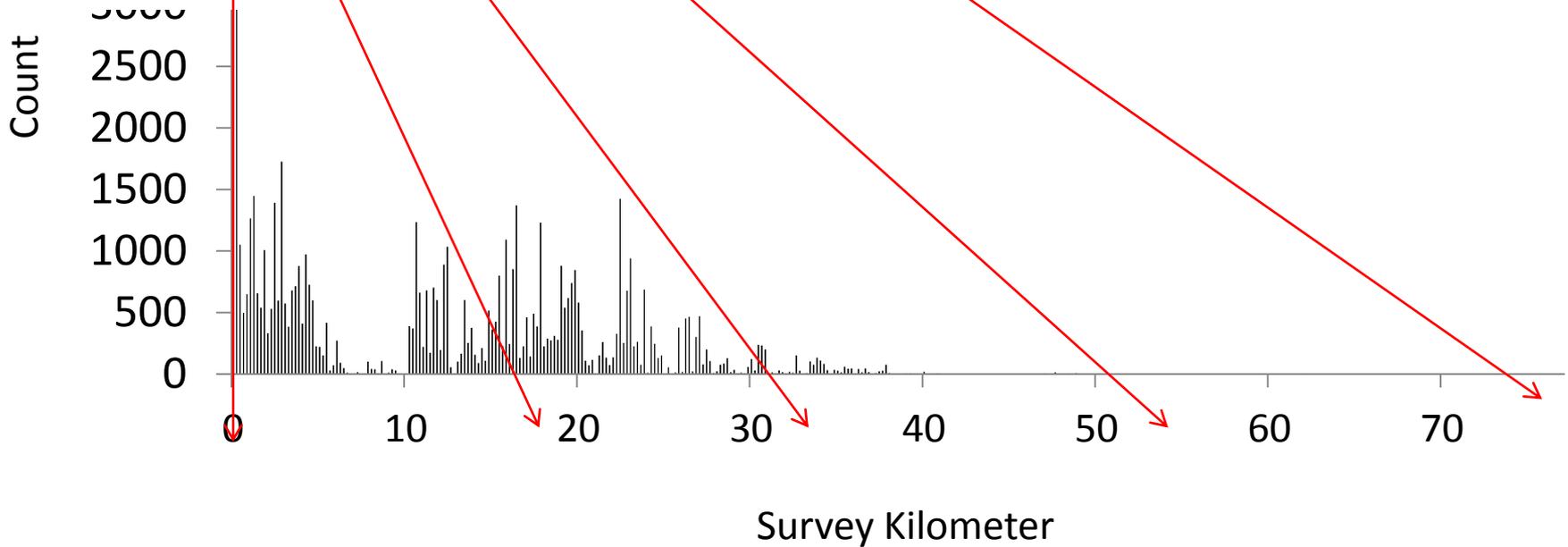


Riverscape Snorkel Reaches

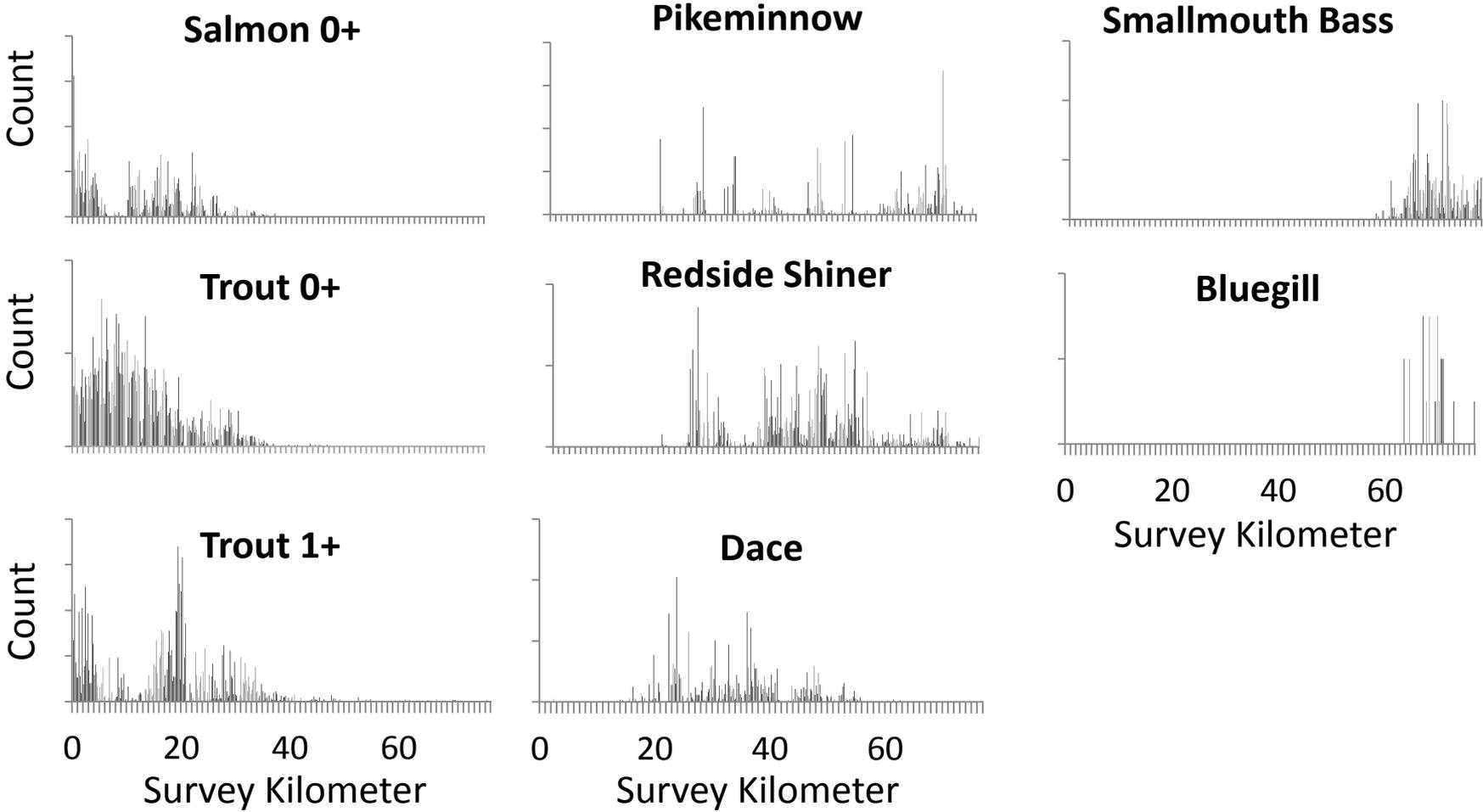


Summer Fish Distribution

Salmon 0+



Summer Fish Distribution



Improved Understanding from Riverscape Study

- Continuous measure of fish and habitat above, within, and below impoundment area.
- Other aquatic species (amphibians, mussels).



- Numbers are relative to the Chehalis River. Can't be directly compared to other systems.

Summer Movement of Juvenile Salmonids

*Direction and distance of summer movements.
Applicable to fish passage needs at dam site and
summer thermal refugia.*



John Winkowski , WDFW
Mara Zimmerman, WDFW

PIT Arrays Detect Tagged Fish

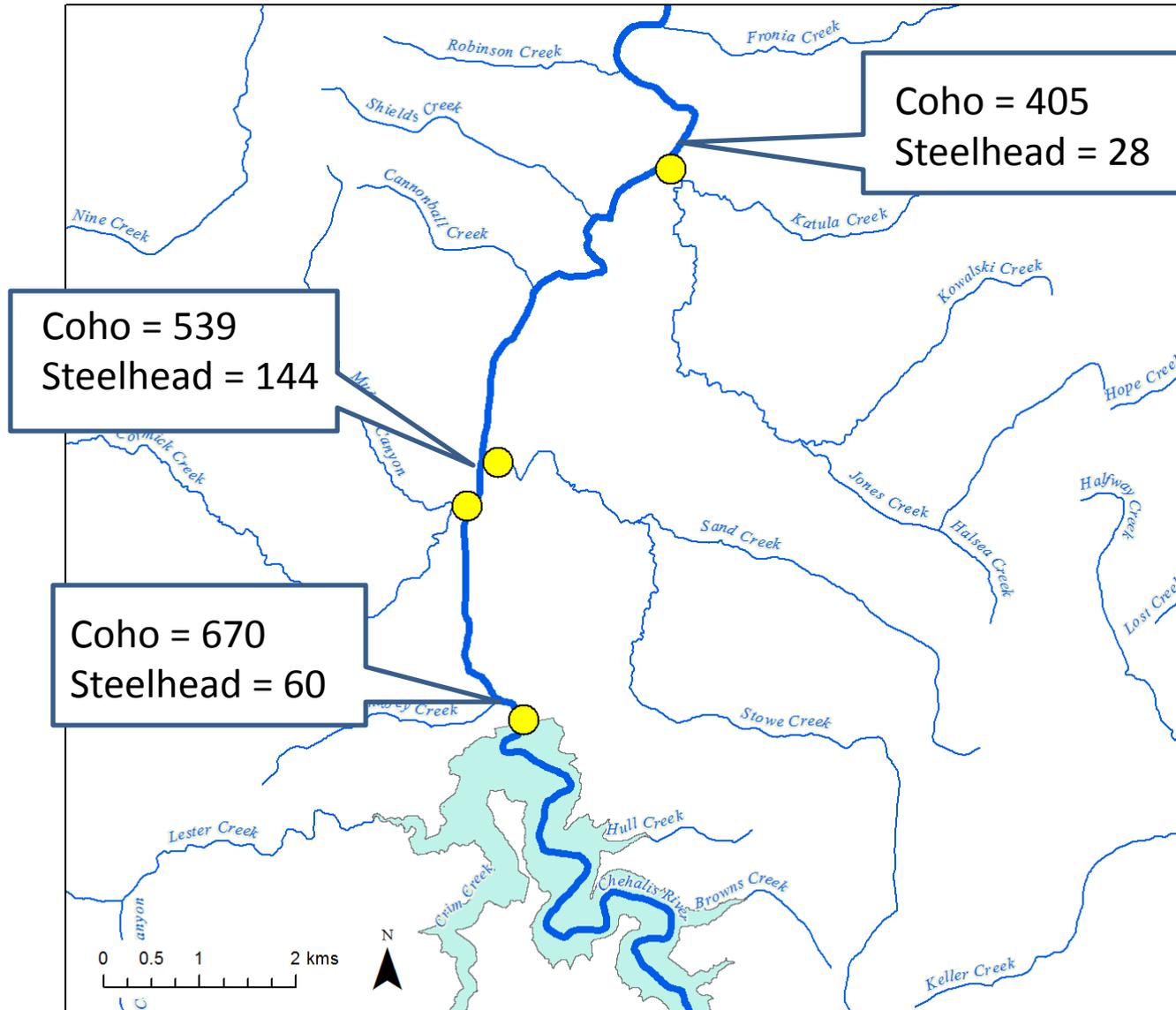


Mainstem PIT Antenna Array near potential dam site



Rock Creek PIT Antenna Array

Locations of PIT Arrays



- Legend**
- PIT Tag Arrays
 - Chehalis Mainstem
 - Named Streams
 - Multipurpose Inundation

Improved Understanding from Summer Movement Study

- Do fish move upstream through the dam site during summer months?

Summer fish movement observed upstream and downstream through the dam site

- What are the movement patterns?
- Is movement correlated with river temperature?



Summary to Date (Preliminary Results)

- Chehalis River supports a diverse assemblage of aquatic species.
- Different fish assemblages use different parts of the mainstem river for summer rearing.
- A high proportion of the salmon and steelhead summer rearing in the mainstem is confined to areas above the proposed dam site.
- Summer movements of coho and steelhead were documented through the proposed dam site.