

# Status and Trends Monitoring of Aquatic and Riparian Habitats in WRIA 8

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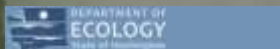
Roger Tabor  
US Fish and Wildlife Service



## Partners



- Washington Department of Ecology
- Region 10 EPA Sentinel Sites Project
- US Fish and Wildlife Service
- WRIA 8 Salmon Recovery Council and Jurisdictions



## Purpose of Project

- Establish a baseline condition for monitoring the effectiveness of the WRIA 8 Salmon Recovery Plan
- Investigate relationships between land cover, hydrology, aquatic and riparian habitats, and biological condition
- Evaluate methods and develop metrics to be used to assess the health of streams across Puget Sound
- Communicate results of this work to decision makers and the public

## A Few Hypotheses we are investigating

- $H_1$ : If effective impervious cover influences hydrology, then urbanized streams will experience more “high pulses” than systems with less connected impervious area.
- $H_2$ : If hydrology influences biological condition in streams, then BIBI and FIBI metrics will be lower in streams that exhibit a “flashy” flow regime.
- $H_3$ : If the number of pools decreases over time, a commensurate decrease will be observed in biotic integrity.
- $H_4$ : If the salmon recovery plan in WRIA 8 is successful, then indicators of biotic integrity, properly functioning habitat, and hydrology will increase in basins where restoration actions are prescribed.

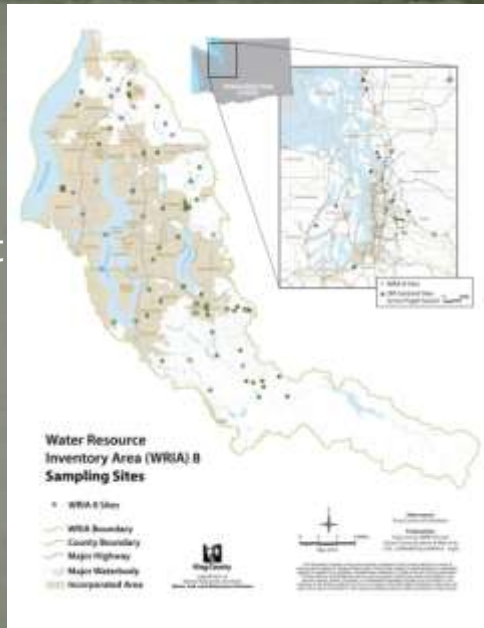
# Timeline and Budget

Major Task	Year					
	2009	2010	2011	2012	2013	2014
<i>Project Management</i>		X	X	X	X	X
<i>Sampling Plan Preparation</i>	X	X				
<i>Field Sampling</i>	X	X	X	X	X	
<i>Analysis</i>				X	X	X
<i>Outreach</i>				X	X	X
<i>Deliverables</i>						X

- \$995,716 awarded from EPA in 2010
- \$335,934 match (WRIA 8 and King County)

# Approach

- 52 sites in WRIA 8 (random)
- 5 sites across Puget Sound ("sentinel")
- Measure:
  - Hydrology
  - Geomorphology and Riparian
  - Biological Indicators
  - Land use/land cover



# Methods

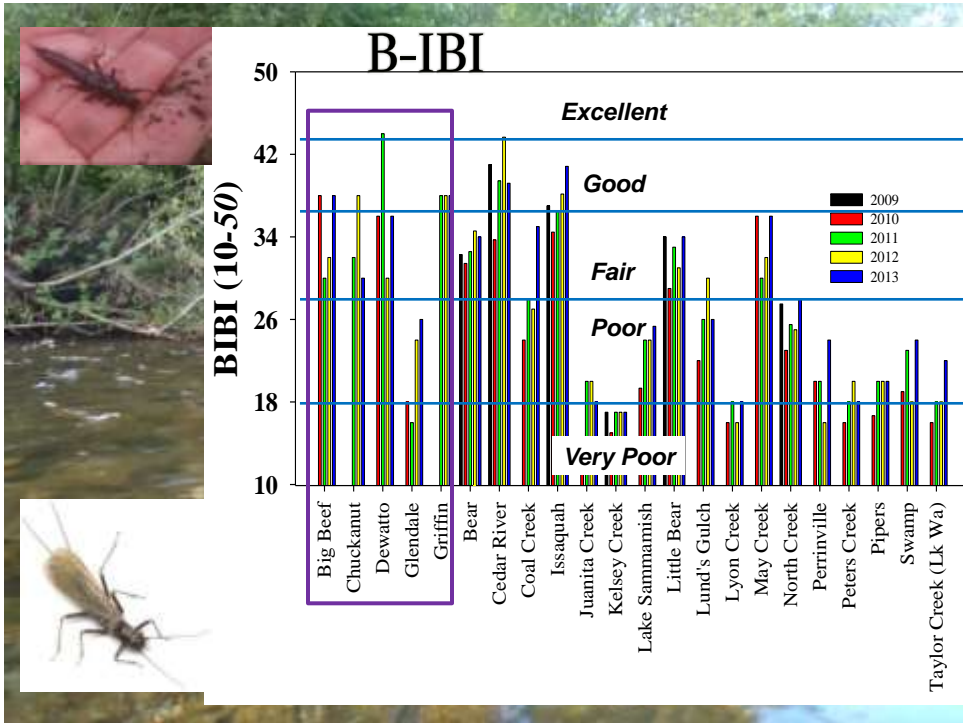
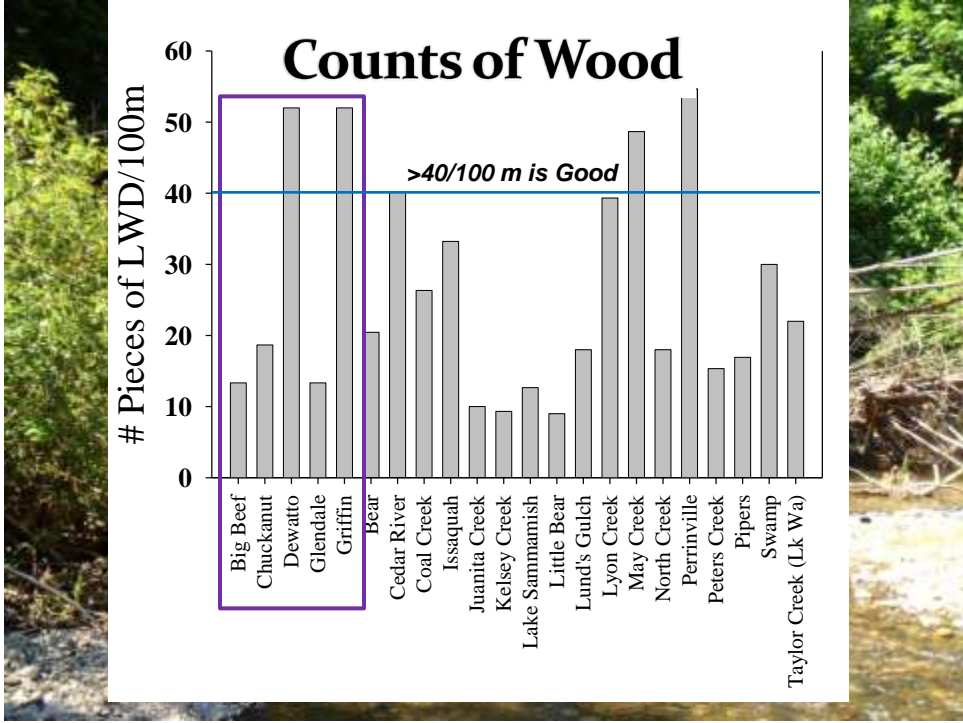
- Hydrology
  - Magnitude
  - Flashiness
  - High Pulses
- Geomorphology
  - Pools
  - Wood
  - Substrate
  - Cover
- Biology
  - Fish
  - Bugs
- Land use/Land cover
  - % Forest
  - %TIA
  - Road density
  - Zoning

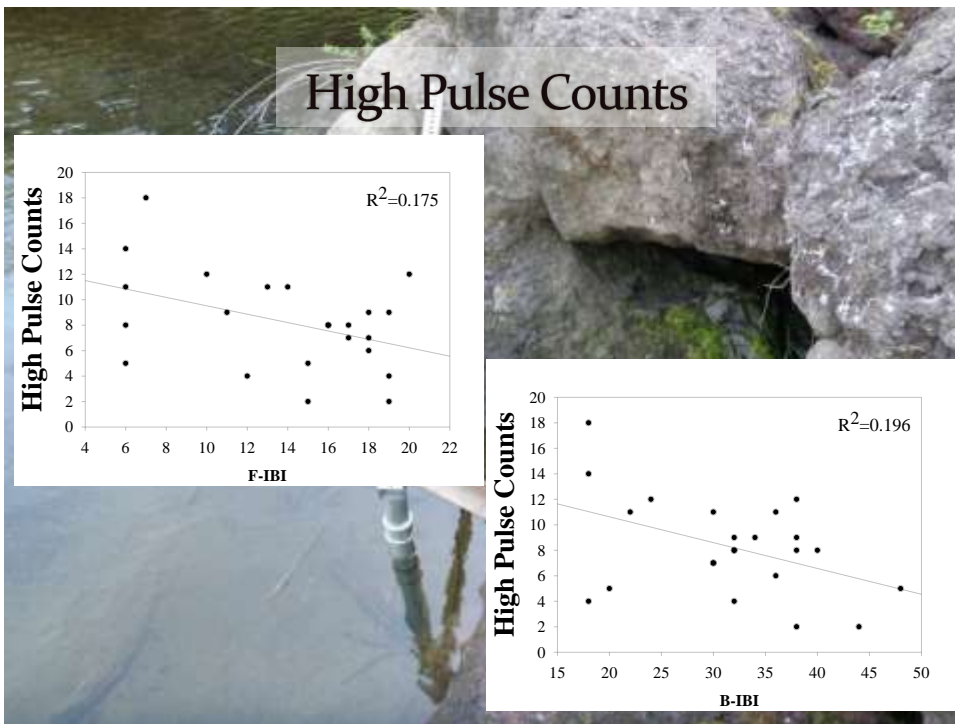
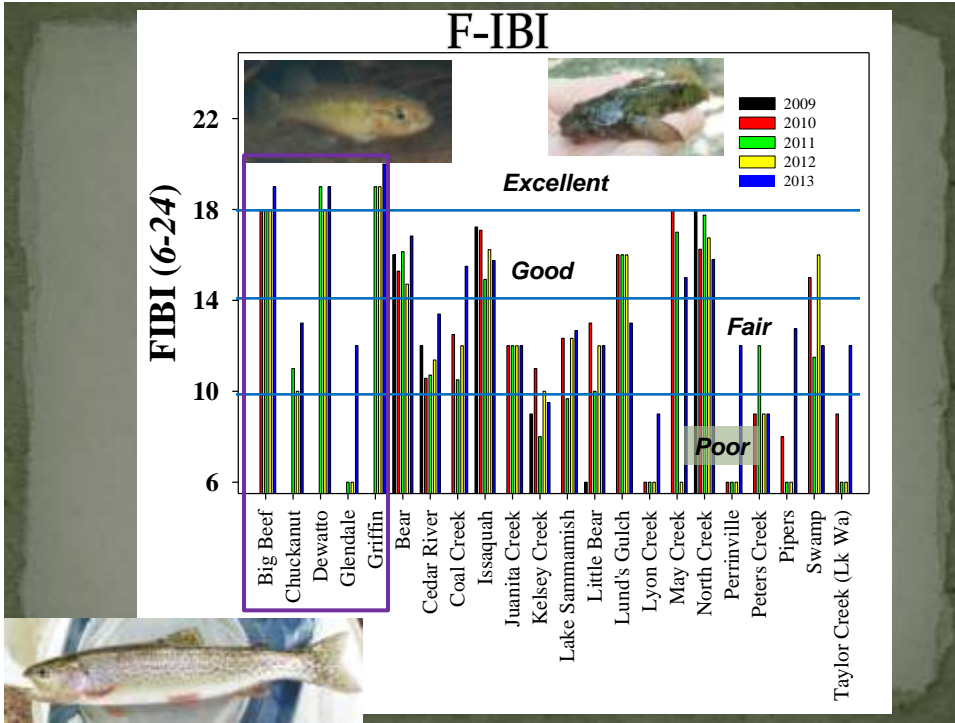


## Preliminary Results



North Creek, 067147





## Land use/Land cover



2005



2010

- Looking at changes in land cover over time
- Using land use classification to better describe how landcover influences salmon recovery and to understand basin scale conditions
- Comparison between land cover metrics (%Forest) and ecological metrics (# of pools)

## Deliverables

- Final Report to EPA describing the relationship between stream flow, aquatic habitat, and biological integrity across land use types in WRIA 8 and 10 sites across Puget Sound (December 2014)
- Report on the status and trends of 50 stream reaches across WRIA 8 (2015)



## Summary

- Year 5 in a 5 year study
- Sampled 57 sites annually
- Many WRIA 8 sites are low in LWD
- BIBI and FIBI scores are much higher in Tier 1 Basins
- Wide range in BIBI and FIBI across watershed and Sentinel sites



## Acknowledgements

- Funding support from EPA, WRIA 8, and King County
- Field Crews from King County and USFWS
- Partners (access, logistics, pooling resources)
- Ecology staff for database support
- Sentinel site team at EPA and Ecology

Issaquah Creek, 035623