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

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U.S. Fish & 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 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 pools decrease in a stream the biotic integrity of that stream will also decrease.

- H_4: If the salmon recovery plan in WRIA 8 is successful, then indicators of biotic integrity will increase in basins where restoration actions are prescribed.

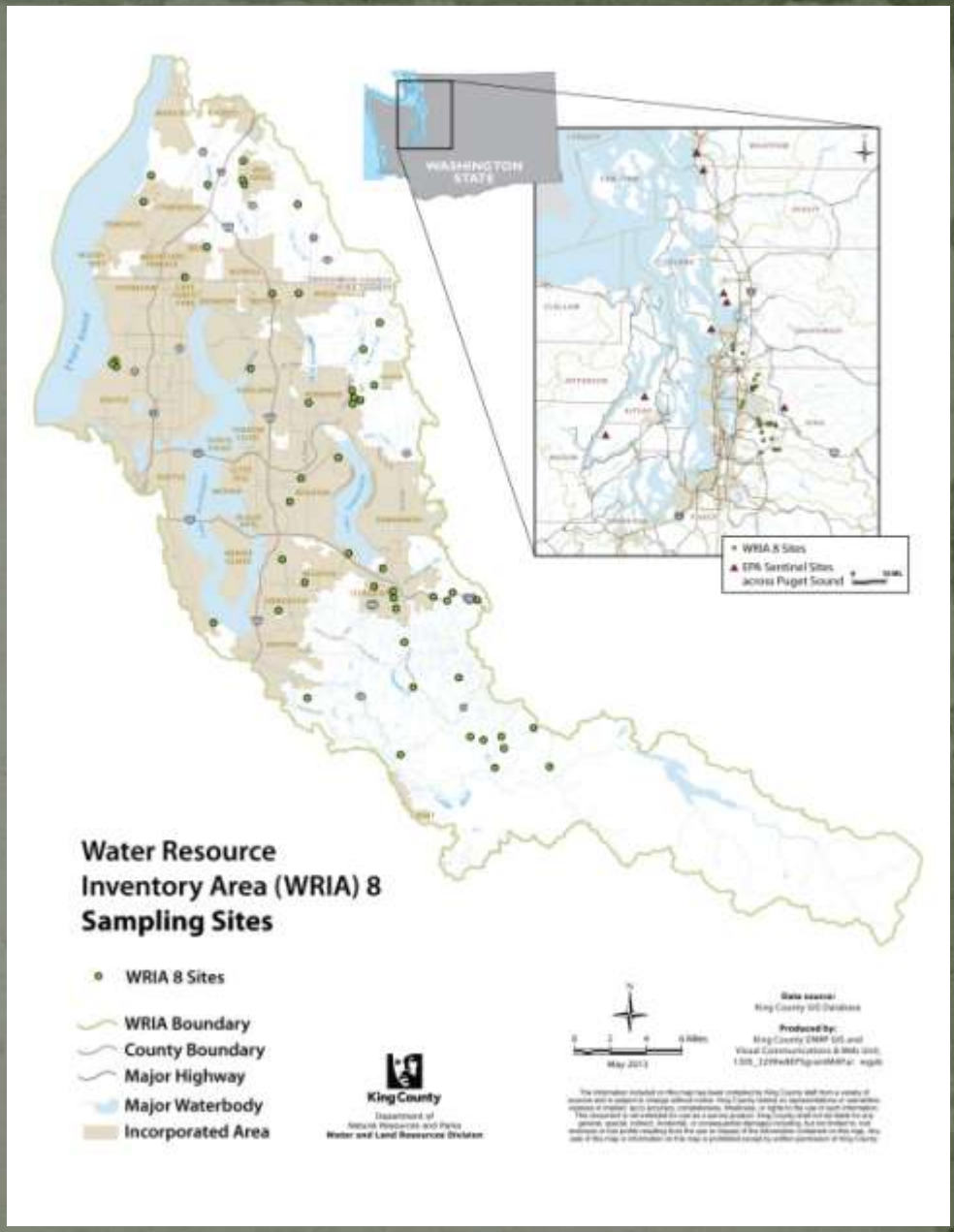
Timeline and Budget

		Year				
Major Task	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Project Management		*X*	*X*	*X*	*X*	*X*
Sampling Plan Preparation	*X*	*X*				
Field Sampling	*X*	*X*	*X*	*X*	*X*	
Analysis				*X*	*X*	*X*
Outreach				*X*	*X*	*X*
Deliverables						*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









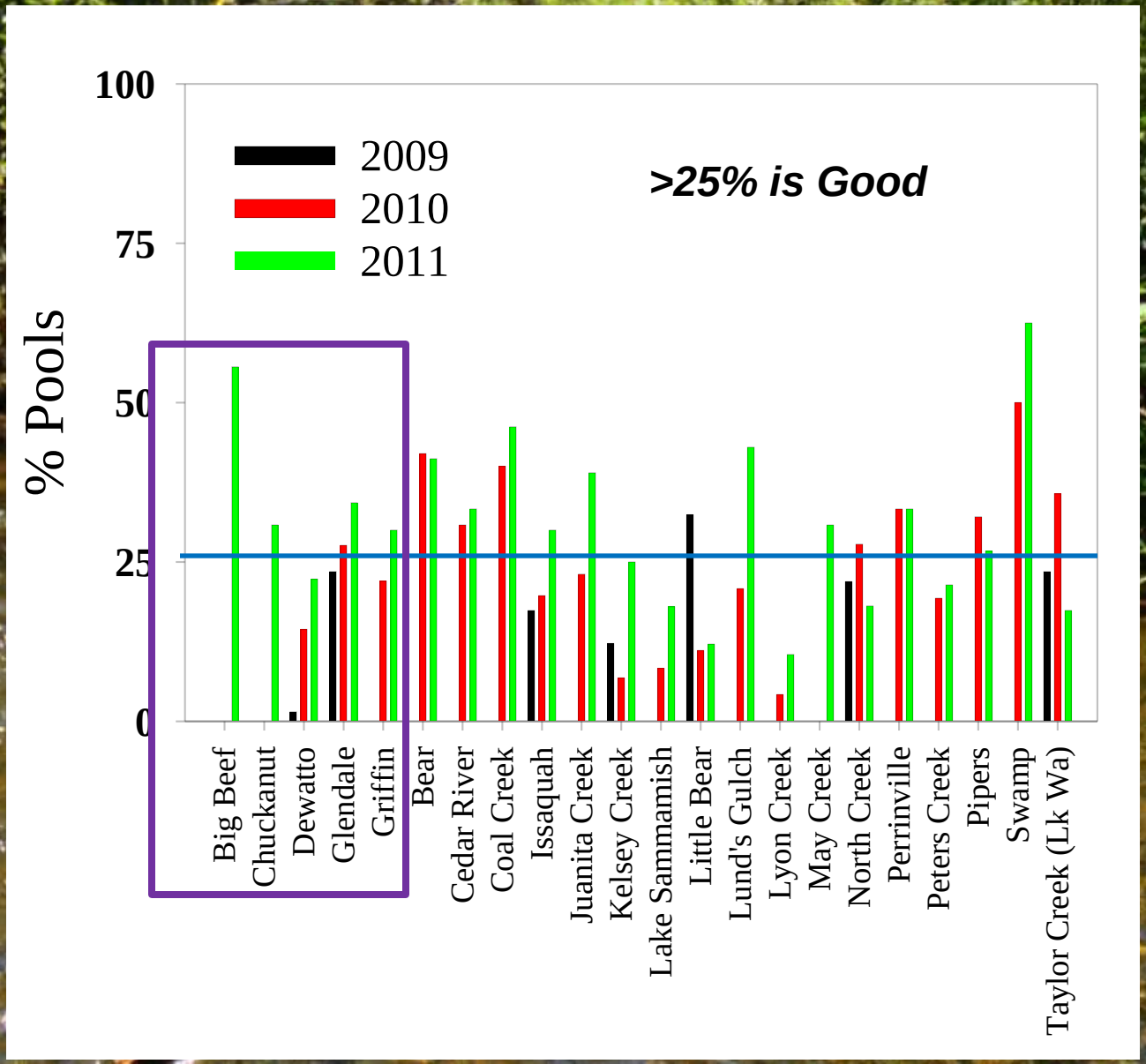


Preliminary Results

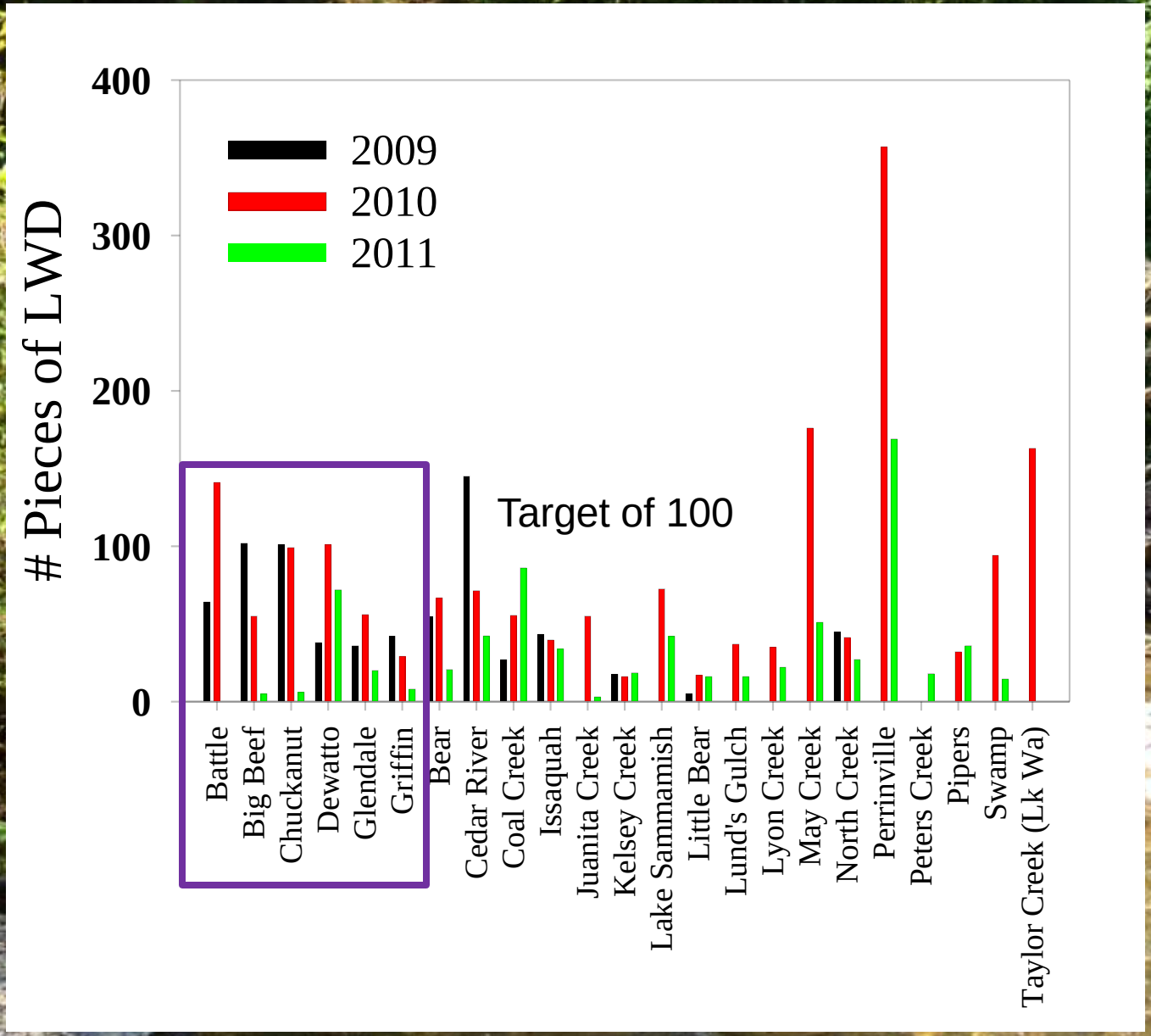


North Creek, 067147

Percent Pool Habitat



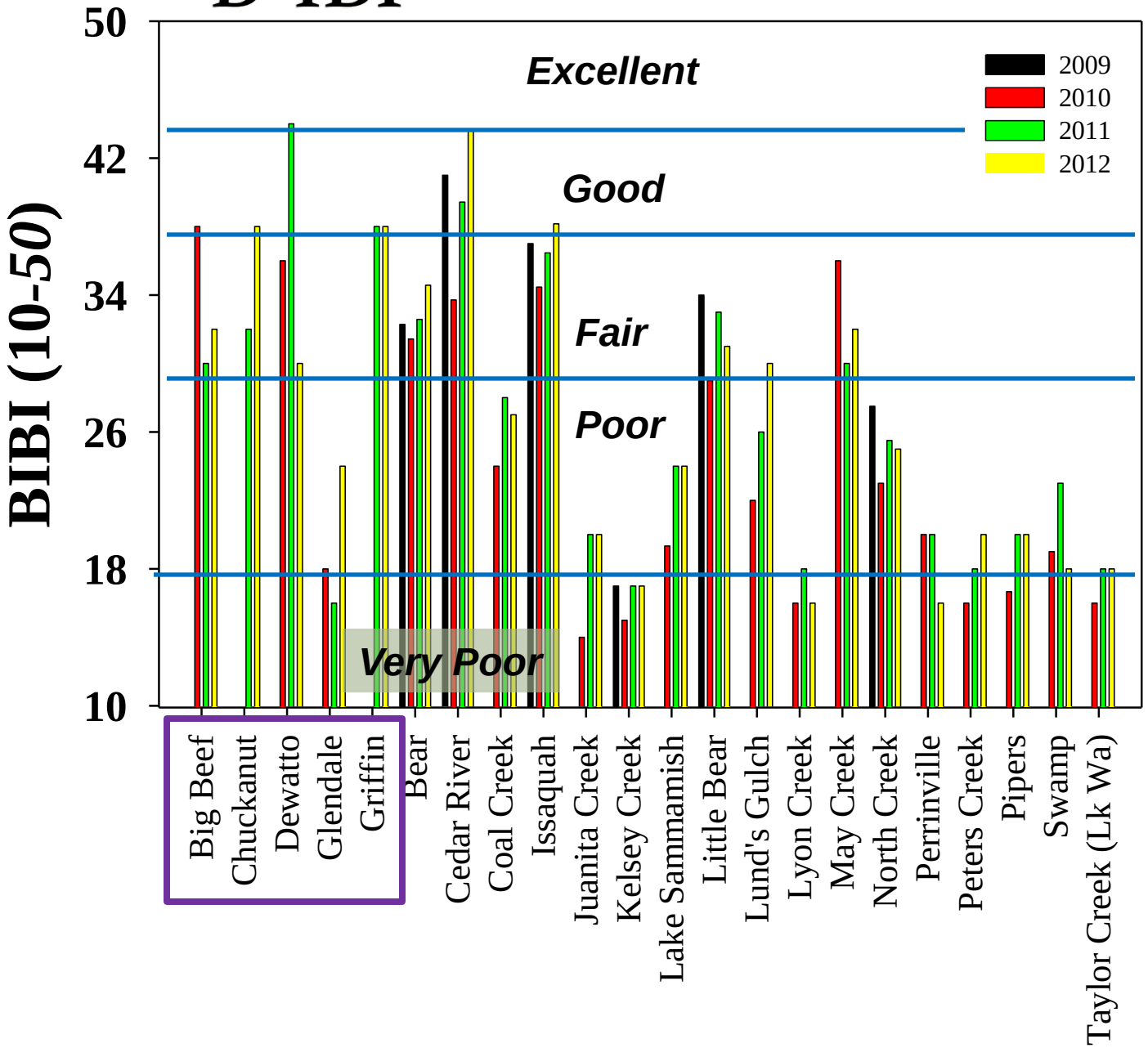
Counts of Large Woody Debris







B-IBI


BIBI (10-50)
50
42
34
26
18
10
Excellent
Good
Fair
Poor
Very Poor
2009
2010
2011
2012
Big Beef
Chuckanut
Dewatto
Glendale
Griffin
Bear
Cedar River
Coal Creek
Issaquah
Juanita Creek
Kelsey Creek
Lake Sammamish
Little Bear
Lund's Gulch
Lyon Creek
May Creek
North Creek
Perrinville
Peters Creek
Pipers
Swamp
Taylor Creek (Lk Wa)

F-IBI





2009
2010
2011
2012

FIBI (6-24)

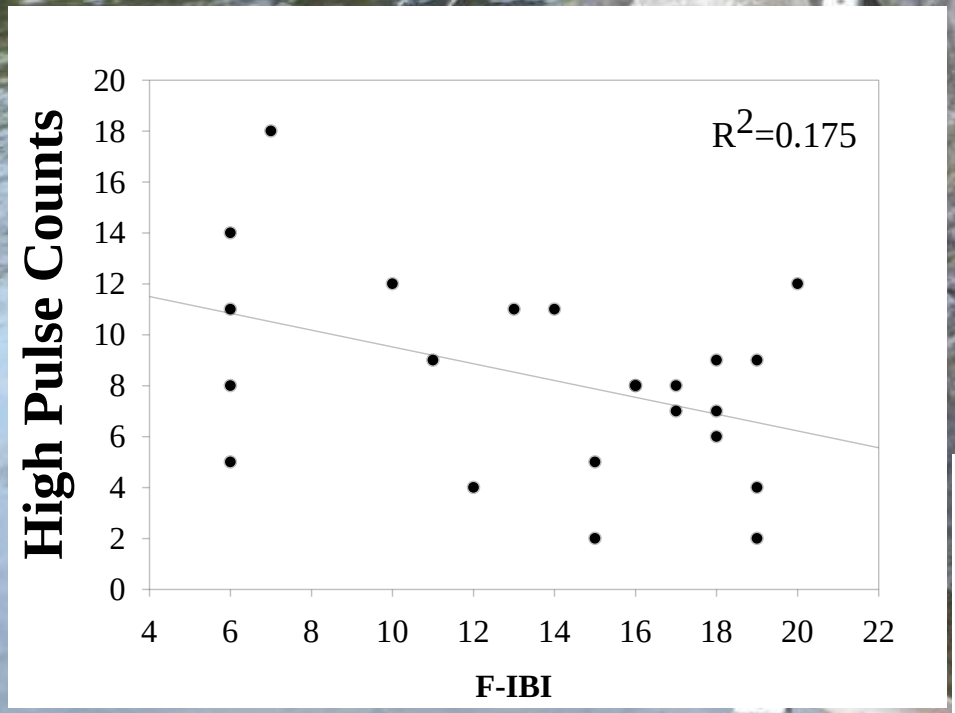
22
18
14
10
6

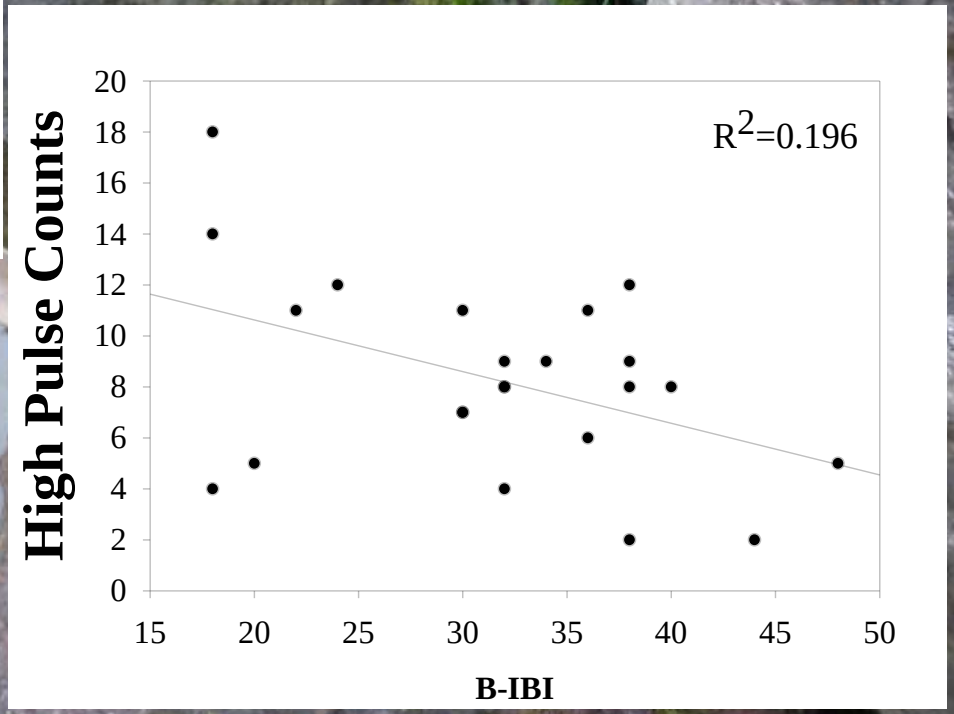
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Lund's Gulch
Lyon Creek
May Creek
North Creek
Perrinville
Peters Creek
Pipers
Swamp
Taylor Creek (Lk Wa)



High Pulse Counts





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

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 (2014)
- Report on the status and trends of 50 stream reaches across WRIA 8 (2014)





Summary



- Year 4 in a 5 year study
- Currently sampling 57 sites annually
- %pools is considered good for ~1/3 of our sites
- WRIA 8 sites are low in LWD
- BIBI and FIBI scores are much higher in Tier 1 Streams
- 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