

USING B-IBI TO IDENTIFY PUGET SOUND WATERSHEDS FOR RESTORATION AND PROTECTION

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Funded by EPA federal pass through funds via WA Dept. of Ecology as part of the PSP Action Agenda: Ecosystem Restoration and Protection Project



King County

Department of
Natural Resources and Parks
Water and Land Resources Division

NWFSC Watershed Program

May 5, 2014

B-IBI: PSP Vital Sign Indicator



Ecosystem Recovery Targets

Freshwater Quality B-IBI Targets by 2020:

- PROTECTION - All stream drainage areas retain “excellent”
- RESTORATION - 30 basins improve from “fair” to “good”

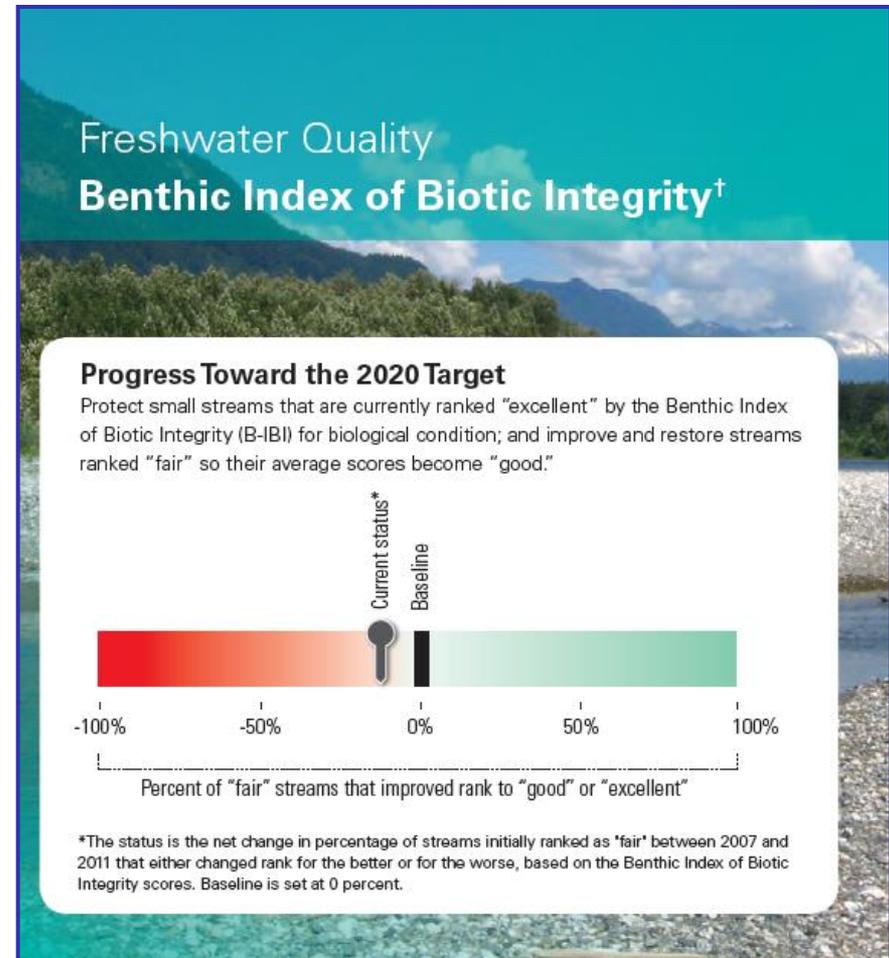


State of the Sound

 On the ground progress towards targets: none

 Currently no funding for restoration & protection implementation or effectiveness monitoring

 Funding for King Co. to prioritize basins & develop strategies (this project)



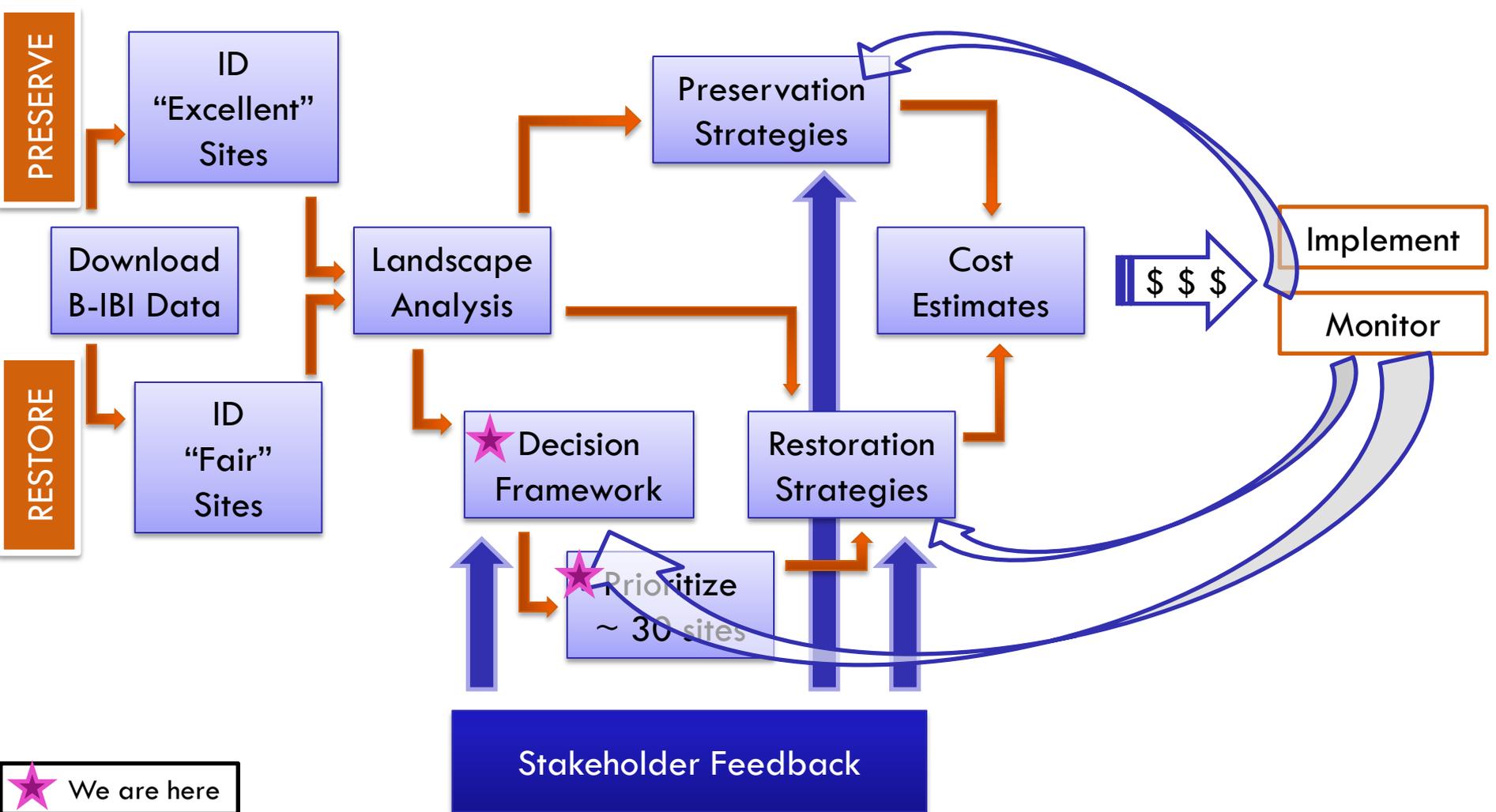
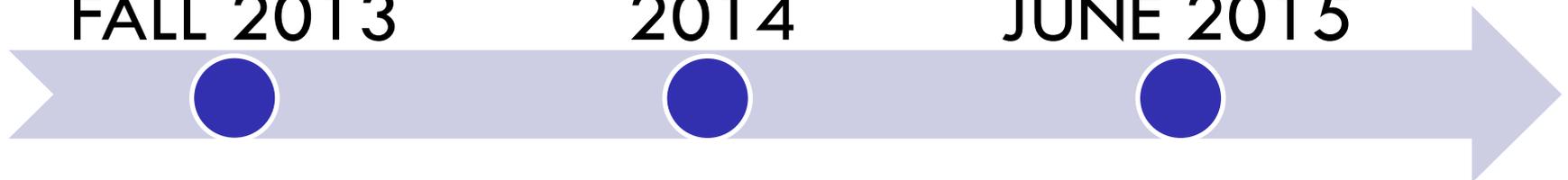
Limits and Opportunities

- EPA Restoration framework vs. opportunistic, single site actions
- Thoughtful, practical approach
 - using only the data we have available
 - identify where we should focus, what other data we would want
- Not fish focused, though restoration activities that benefit fish would likely benefit bugs
- May be able to leverage additional support for restoration if there are fish recovery goals for the stream or watershed

FALL 2013

2014

JUNE 2015



Download B-IBI Data:

www.pugetsoundstreambenthos.org

Puget Sound Stream Benthos

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Analysis: [Benthic Index of Biotic Integrity](#)

[Show Criteria](#)

[Clear & Use Default Options](#)

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Area

Project

Location or Keyword

All Puget Sound Streams

All Projects

Open in new tab

[Plot on Map](#)

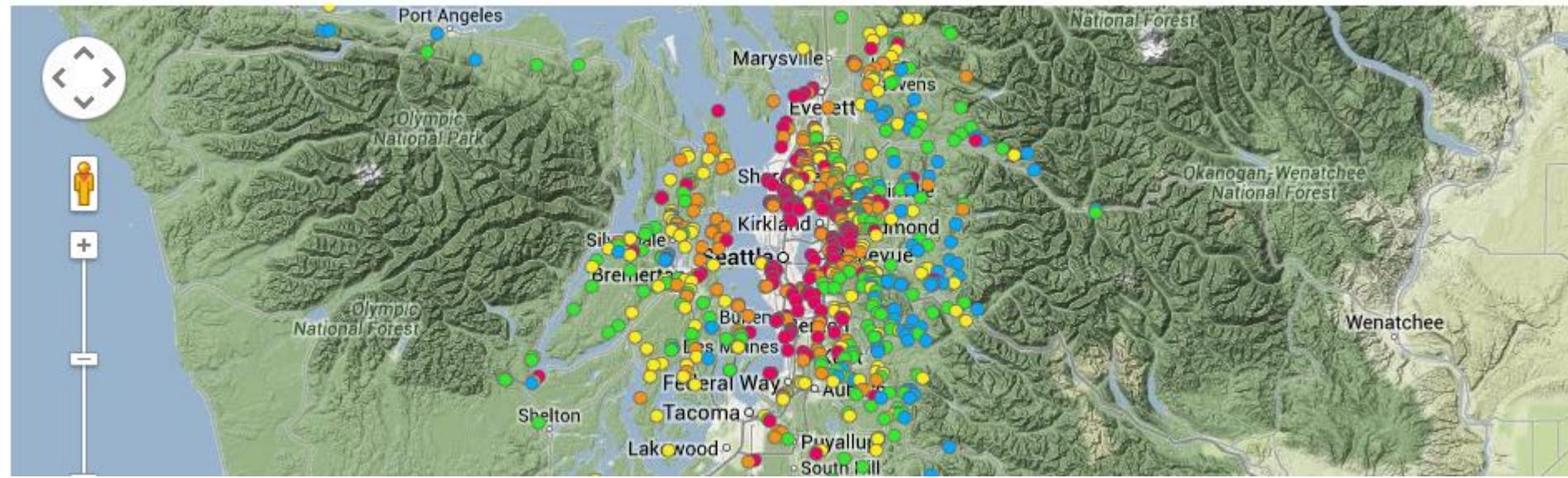
[Tabulate](#)

[Tabulate Trend](#)

[Chart Trend](#)

[Show Samples](#)

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“Excellent” Sites (≥ 42) = Protection

“Excellent” scores

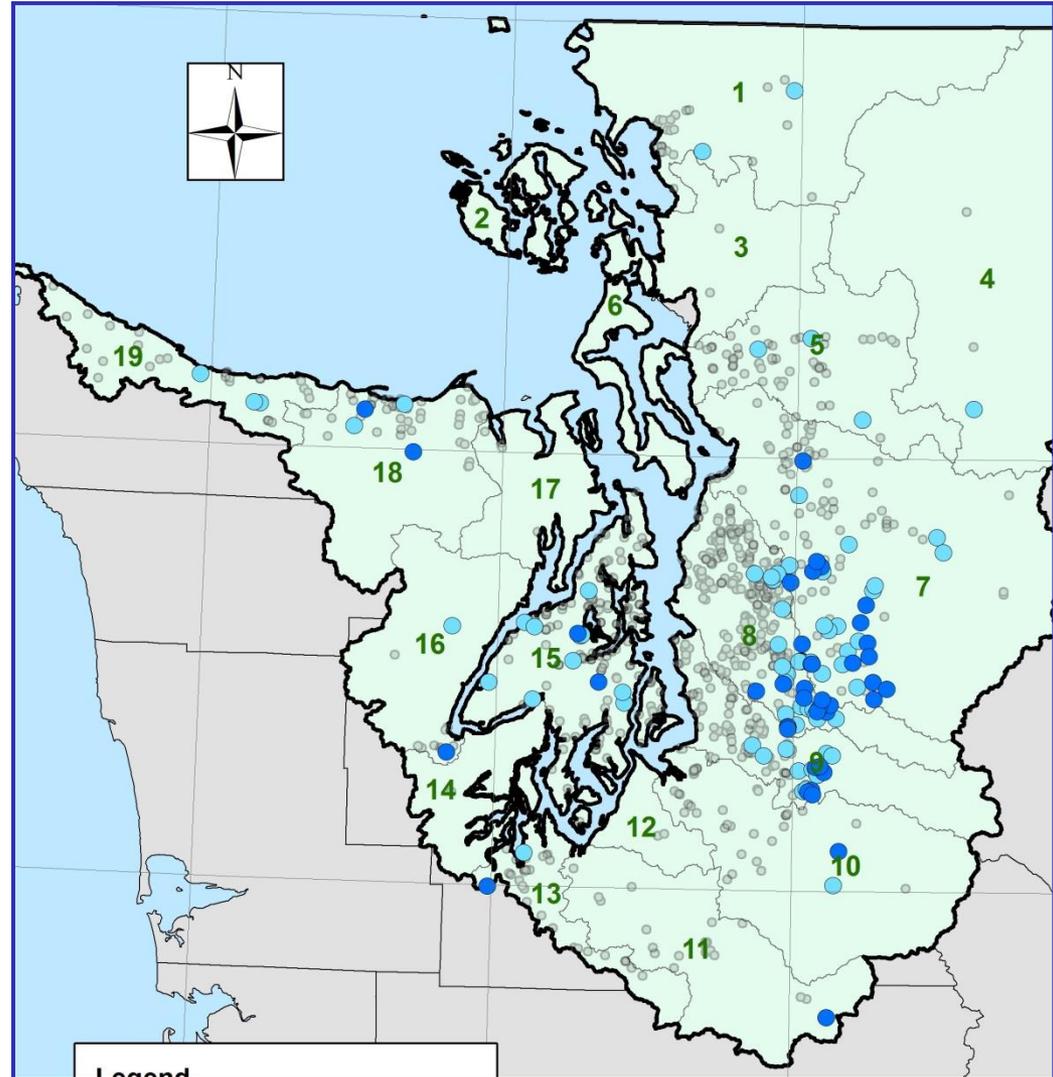
● ≥ 46

● ≥ 42 and < 46

 **121** sites scored
“excellent” at least once

 **35** sites had a median
“excellent” score

 **33** sites averaged
“excellent”



“Fair” Sites (28-36) = Restoration

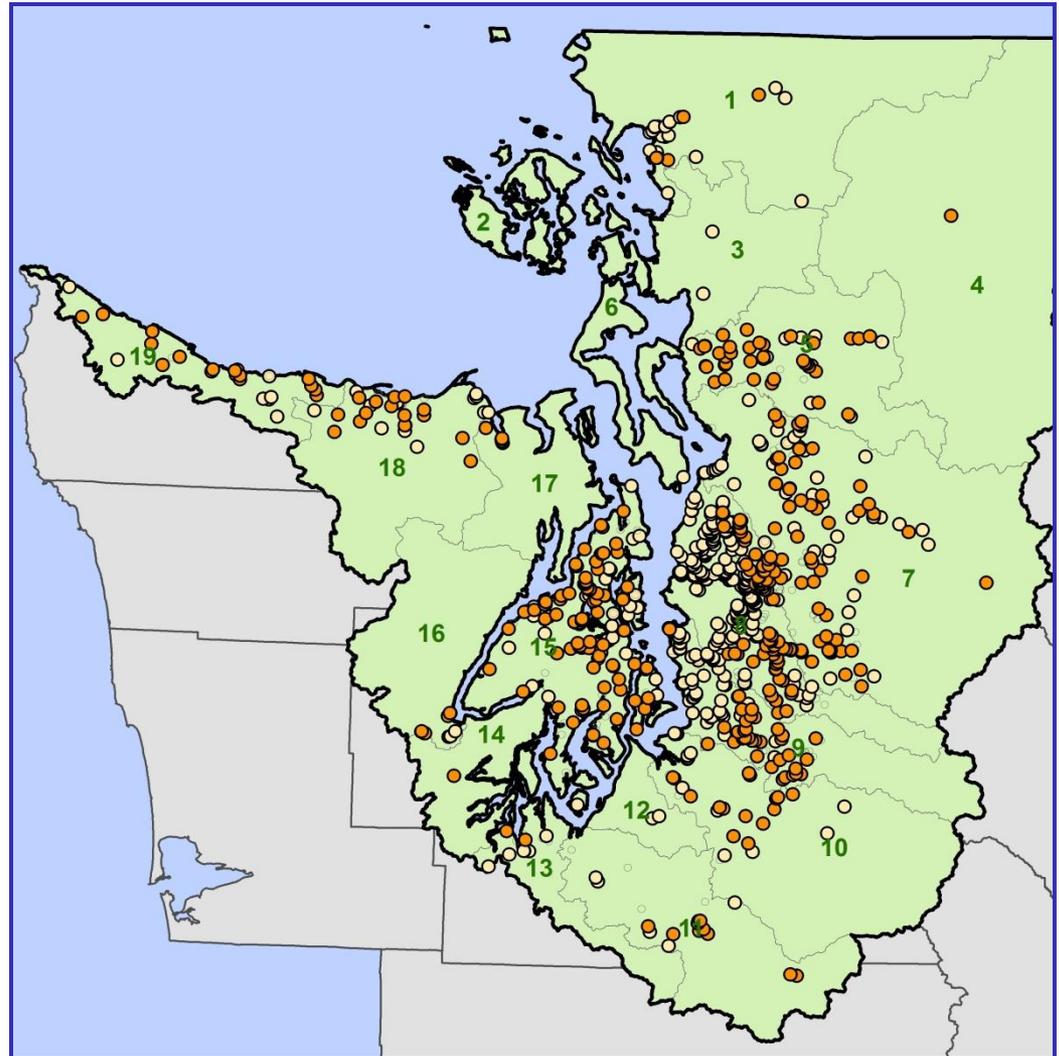
● “Fair” average

○ “Fair” at least once

🐛 **648** sites scored “fair”
at least once

🐛 **454** sites with median
“fair” scores

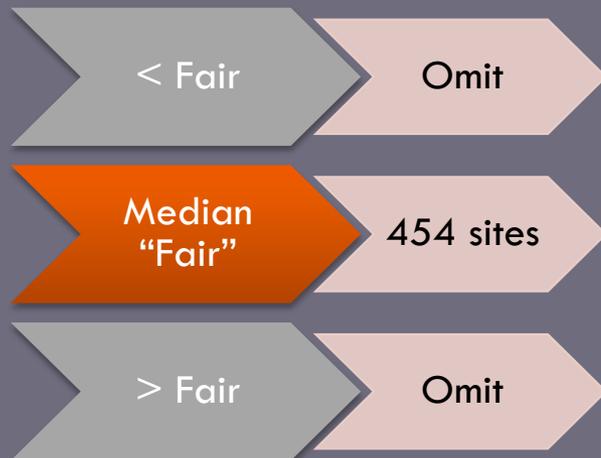
🐛 **428** sites averaged
“fair”



Restoration Decision Framework

Filtering

Applied first. Criteria used to reduce number of sites considered.



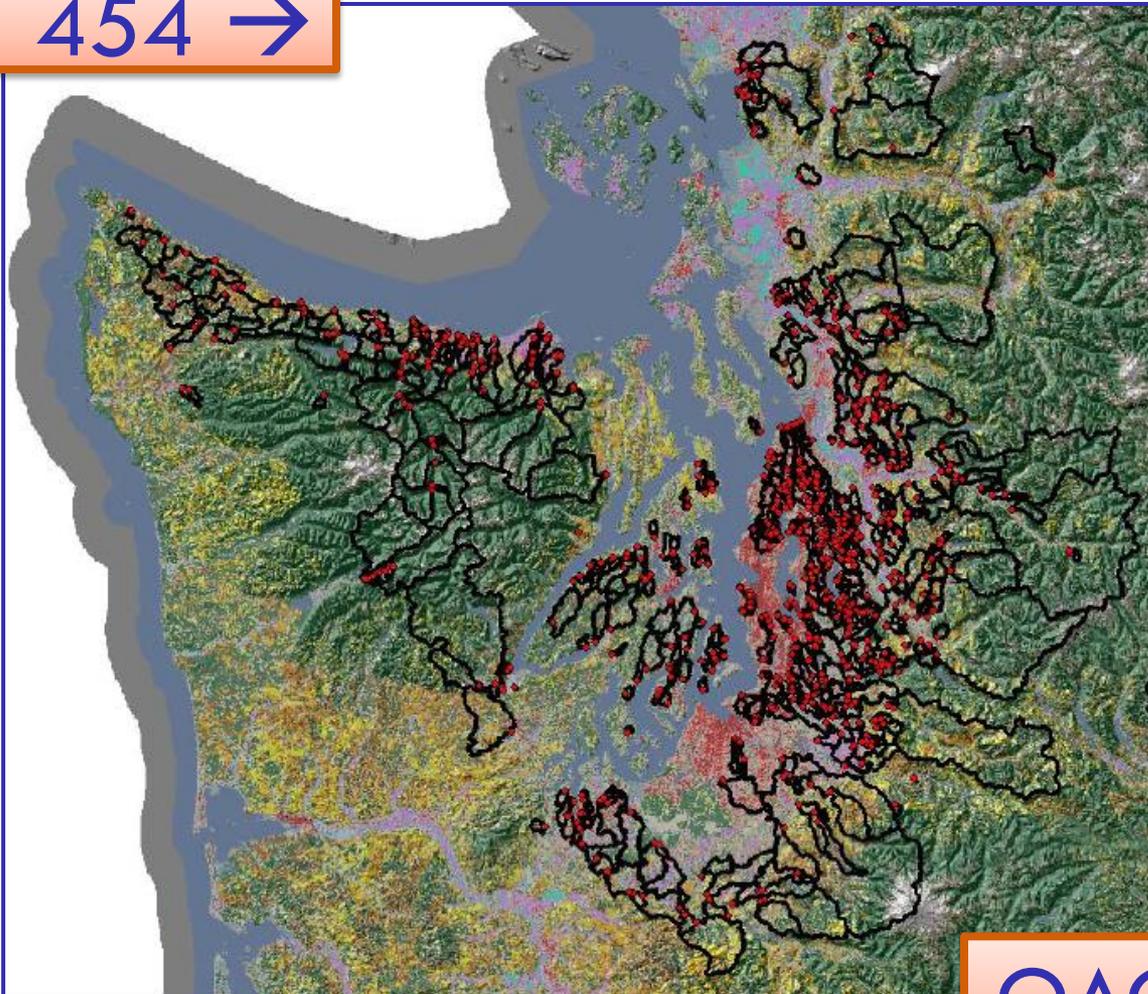
Ranking/Scoring

Applied after filtering. Uses a cumulative ranking to assess the criteria and assign a score to each site so that the sites can be prioritized.

	SITE 1	SITE 2	SITE 3
Watershed Context	2	1	0
Biotic Potential	2	2	1
OVERALL SCORE	4	3	1

Landscape Analysis

454 →



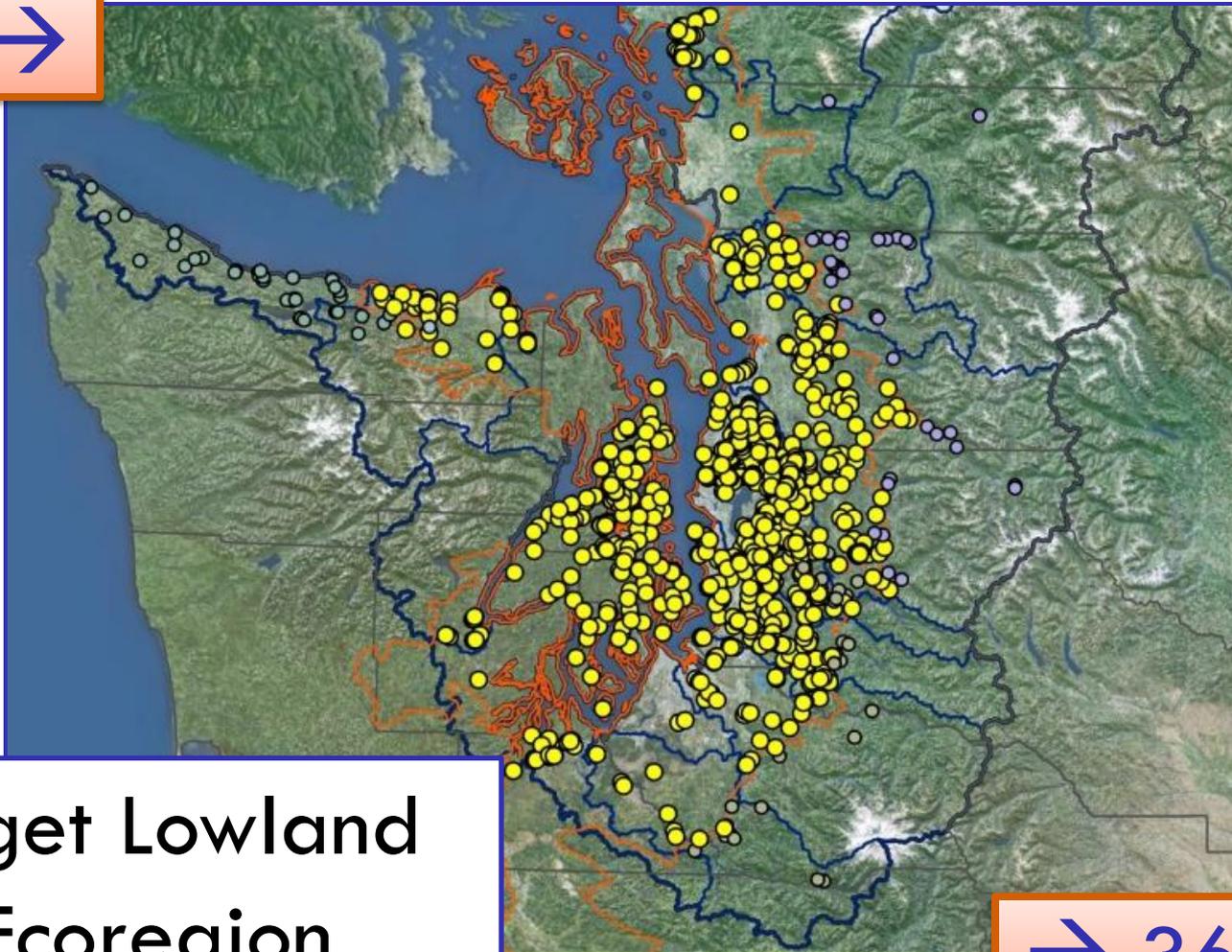
- ✈ Basin delineation
- ✈ Scale
- ✈ Watershed
- ✈ Local (1 km)
- ✈ Buffer (90-m)
- ✈ Metrics
- ✈ Landcover
- ✈ Geology
- ✈ Site characteristics

QAQC → 432



Initial Filters: Ecoregion

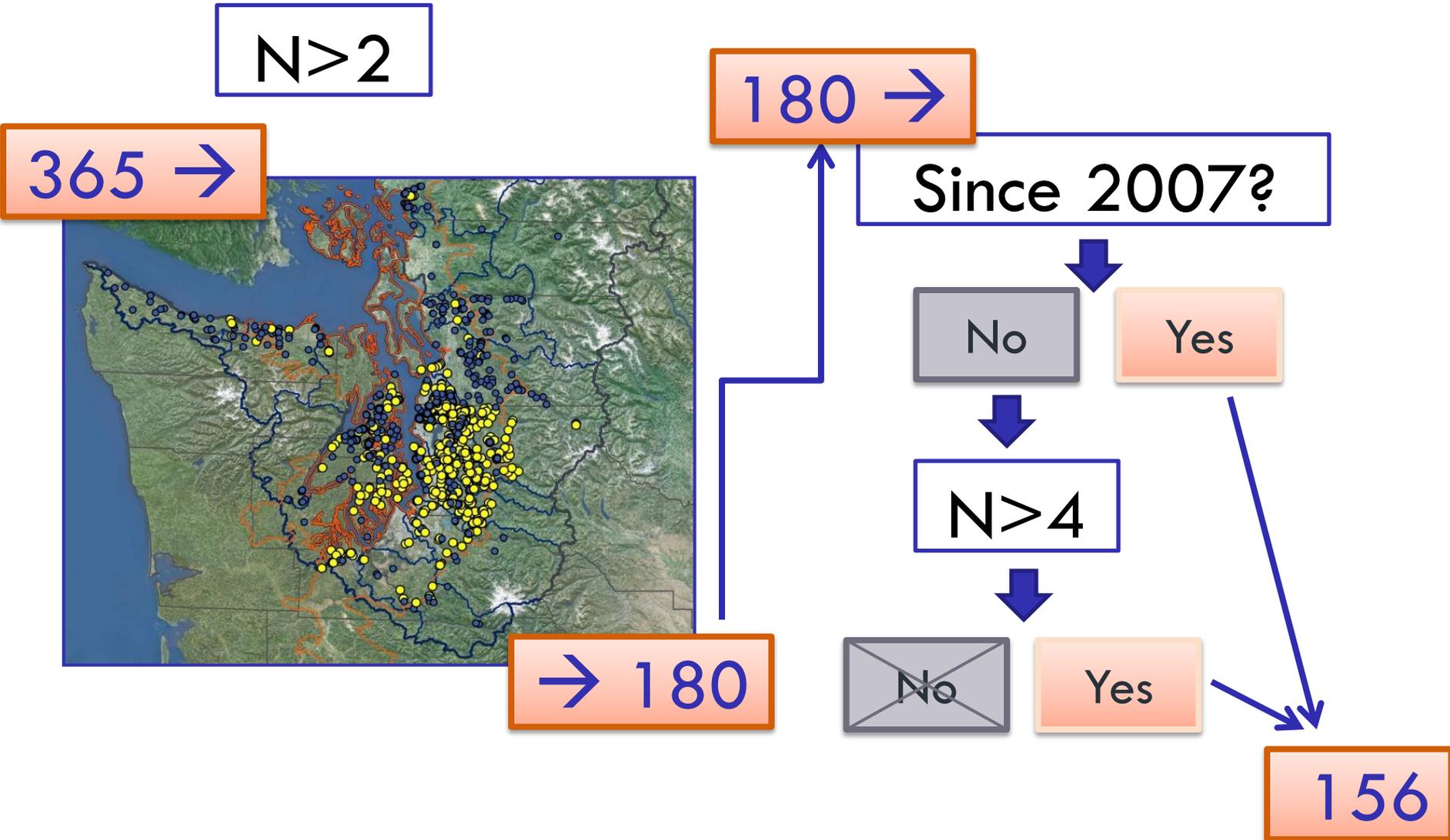
432 →



Puget Lowland
Ecoregion

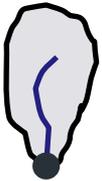
→ 365

Initial Filters: Sampling History

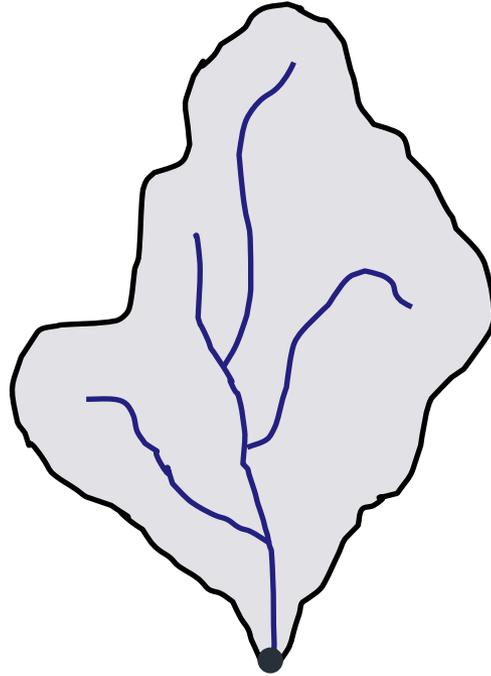


Initial Filters: Watershed Area

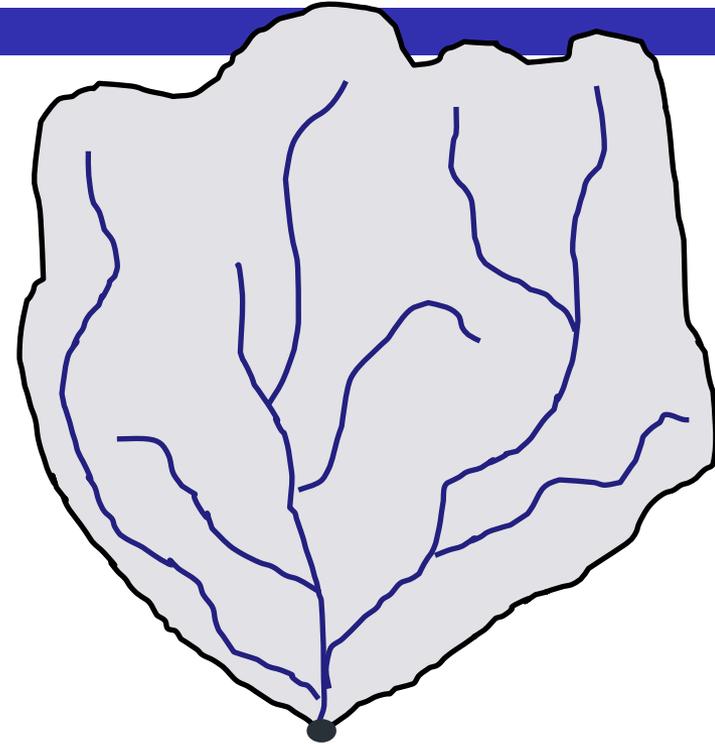
156 →



<200 Acres:
Too Small



200-3000 Acres:
Just Right



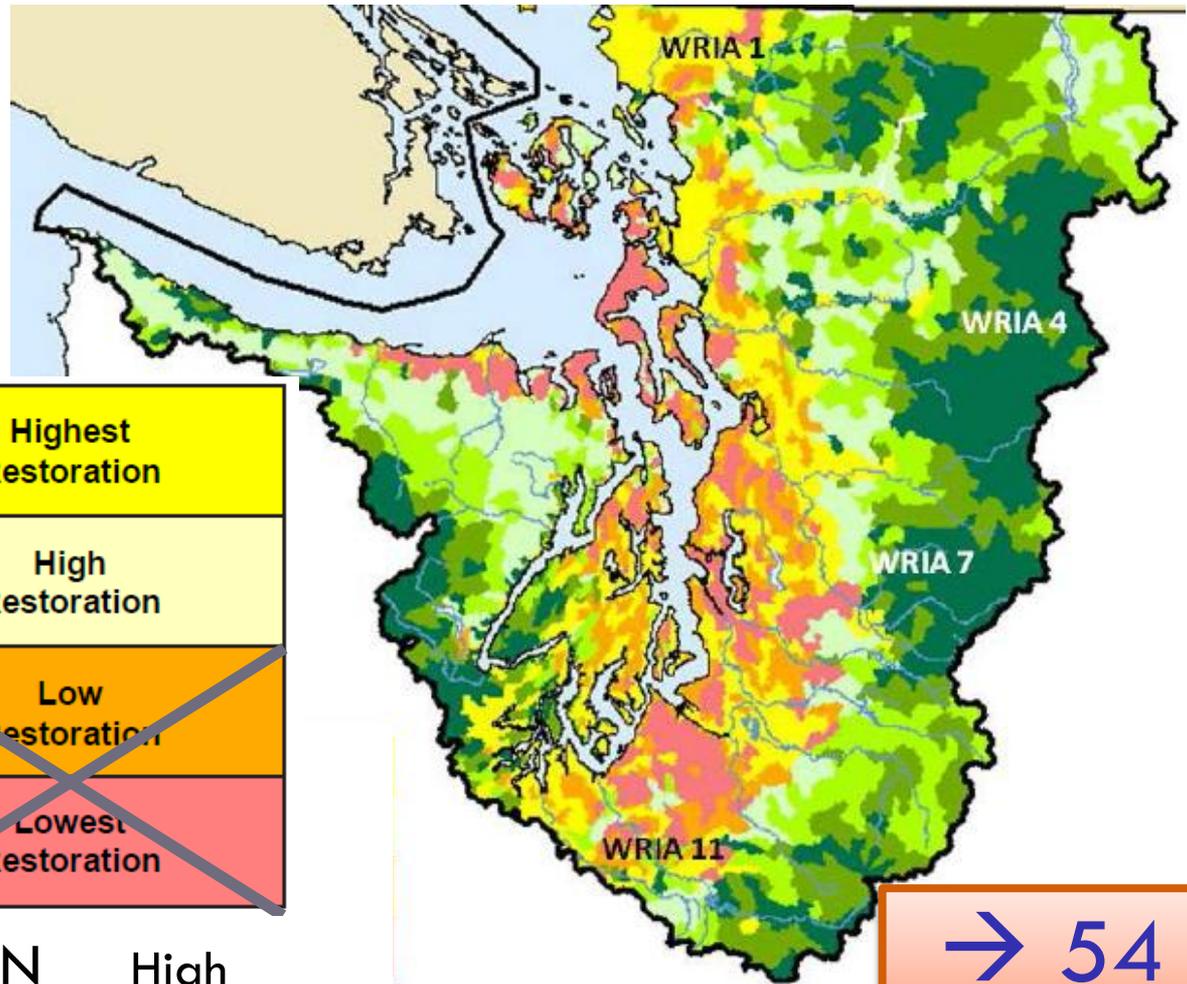
>3000 Acres:
Too Big

→ 72

Initial Filters: PSWC

72 →

PS Watershed Characterization



IMPORTANCE	High	Highest Protection	Highest Restoration
	High	High Protection	High Restoration
	Low	Low Protection	Low Restoration
	Low	Lowest Protection	Lowest Restoration
		Low	High
		DEGRADATION	

→ 54

Watershed Context

Worst = 0

- Urban > 30%
- Buffer < 50% natural

Moderate = 1

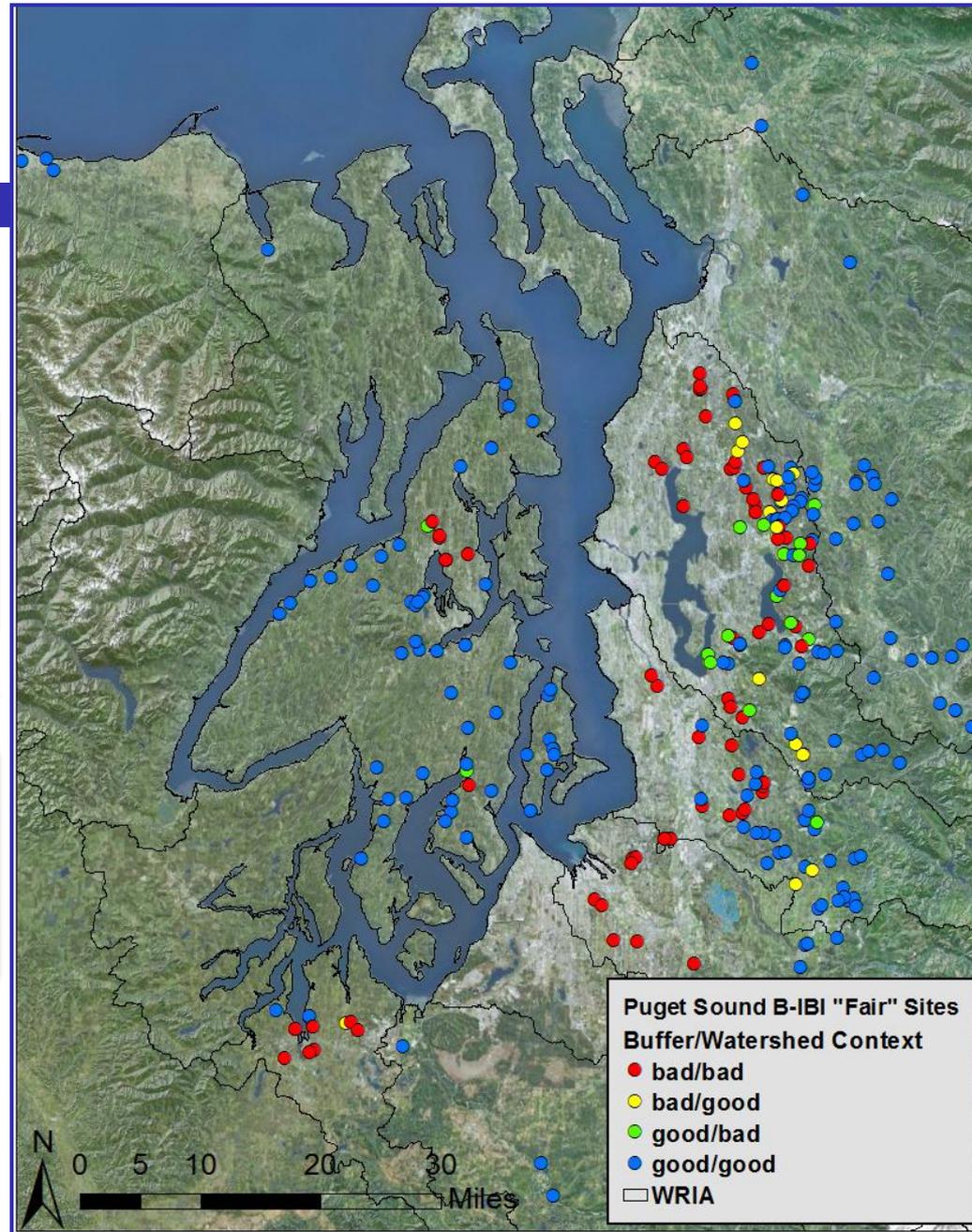
- Urban > 30%
- Buffer > 50% natural

Good = 2

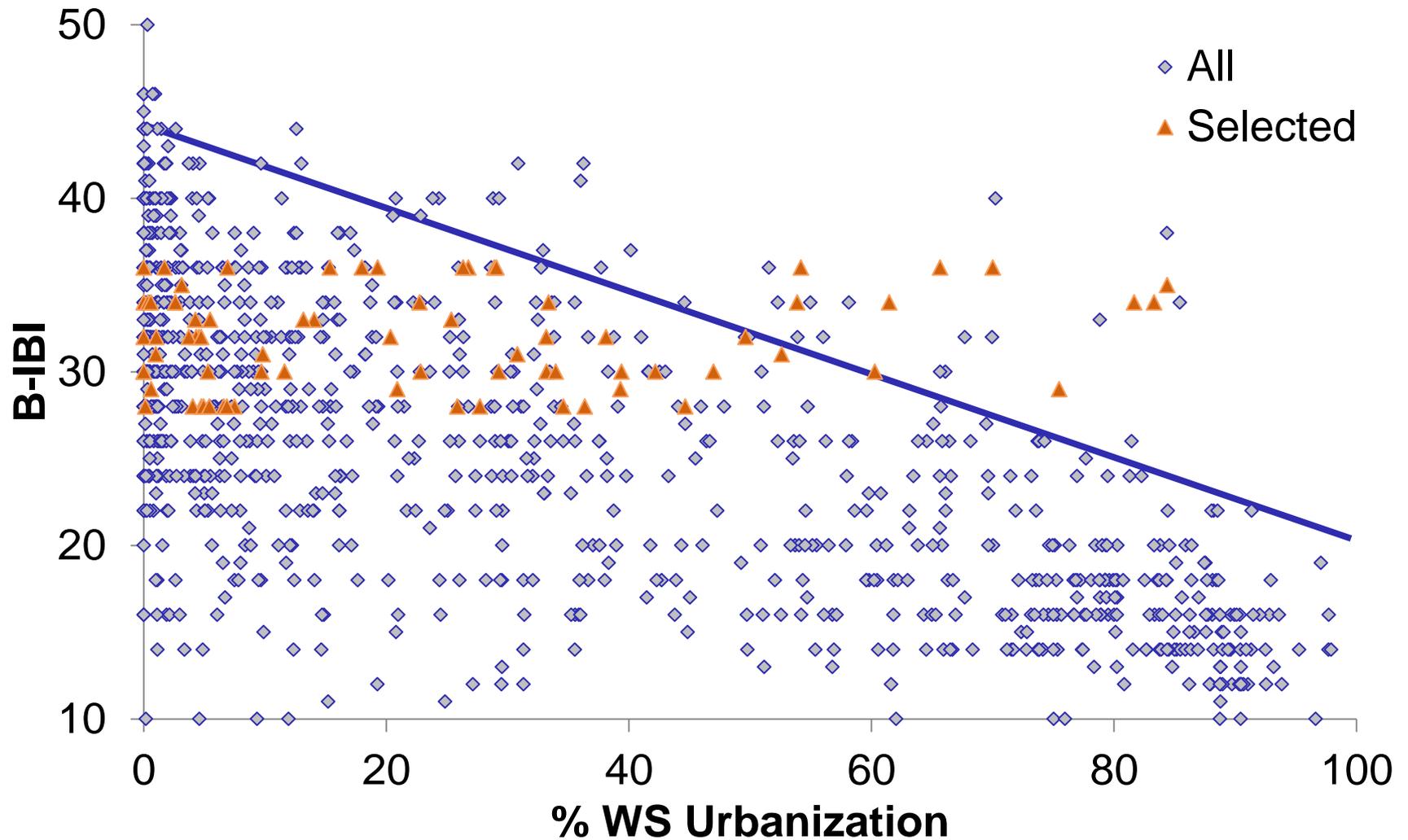
- Urban < 30%
- Buffer < 50% natural

Best = 2

- Urban < 30%
- Buffer > 50% natural



Biotic Potential – all scores



Recap: Framework

- Landscape data
 - Puget Sound Ecoregion
 - Sampling history
 - Watershed area
 - Puget Sound Watershed Characterization
 - Watershed context
 - Biotic potential
-
- Connectivity
 - Land ownership
 - Fish use

Next Steps: Restoration

What is Feasible? Effective?

- Habitat improvements
- Riparian plantings
- SW retrofits
- Agriculture BMPs
- Education/outreach
- Legislation
- Incentives
- Seeding inverts...



Project Web Page:

<http://pugetsoundstreambenthos.org/Projects/Restoration-Priorities-2014.aspx>

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Restoration Priorities

Strategies for Preserving and Restoring Small Puget Sound Drainages

Background

In fall 2013 the King County Water and Land Resources Division finalized a two year interagency agreement with the Washington State Department of Ecology funded by Environmental Protection Agency pass through funds as part of the Puget Sound Action Agenda Ecosystem and Protection Project. The purpose of this project is to develop strategies and cost estimates for preserving all Puget Sound drainages with "excellent" benthic index of biotic integrity (B-IBI) scores ecosystem recovery targets. This project is intended to manage urban runoff at the basin and watershed scale.

This project relies on existing data and does not include from the Puget Sound Stream Benthos website and site be identified. A geospatial analysis will be done to deline including land cover and geology in addition to site chara

King County staff working with the Puget Sound Watersh with "fair" scores and prioritize 30 sites for the developm stakeholders. Once the 30 sites are prioritized, planning activities on a general cost per unit of activity - such as individual restoration projects will not be developed.

King County will also develop strategies for preserving ba purchase, conservation easement purchase, and transfe

Documents and Presentations

[Deliverable for Task 2: Geospatial Analysis](#), Chris Gregersen, Jo Wilhelm, Chris Knutson

[Quality Assurance Project Plan \(QAPP\)](#), Jo Wilhelm, Chris Gregersen

[Signed Interagency Agreement \(C1300210\)](#), WA Dept of Ecology, King County WLRD

Puget Sound B-IBI Advisory Group Meeting [\[hide\]](#)

February 2014, Seattle, WA

[Prioritizing Stream Preservation & Restoration Based on B-IBI](#), Jo Wilhelm

PSP Science-Policy Workshop [\[hide\]](#)

December 2013, Seattle, WA

[Implementation Strategies: Freshwater Insect Recovery Target](#), Jo Wilhelm

NW Biological Assessment Workgroup Meeting [\[hide\]](#)

November 2013, Astoria, OR

[Using B-IBI to Set Restoration Targets for Puget Sound Watersheds](#), Jo Wilhelm, Leska Fore

Acknowledgements



King County:

Gino Lucchetti, Kate O’Laughlin, Jim Simmonds, Kerry Thrasher

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PS Watershed Characterization:

Ecology: Susan Grigsby, Colin Hume, Stephen Stanley, Kelly Slattery

WDFW: George Wilhere

Ecology Project Administration:

Tom Gries, Kim Harper, **Doug Howie**, Kirsten Weinmeister

Stakeholder Workgroup



The background of the slide is a photograph of a stream. In the foreground, several dark, segmented aquatic insects, likely stoneflies, are resting on a flat, light-colored rock. The water is shallow and clear, revealing a bed of smooth, rounded stones of various sizes and colors (tan, grey, brown) in the background. The lighting is natural, suggesting an outdoor setting.

?’s/Suggestions/Success Stories

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