

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

Science Seminar

November 5, 2014

B-IBI: PSP Vital Sign Indicator



PSP 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”

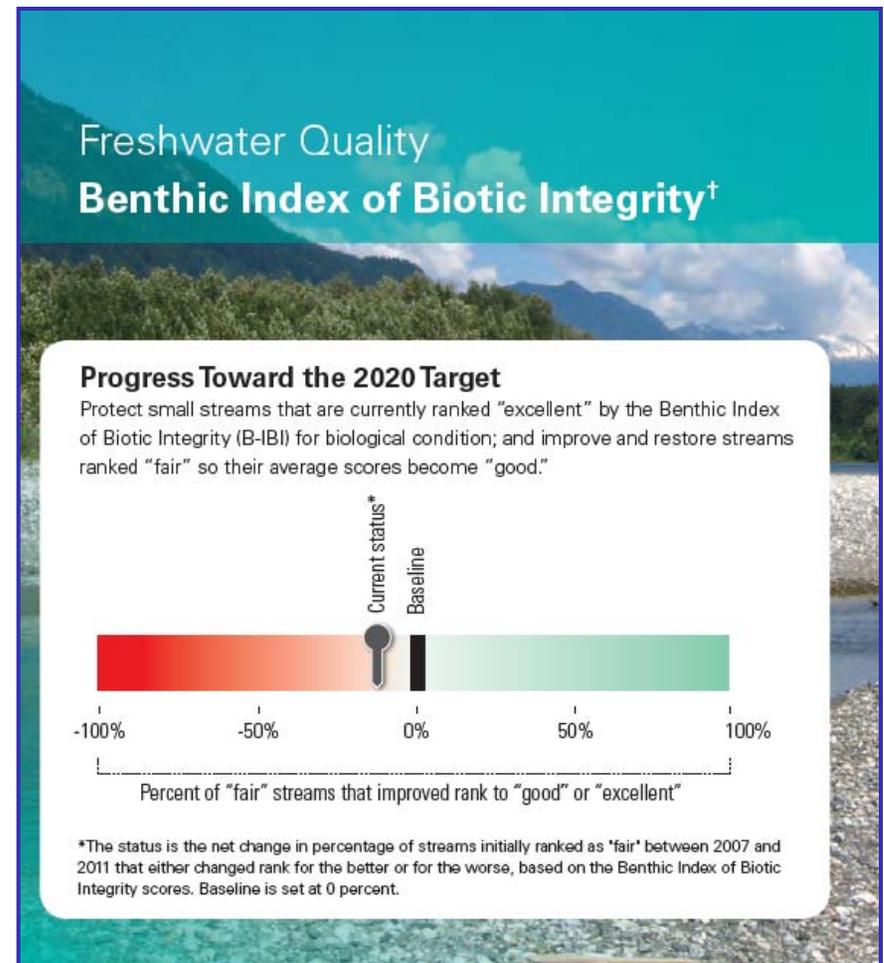


PSP Report Card

 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

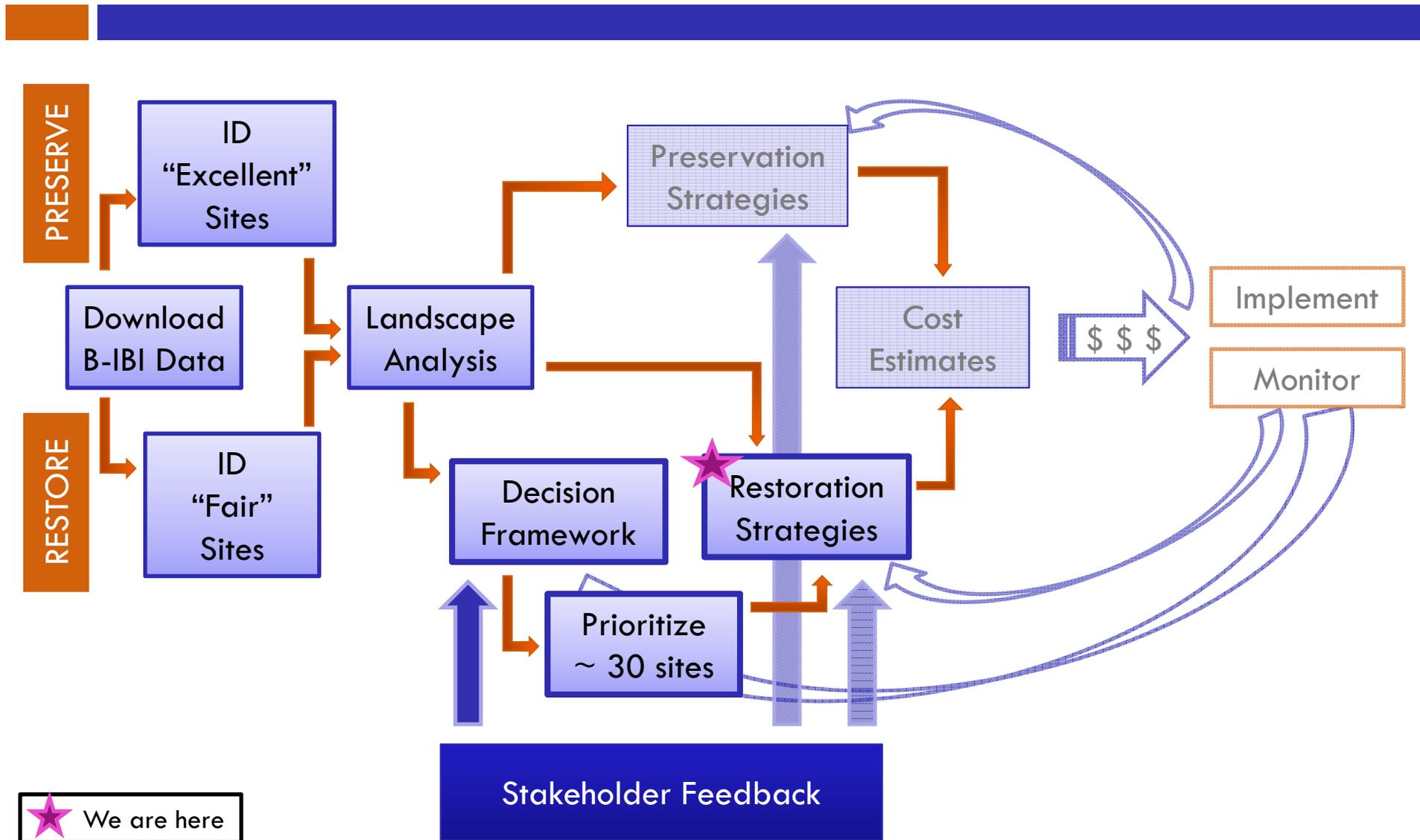


- EPA Restoration framework vs. opportunistic, single site actions
- Thoughtful, practical approach
 - using only the data we have available
 - identify where we should focus, what other data we would want
- Not fish focused, though restoration activities that benefit fish would likely benefit bugs
- 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



★ We are here

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](#) [Show More Options](#)

Area: All Puget Sound Streams | Project: All Projects | Location or Keyword:

Open in new tab | [Plot on Map](#) | [Tabulate](#) | [Tabulate Trend](#) | [Chart Trend](#) | [Show Samples](#) | [Download...](#)

The map displays the Puget Sound region with numerous sampling locations marked by colored dots. Key geographical features labeled include Port Angeles, Marysville, Everett, Shiro, Kirkland, Almond, Seattle, Bellevue, Burien, Federal Way, Tacoma, Lakewood, Puyallup, South Hill, Shelton, Olympic National Park, Olympic National Forest, Okanogan-Wenatchee National Forest, and Wenatchee.

“Excellent” Sites (≥ 42) = Protection

“Excellent” scores

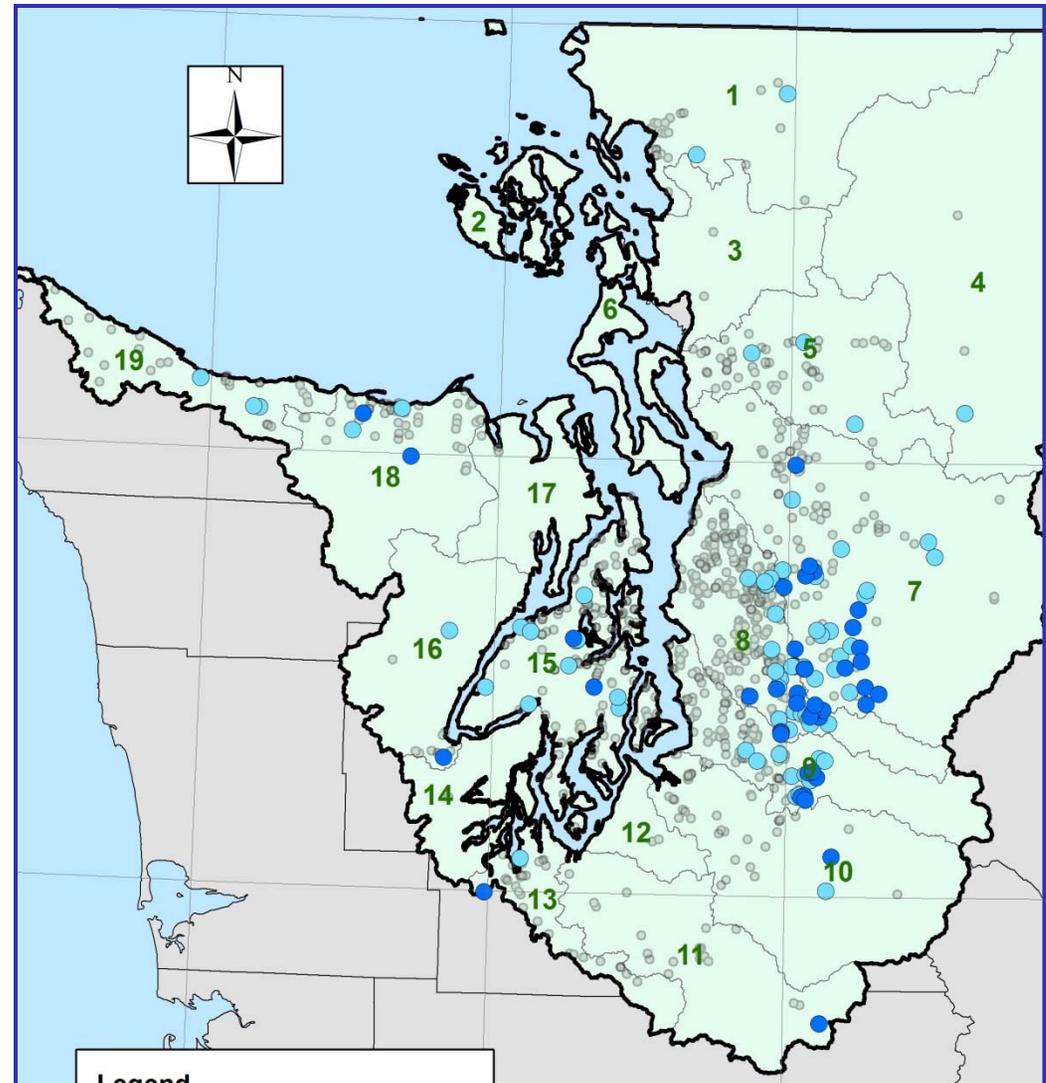
● ≥ 46

● ≥ 42 and < 46

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

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

 **33** sites averaged
“excellent”

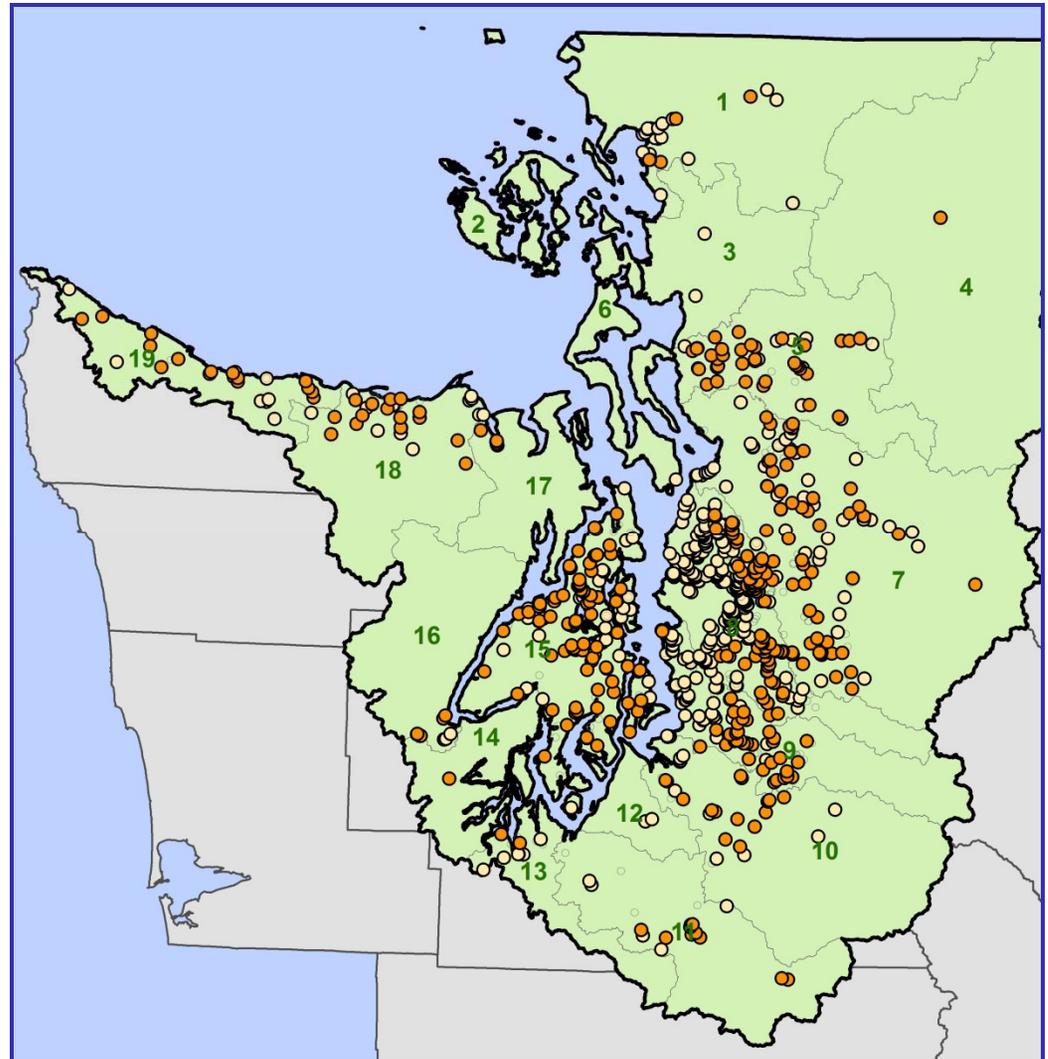


“Fair” Sites (28-36) = Restoration

- “Fair” average
- “Fair” at least once

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

 **439** sites with median
“fair” scores

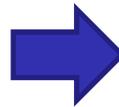
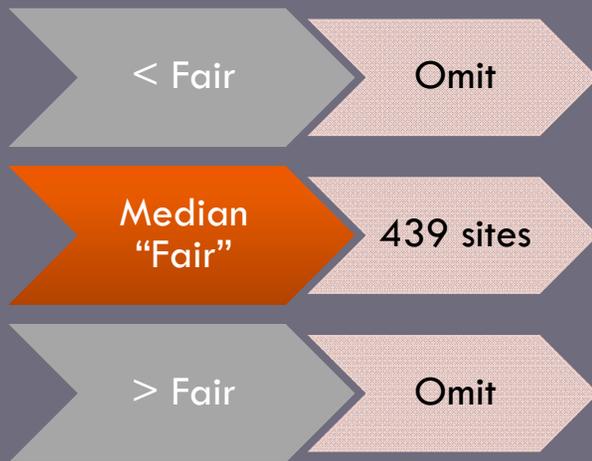


Restoration Decision Framework

Part 1

Filtering

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



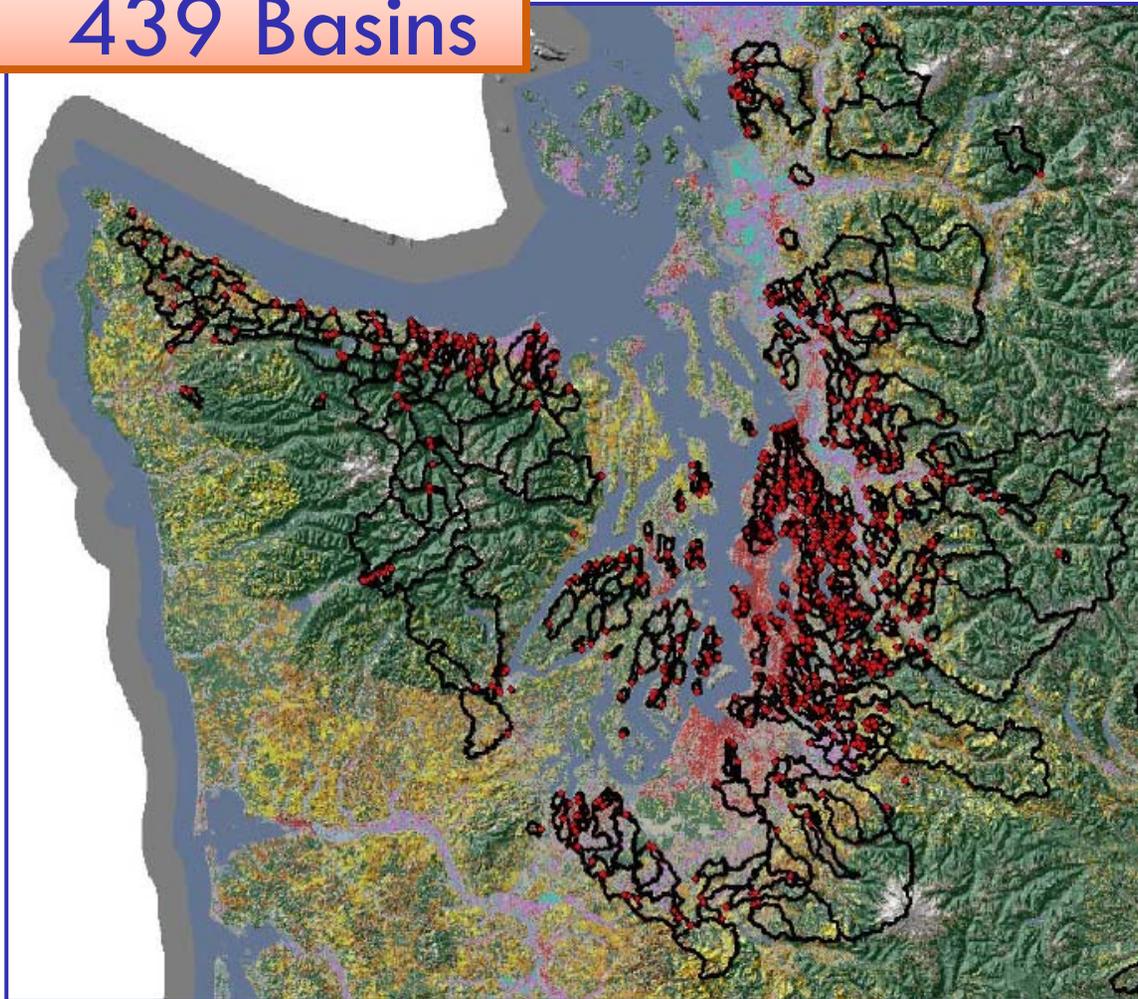
Part 2

Ranking

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.

Landscape Analysis

439 Basins

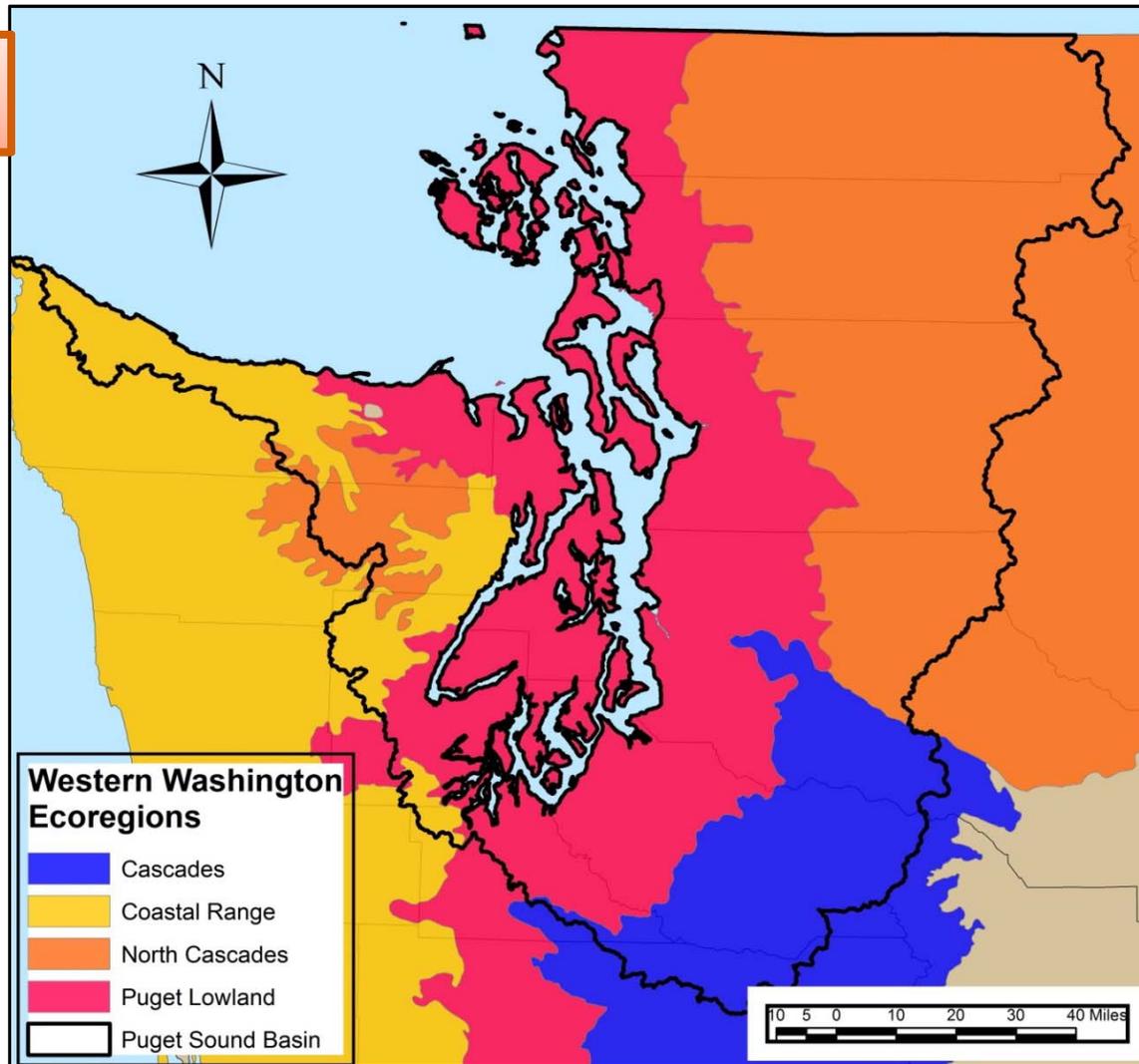


- Basin delineation
- Scale
- Watershed
- Local (1 km)
- Buffer (90-m)
- Metrics
 - Landcover
 - Geology
 - Site characteristics

Filtering: Ecoregion

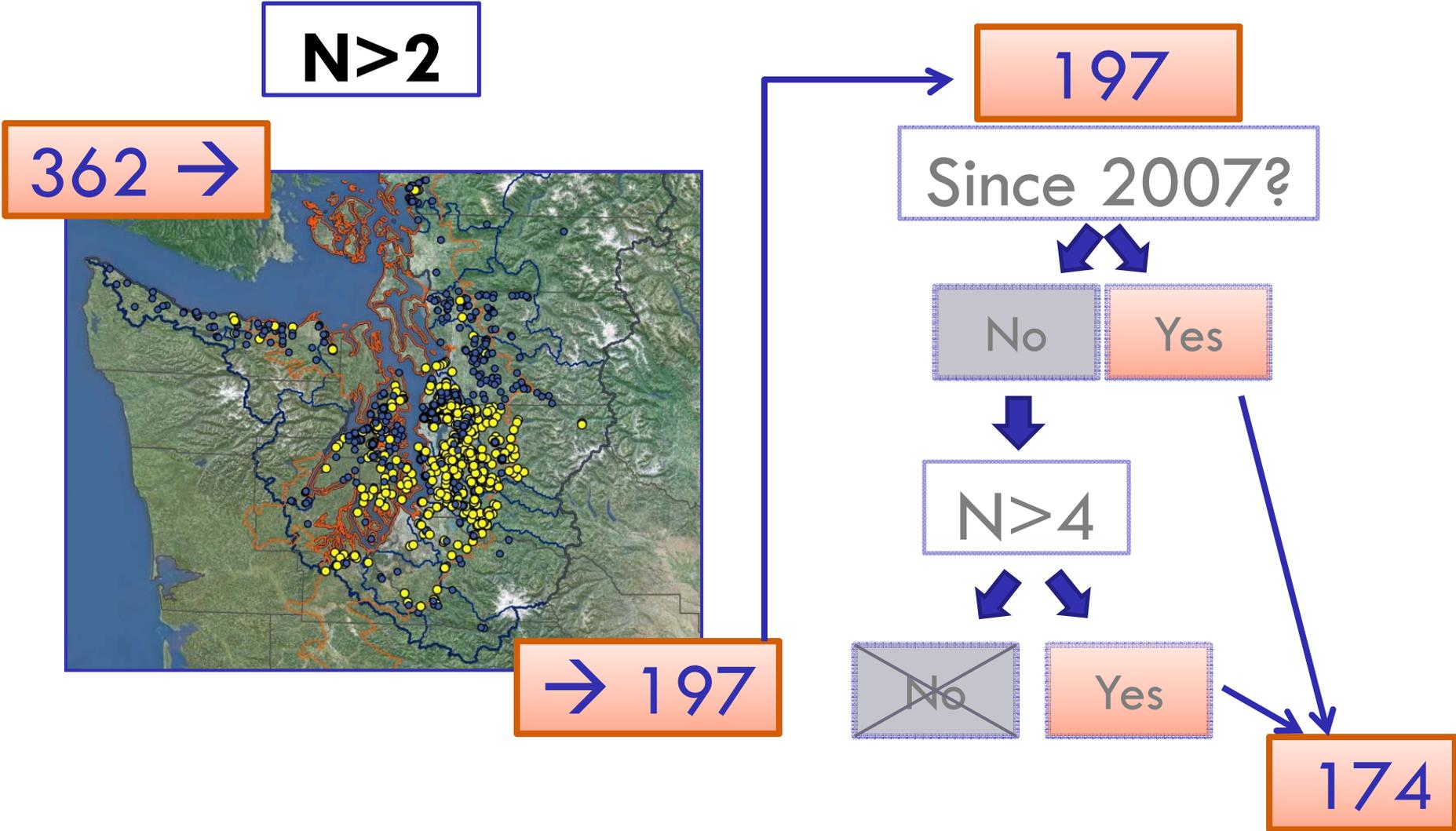


439 →



→ 362

Filtering: Sampling History

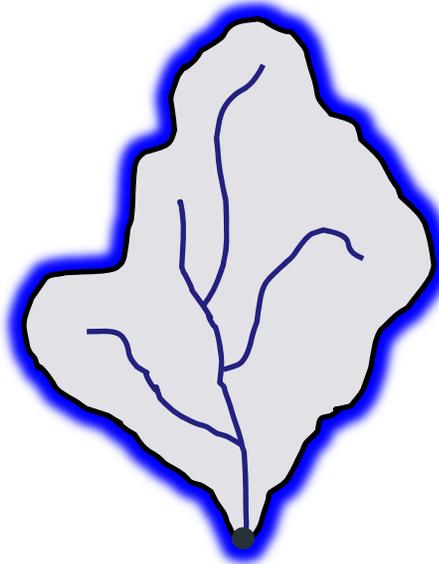


Filtering: Watershed Area

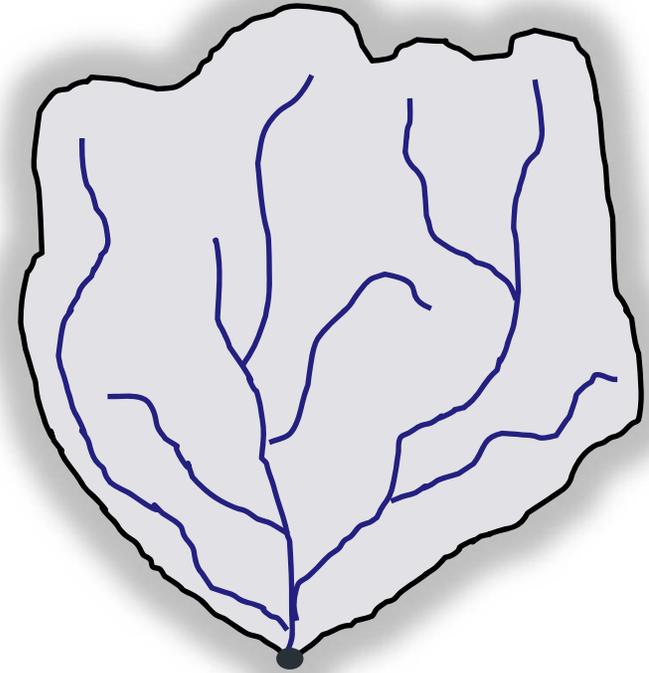
174 →



<200 Acres:
Too Small



200-3000 Acres:
Just Right



>3000 Acres:
Too Big

→ 81

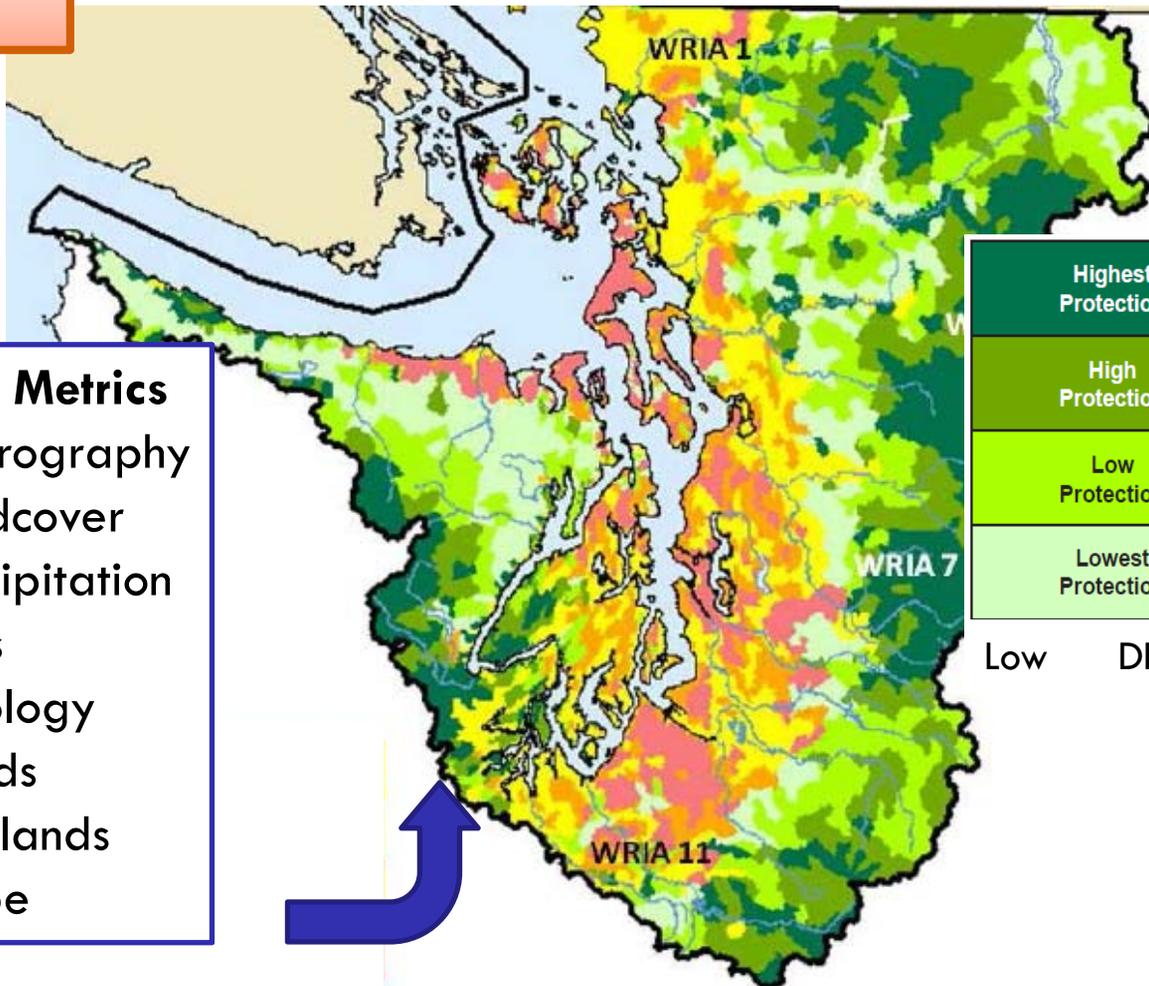
Filtering: PSWC

81

PS Watershed Characterization

PSWC Metrics

- Hydrography
- Landcover
- Precipitation
- Soils
- Geology
- Roads
- Wetlands
- Slope



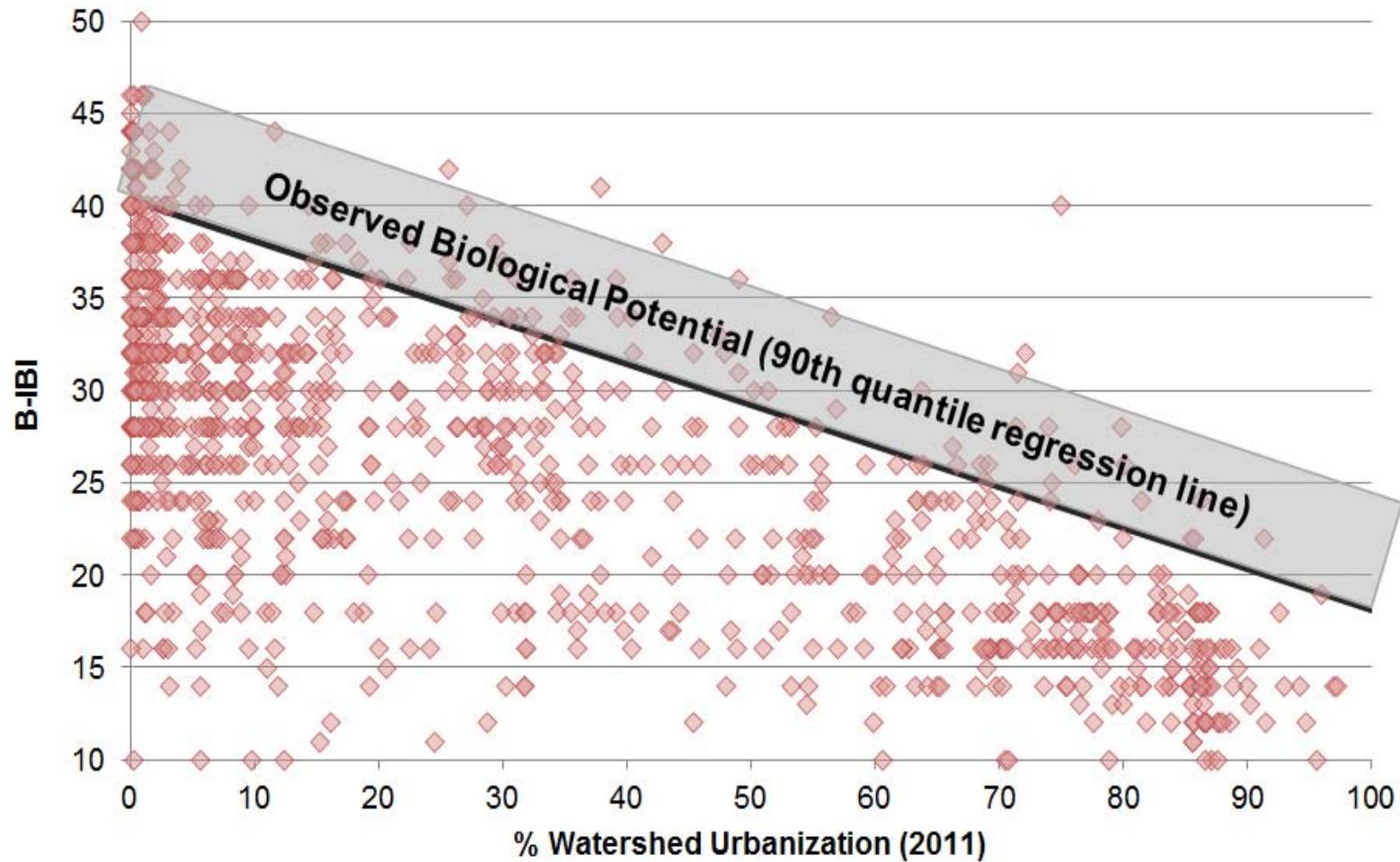
| | |
|--------------------|-------------------------------|
| Highest Protection | Highest Restoration |
| High Protection | High Restoration |
| Low Protection | Low Restoration |
| Lowest Protection | Lowest Restoration |
| Low | High |
| DEGRADATION | |

Low High

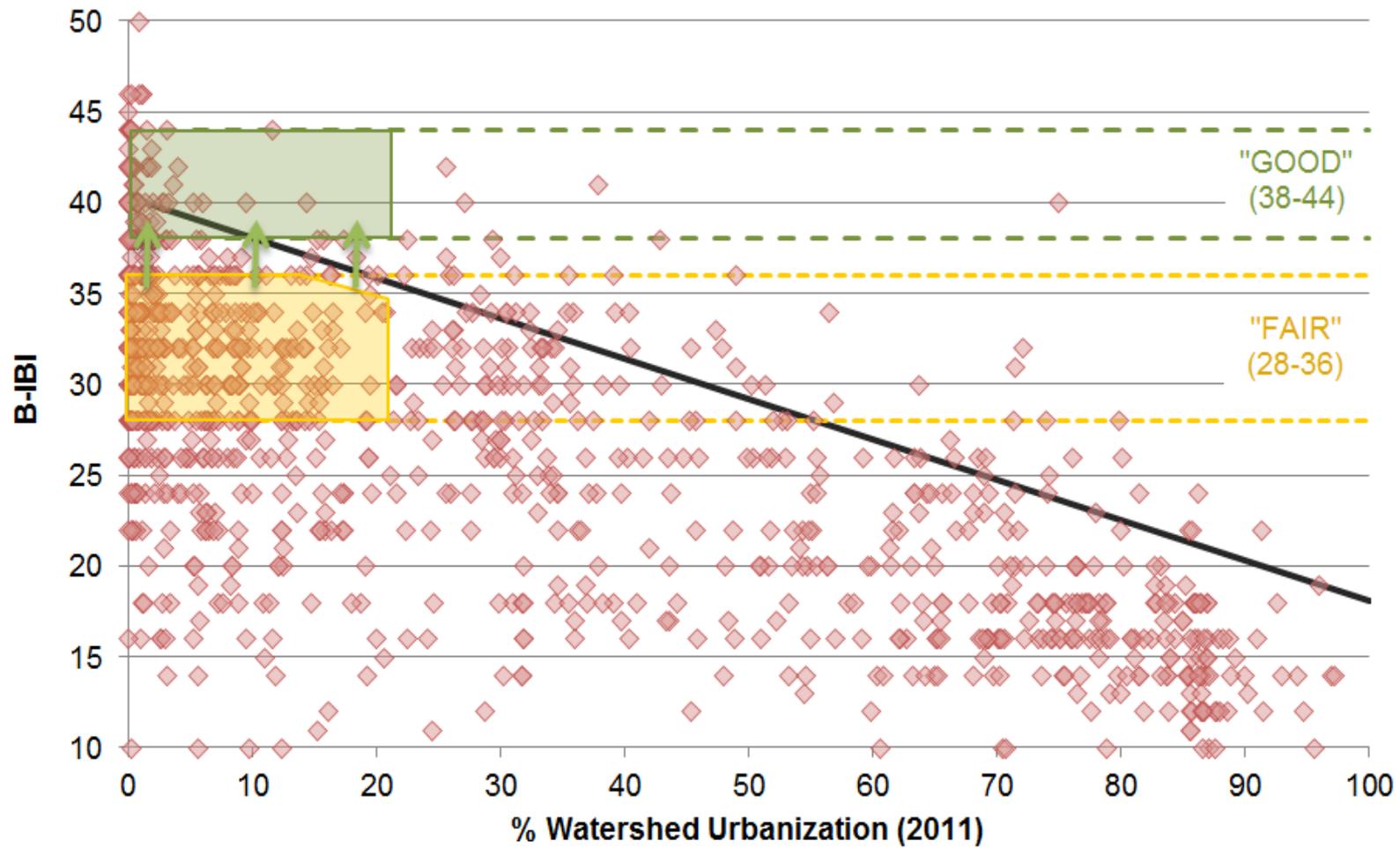
Low High
IMPORTANCE

→ 59

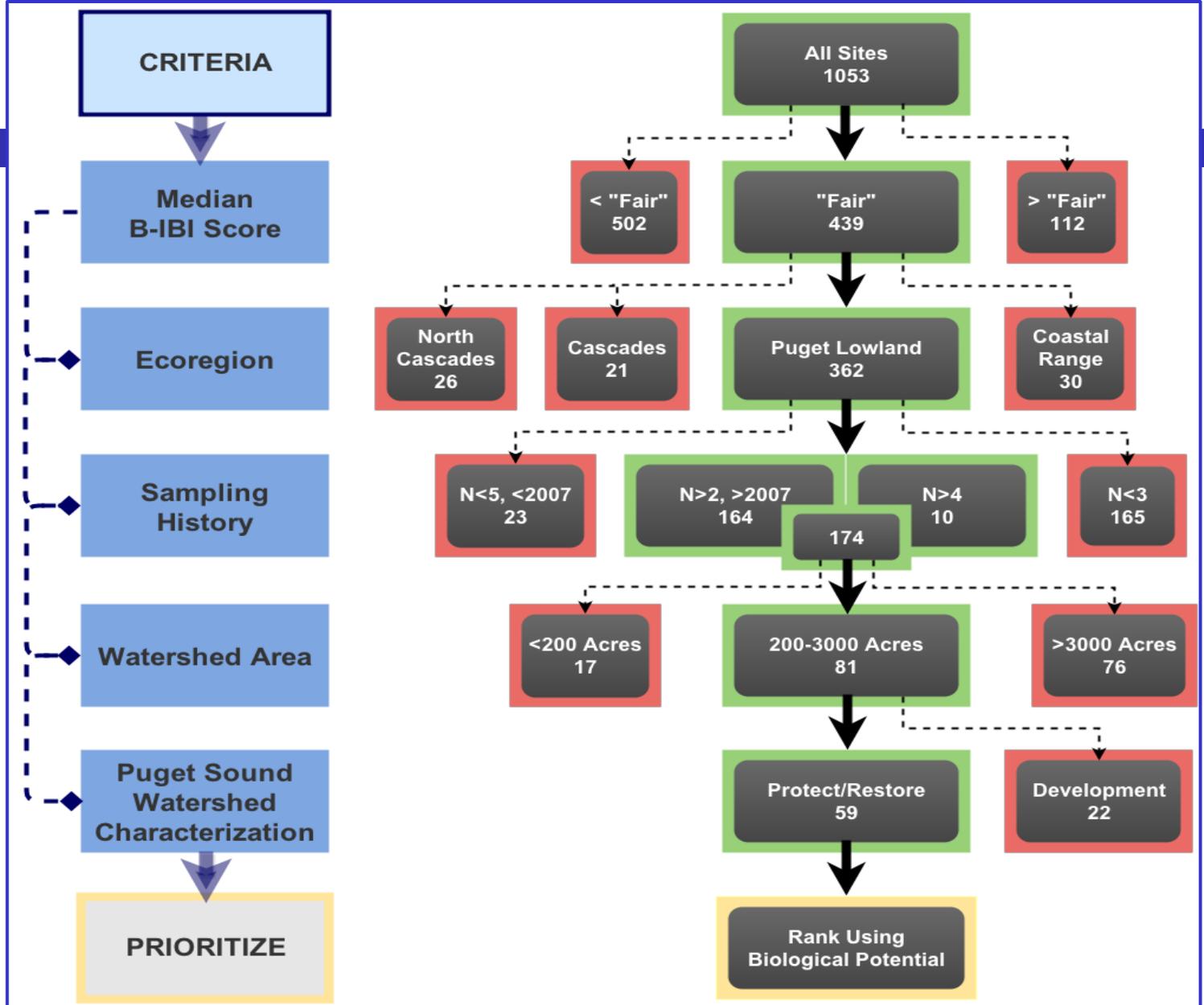
Ranking: Biotic Potential



Ranking: Biotic Potential

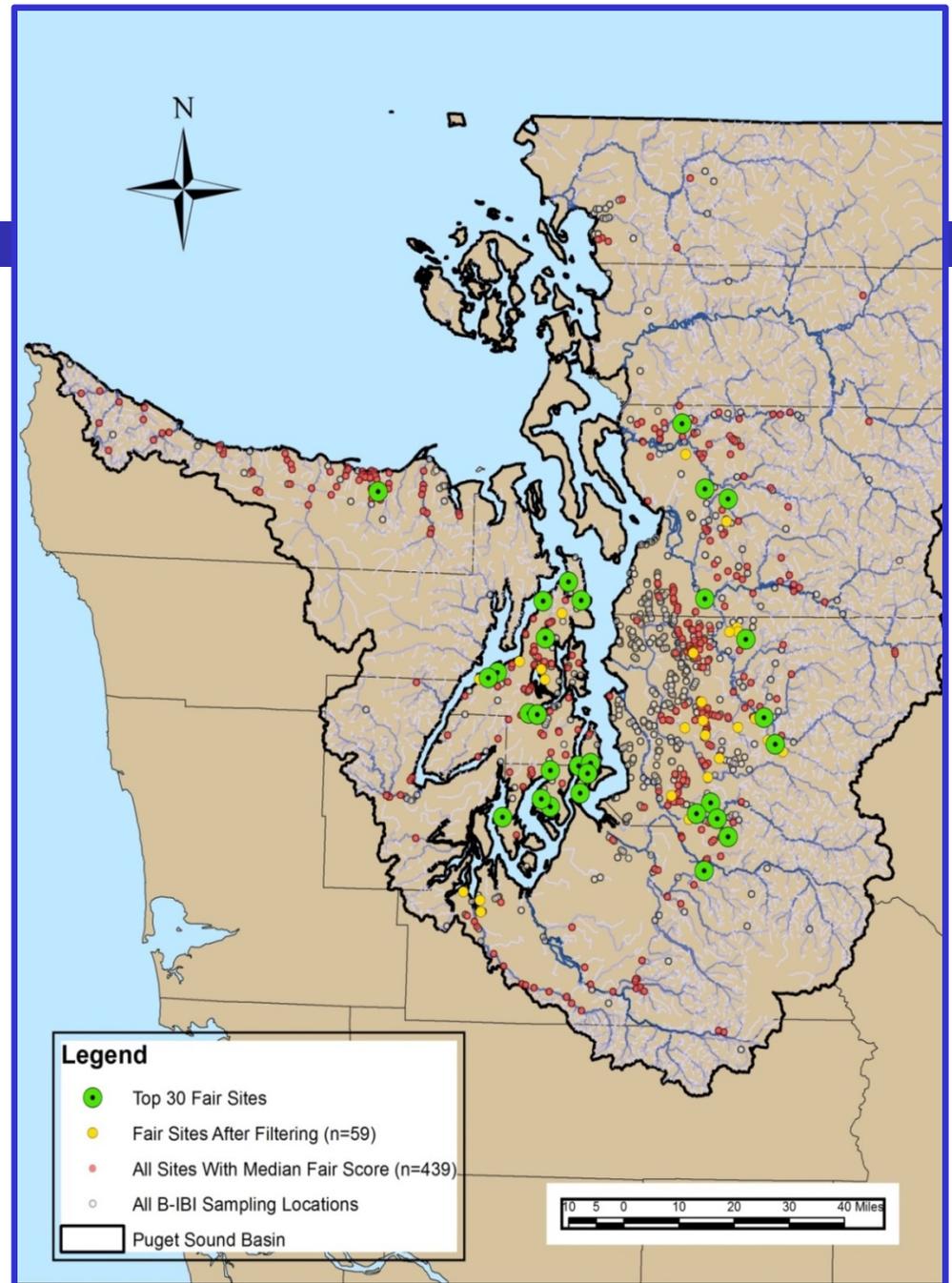


Recap:



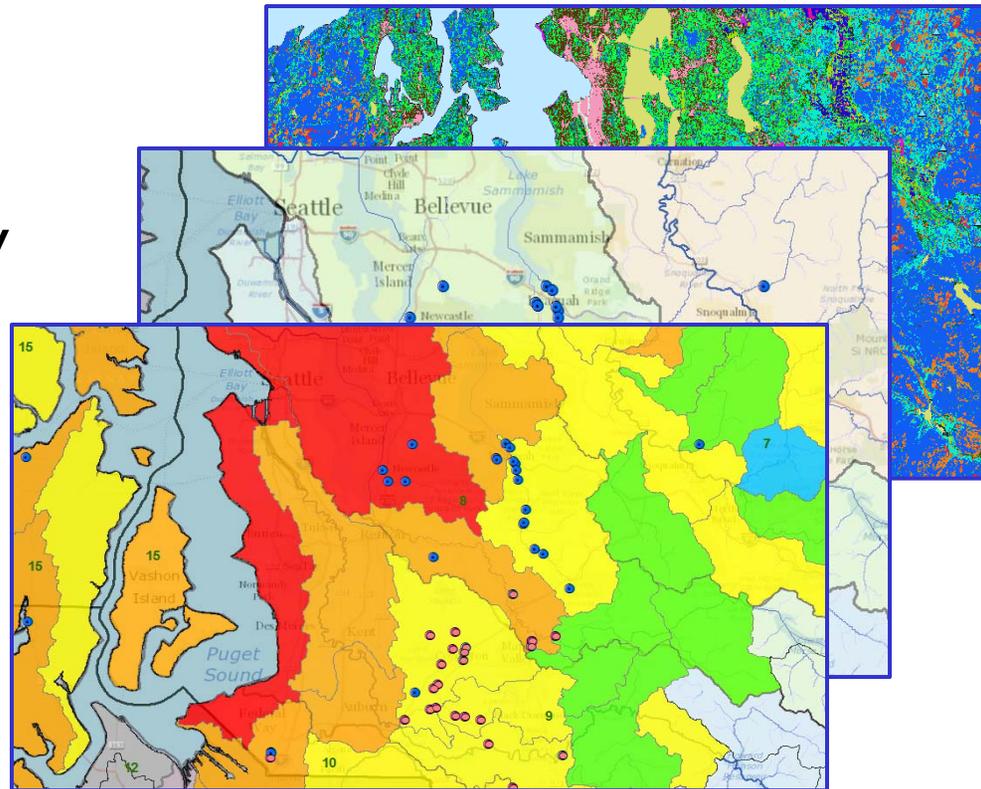
Top 30 sites

| WRIA # | WRIA Name | Sites in Top 30 |
|--------|-----------------|-----------------|
| 5 | Stillaguamish | 1 |
| 7 | Snohomish | 6 |
| 9 | Duwamish-Green | 9 |
| 10 | Puyallup-White | 1 |
| 15 | Kitsap | 12 |
| 18 | Elwha-Dungeness | 1 |



Other Criteria Considered

- Threatened/endangered fish presence
- Land ownership
- Urban growth area
- Habitat connectivity
- Hydrology
- Natural buffer



Next Steps: **Restoration**

What is Feasible? Effective?

Your Feedback!

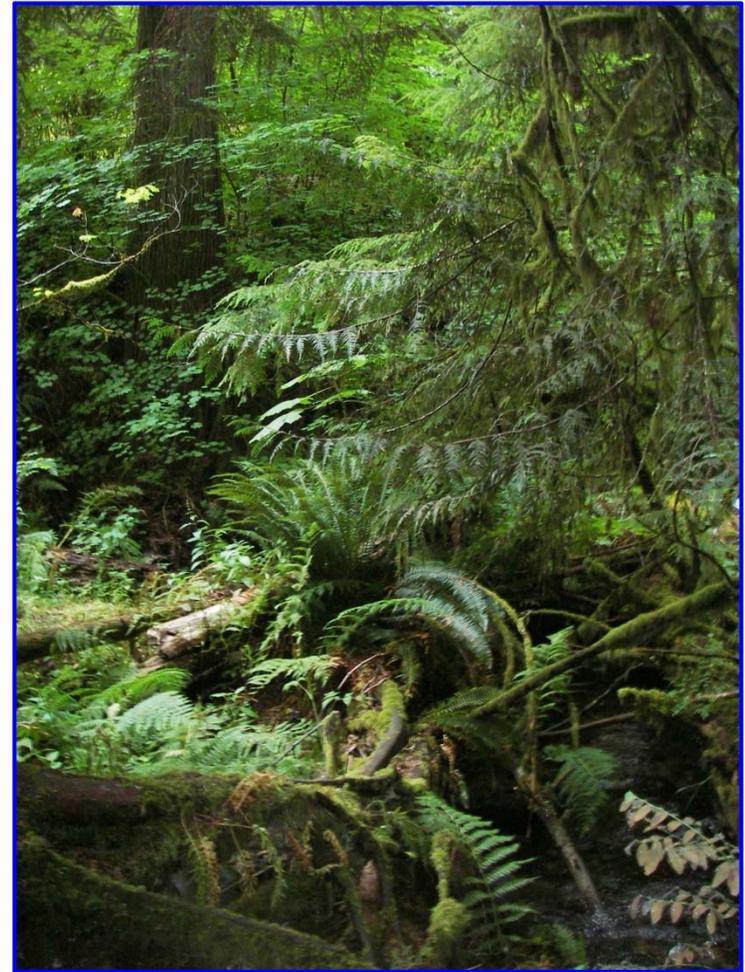
-  Habitat improvements
-  Riparian plantings
-  SW retrofits
-  Agriculture BMPs
-  Education/outreach
-  Seeding inverts...



Next Steps: **Preservation**

Strategies to preserve Excellent Sites

- ✈ Land Purchase
- ✈ Conservation easements
- ✈ Development rights



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 managing 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 sites 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:

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WDFW: George Wilhere



Ecology Project Administration:

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



Stakeholder Workgroup