

Restoration Decision Making Framework: Criteria

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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

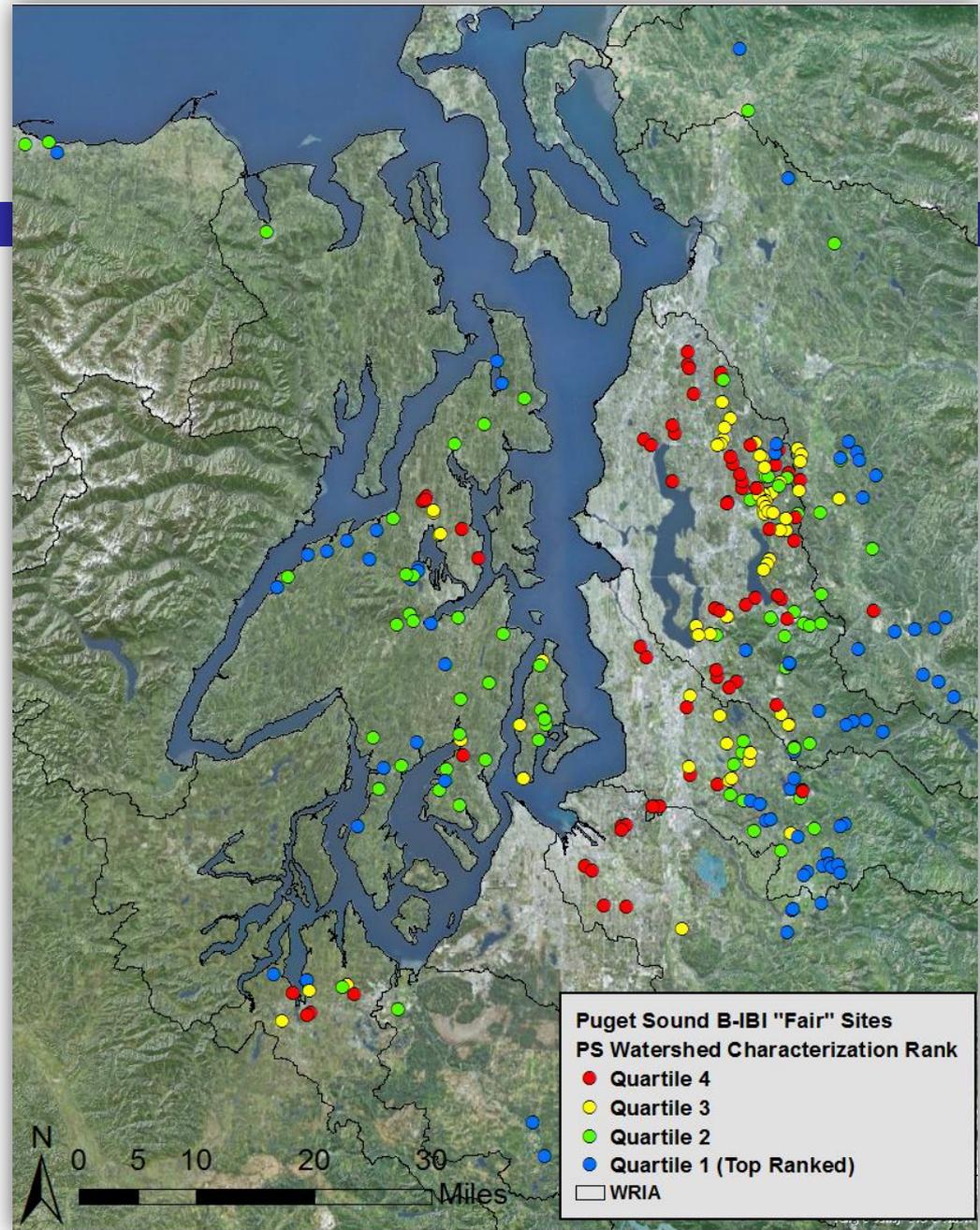
B-IBI Restoration Priorities Stakeholder Meeting 3/19/14

Decision Making Framework Criteria

- ✓ PS Watershed Characterization model
- ✓ watershed area
- ✓ average “fair” score
- ✓ sampling history
- ✓ threatened fish
- ✓ % natural buffer
- ✓ % urbanization
- ✓ watershed context
- ✓ urban growth area (UGA)
- ✓ biological potential (Paul et. al.)
- ✓ connectivity



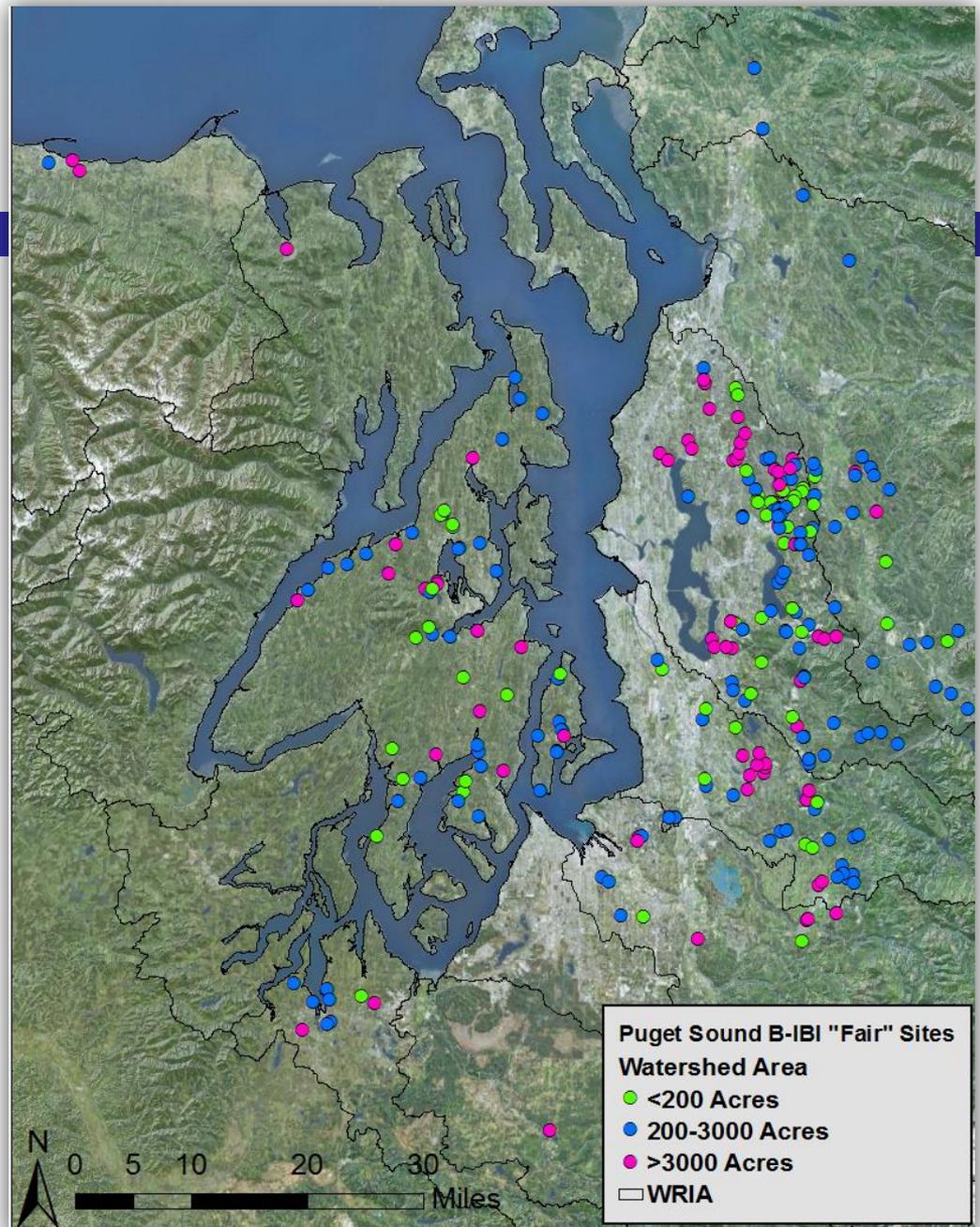
PSWC model



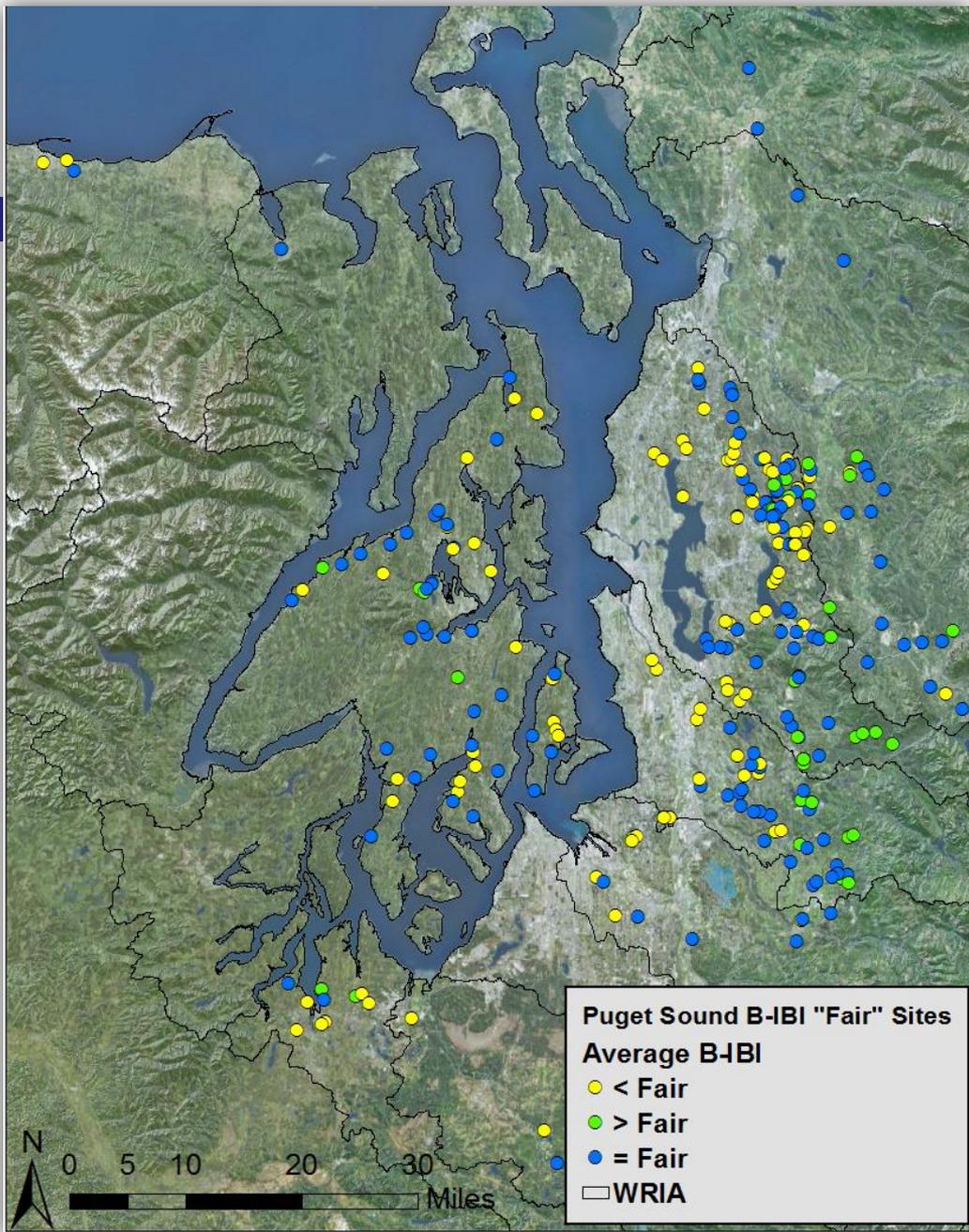
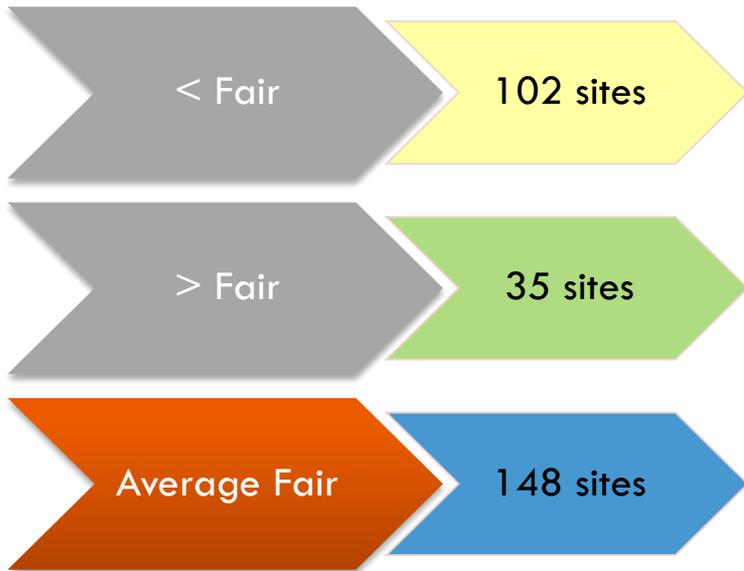
Watershed Area



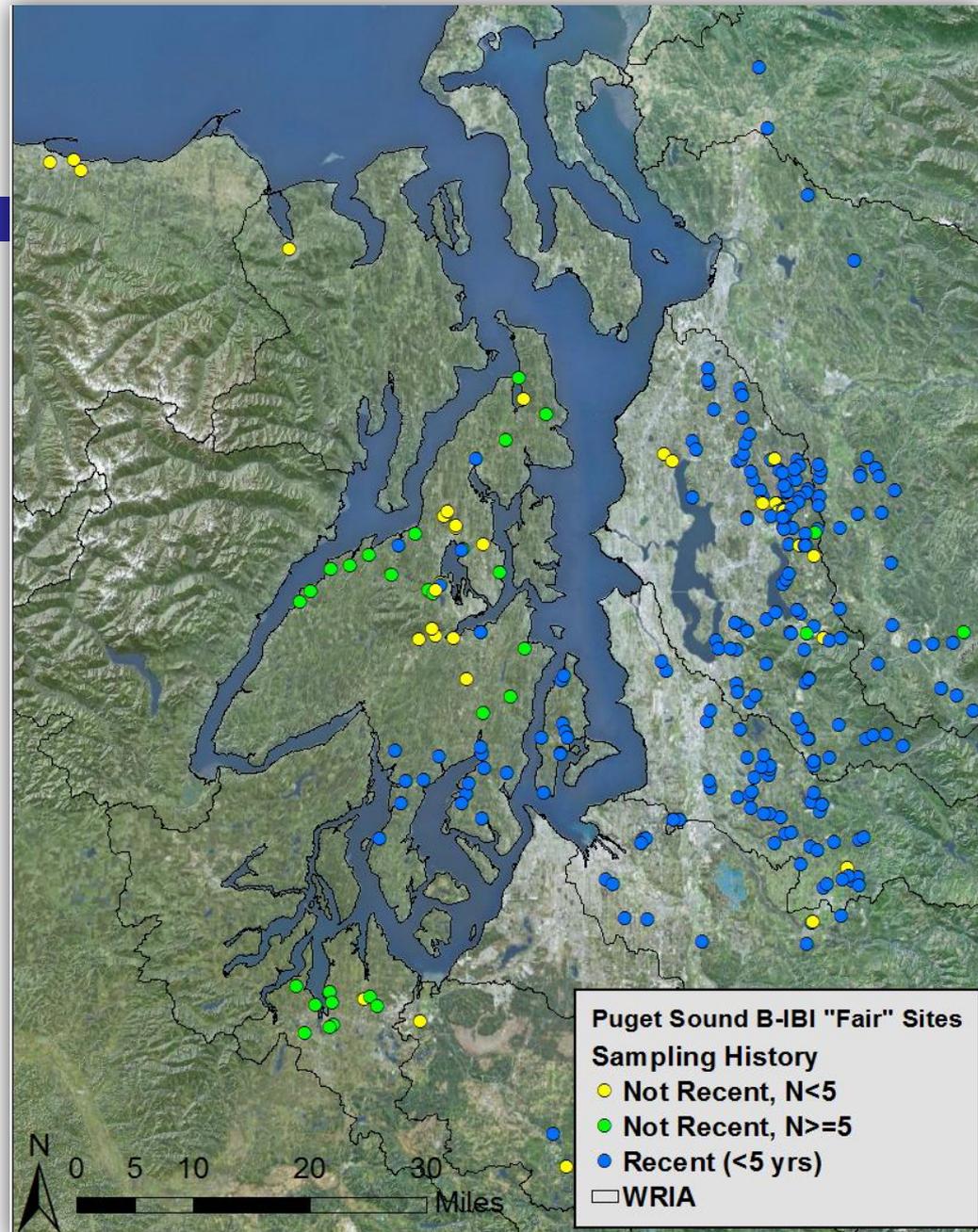
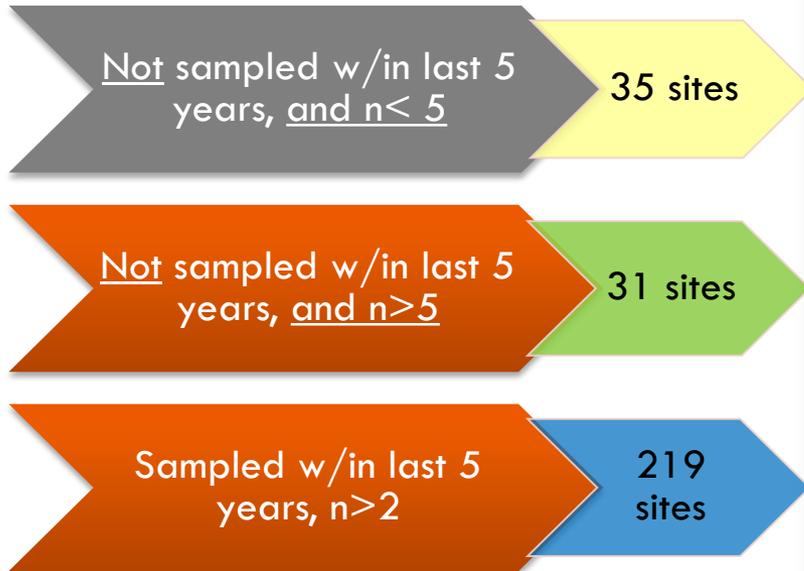
* 15 basins not yet defined



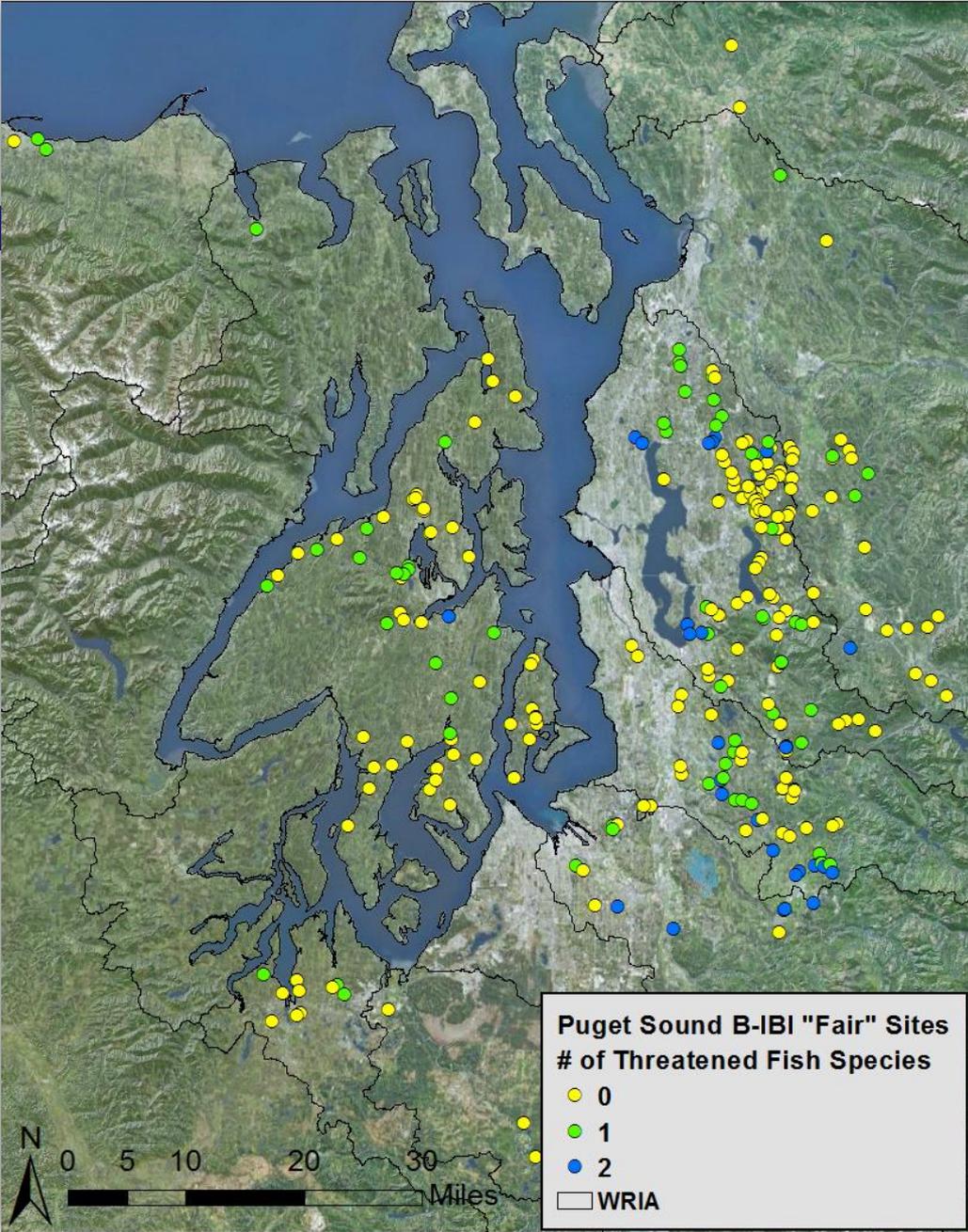
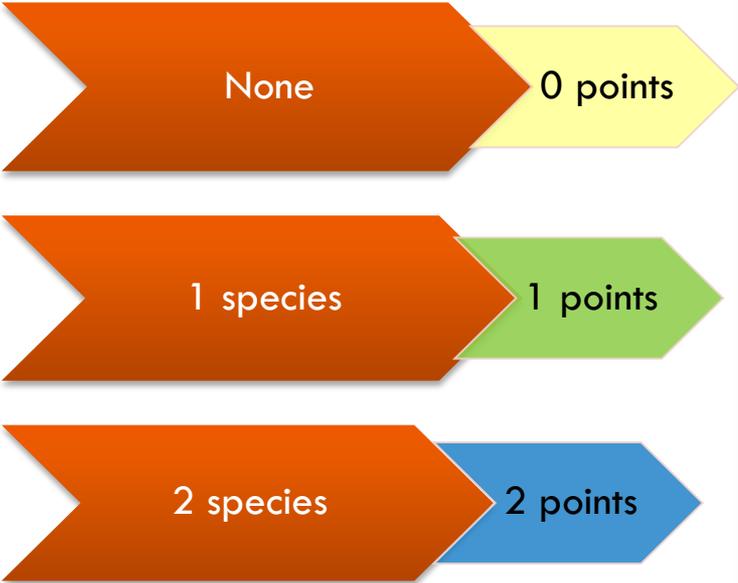
Mean B-IBI Score



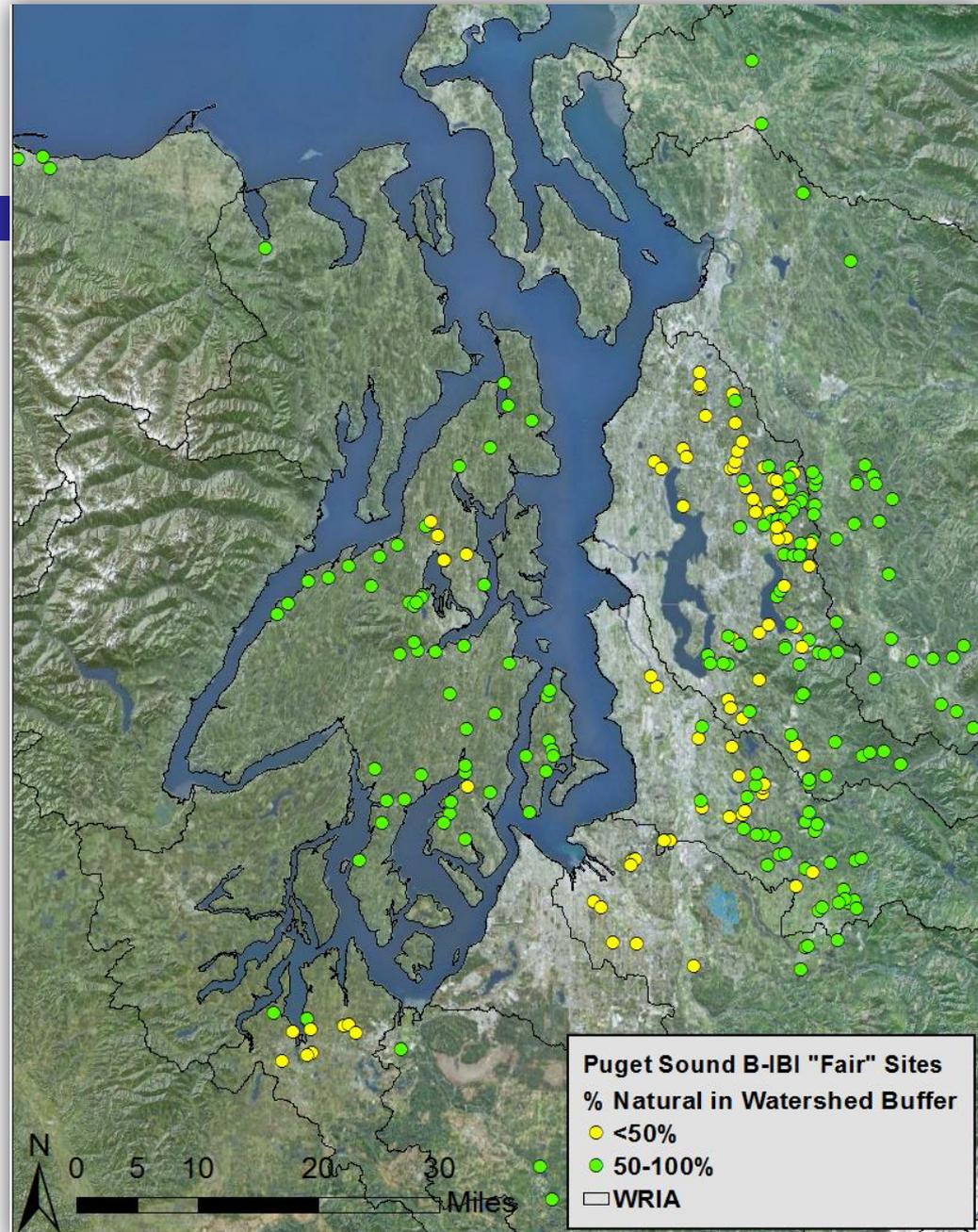
Sampling History



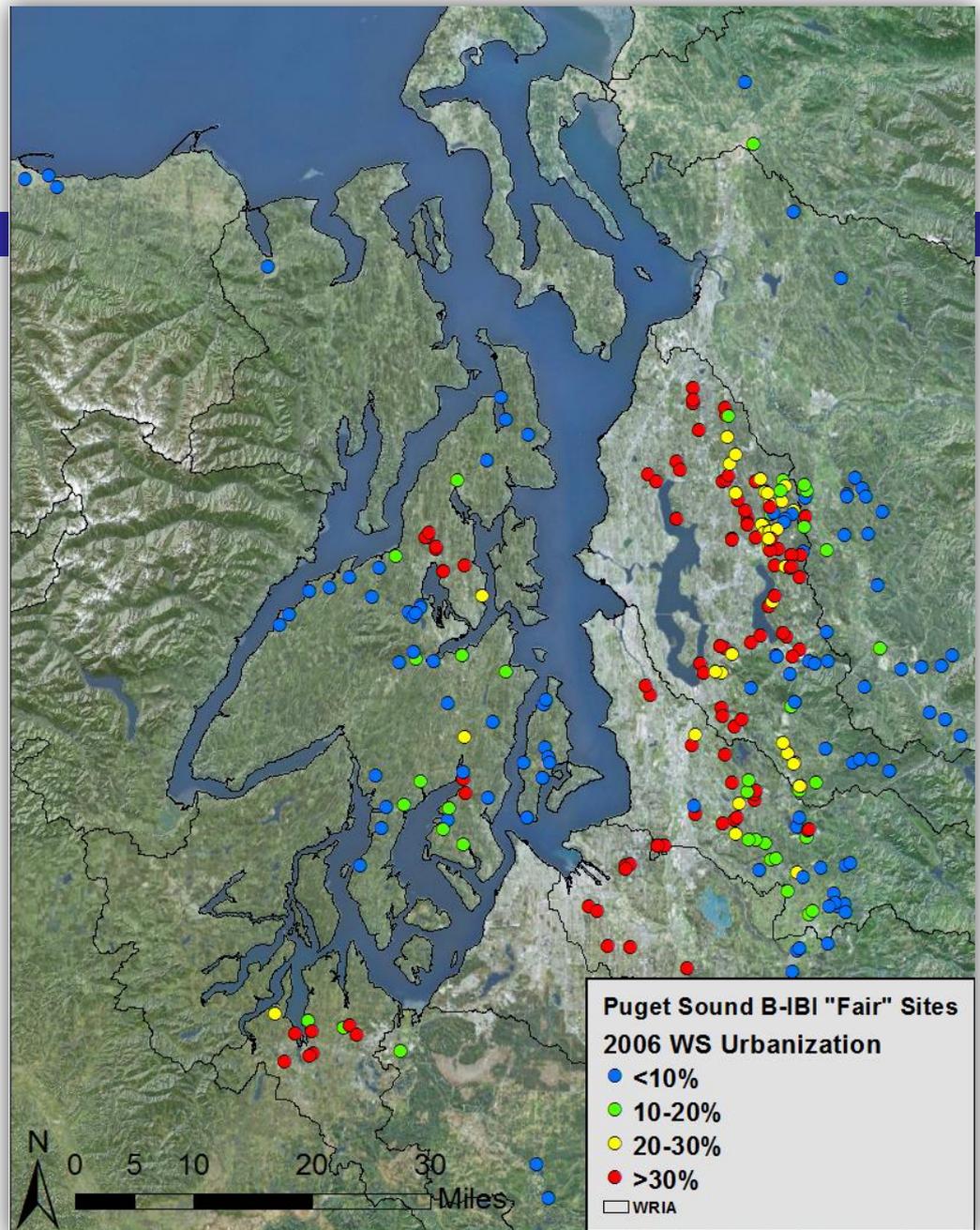
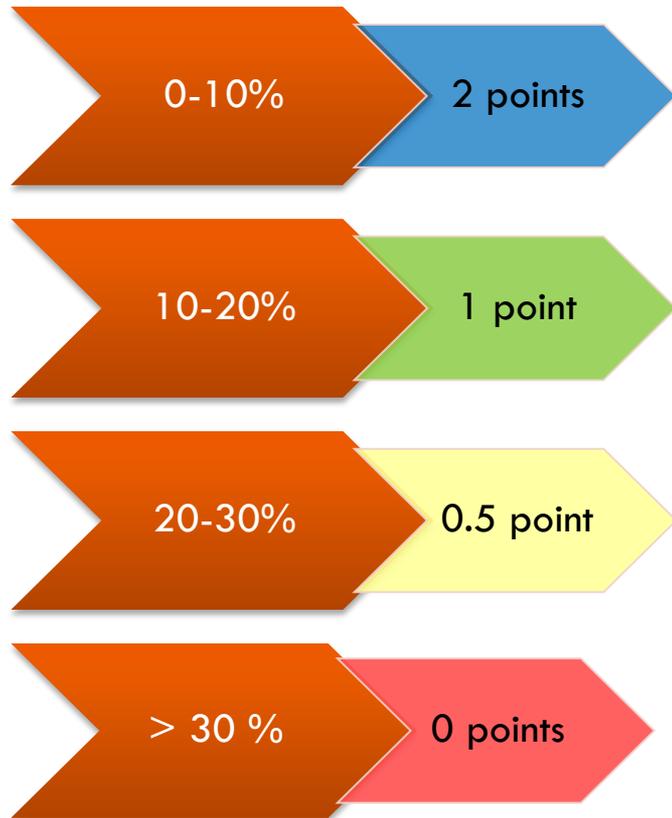
Threatened Fish



% Natural Buffer



% Urbanization



Watershed Context

Worst = 0

- Urban > 30%
- Buffer < 50% natural
 - 76 sites

Moderate = 1

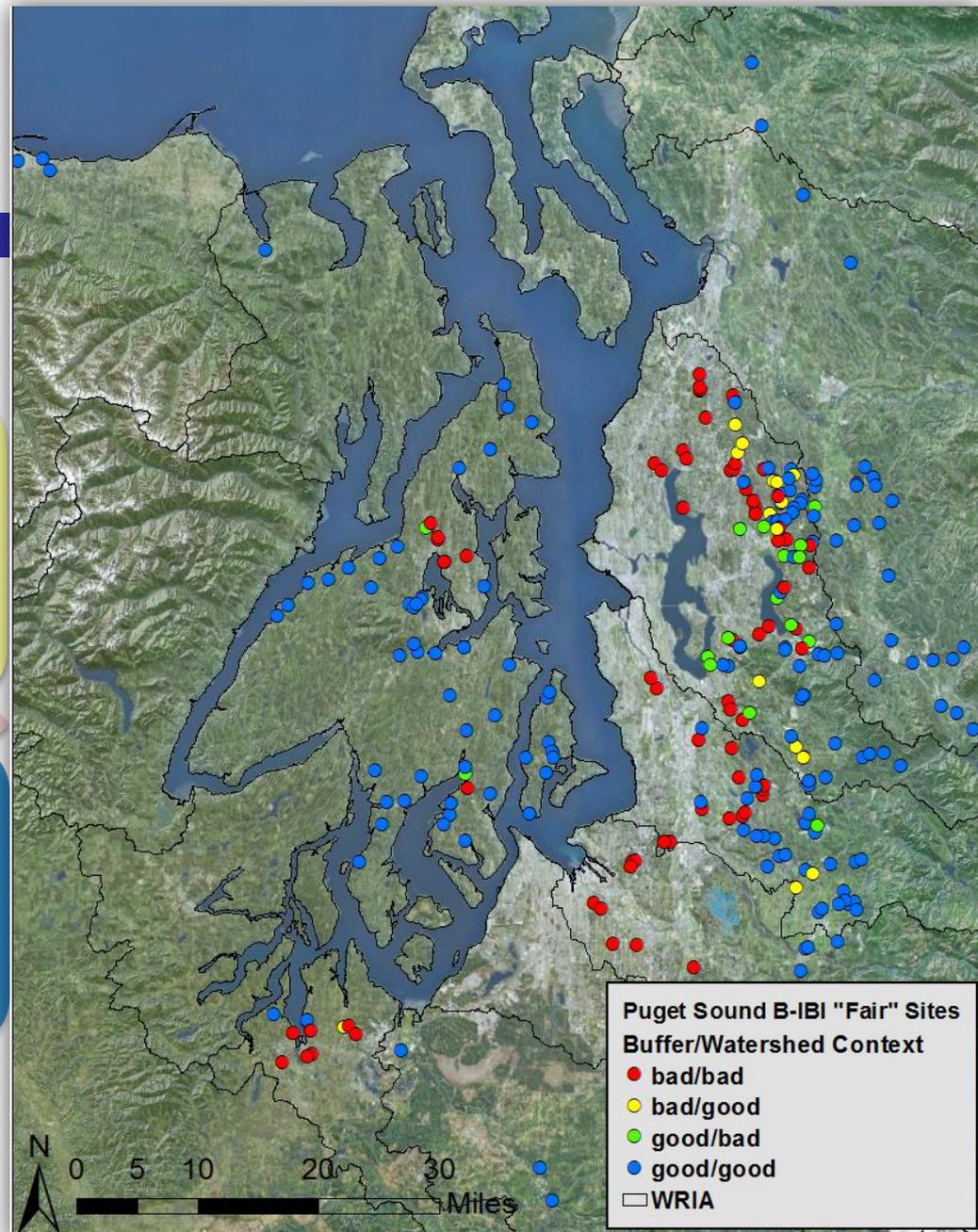
- Urban > 30%
- Buffer > 50% natural
 - 22 sites

Good = 2

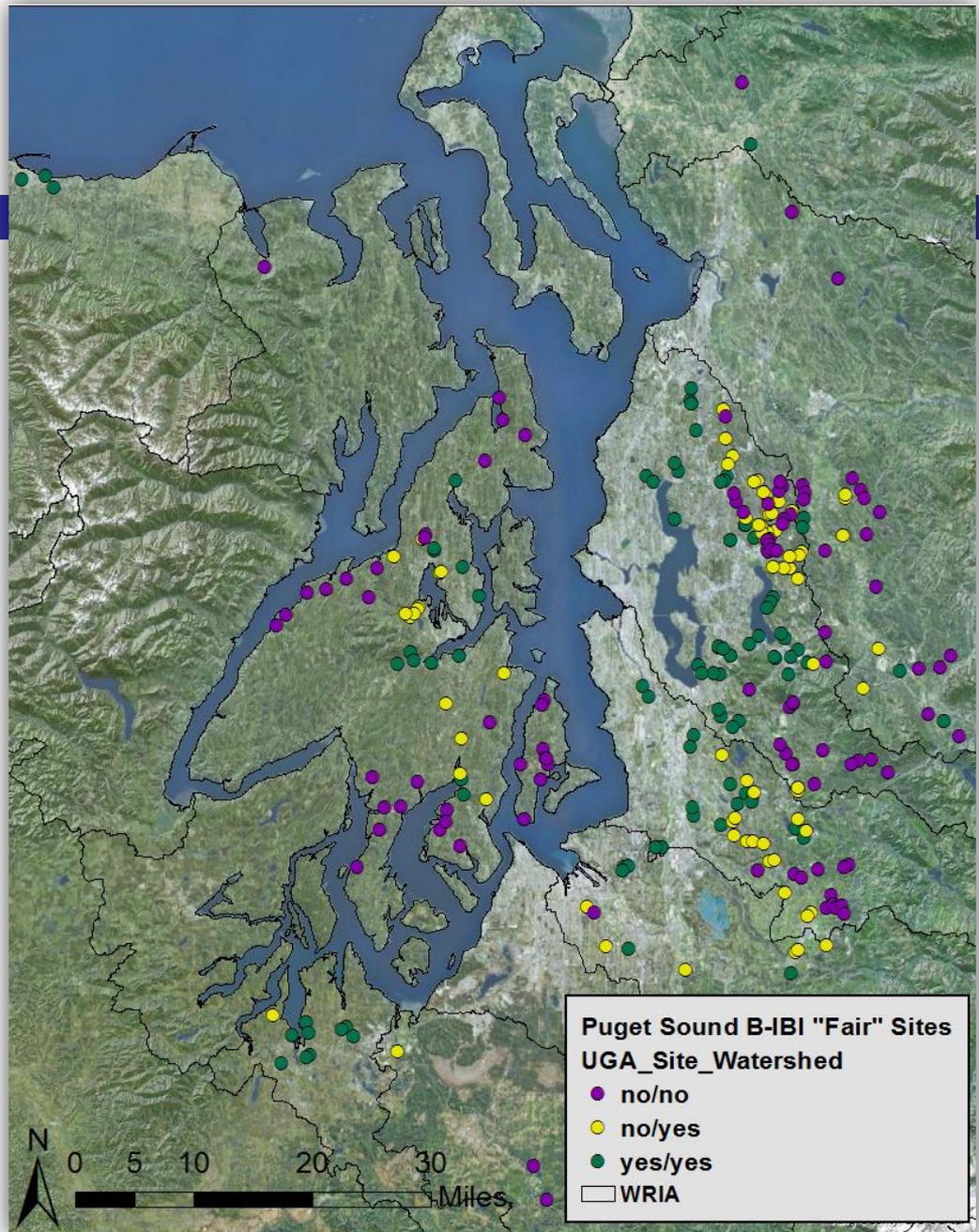
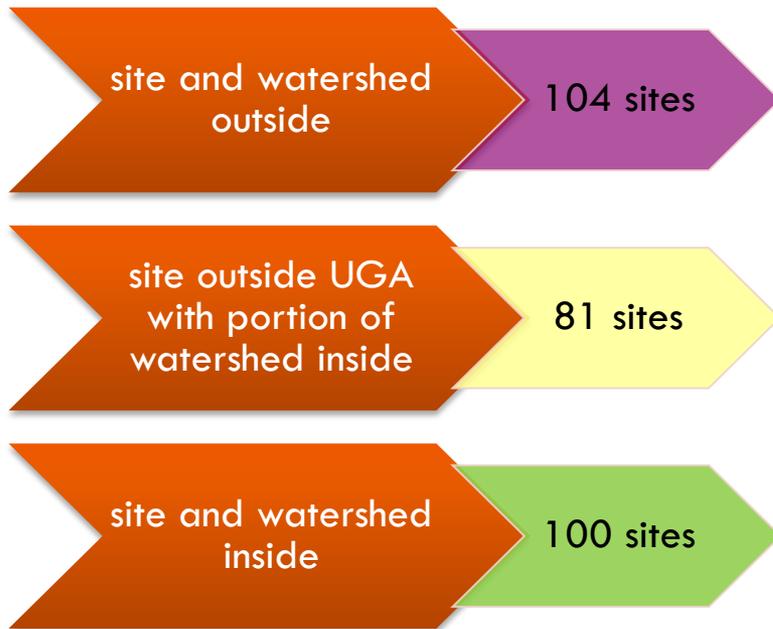
- Urban < 30%
- Buffer < 50% natural
 - 21 sites

Best = 2

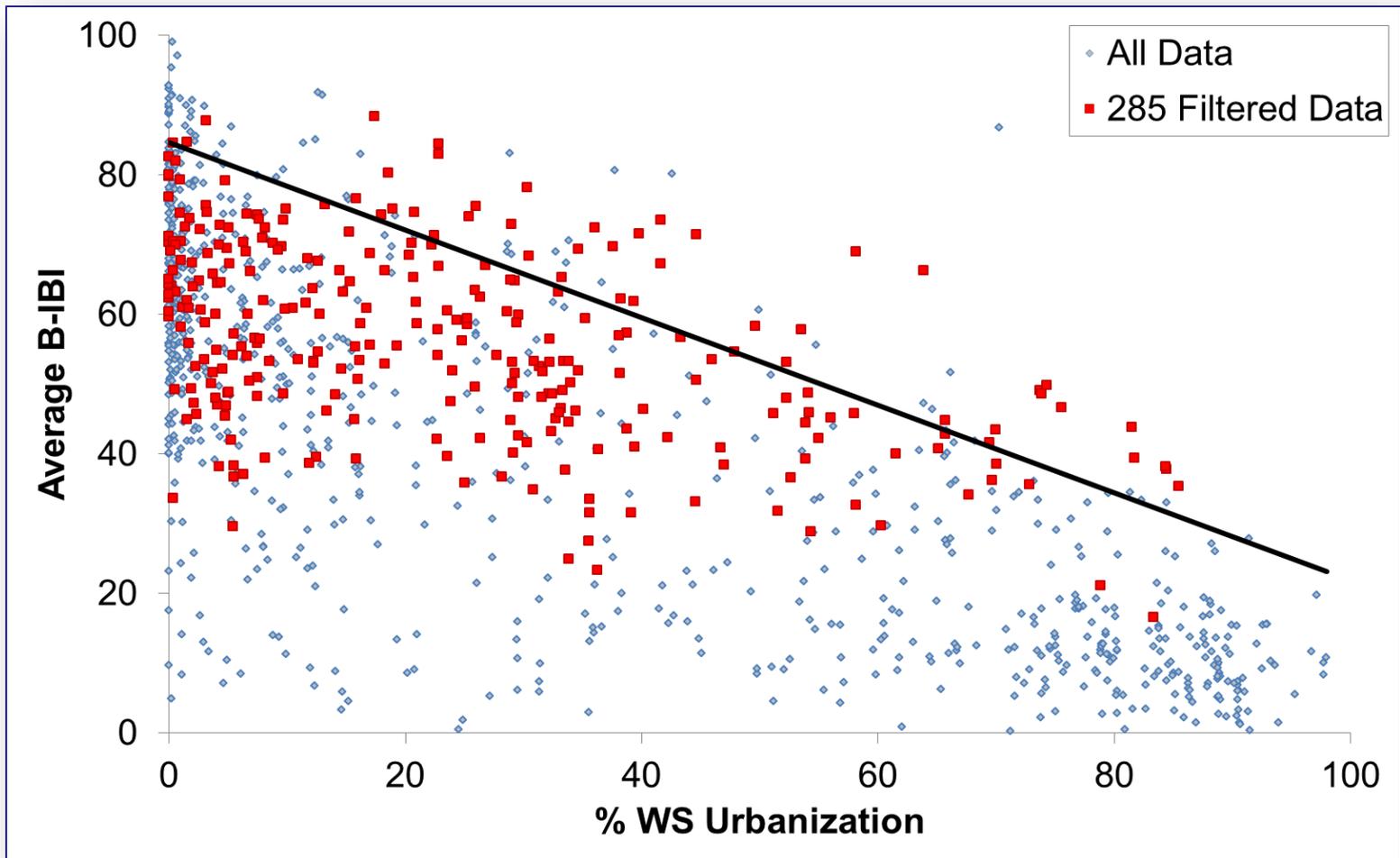
- Urban < 30%
- Buffer > 50% natural
 - 166 sites



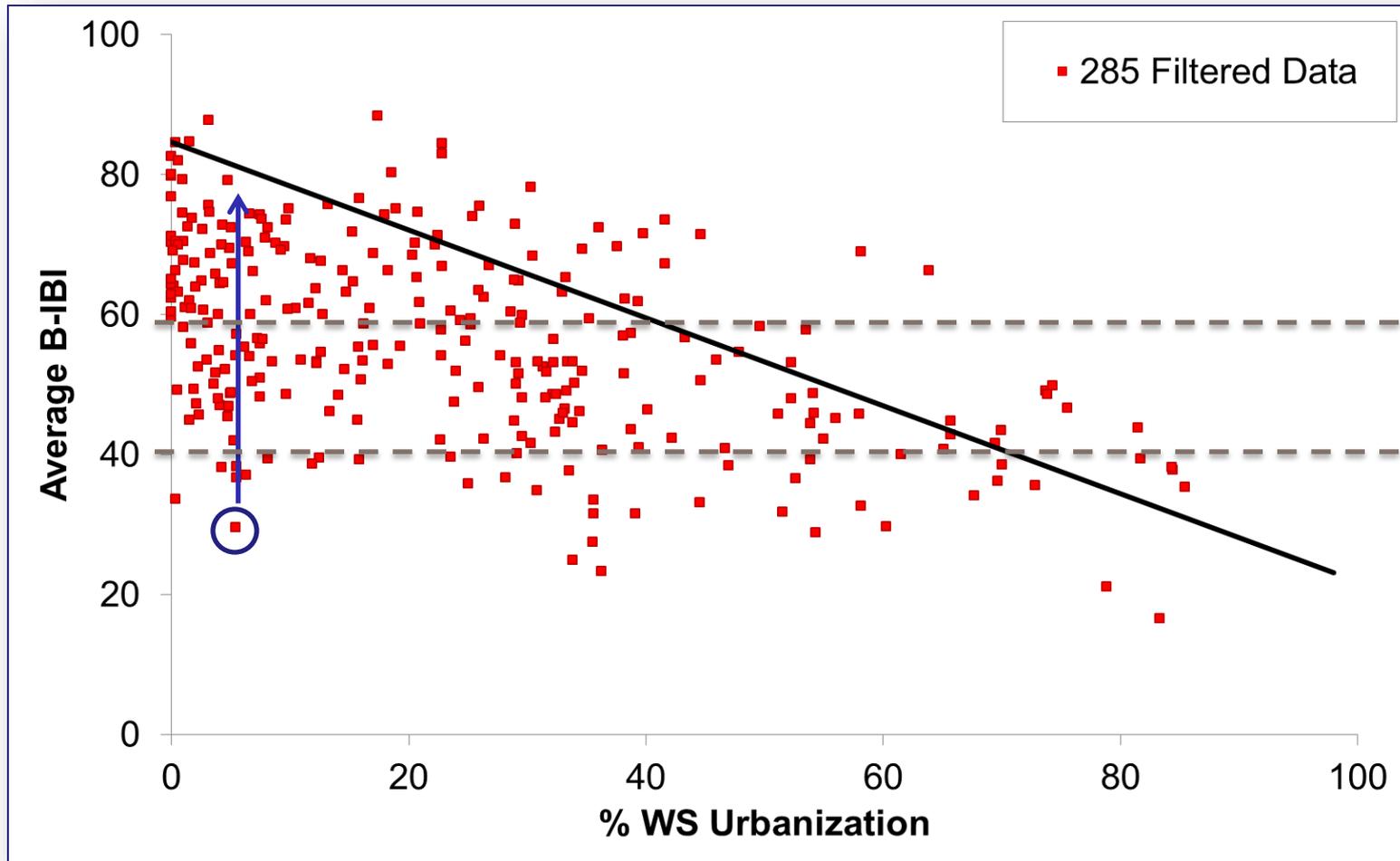
In Urban Growth Area



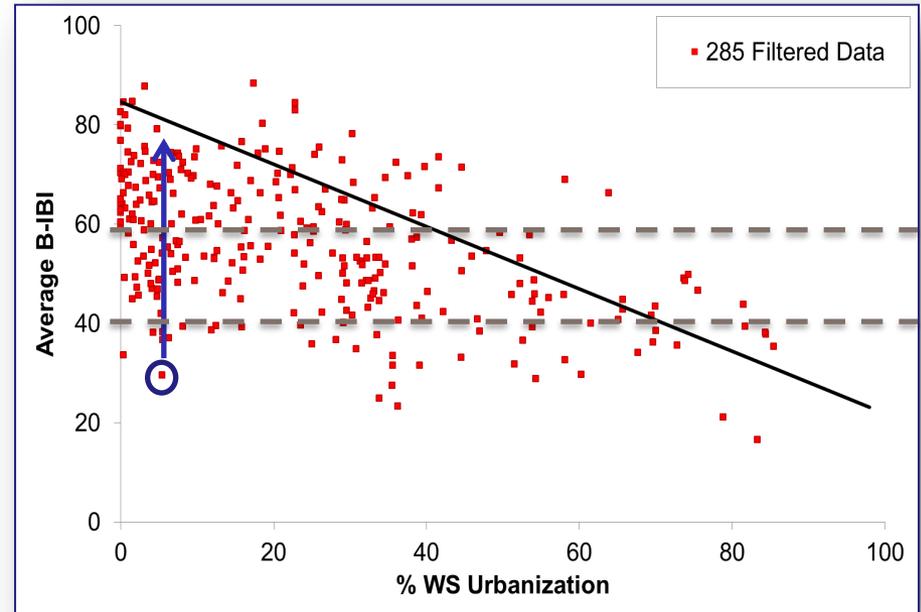
Biotic Potential – all scores



Biotic Potential

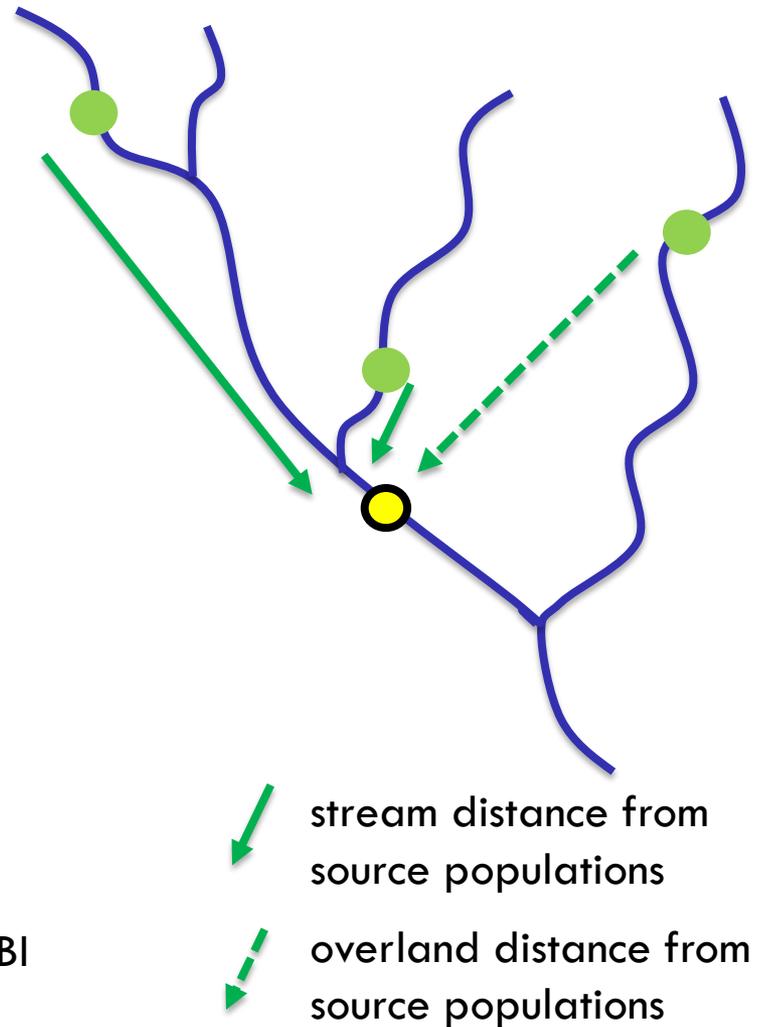


Biotic Potential

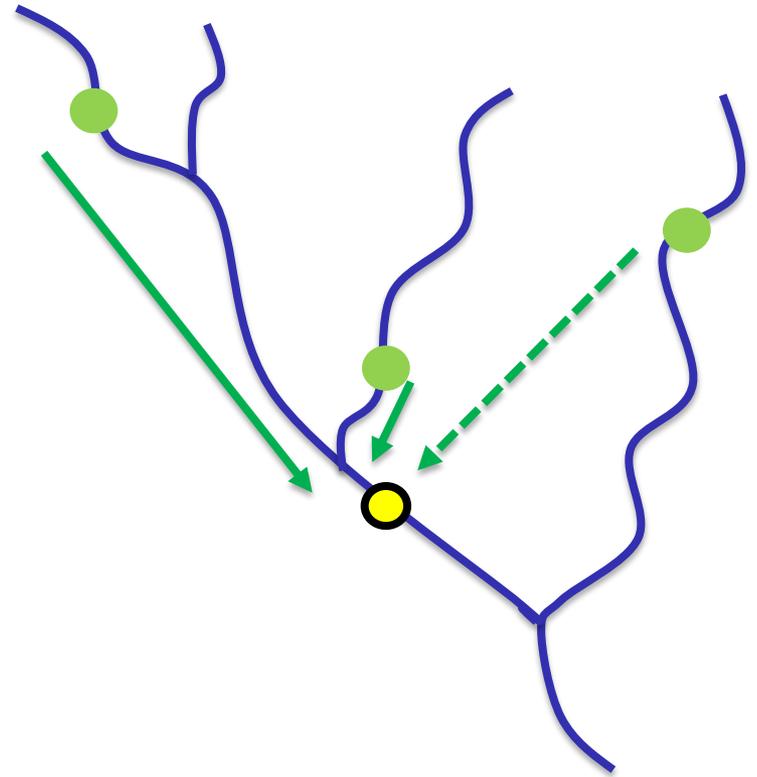
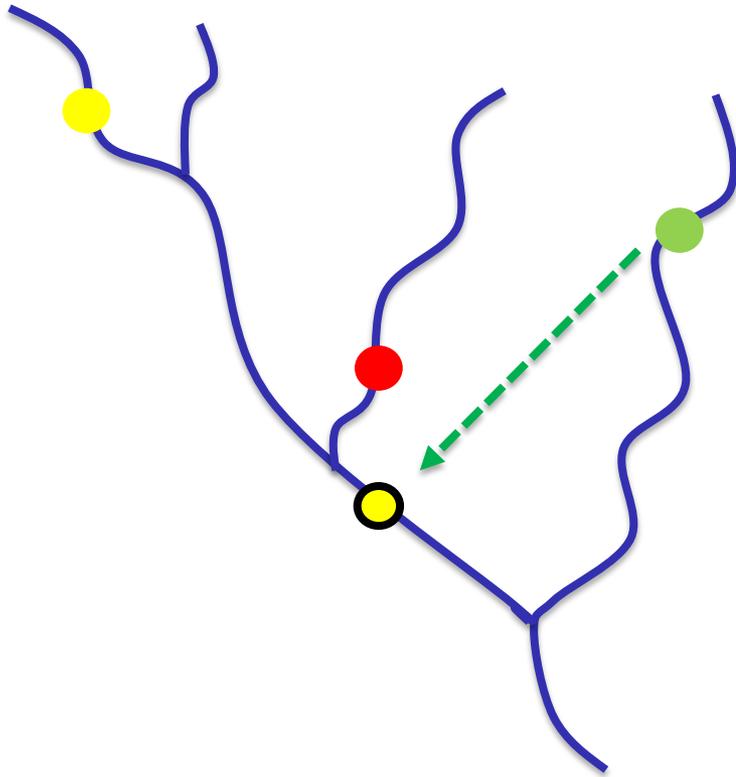


Connectivity

● poor BIBI ● fair BIBI ● excellent BIBI



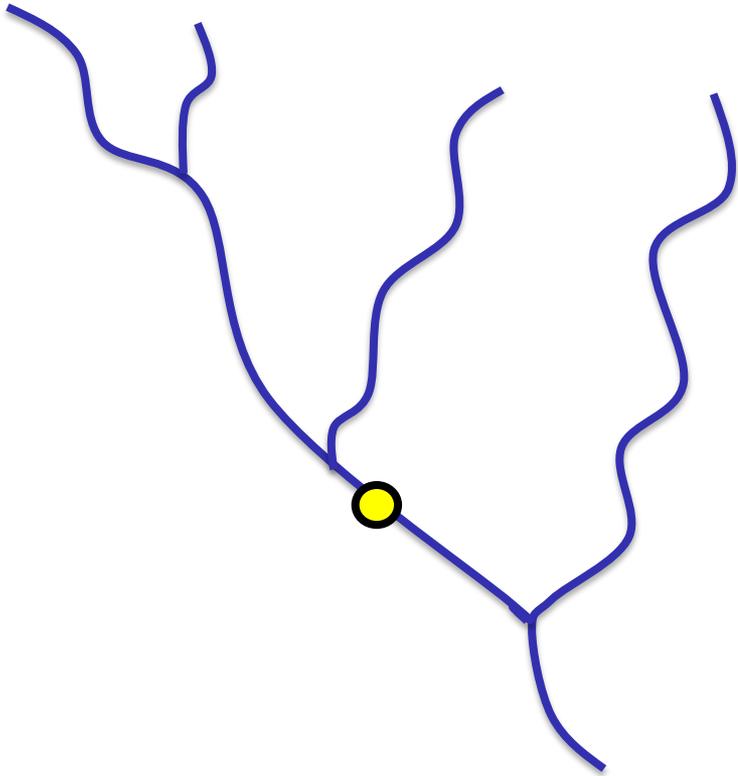
Connectivity



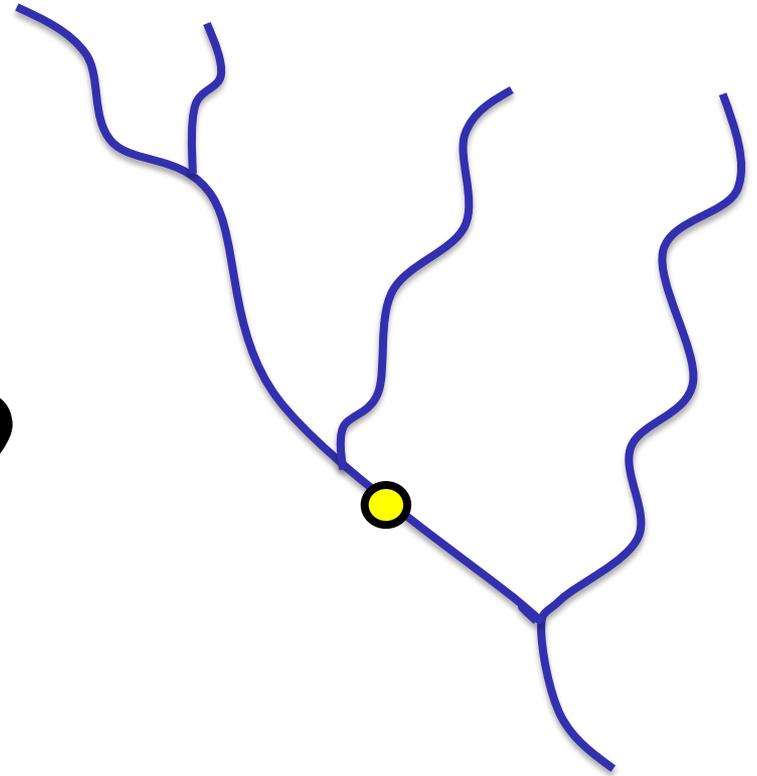
● poor BIBI ● fair BIBI ● excellent BIBI

→ stream distance from source populations
- - - → overland distance from source populations

Connectivity

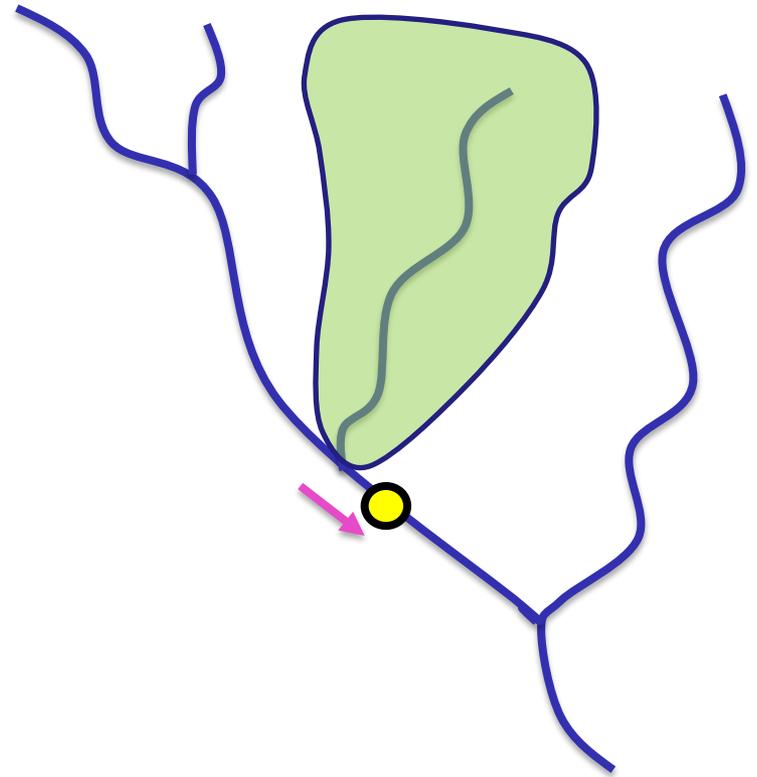
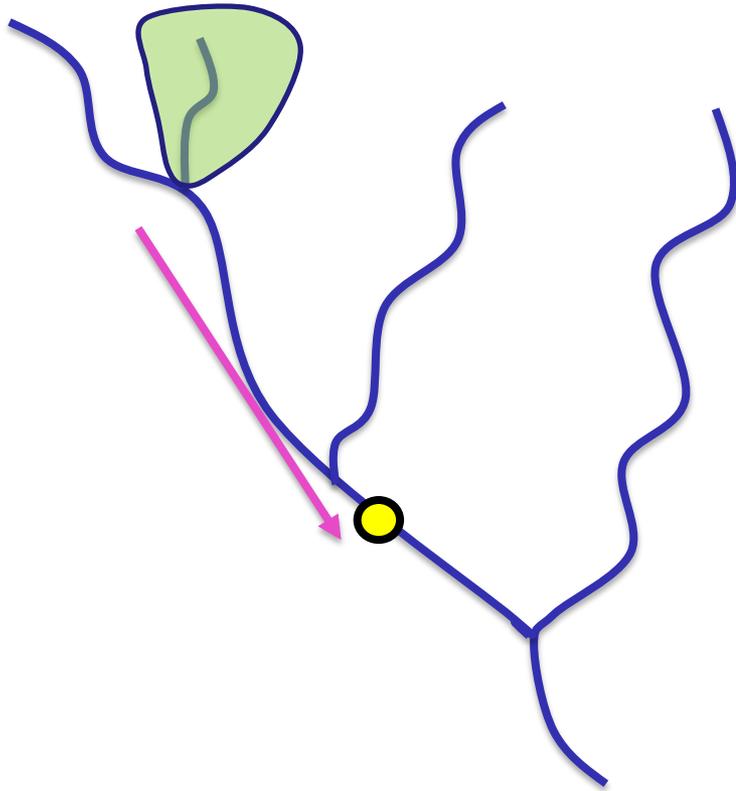


?



● fair BIBI

Connectivity

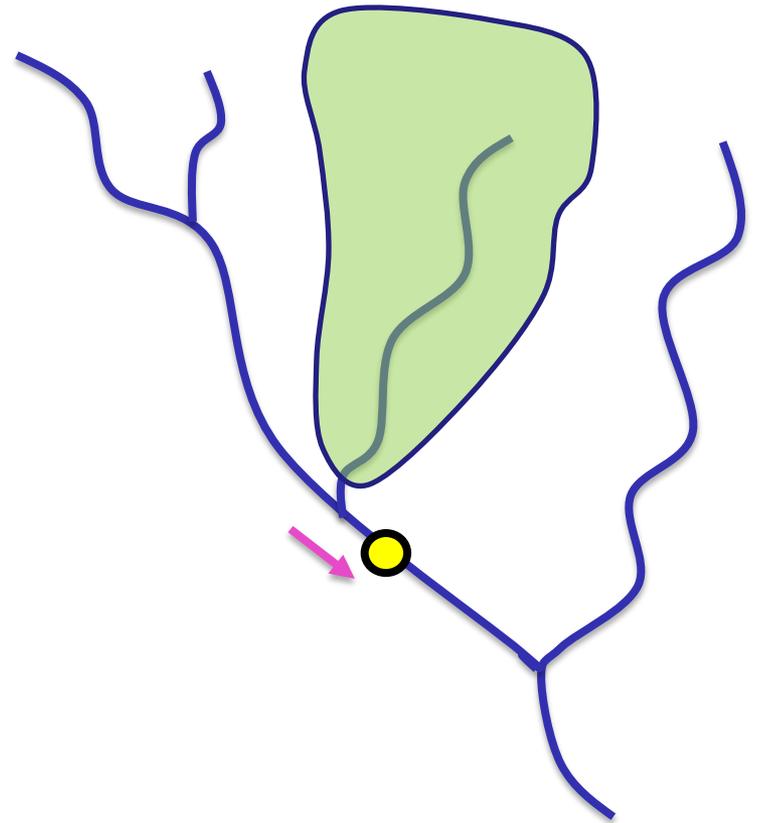
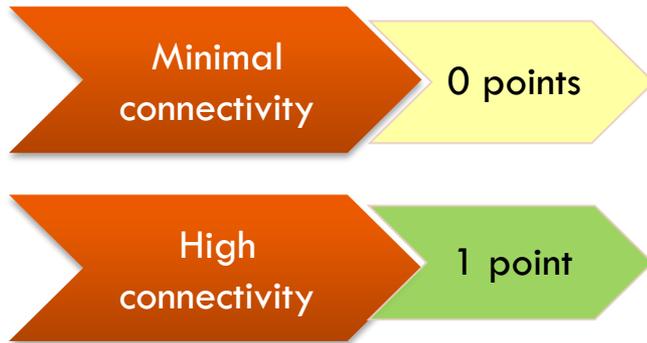


● fair BIBI



Distance from *likely* source

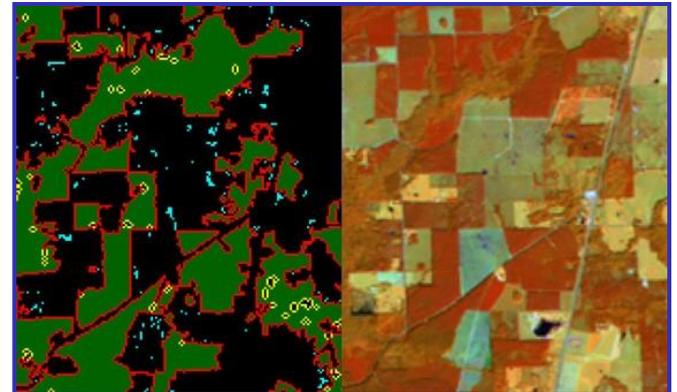
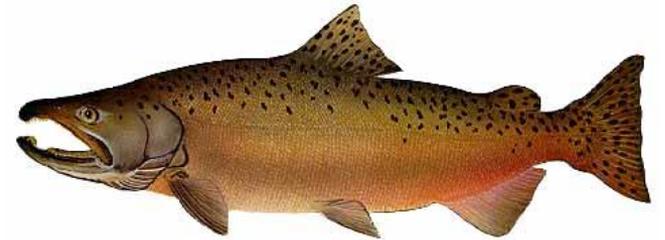
Connectivity



Other Criteria?

Are there other criteria to consider that have widely available data without further monitoring?

- Salmon recovery priorities?
- Ownership?
- Fragmentation?
- Geology?
- Other?



Please send additional comments/suggestions to:

[Debra Bouchard, debra.bouchard@kingcounty.gov](mailto:debra.bouchard@kingcounty.gov)

Stakeholder Input – vote with dots

- 11 criteria posted on back wall
- 11 dots for each participant

Simple Instructions:

Place dots on criteria you think appropriate for the Decision Making Framework.

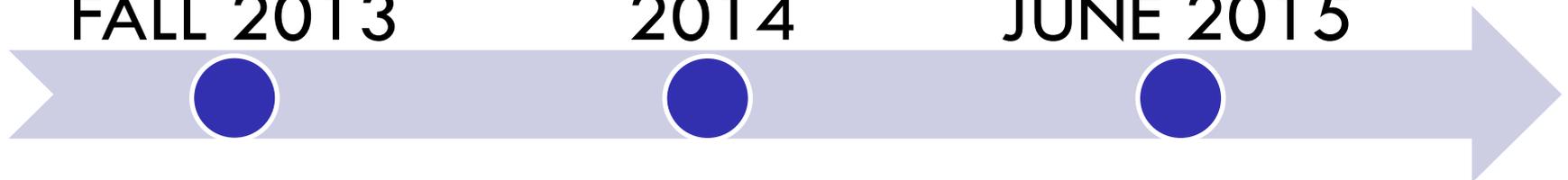
- one dot on each criteria = all criteria are equally important
- more dots on a criteria = that criteria is more important



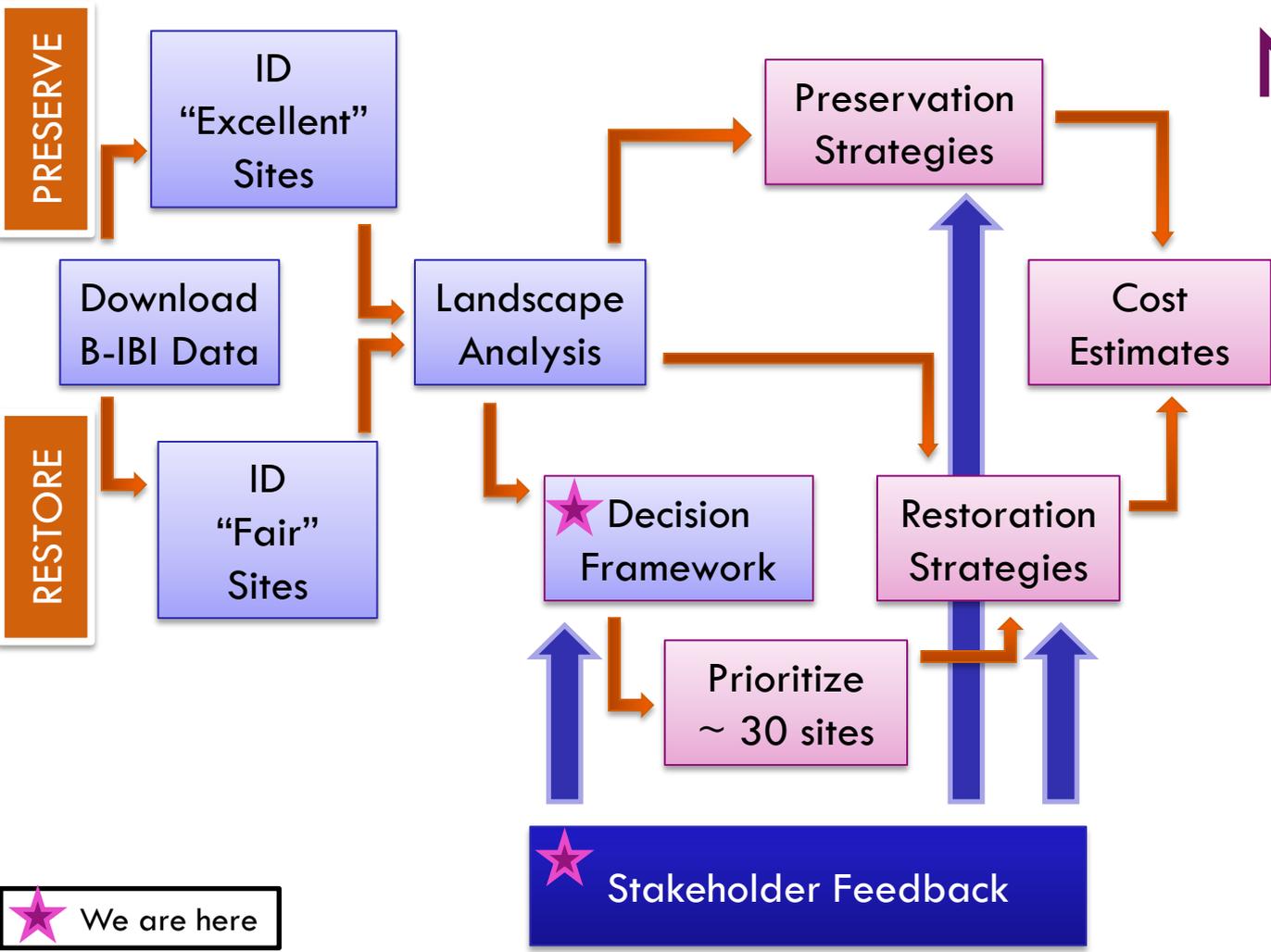
FALL 2013

2014

JUNE 2015



Next Steps



★ We are here

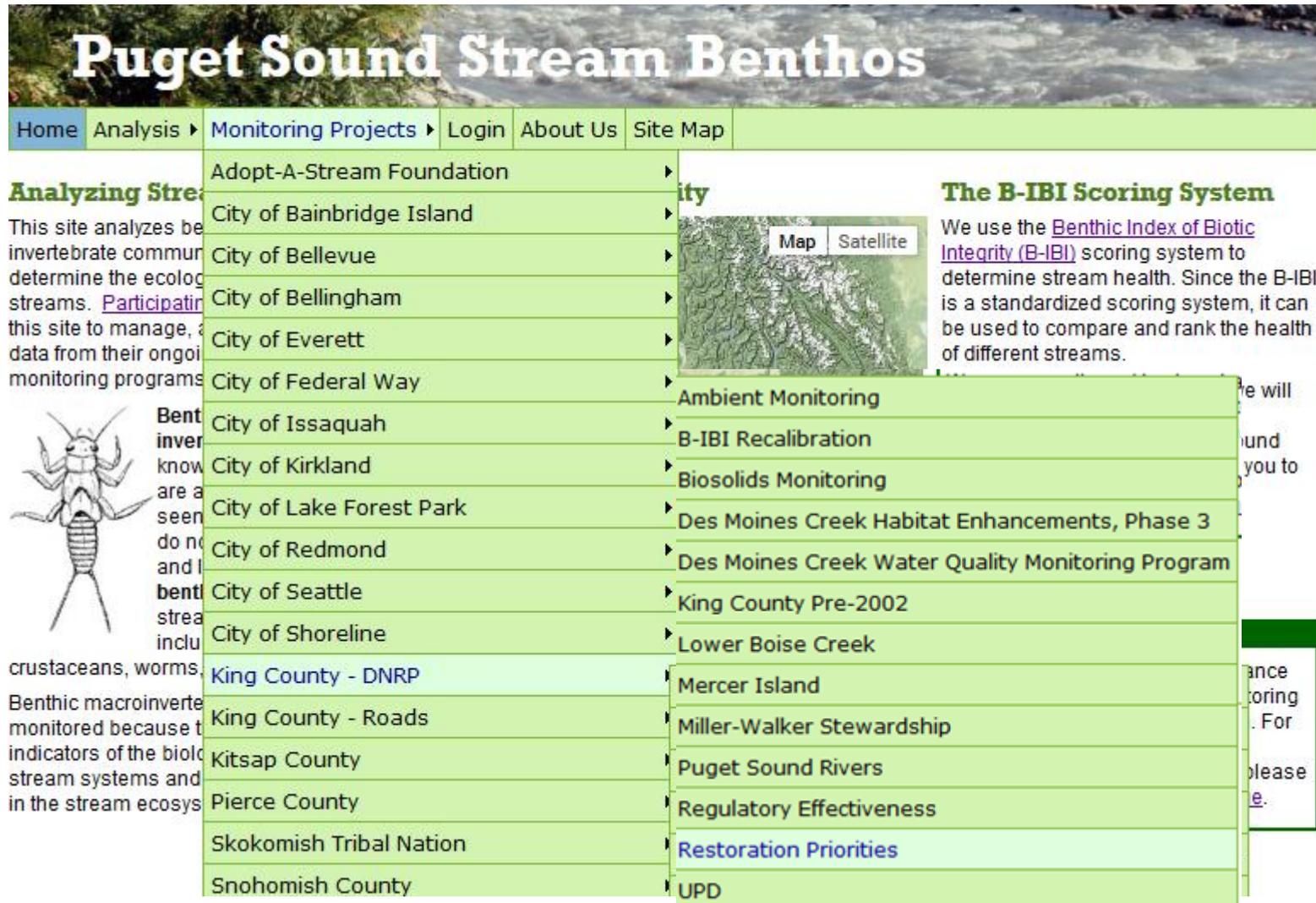
Next Steps: Restoration

What is Feasible? Effective?

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



Project Web Page: PSSSB



Puget Sound Stream Benthos

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Analyzing Streams

This site analyzes benthic invertebrate communities to determine the ecological health of streams. [Participating agencies](#) use this site to manage, analyze, and share data from their ongoing monitoring programs.



Benthic invertebrates are a key component of stream ecosystems. They are used as indicators of stream health because they are sensitive to changes in water quality and habitat. Benthic macroinvertebrates are monitored because they are good indicators of the biological health of stream systems and the stream ecosystem.

The B-IBI Scoring System

We use the [Benthic Index of Biotic Integrity \(B-IBI\)](#) scoring system to determine stream health. Since the B-IBI is a standardized scoring system, it can be used to compare and rank the health of different streams.

[Map](#) [Satellite](#)

- Adopt-A-Stream Foundation
- City of Bainbridge Island
- City of Bellevue
- City of Bellingham
- City of Everett
- City of Federal Way
- City of Issaquah
- City of Kirkland
- City of Lake Forest Park
- City of Redmond
- City of Seattle
- City of Shoreline
- King County - DNRP
- King County - Roads
- Kitsap County
- Pierce County
- Skokomish Tribal Nation
- Snohomish County
- Ambient Monitoring
- B-IBI Recalibration
- Biosolids Monitoring
- Des Moines Creek Habitat Enhancements, Phase 3
- Des Moines Creek Water Quality Monitoring Program
- King County Pre-2002
- Lower Boise Creek
- Mercer Island
- Miller-Walker Stewardship
- Puget Sound Rivers
- Regulatory Effectiveness
- Restoration Priorities
- UPD

Project Web Page:

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

Puget Sound Stream Benthos

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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

GIS:

Peter Leinenbach (EPA), Ken Rauscher (King Co.)

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

?’s/Suggestions/Success Stories

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Debra.Bouchard@kingcounty.gov

www.pugetsoundstreambenthos.org