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

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King County
Department of
Natural Resources and Parks
Water and Land Resources Division

PNW Chapter SFS, Bellingham WA Nov. 6, 2014

B-IBI: PSP Vital Sign Indicator

PSP Ecosystem Recovery Targets

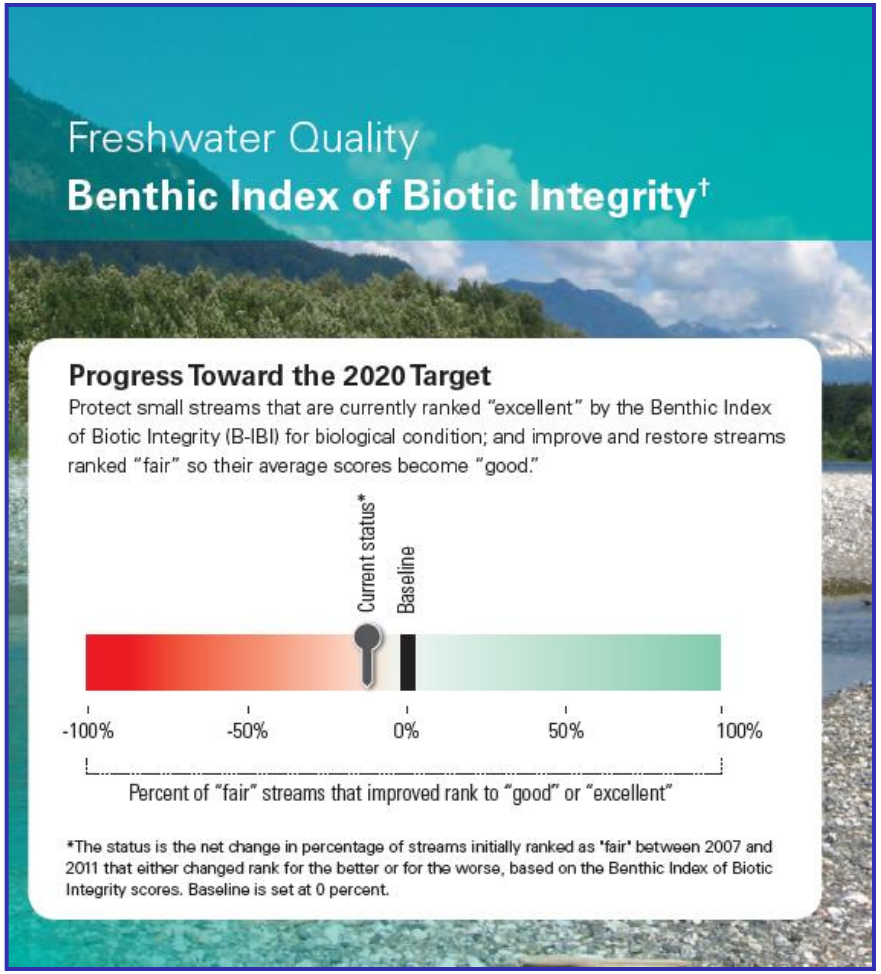
Freshwater Quality B-IBI Targets by 2020:

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

PSP Report Card

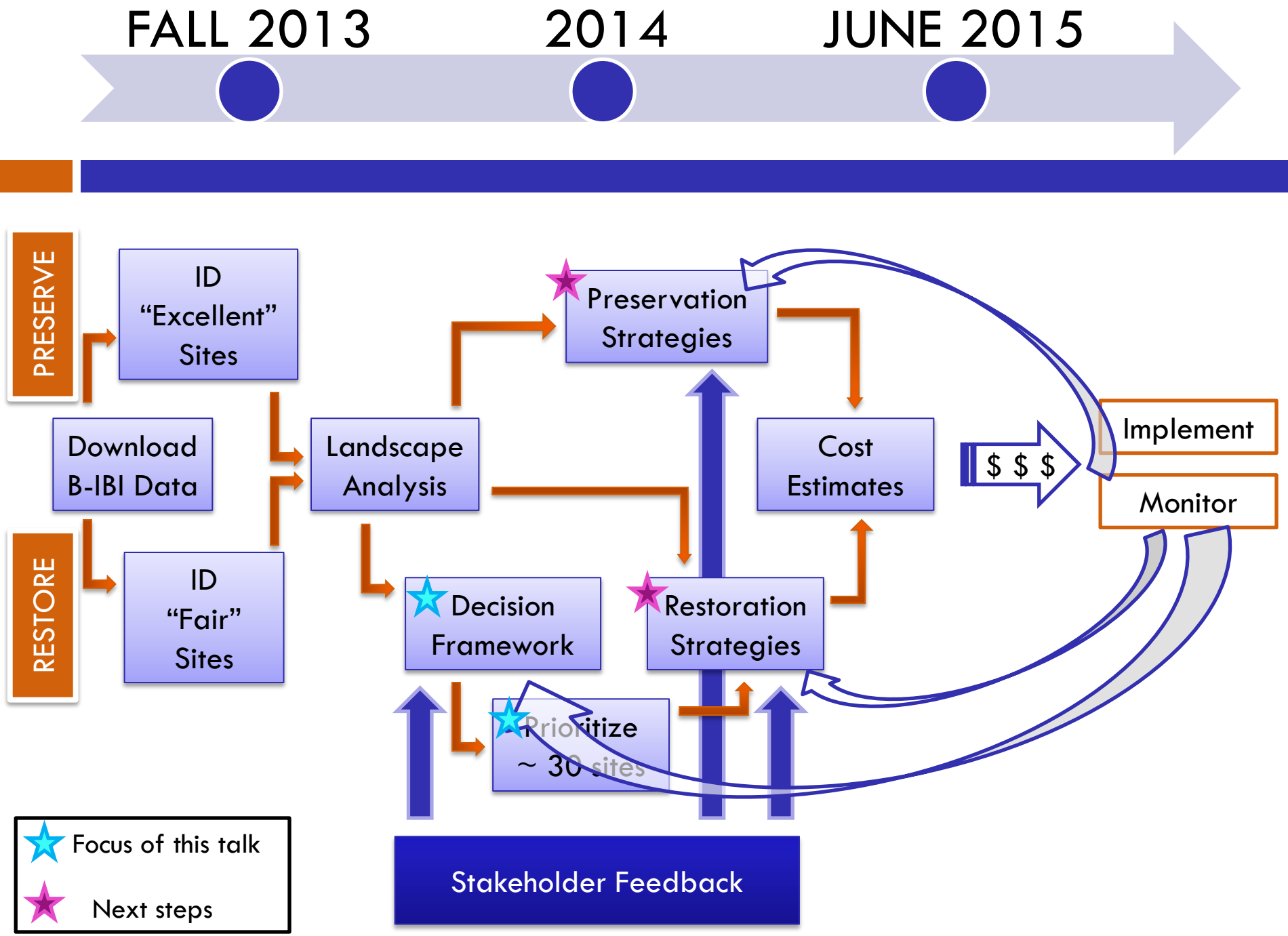
PugetSoundPartnership
LEADING PUGET SOUND RECOVERY

- 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)

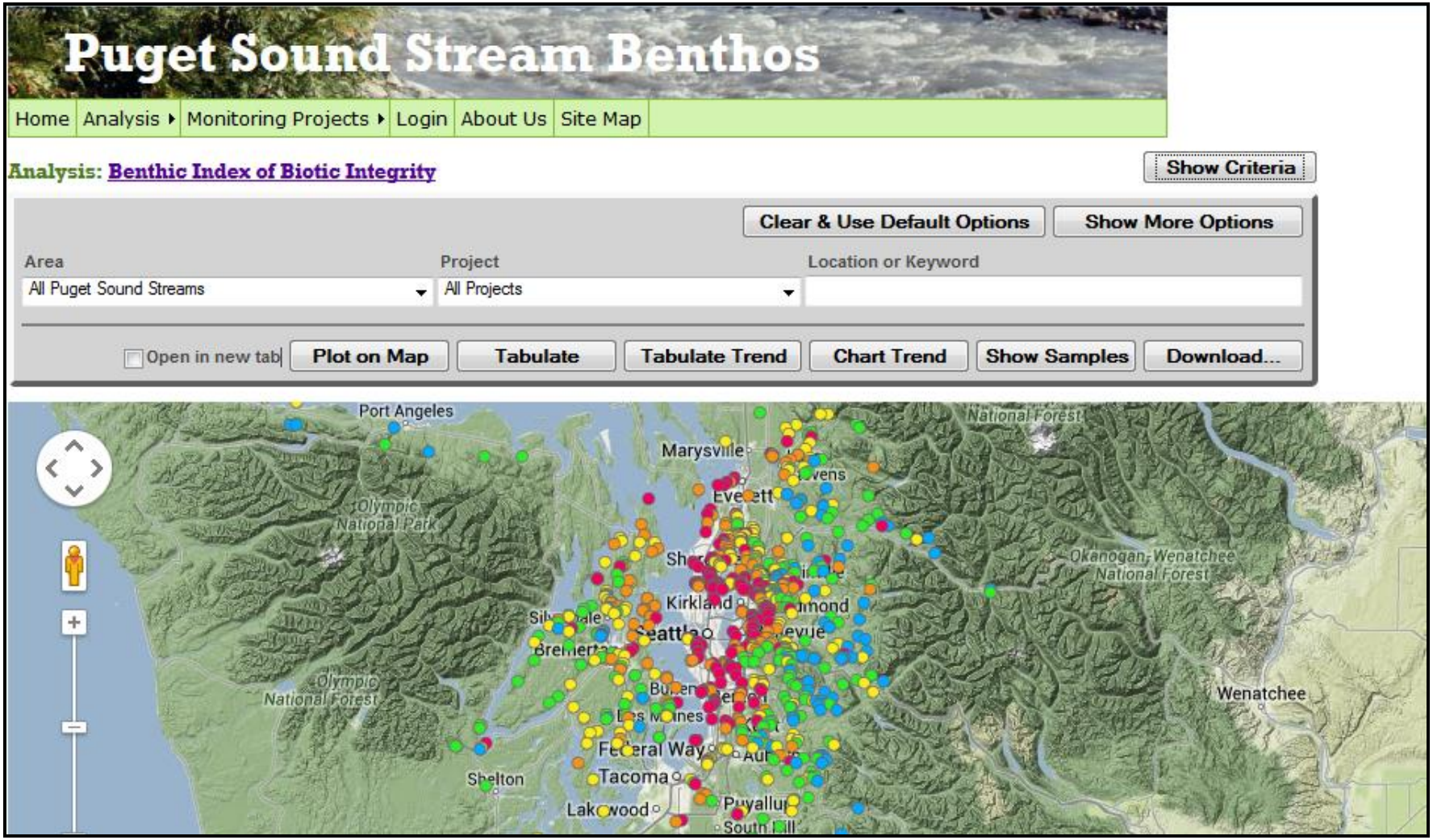


Limits and Opportunities

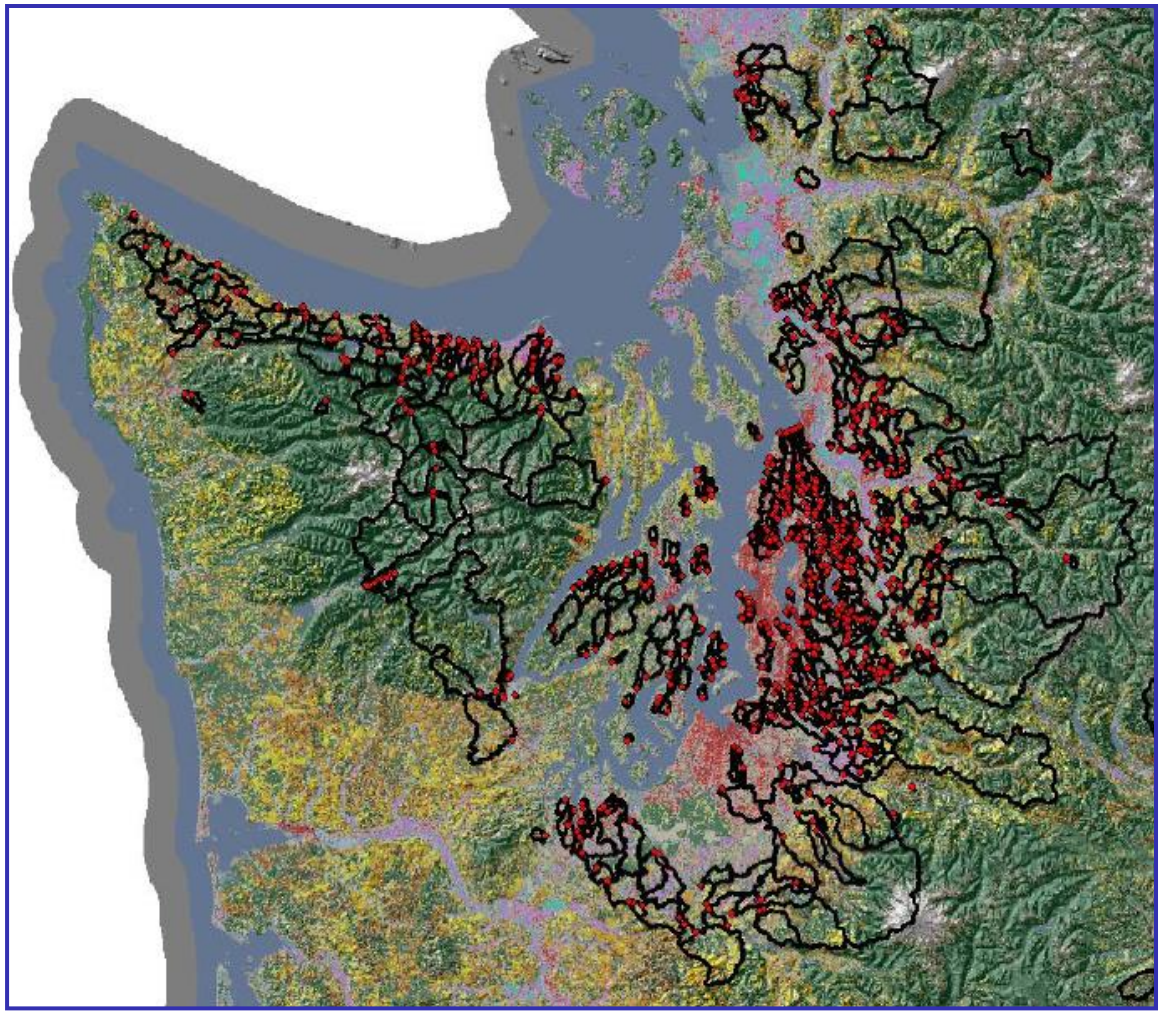
- Framework vs. opportunistic, single site action
- Thoughtful, practical approach
  - Widely available data
  - Simple, transparent, updatable
- Not fish focused
  - Restoration benefiting fish likely to benefit bugs
  - Potential to leverage additional support if there are fish recovery goals for prioritized watersheds


FALL 2013
2014
JUNE 2015
PRESERVE
ID "Excellent" Sites
Download B-IBI Data
RESTORE
ID "Fair" Sites
Landscape Analysis
Preservation Strategies
Decision Framework
Restoration Strategies
Prioritize ~ 30 sites
Cost Estimates
$ $ $
Implement
Monitor
Stakeholder Feedback
Focus of this talk
Next steps

Download B-IBI Data: www.pugetsoundstreambenthos.org



Landscape Analysis



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

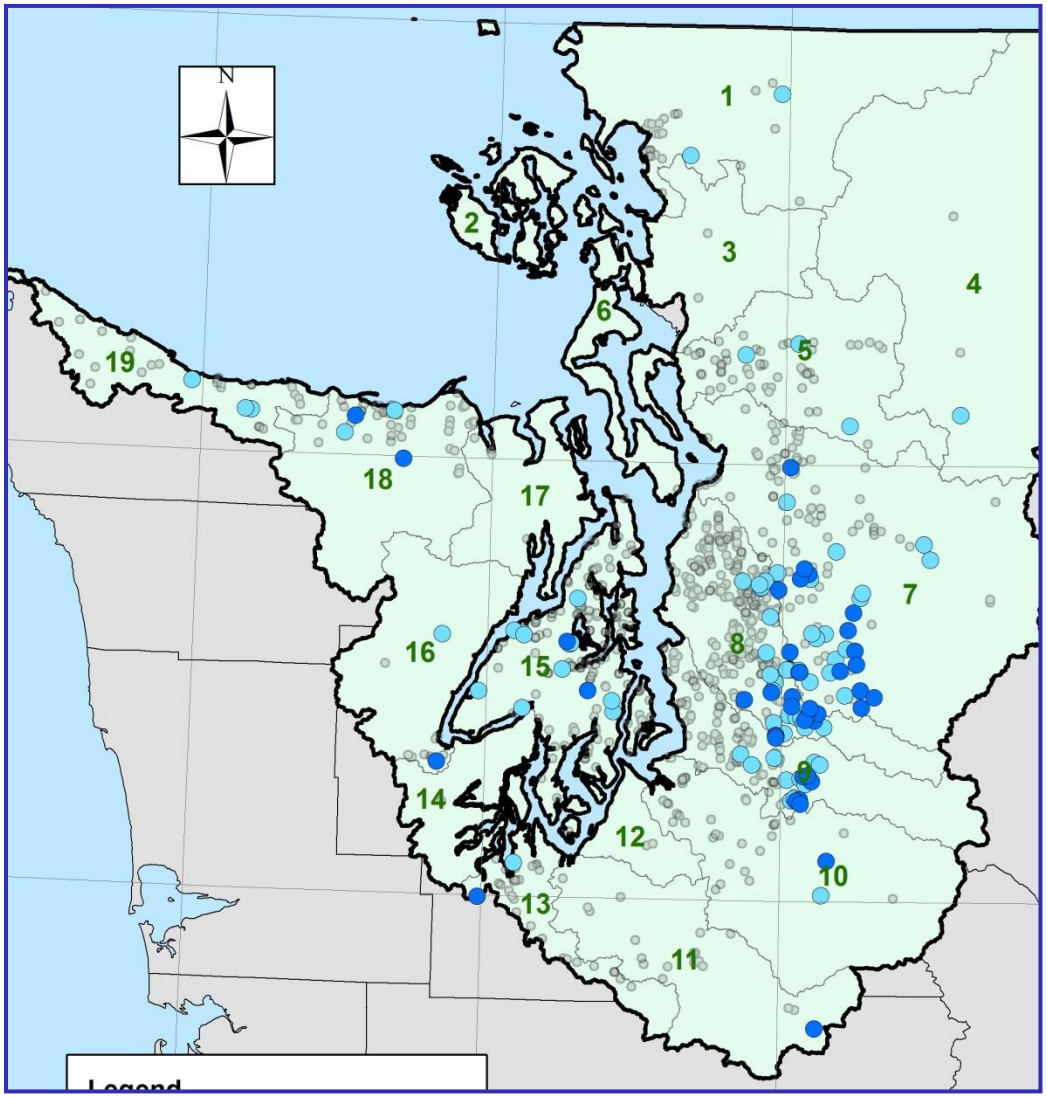
Thanks Peter Leinenbach (EPA)!

“Excellent” Sites (≥42) = **Protection**

“Excellent” scores

- ≥ 46
- ≥ 42 and <46

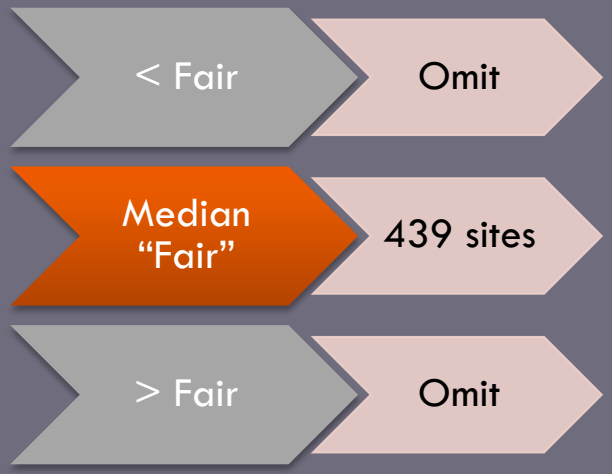
- **121** sites scored “excellent” at least once
- **35** sites had a median “excellent” score
- **33** sites averaged “excellent”



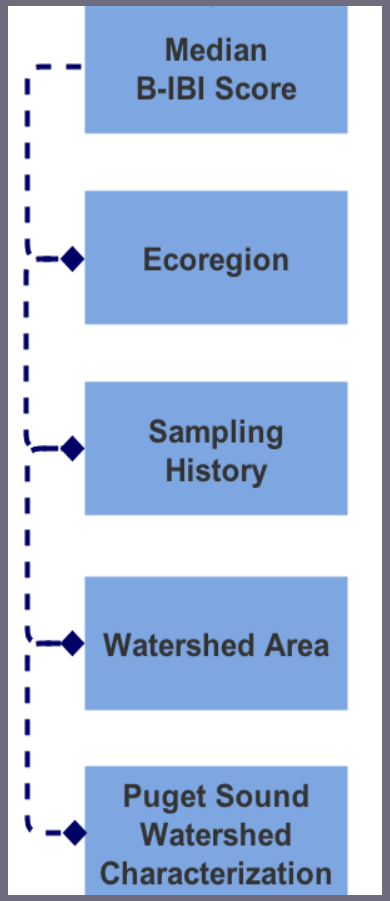
Restoration Decision Framework

Filtering

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



5 Filters



Ranking

Applied after filtering. Rank orders each site so that the sites can be prioritized.

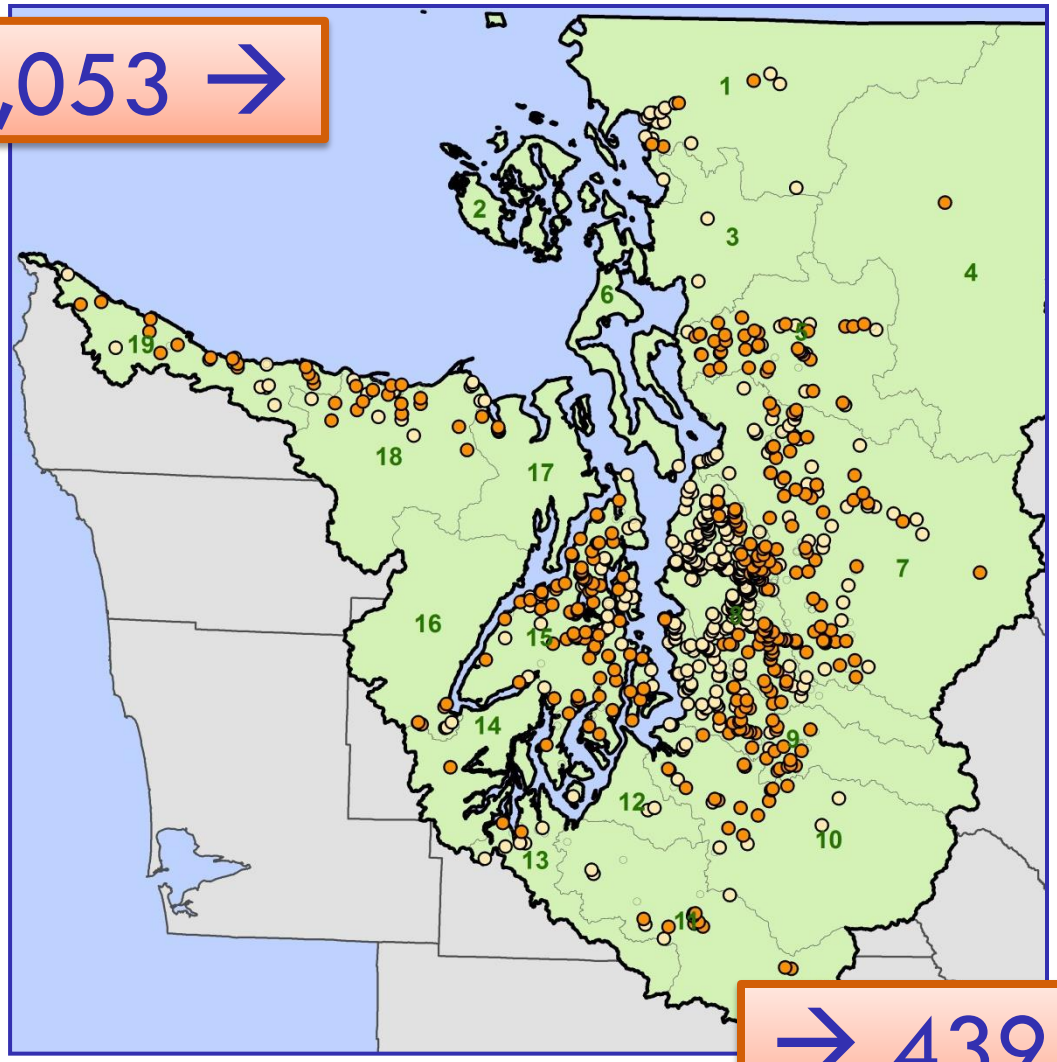
Site	Biotic Potential Rank
Site D	1
Site X	2
Site A	3
Site C	4
Site W	5

"Fair" Sites (28-36) = **Restoration**

- "Fair" median
- "Fair" at least once

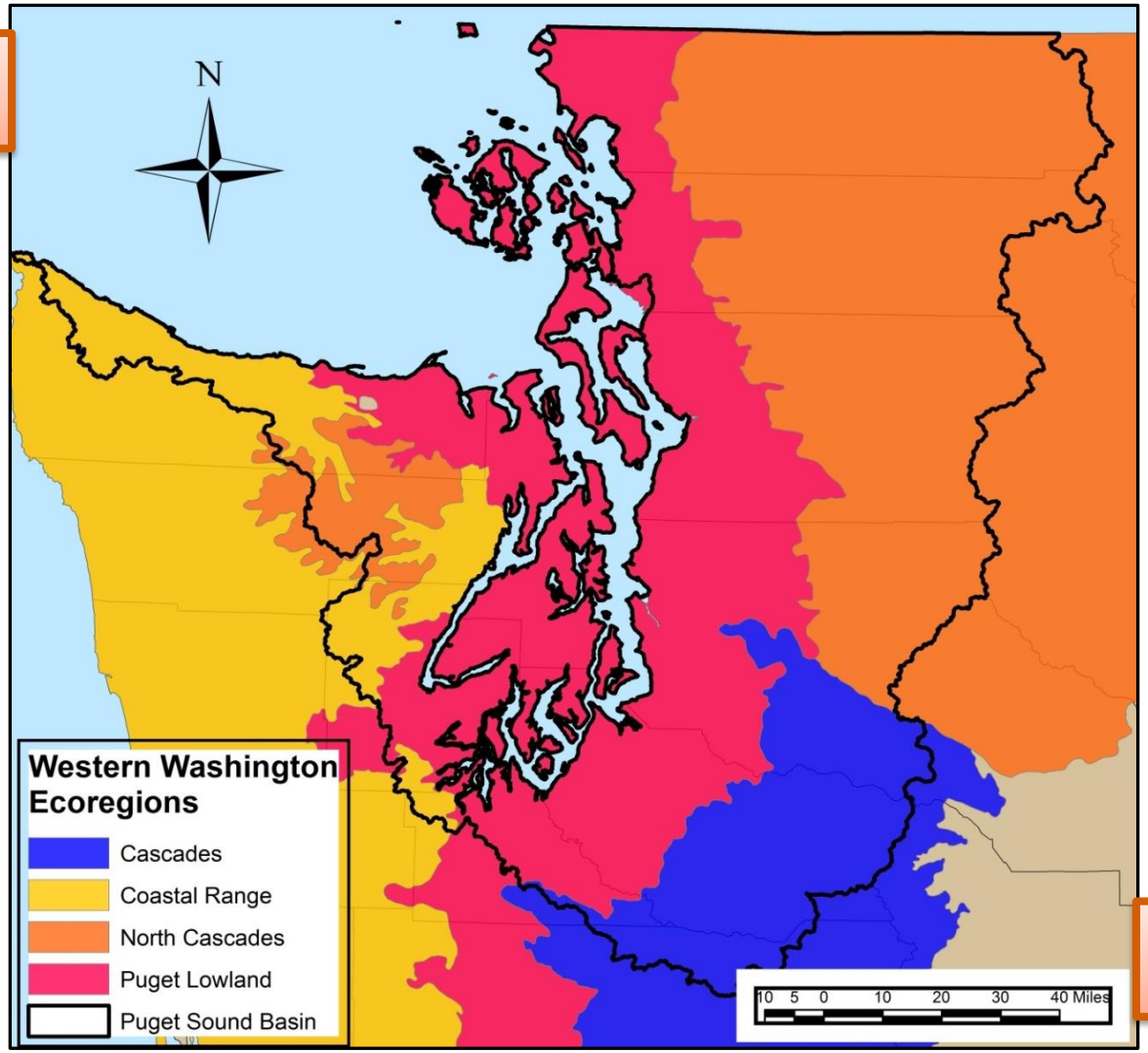
- **648** sites scored "fair" at least once

- **439 sites with median "fair" scores**



Filtering: **Ecoregion**

439 →



→ 362

Filtering: **Sampling History**

362 →

N>2 *and* since 2007

OR

N>4



\+



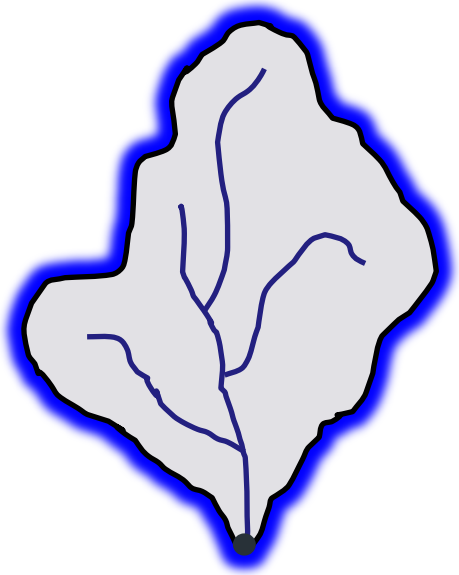


→ 174

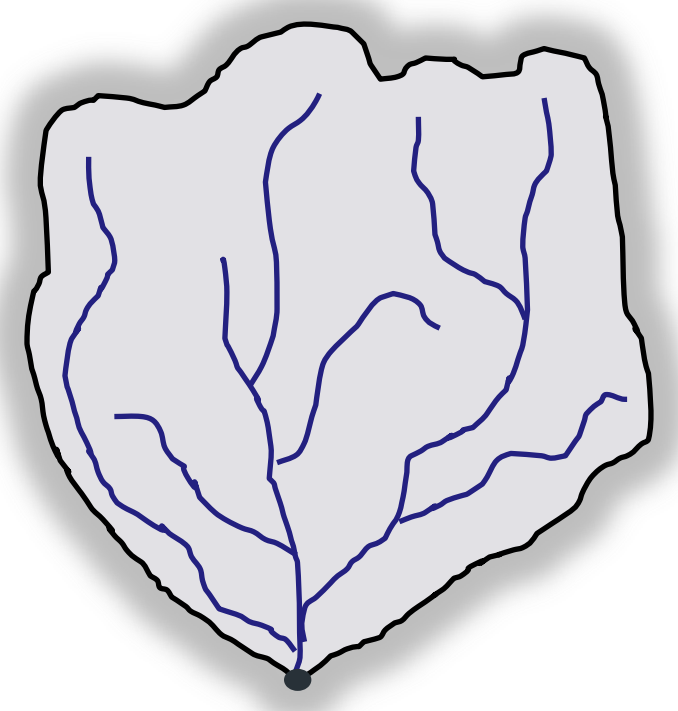
Filtering: **Watershed Area**

174 →

<200 Acres:
Too Small



200-3000 Acres:
Just Right



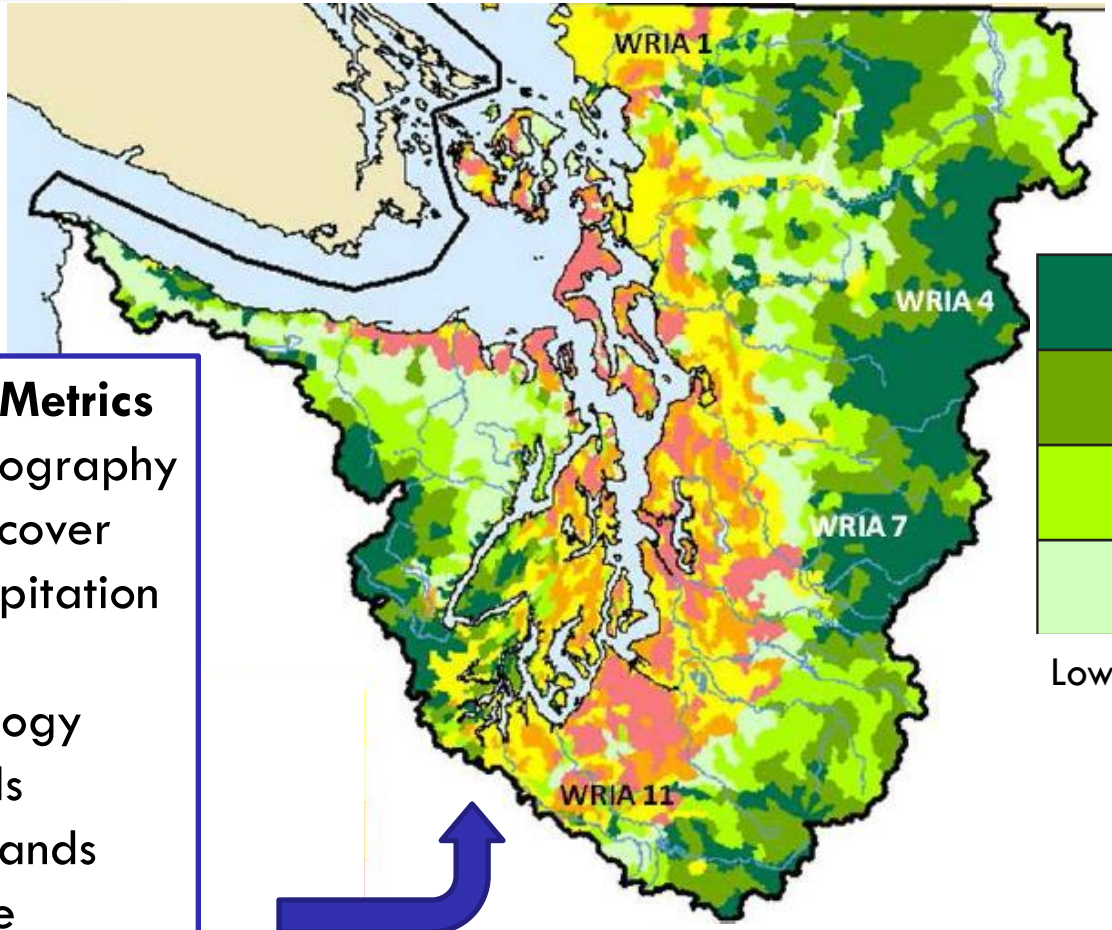
>3000 Acres:
Too Big

→ 81

Filtering: **PS Watershed Characterization**

81→

Water Flow Processes Model



PSWC Metrics

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

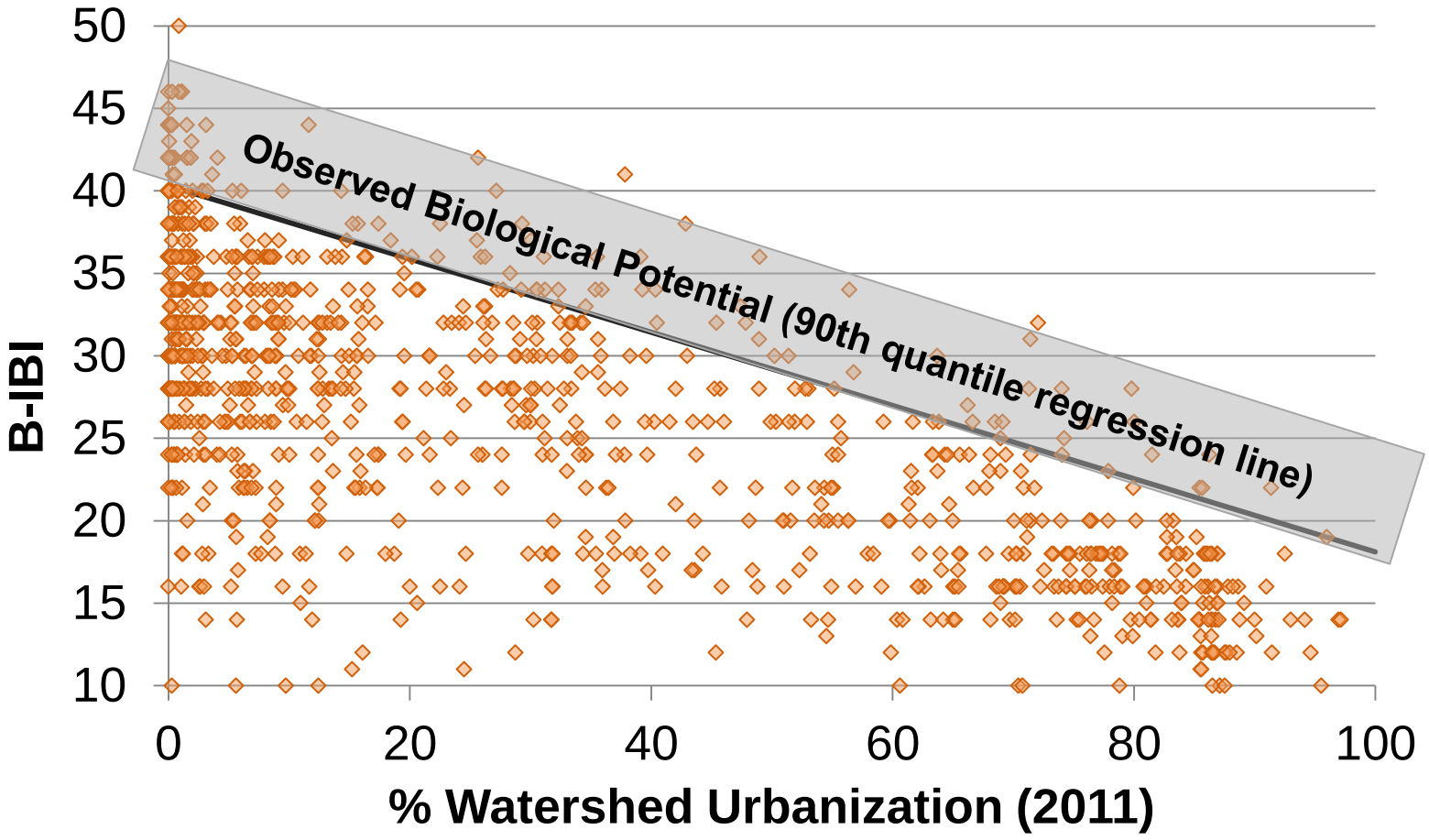
Highest Protection	Highest Restoration
High Protection	High Restoration
Low Protection	Low Restoration
Lowest Protection	Lowest Restoration

Low DEGRADATION High

Low IMPORTANCE High

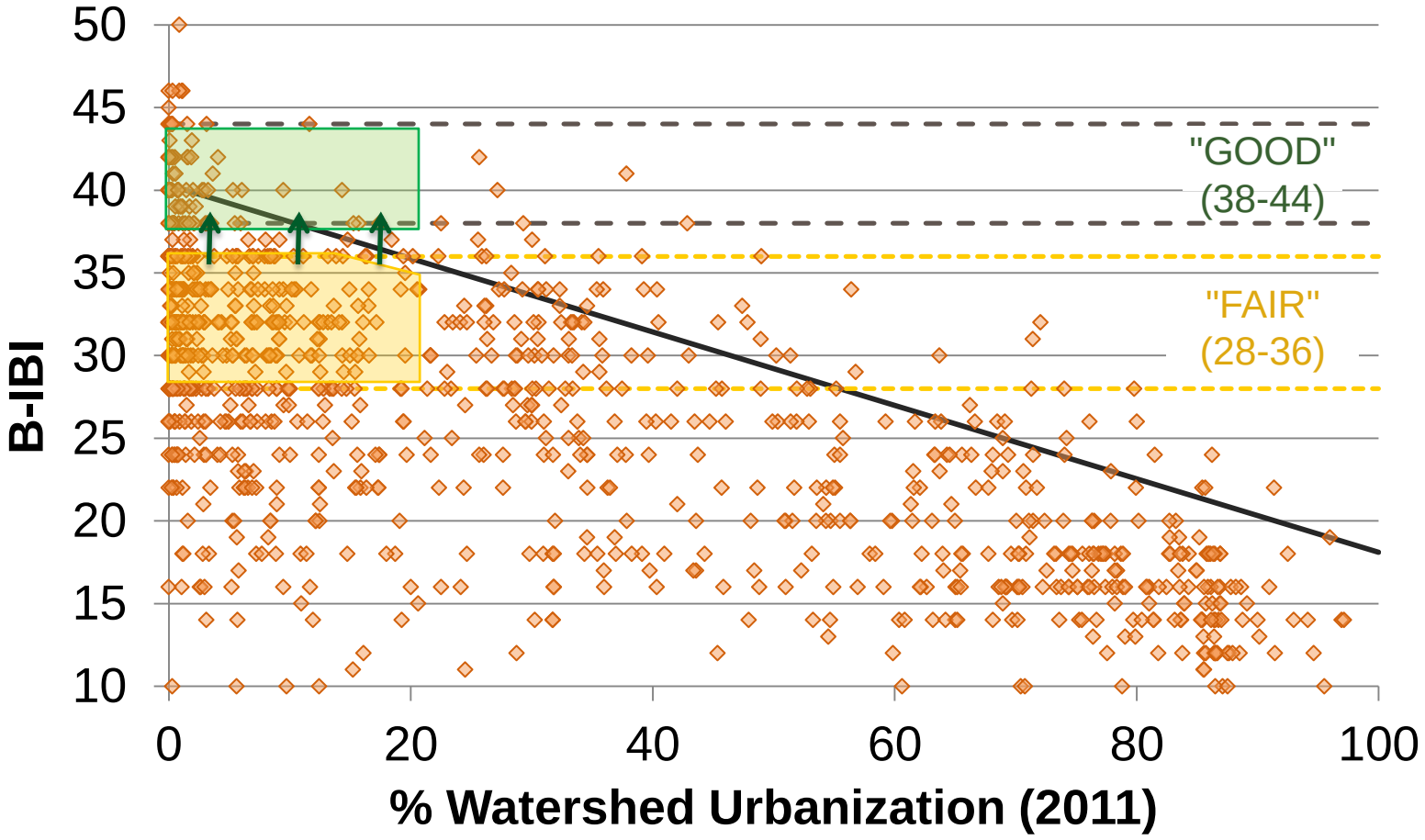
→ 59

Ranking: **Biological Potential**

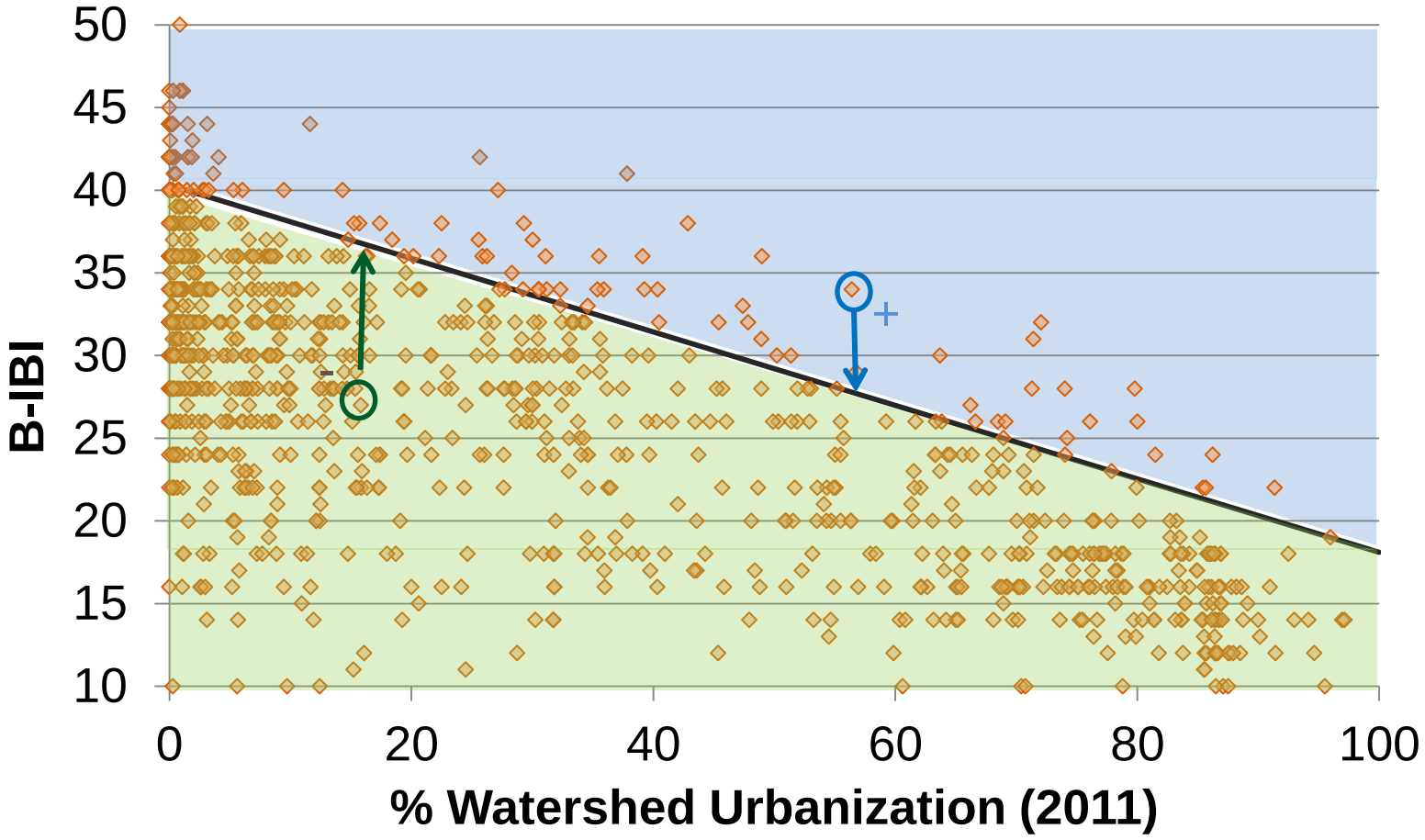


Paul et al. 2009

Ranking: **Biological Potential**

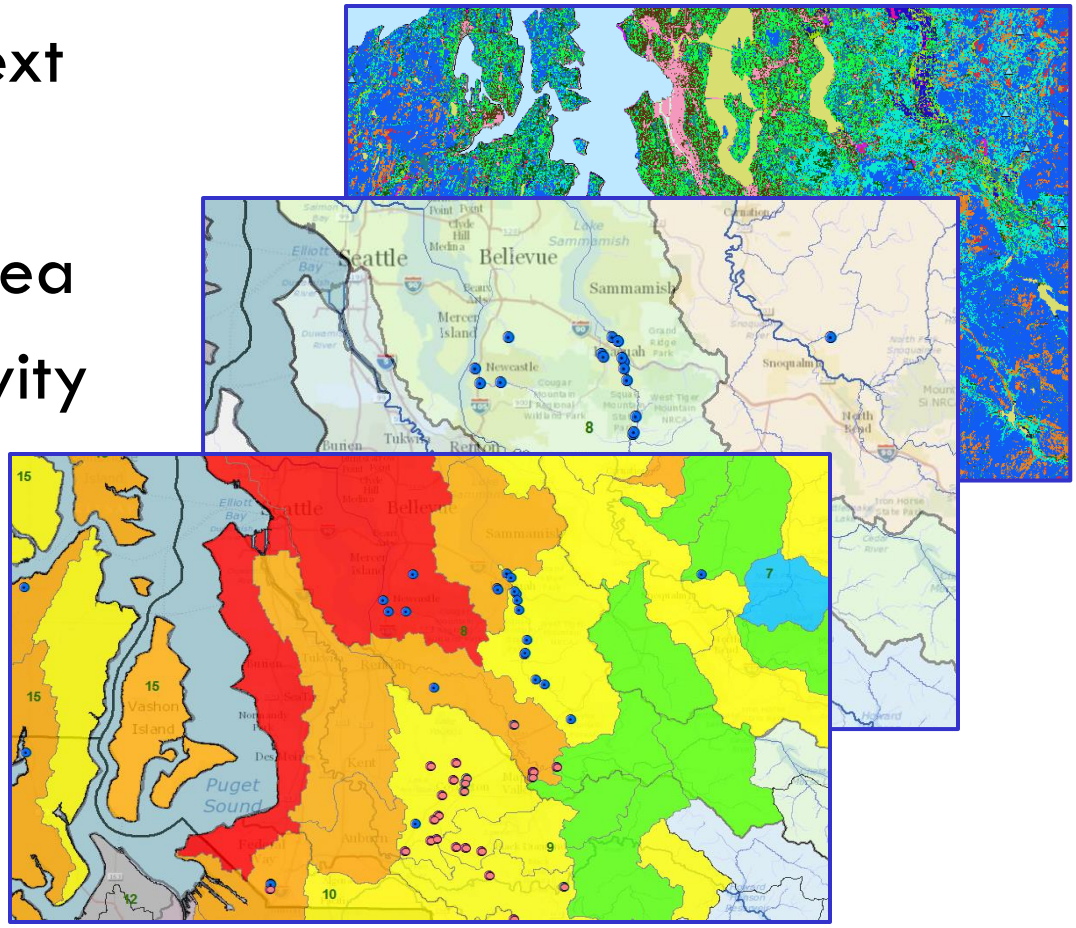


Ranking: **Biological Potential**



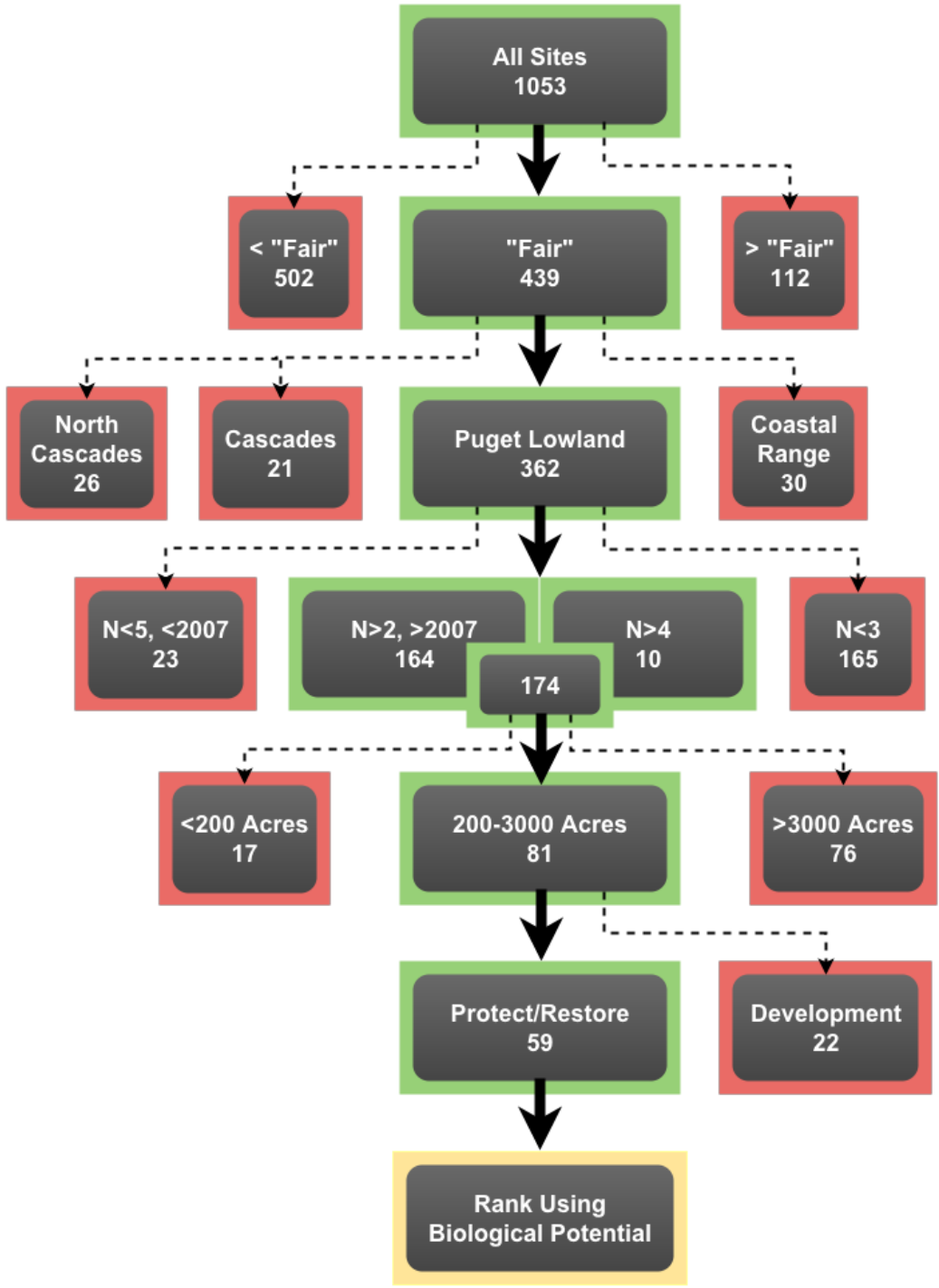
Other Criteria Considered

- Threatened/endangered fish presence
- Watershed context
- Land ownership
- Urban growth area
- Habitat connectivity
- Hydrology



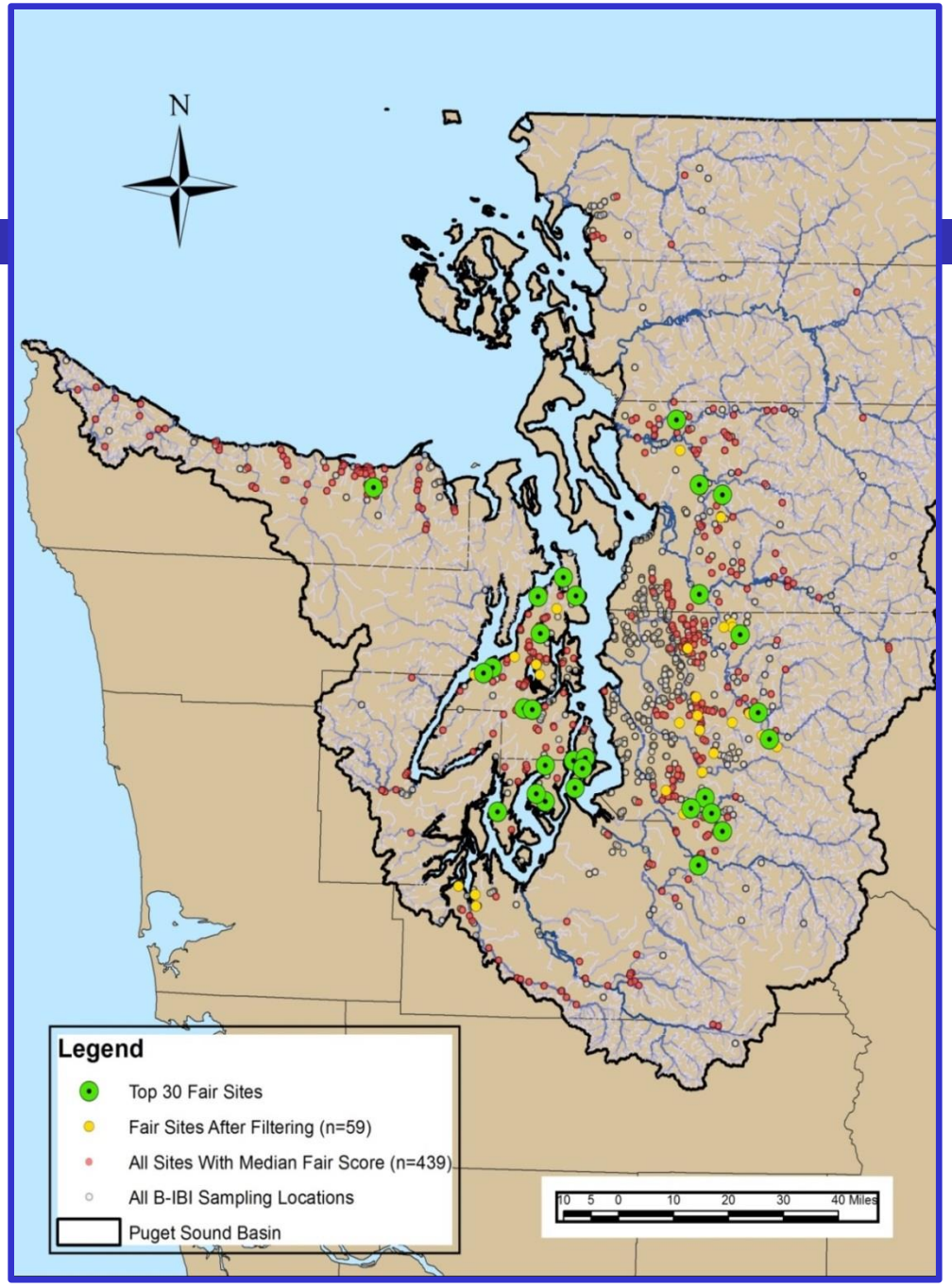
Recap:


CRITERIA
Median B-IBI Score
Ecoregion
Sampling History
Watershed Area
Puget Sound Watershed Characterization
PRIORITIZE


All Sites 1053
< "Fair" 502
"Fair" 439
> "Fair" 112
North Cascades 26
Cascades 21
Puget Lowland 362
Coastal Range 30
N<5, <2007 23
N>2, >2007 164
N>4 10
174
N<3 165
<200 Acres 17
200-3000 Acres 81
>3000 Acres 76
Protect/Restore 59
Development 22
Rank Using Biological Potential

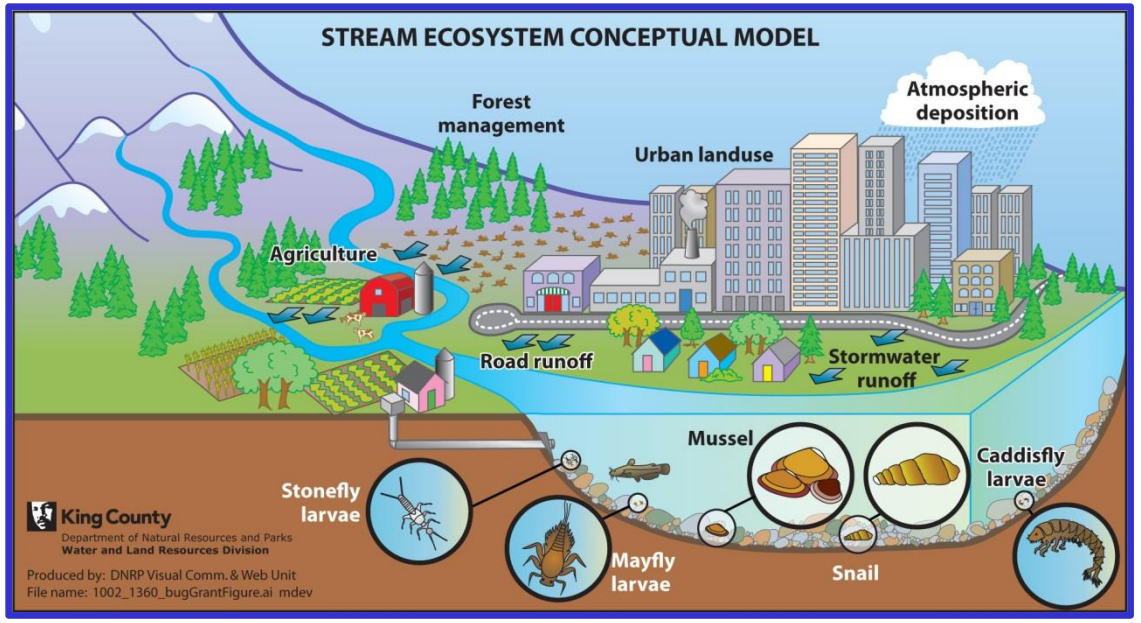
Top 30 sites

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



Next Steps

- Outreach to local experts who know the basins
- Identify key basin stressors
  - Puget Sound watershed characterization
  - Biological potential (metrics)
  - Aerial photos
  - Landscape data



Next Steps: **Restoration**

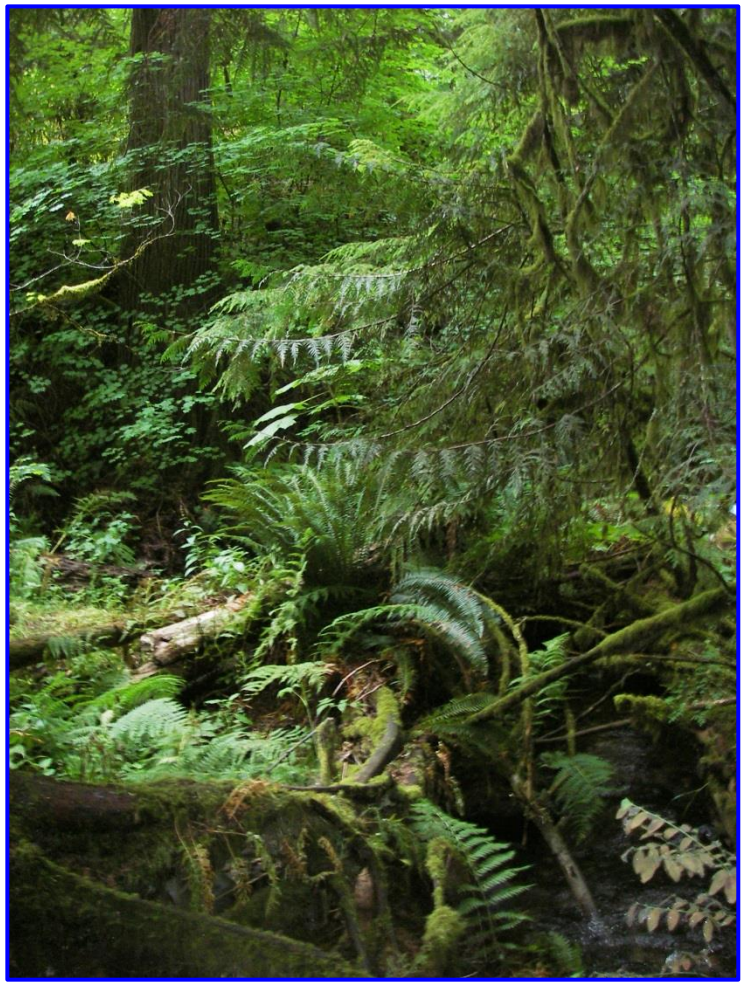
What is Feasible? Effective?

- Habitat improvements
- Riparian plantings
- Stormwater retrofits
- Agriculture BMPs
- Education/outreach
- Legislation
- Incentives
- 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

Acknowledgements



- King County:

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  WDFW: George Wilhere

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- Stakeholder Workgroup

?'s/Suggestions/Success Stories

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www.pugetsoundstreambenthos.org