May 1st, 10:30 AM - 12:00 PM

Using B-IBI to Identify Puget Sound Watersheds for Restoration and Protection

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

Jo Wilhelm (Project Manager), Debra Bouchard, Chris Gregersen, Chris Knutson, Kate Macneale

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

Puget Sound Vital Signs
a dashboard of indicators on Puget Sound's health and vitality
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”
On the ground progress towards targets: none

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

Currently no funding for restoration & protection implementation or effectiveness monitoring
FALL 2013

Download B-IBI Data

ID “Excellent” Sites

Landscape Analysis

ID “Fair” Sites

Preservation Strategies

Prioritize ~ 30 sites

Restoration Strategies

Cost Estimates

Decision Framework

Implement

Monitor

We are here

Stakeholder Feedback
Download B-IBI Data:
www.pugetsoundstreambenthos.org
“Excellent” Sites ($\geq 42$) = Protection

“Excellent” scores

- $\geq 46$
- $\geq 42$ 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

648 sites scored “fair” at least once
454 sites with median “fair” scores
428 sites averaged “fair”

“Fair” average
“Fair” at least once
Restoration Decision Framework

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

- < Fair: Omit
- Median “Fair”: 454 sites
- > Fair: Omit

**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.

<table>
<thead>
<tr>
<th></th>
<th>SITE 1</th>
<th>SITE 2</th>
<th>SITE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watershed Context</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Biotic Potential</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>OVERALL SCORE</strong></td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
Landscape Analysis

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

QAQC → 432
Initial Filters: Ecoregion

Puget Lowland Ecoregion
Initial Filters: Sampling History

365 → N>2

180 → Since 2007?

N>4

→ Yes
No

→ 180

→ 156
Initial Filters: Watershed Area

- **<200 Acres:** Too Small
- **200-3000 Acres:** Just Right
- **>3000 Acres:** Too Big

156 → 72
Initial Filters: PSWC

PS Watershed Characterization

<table>
<thead>
<tr>
<th>Importance</th>
<th>Degradation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low Protection</td>
</tr>
<tr>
<td>High</td>
<td>Highest Protection</td>
</tr>
</tbody>
</table>

High

72 → 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

B-IBI

% WS Urbanization

All
Selected
Biotic Potential – all scores

\[ B-IBI \]

\[ \% WS Urbanization \]
Next Steps

- **Preserve**
  - Download B-IBI Data
  - ID "Excellent" Sites

- **Restore**
  - ID "Fair" Sites

**Landscape Analysis**

**Decision Framework**

**Prioritize ~ 30 sites**

**Preservation Strategies**

**Cost Estimates**

**Restoration Strategies**

**We are here**

**Stakeholder Feedback**

**2013 Fall - 2014 - June 2015**
Next Steps: Restoration

What is Feasible? Effective?

- Habitat improvements
- Riparian plantings
- SW retrofits
- Agriculture BMPs
- Education/outreach
- Legislation
- Incentives
- Seeding inverts...
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 an "excellent" benthic index of biotic integrity (B-IBI) scores and ecosystem recovery targets. This project is intended to assess and manage urban runoff at the basin and watershed scale.

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

King County staff working with the Puget Sound Watershed with "fair" scores and prioritize 30 sites for the development of stakeholders. Once the 30 sites are prioritized, planning activities on a general cost per unit of activity - such as land purchase, conservation easement purchase, and transfers.

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
Questions/Suggestions/Success Stories

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www.pugetsoundstreambenthos.org