

PUGET SOUND REGION

Examples of Successful Data Sharing & Collaboration



Jo Wilhelm, Deb Lester, Leska Fore,
Karen Adams, & Gretchen Hayslip



King County

Department of
Natural Resources and Parks
Water and Land Resources Division

NBAW Oct. 27, 2011

Life Before Collaboration – pre 2007

Microsoft Excel - 07-621_KC_Biosurveys_2007_Invert_Data [Re...]

File Edit View Insert Format Tools Data Window

A1 2007 KING COUNTY BIO

| 2007 KING COUNTY BIOSURVEYS MACROINVERTEBRATE DATA | |
|---|------------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | Non-insect taxa |
| 8 | Turbellaria |
| 9 | Nemata |
| 10 | Oligochaeta |
| 11 | Nereididae |
| 12 | Branchiolaria |
| 13 | Eprobolidae |
| 14 | Eprobolidae |
| 15 | Hirudiniidae |
| 16 | Glossiphoniidae |
| 17 | Pisicoidae |
| 18 | Hydra |
| 19 | Margaritiferidae |
| 20 | Pisidiidae |
| 21 | Angulidae |
| 22 | Lymnaeidae |
| 23 | Planorbidae |
| 24 | Ostracoda |
| 25 | Copepoda |
| 26 | Hyalellidae |
| 27 | Juga |
| 28 | Pleuroceridae |
| 29 | Hydrobiidae |
| 30 | Physidae |
| 31 | Corophiidae |
| 32 | Crangonidae |
| 33 | Gammaridae |
| 34 | Ramissidae |
| 35 | Asellidae |
| 36 | Sphaeromatidae |
| 37 | Astacidae |
| 38 | Trombidiformes |
| 39 | Gomphidae |
| 40 | Detonidae |
| 41 | Aeshnidae |
| 42 | Coenagrionidae |
| 43 | Coenagrionidae |
| 44 | Corduliidae |
| 45 | Lepidoptera |
| 46 | Ephemeroptera |
| 47 | Ameletidae |
| 48 | Baetidae |
| 49 | Baetidae |
| 50 | Baetidae |
| 51 | Baetidae |
| 52 | Baetidae |
| 53 | Baetidae |
| 54 | Baetidae |
| 55 | Baetidae |
| 56 | Baetidae |
| 57 | Baetidae |
| 58 | Baetidae |
| 59 | Baetidae |
| 60 | Baetidae |
| 61 | Baetidae |
| 62 | Baetidae |
| 63 | Baetidae |
| 64 | Baetidae |
| 65 | Baetidae |
| 66 | Baetidae |
| 67 | Baetidae |
| 68 | Baetidae |
| 69 | Baetidae |
| 70 | Baetidae |
| 71 | Baetidae |
| 72 | Baetidae |
| 73 | Baetidae |
| 74 | Baetidae |
| 75 | Baetidae |
| 76 | Baetidae |
| 77 | Baetidae |
| 78 | Baetidae |
| 79 | Baetidae |
| 80 | Baetidae |
| 81 | Baetidae |
| 82 | Baetidae |
| 83 | Baetidae |
| 84 | Baetidae |
| 85 | Baetidae |
| 86 | Baetidae |
| 87 | Baetidae |
| 88 | Baetidae |
| 89 | Baetidae |
| 90 | Baetidae |
| 91 | Baetidae |
| 92 | Baetidae |
| 93 | Baetidae |
| 94 | Baetidae |
| 95 | Baetidae |
| 96 | Baetidae |
| 97 | Baetidae |
| 98 | Baetidae |
| 99 | Baetidae |
| 100 | Baetidae |

| | 08SAM2865/07 | 08WES | |
|---|--------------|------------|-------|
| | 07-621-192 | 07-621-192 | |
| | 8/27/2007 | 8/15/2007 | |
| | 30 | 2 | |
| | | PA | |
| ? | Count | Unique? | Count |
| | | | |
| | | | |
| | | | |
| | 26 | | 12 |
| | 2 | | 2 |
| | 6 | | 3 |
| | 8 | | 2 |
| | 2 | | 1 |
| | 14 | | 4 |
| | 4 | | 1 |
| | 3.41 | | 10.87 |
| | 20.45 | | 4.63 |
| | 46.02 | | 64.53 |
| | | | |
| | | | |
| | 3 | | 1 |
| | 1 | | 1 |
| | 3 | | 1 |
| | 3 | | 1 |
| | 3 | | 1 |



COLLABORATION

WHEN A MOTIVATED GROUP OF PEOPLE JOIN TOGETHER,
THEY CAN TURN PROBLEMS INTO OPPORTUNITIES. ESPECIALLY DRINKING PROBLEMS.

Early Collaboration: 2007-2008

- Mutual need for better data management
- Desire for regional perspective
- March 2007 kick-off
- Monthly meetings
 - ▣ Managers
 - ▣ Technical Staff
 - ▣ Database/IT gurus



August 2008 Launch

www.pugetsoundstreambenthos.org/



RESULT

- **Consistent & secure data storage**
- **Enhanced analysis capabilities**
- **Data flexibility**
- **Regional comparability, look across boundaries**



[Click here to customize chart.](#)

Database Expansion: 2009

- Address need for improved stream benthos data management and coordination
- Enhance regional coordination of environmental monitoring

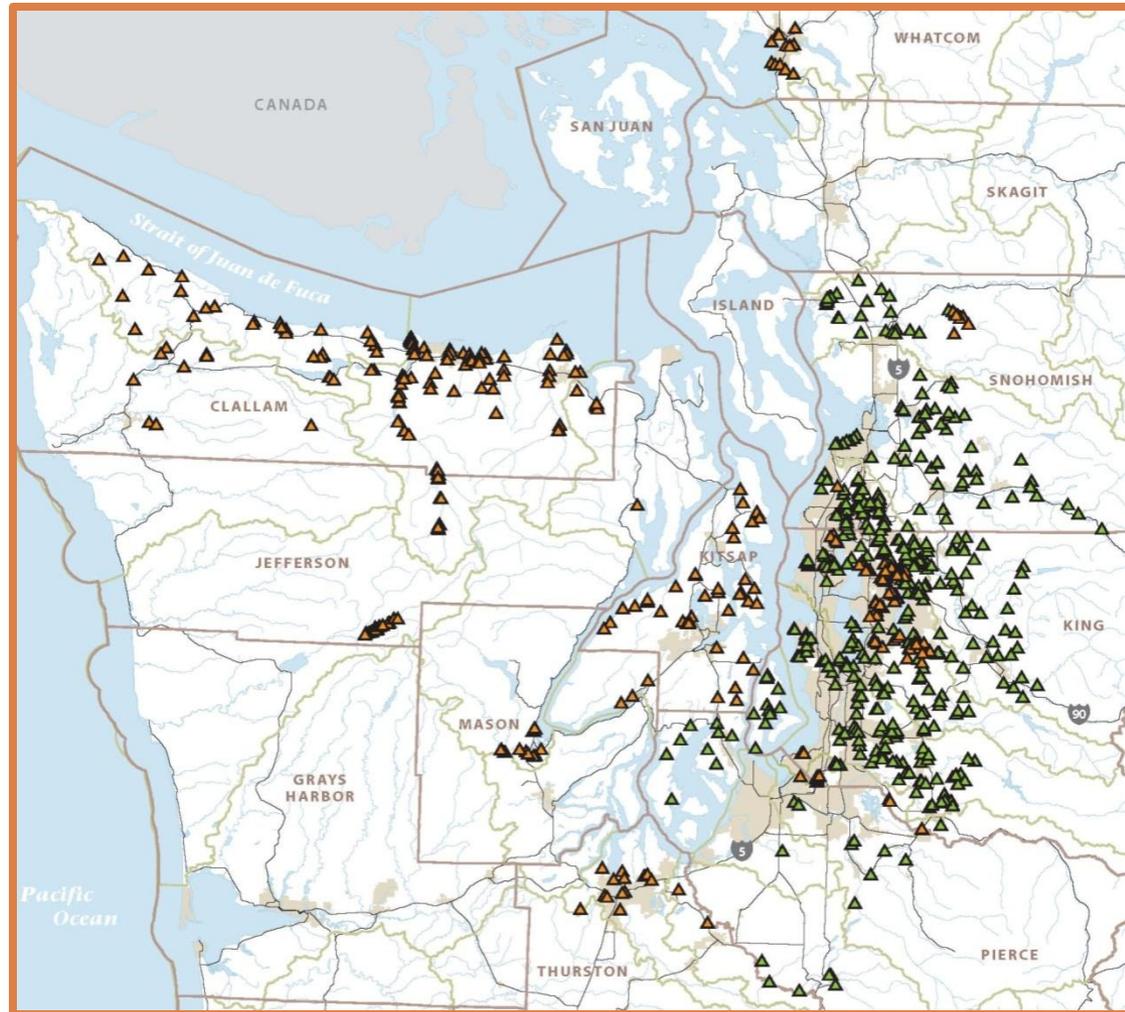
| Row | Site Code, Location | Year, Project | Quantities | | | | | | | | | | | Scores | | | | | | | View Samples | | | | | | |
|-----|---------------------|----------------|---------------|------------------------|---------------------|----------------------|--------------|------------------|---------------------|---------------------|-------------------|------------------|------------------|-----------|---------------|---------------|------------------------|---------------------|----------------------|------------------|--------------|---------------------|---------------------|-------------------|------------------|------------------|-------------------------|
| | | | Taxa Richness | Ephemeroptera Richness | Plecoptera Richness | Trichoptera Richness | EPT Richness | Clinger Richness | Long-Lived Richness | Intolerant Richness | Dominance Percent | Predator Percent | Tolerant Percent | Organisms | Overall Score | Taxa Richness | Ephemeroptera Richness | Plecoptera Richness | Trichoptera Richness | Clinger Richness | | Long-Lived Richness | Intolerant Richness | Dominance Percent | Predator Percent | Tolerant Percent | |
| 1 | 05B, Cher... | 2010, Regul... | 45 | 6 | 12 | 13 | 31 | 26 | 6 | 6 | 52.4% | 20.2% | 5.2% | 500 | 48 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | Details |
| 2 | 53E, Weis... | 2010, Regul... | 22 | 4 | 4 | 6 | 14 | 14 | 4 | 0 | 59.4% | 10.0% | 22.0% | 500 | 28 | 3 | 1 | 3 | 3 | 3 | 3 | 1 | 5 | 3 | 3 | 3 | Details |
| 3 | 31I, Taylo... | 2010, Regul... | 39 | 6 | 6 | 13 | 25 | 23 | 2 | 1 | 39.2% | 18.0% | 8.8% | 500 | 36 | 5 | 3 | 3 | 5 | 5 | 1 | 1 | 5 | 3 | 5 | 5 | Details |
| 4 | 31Q, Web... | 2010, Regul... | 38 | 7 | 12 | 10 | 29 | 20 | 2 | 6 | 46.2% | 14.0% | 12.5% | 500 | 42 | 5 | 3 | 5 | 5 | 5 | 1 | 5 | 5 | 3 | 5 | 5 | Details |
| 5 | 02O, Seid... | 2010, Regul... | 37 | 6 | 8 | 7 | 21 | 16 | 2 | 4 | 50.0% | 18.0% | 25.1% | 378 | 36 | 5 | 3 | 5 | 3 | 3 | 1 | 5 | 5 | 3 | 3 | 3 | Details |
| 6 | 02P, Seid... | 2010, Regul... | 29 | 3 | 6 | 5 | 14 | 13 | 3 | 2 | 79.4% | 3.0% | 6.5% | 500 | 28 | 5 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 1 | 5 | 5 | Details |
| 7 | 65B, Fish... | 2010, Regul... | 38 | 6 | 9 | 7 | 22 | 19 | 2 | 4 | 51.6% | 14.8% | 12.2% | 500 | 40 | 5 | 3 | 5 | 3 | 5 | 1 | 5 | 5 | 3 | 5 | 5 | Details |
| 8 | 28A, Judd ... | 2010, Regul... | 27 | 4 | 6 | 6 | 16 | 13 | 2 | 1 | 69.6% | 4.4% | 10.0% | 500 | 24 | 3 | 1 | 3 | 3 | 3 | 1 | 1 | 3 | 1 | 5 | 5 | Details |
| 9 | 65A, Tahl... | 2010, Regul... | 35 | 6 | 7 | 7 | 20 | 14 | 2 | 3 | 54.2% | 13.0% | 8.2% | 500 | 34 | 5 | 3 | 3 | 3 | 3 | 1 | 3 | 5 | 3 | 5 | 5 | Details |

9 scores generated from 606 sample taxa on Thursday, October 20, 2011 6:33:48 PM. (0.02 seconds)

Legend **Excellent** **Excellent/Good – Good** **Good/Fair – Fair** **Fair/Poor – Poor** **Poor/Very Poor – Very Poor**

Database Expansion: 2009

- Contacted 96 entities
- Entered 2002-2007 data for 17 entities
- 359 new locations, over 50,000 records



Ecology as partner: ~2010

Specify Your Download

Score Table

Option for All Years (not available)

QC Option

Only one visit per site per year

Hide QC samples

Download Scores

Scores By Year

Get a score pivot table with one site per row & one year per column. Only available when not aggregating.

Download by Year

Raw Sample Data

Options for All Years (not available)

Select Format

Only one visit per site per year

Standard Sample Format

Include deficient samples

Samples with Taxa Attributes

Samples with T.A. and Taxonomy

Wash. DOE's EIM Format

Download Samples

Technical Notes

Each of the above downloads is in a comma delimited format with column headers, and the rest of the rows are the data (not including the column headers) into MS Excel, MS Access and other data bases.

If the scores downloaded are site visit scores (not sample scores), the scores will be downloaded to the sample table on the natural key composed of the site ID and the date. The site ID is guaranteed to be unique within an agency.

Cancel

| | | | | | | | | |
|---|----|----|----|----|---|---|-------|----|
| 6 | 6 | 13 | 25 | 23 | 2 | 1 | 39.2% | 18 |
| 7 | 12 | 10 | 29 | 20 | 2 | 6 | 46.2% | 14 |
| 6 | 8 | 7 | 21 | 16 | 2 | 4 | 50.0% | 18 |
| 3 | 6 | 5 | 14 | 13 | 3 | 2 | 79.4% | 3 |
| 6 | 9 | 7 | 22 | 19 | 2 | 4 | 51.6% | 14 |
| 4 | 6 | 6 | 16 | 13 | 2 | 1 | 69.6% | 4 |
| 6 | 7 | 7 | 20 | 14 | 2 | 3 | 54.2% | 13 |

Wash. DOE's EIM Format Fields

- | | | |
|--|--|--|
| 1) User Study ID | 19) Sample Field Replicate ID | 37) Sample Tissue Type (Blank) |
| 2) User Location ID | 20) Sample Replicate Flag | 38) Sample Tissue Resection Date (Blank) |
| 3) Study Location Name | 21) Sample Sub ID (Blank) | 39) Sample Tissue ID (Blank) |
| 4) Field Activity Type | 22) Sample Composite Flag | 40) Sample Percent Sorted |
| 5) Field Activity Data Originator | 23) Sample Matrix | 41) Sample Trawl Length (Blank) |
| 6) Field Activity Start Date | 24) Sample Source | 42) Sample Trawl Length UOM (Blank) |
| 7) Field Activity Start Time | 25) Sample Type Code (Blank) | 43) Sample Trawl Duration (Blank) |
| 8) Field Activity End Date (Blank) | 26) Sample Use Code (Blank) | 44) Result Parameter Name |
| 9) Field Activity End Time (Blank) | 27) Sample Chain of Custody Flag (Blank) | 45) Result Parameter CAS Number (Blank) |
| 10) Field Activity Comment | 28) Sample Method Code 1 (Blank) | 46) Result Date |
| 11) Field Activity Area | 29) Sample Method Code 2 (Blank) | 47) Result Date Accuracy |
| 12) Field Activity Area UOM | 30) Sample Method Code 3 (Blank) | 48) Result Time (Blank) |
| 13) Field Activity Reference Point (Blank) | 31) Sample Method Code 4 (Blank) | 49) Result Reported Value |
| 14) Field Activity Upper Depth (Blank) | 32) Sample Refrigeration Temperature (Blank) | 50) Result Value UOM |
| 15) Field Activity Lower Depth (Blank) | 33) Sample Refrigeration UOM (Blank) | 51) Result Reporting Limit (Blank) |
| 16) Field Activity Depth UOM (Blank) | 34) Sample Lab Name (Blank) | 52) Result Reporting Limit Type (Blank) |
| 17) Well Measuring Point Name (Blank) | 35) Sample Taxon Name (Blank) | 53) Result Detection Limit (Blank) |
| 18) Sample ID | 36) Sample Taxon TSN (Blank) | 54) Result Detection Limit Type (Blank) |



DEPARTMENT OF
ECOLOGY
State of Washington

Take our quick survey...

Home | WATER | AIR | WASTE | CLEANUP | TOXIC HAZARDS | GREEN

Programs | Services | Publications | Databases | Laws & Rules | Calendar | Public Records

EIM Environmental Information Management

ENVIRONMENTAL INFORMATION MANAGEMENT (EIM)

Search

Advanced search (MyEIM)

Submit data

Downloads

Scores

| Site ID | Year | Score |
|---------|------|-------|
| 6 | 6 | 13 |
| 7 | 12 | 10 |
| 6 | 8 | 7 |
| 3 | 6 | 5 |
| 6 | 9 | 7 |
| 4 | 6 | 6 |
| 6 | 7 | 7 |

Great! But room for improvement...

- Methodological inconsistencies
- Attribute lists not empirically derived
- B-IBI precision, variability, regional applicability
- Lack of causal analysis tools

prevent integrated reporting
across agencies and jurisdictions





EPA Grant: January 2010

- EPA Scientific Studies and Technical Investigation Assistance Program call for proposals for the Puget Sound Region
- Submitted proposal for addressing monitoring challenges, advancing tools, and partnering with others throughout the region
- We got it!



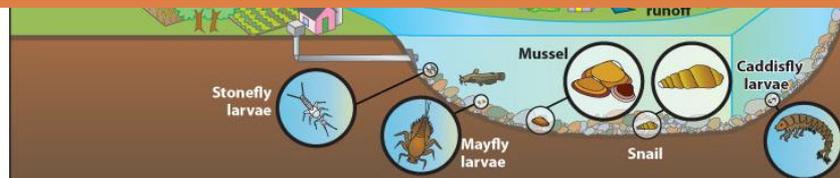
Working together to measure the health of Puget Sound streams

Enhancement and
Standardization
of Benthic
Macroinvertebrate
Monitoring and
Analysis Tools for the



Goals

- Regional biomonitoring program
- Data integration
- Enhance tools and create opportunities that support decisions and regional engagement



Ongoing partnerships: 2011

- Kick-off meeting
- 42 people from 23 entities
- Broad interest
 - ▣ Review products: 25
 - ▣ Attend future meetings: 27
 - ▣ Participate in trainings: 26



Ongoing partnerships: 2011

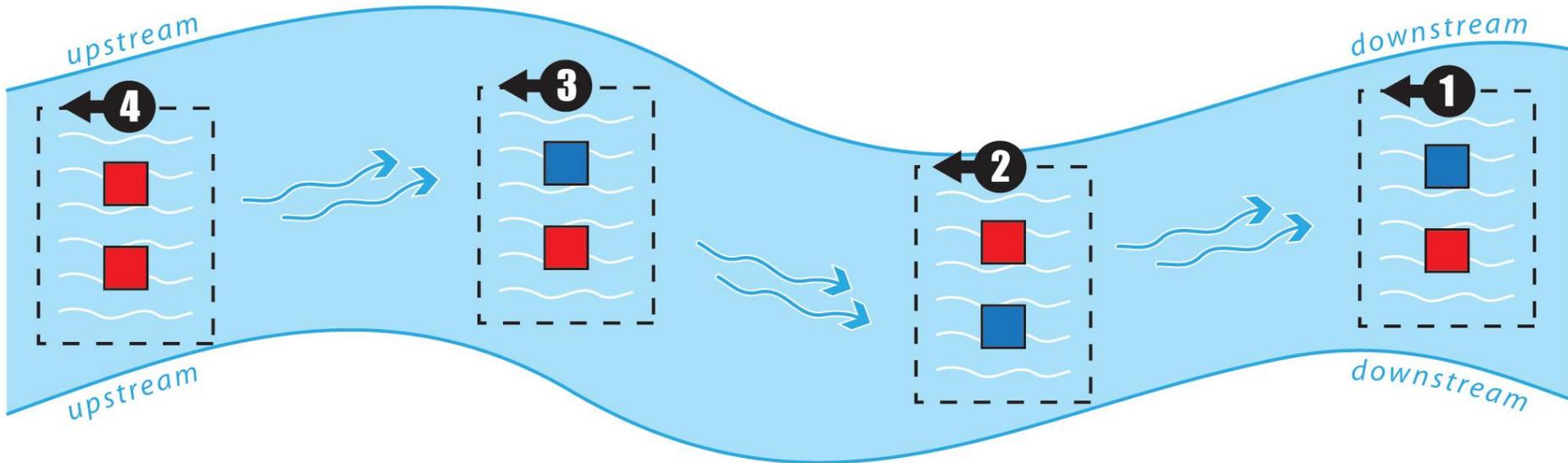
- Summer field training/demo/discussion
 - ▣ 32 people from 17 entities
- Database workshop
 - ▣ 20 people from 8 entities



Data Collection: Summer 2011

STREAM REACH SAMPLE COLLECTION

- Sample each riffle twice, 1 ft² per sample
- Move from downstream to upstream
- 3 ft²: collect one sample from three riffles
- 5 ft²: collect one sample from three riffles and two from a fourth riffle



Data Collection: Summer 2011

- 55 sites
 - 45: 3 vs. 8 ft²
 - 10: 3 vs. 8 vs. 9 ft²
- 9 partners
 - 3 cities
 - 5 counties
 - 1 non-profit





THE SECRET OF SUCCESS

WHAT IS THE SECRET? PRETEND YOU'VE ALREADY ACHIEVED IT-
THEN OFFER TO SELL THE SECRET TO OTHERS.

What is working?

- Started small, but anticipated expansion
- Providing opportunities for interaction
- Learning from, making service of each other
- Regional connections
 - ▣ Puget Sound Partnership
 - ▣ Stormwater workgroup
 - ▣ NPDES permit



“Thinking about where we
were a few years ago,
this is Nirvana!”



Leska Fore,
October 2011



Acknowledgements

- Funding: EPA, Ecology, Interagency Partners on PSSB
 - Ecology
 - King, Snohomish, Pierce, Kitsap Counties
 - City of Everett and City of Seattle
- Our many wonderful partners from throughout the Puget Sound Region from federal, state, and local agencies, tribes, non-profits, and taxonomic labs
- Jim Simmonds, Doug Henderson, James Develle, Jenee Colton (King County)

Questions? Suggestions?

- **Goal: A widely adopted, effective regional monitoring program**
- Talk with me or send suggestions to jo.wilhelm@kingcounty.gov

