



pacific northwest aquatic  
monitoring partnership

# **Pacific Northwest Aquatic Monitoring Partnership (PNAMP)**

Presentation to the Stormwater Workgroup May 18, 2011

Presented by Jennifer Bayer, PNAMP Coordinator (USGS)

# What is PNAMP?

- PNAMP provides a forum for collaboration and coordination between state, federal, and tribal aquatic habitat and salmonid monitoring programs
- Open and inclusive process, voluntary participation
- Supported primarily by in-kind contributions of time from partners
- Facilitated by staff (through USGS)

# Who is PNAMP? Signatory Partners



ACOE



EPA



USFS



BLM



NOAA



USGS



BPA



NWIFC



WA ECY



CDFG



WDFW



CBFWA



OWEB



WA GSRO



CRITFC



PSMFC



WA RCO



Colville Tribes



USBR

# Drivers for Coordination

Land area affected by Endangered Species Act listing of salmon and steelhead

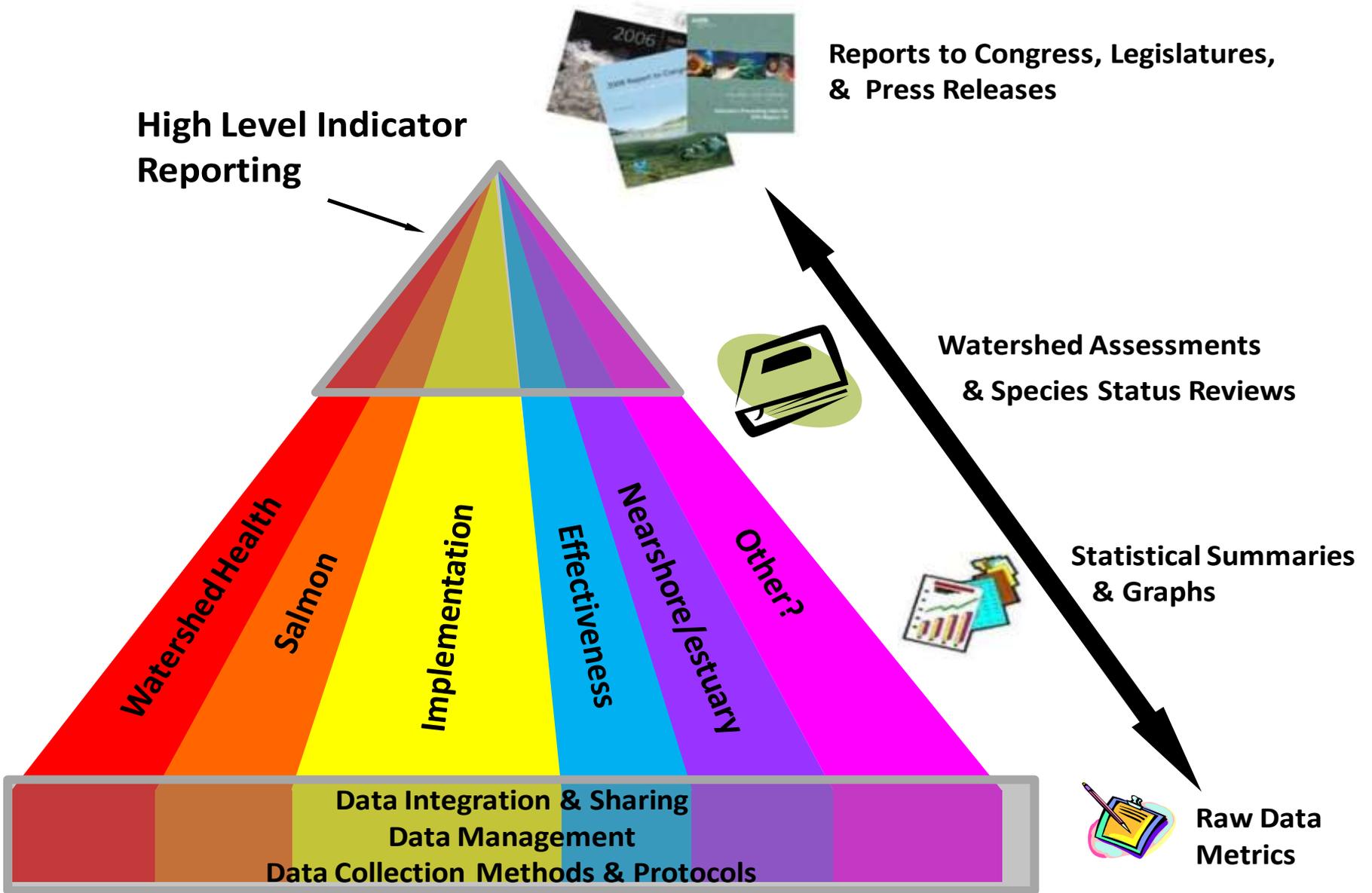
- 28 distinct population segments (6 endangered, 22 threatened)
- 176,000 square miles in WA, OR, CA
- 61% of Washington's land area, 55% of Oregon's, 26% Idaho's, 32% California's

**Beyond salmon...PNW entities have varied but overlapping mandates – current fiscal realities direct us to share resources**

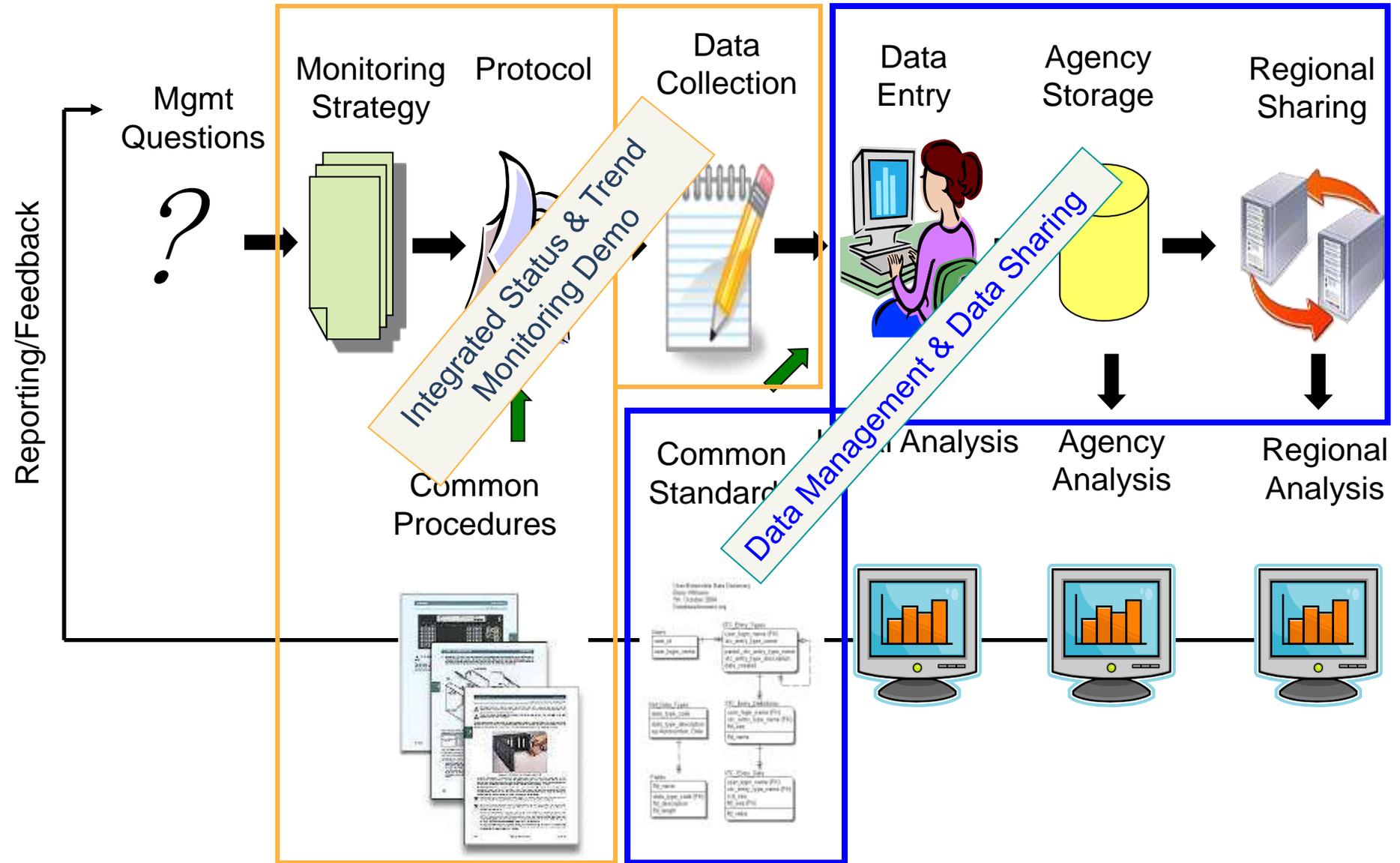
- **Data collection**
- **Sharing of results**



# Connecting Reporting to Data Collection



# Steps Needed to Feed into HLIs



# Accomplishments

- Forum for coordination & collaboration
- Participation steadily grows
- Workshops, workgroups
- White papers, peer reviewed products
- Information flow from technical experts to managers & policy makers
- See [www.pnamp.org](http://www.pnamp.org)

# PNAMP Tasks 2011



## Monitor status and trends

Adult and  
juvenile fish

Habitat condition (remote  
sensing and field methods)

## Track implementation of restoration actions

Data dictionary and metrics

## Evaluate effectiveness of actions

Project -  
reach scale

Watershed scale –  
intensively monitored  
watersheds

Coordinate data access

Monitoring  
design,  
sampling  
protocols,  
and data  
manage-  
ment  
standards

Integrated Status & Trend  
Monitoring Demonstration

Master Sample Tracking Tool

Protocol/methods Workshop  
Series

Remote Sensing Applications

Monitoring Methods.org  
(protocol library and glossary)

Metadata Guidance  
Implementation & Tools

Effectiveness Monitoring  
IMWs/ Coordination

Data Management Best  
Practices

Coordinated Assessments (Fish  
Population Data)

Habitat Data Sharing  
Coordination

# Key PNAMP projects of interest to Stormwater Workgroup

- **Integrated Status & Trends Monitoring Demo:** monitoring coordination & data sharing
- **Master Sample Tracking Tool:** web-based support & tracking tool
- **Monitoring Methods.org:** methods documentation & discussion

# Integrated Status & Trend Monitoring (ISTM) Demonstration Project

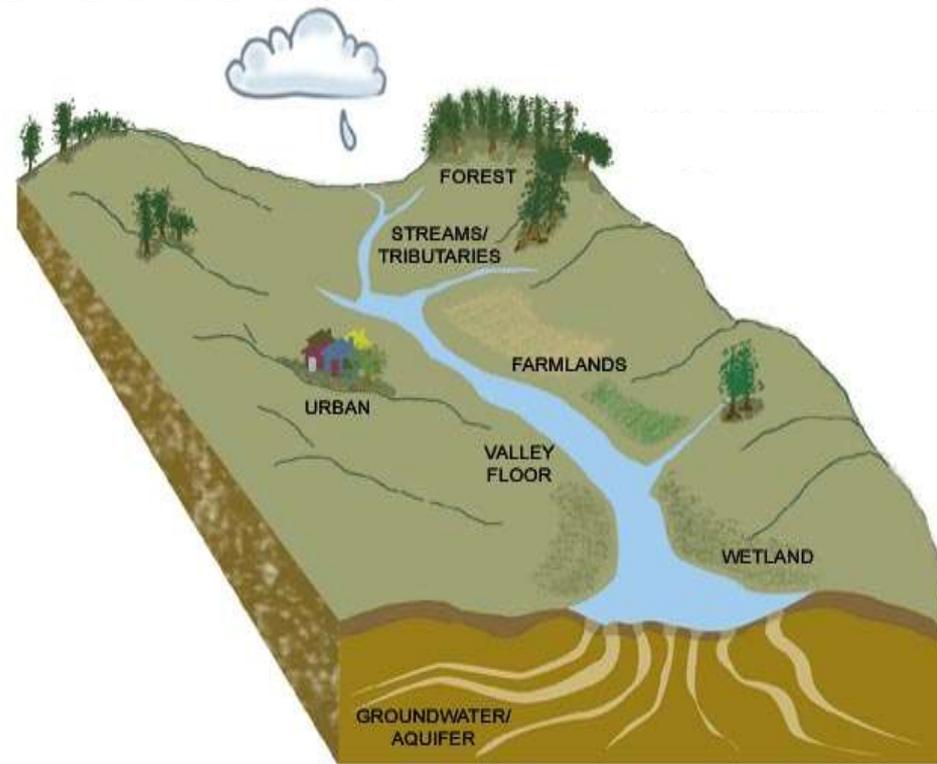
Common Question:

What is the status and trend of fish and/or the ecosystems that support them?



# Objectives of ISTM

1. Identify decisions, questions, and objectives
2. Review existing programs and designs
3. Establish design, sampling frames, analytical methods
4. Use trade-off analyses to develop recommendations for monitoring
5. Recommend implementation and reporting mechanisms

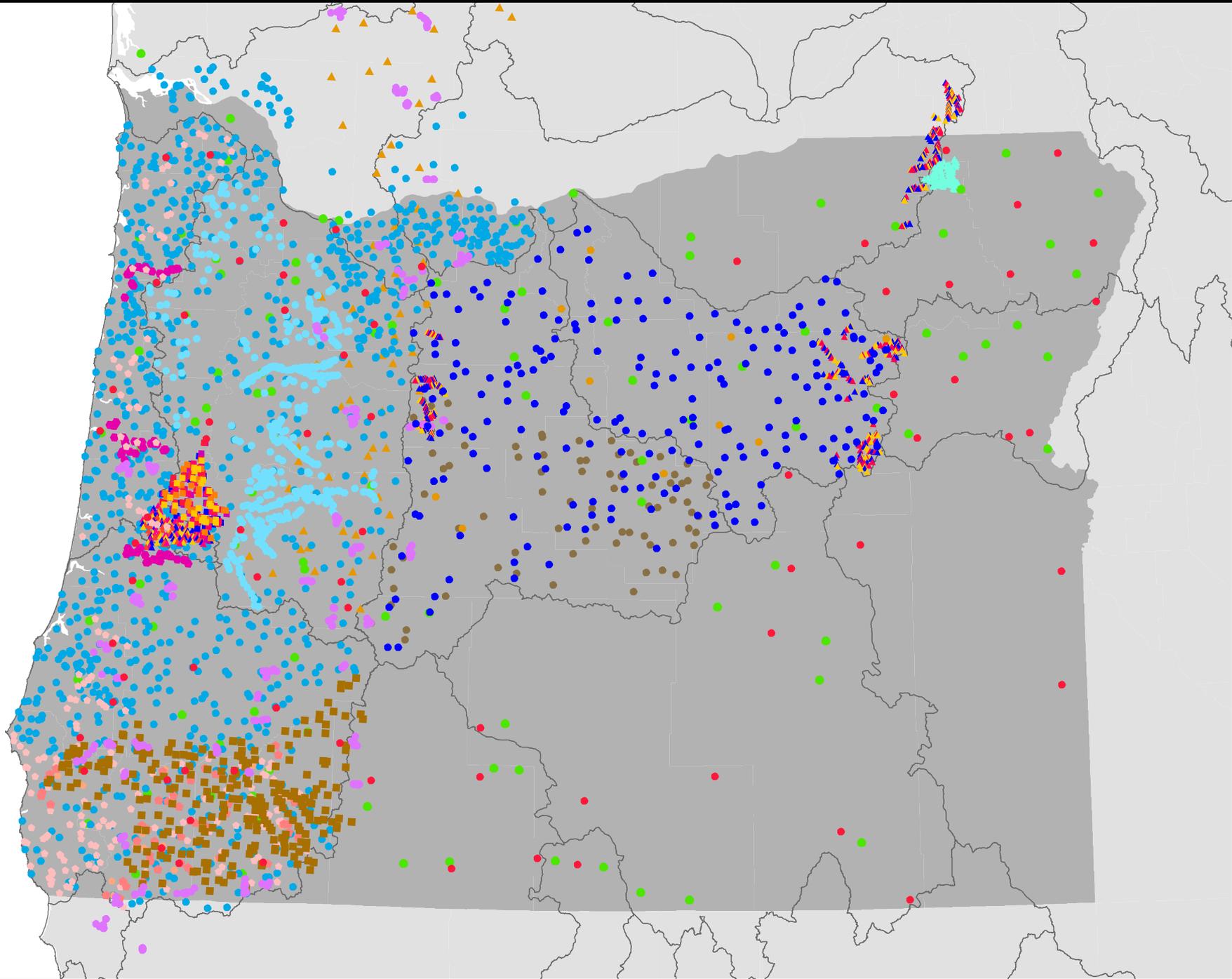


# ISTM Partners

- Oregon Department of Fish & Wildlife
- Lower Columbia Fish Recovery Board
- Washington Department of Ecology
- Oregon Department of Environmental Quality
- US Forest Service
- National Marine Fisheries Service
- US Geological Survey

# Anticipated Contributions of ISTM

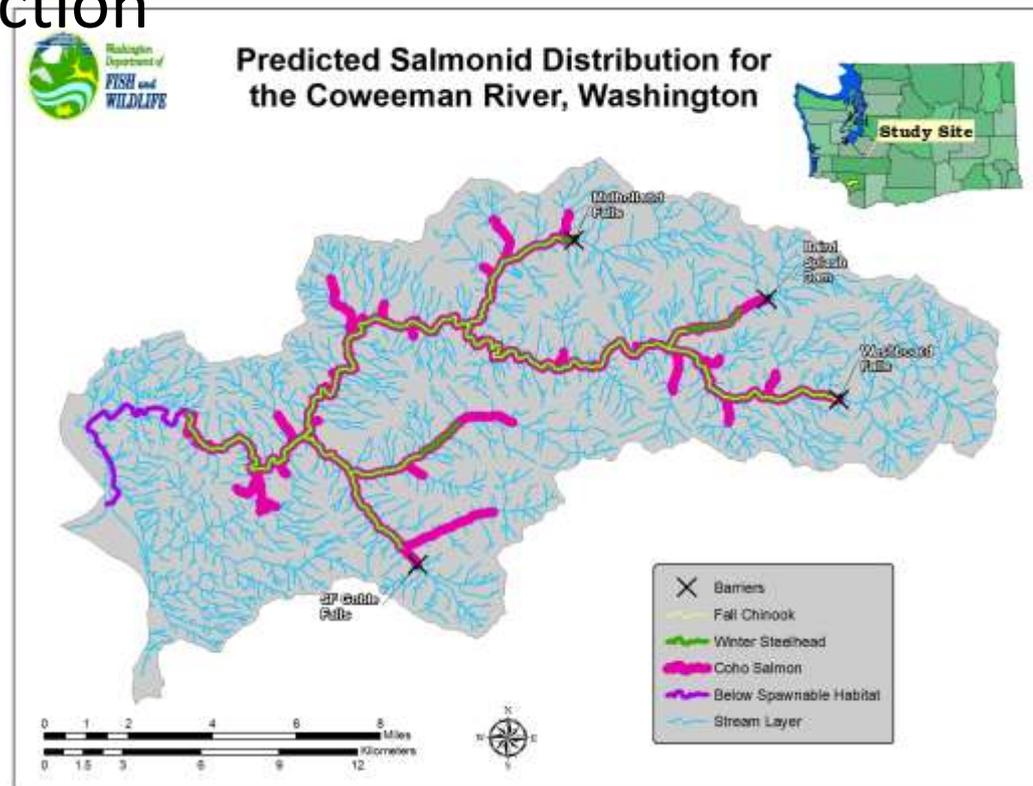
- Coordination among participants
- Tools for designing monitoring programs and analyzing data: **Master Sample Tracking Tool**
- Examples of how to integrate the master sample concept with existing monitoring efforts
- Specific recommendations for developing a coordinated, integrated, and efficient monitoring programs for fish and habitat in the LCR ESU
- Recommendations to other areas of the PNW to help develop more coordinated, integrated, and efficient monitoring programs for fish and habitat
- Recommendations on metadata requirements to describe survey designs, protocols, and resulting data



# Master Sample Design

- Data Sharing
  - Different surveys, agencies
- Site History Information
  - Coordinate site selection

- Develop species distribution models
  - Sampling frame for salmon/steelhead
- Understand how existing sites fit into master sample



# Design Tools are Available

GRTS: Generalized Random Tessellation  
Stratified design

- Incorporates randomization
- Is spatially balanced
- Creates an ordered list of sites
- See: [www.epa.gov/nheerl/arm](http://www.epa.gov/nheerl/arm)

# A Desirable Goal

- Create a design that allows and facilitates integration “up front” rather than after the fact.
- Current GRTS design allows selection of a “master” sample that can be subset to meet specific needs at a variety of spatial scales.

# Master Sample Tracking Tool

## PNAMP ISTM Demo Project – OSU prototype

- Next steps
  - Expand
  - Integrate
  - Content



Home » Site Management System

### Site Management System

Search Site Notes Download Entire Sample Google Map Locations

County Based Search Salmon Recovery Based Search USGS Based Search WRIA Based Search

Your search returned 181 matches

Show only items where

Land Type is Private

and where:

- Owner
- Manager
- Eco Reg 1
- Eco Reg 2
- Eco Reg 3
- Eco Reg 4
- Land Name
- Strah Dtd

is

Private  
Private  
Northwestern Forested Mox  
Western Cordillera  
Canadian Rockies  
Western Cascades Lowlan  
NA  
3

Refine Undo Reset

Add Panel Constraints

Enter Design Name:

Required to Download



Home » Site Management System

### Site Search Results

Your search returned 3182 matches

Show only items where

and where:

- Own Type
- Type
- Exclude

is

Park/Non Wilderness  
False  
Eco Reg

Filter

Site Name	X Coord.	Y Coord.	Latitude	Longitude	County	Land Type	Info	Map
WAM08600-000031	1174266.72	83341.42	48.55	-122.32	Clark County	Park/Non Wilderness	Info	Map
WAM08600-000033	1194603.09	206253.07	48.39	-122.25	Clark County	Non Designated Forest	Info	Map
WAM08600-000193	1199600.09	157082.97	48.75	-122.27	Clark County	Non Designated Forest	Info	Map
WAM08600-000257	1162960.9	112963.96	48.63	-122.37	Clark County	NA	Info	Map
WAM08600-000481	1128211.09	191386.34	48.94	-122.52	Clark County	Park/Non Wilderness	Info	Map
WAM08600-000577	1186720.09	148399.2	48.73	-122.29	Clark County	Non Designated Forest	Info	Map
WAM08600-000583	1181692.01	180975.53	48.83	-122.3	Clark County	Non Designated Forest	Info	Map
WAM08600-000931	1122074.89	217093.43	48.91	-122.54	Clark County	Wildlife Area	Info	Map
WAM08600-000955	1181217.51	205011.35	48.94	-122.31	Clark County	Unknown	Info	Map
WAM08600-001025	1174377.49	97303.84	48.59	-122.32	Clark County	Wildlife Refuge	Info	Map
WAM08600-001233	9937011.20	198995.38	48.86	-122.63	Clark County	Park/Non Wilderness	Info	Map
WAM08600-001425	1183198.17	197425.84	48.86	-122.29	Clark County	Non Designated Forest	Info	Map
WAM08600-001613	983601.85	227012.12	48.94	-122.69	Clark County	Fish Hatchery	Info	Map

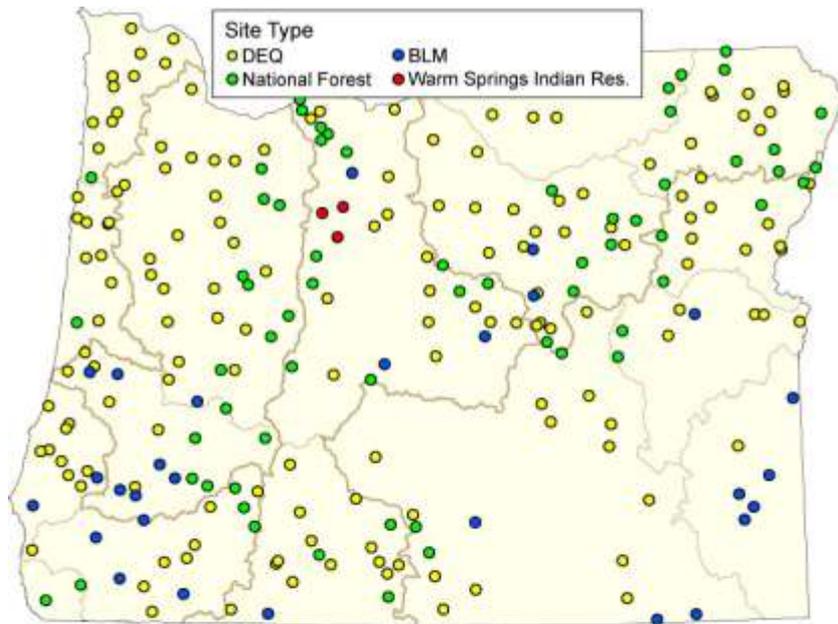


Figure 1a

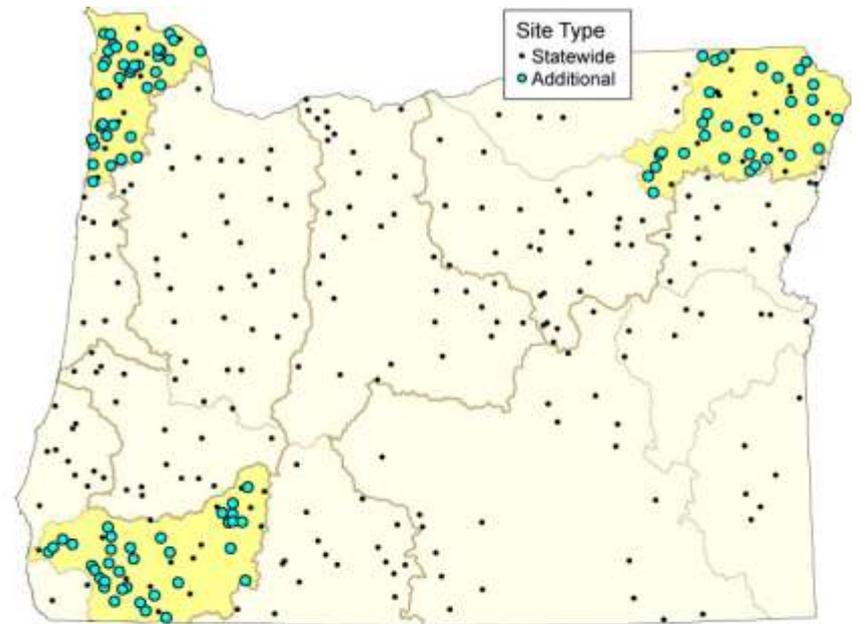


Figure 1b

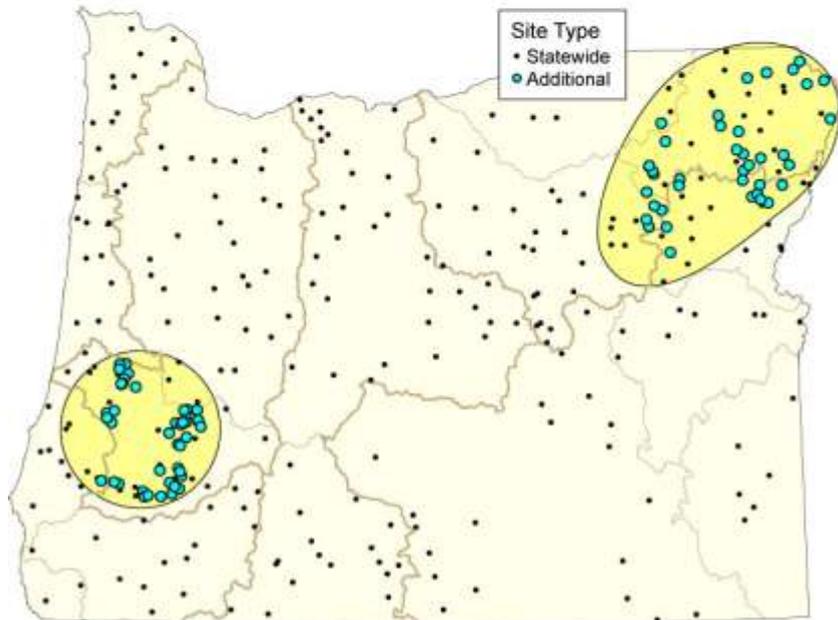


Figure 1c

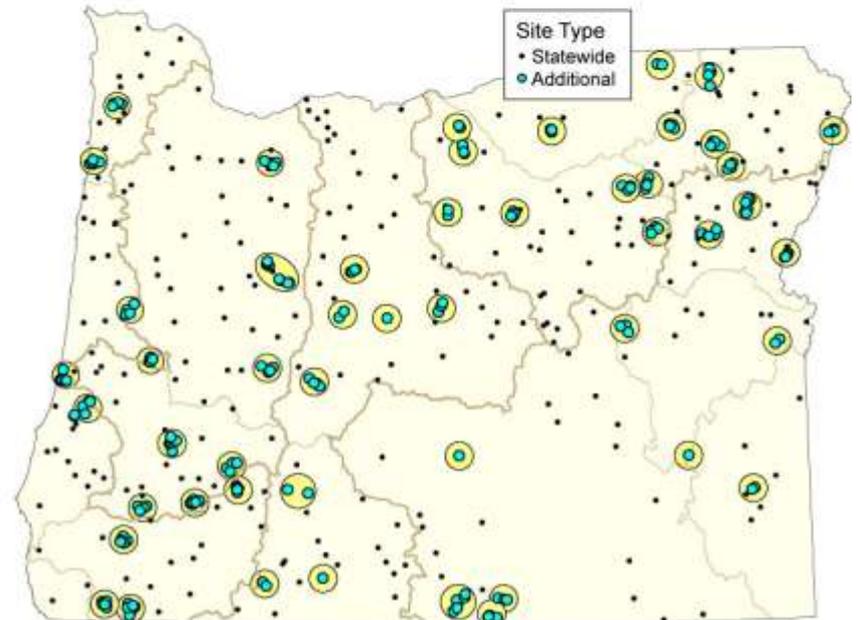


Figure 1d

# Master Sample Next Steps

- Develop LCR ESU pilot into regional tool
  - Pacific Northwest scope
  - Incorporation of multiple ‘master samples’
  - Tools to assist with design, including how to integrate with existing &/or non-GRTS design
  - Connect tributaries with mainstem Columbia R.
  - site tracking
- Requirements Analysis
  - **We need your input!**



# Information management is fundamental to monitoring coordination



- Advancement of regional data collection, sharing and exchange guidance

Coordinated Assessments Project (with CBFWA)

Habitat Data Sharing Project (just getting started)

- Development of a library of monitoring protocols & glossary of monitoring terms

MonitoringMethods.org Project (with State of the Salmon)

# Monitoring Methods Project

- Need for better, more consistent documentation of methodology
  - Information discovery, data exchange, metadata
- Need for a community forum
  - Discuss and vet methodology
  - Collaborate to identify best practices
  - Provide update for out-of date publications
  - Understand who's collecting what information, why, how





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Home

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Create

Update

Review

Learn

Discuss



Welcome to MonitoringMethods.org, the Pacific Northwest Aquatic Monitoring Partnership's Monitoring Methods, Metrics, and Indicators web site

You are logged in

Use the navigation above to begin browsing, creating, and learning.

BROWSE

Find techniques others are using or recommend

CREATE

Add or update your own methods or protocols

REVIEW

Recommend edits, rate techniques, participate in formal reviews

DISCUSS

Share what you've learned and find advice from your colleagues

Learn More:

- [About this Site](#)
- [Glossary of Terms](#)
- [Frequently Asked Questions](#)

How can we help you?

New to the Monitoring Methods site? Not sure where to begin? Select the user type below that best describes you and we'll show you how to get the most out of the site based on your individual needs and interests.

### Our Anatomy of a Protocol

"Protocol" is one of those terms that means many things to many people. Check out our definition to get a quick idea of what this application is about.

### Latest Updates

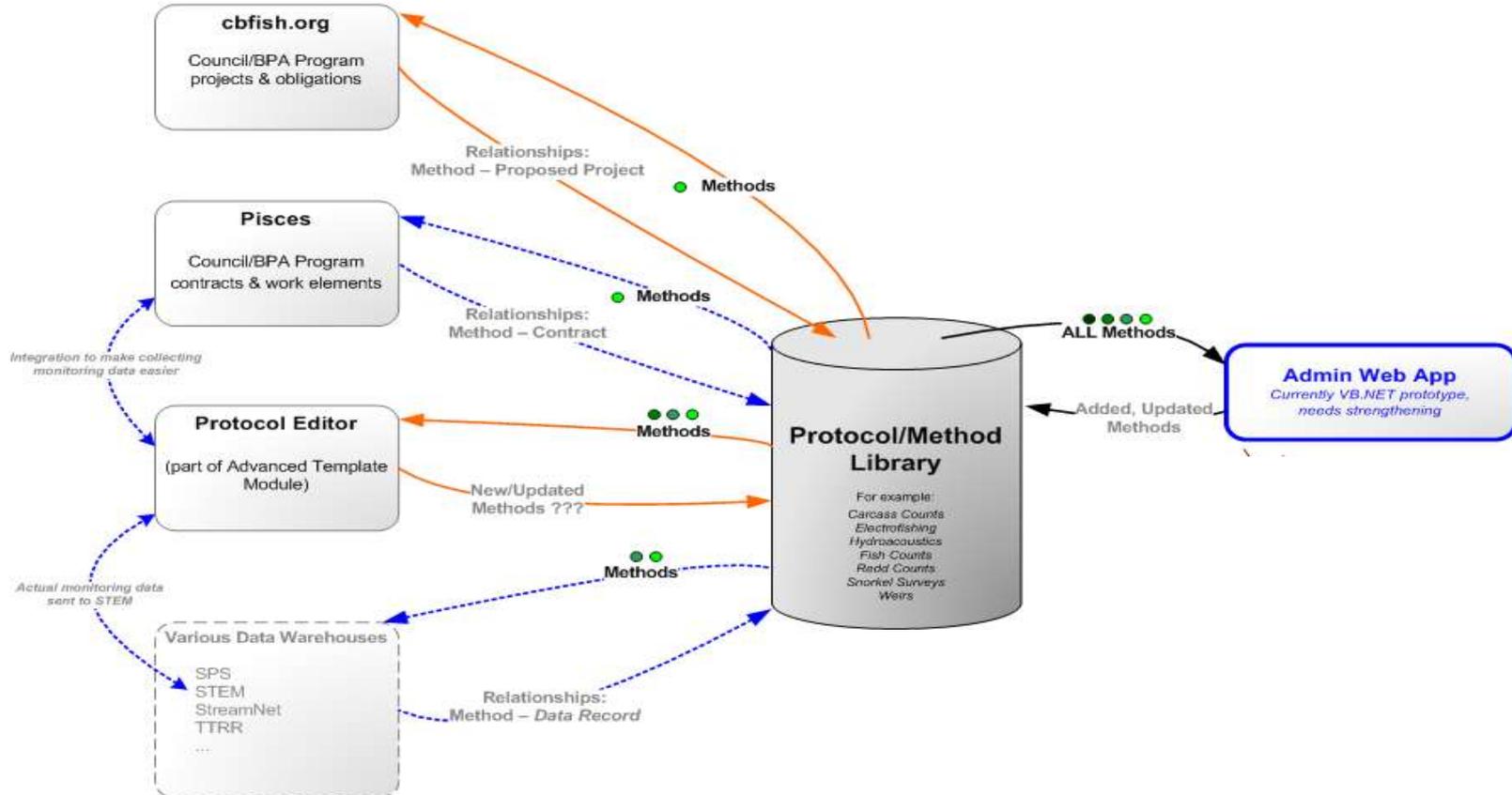
Below is a quick summary of recent activity. You can also set up a [custom RSS feed](#) to track changes to the content of interest to you.

### Quick Stats

# Integration of Web Tools

Web services – enable exchange of information

- Within PNAMP tools
- Between PNAMP tools and regional systems



# Lessons Learned



It's time to start speaking the same language!

# Future Connections

- Expert engagement in topical discussions
- More institutional partners for Monitoring Methods
- Input for redevelopment of prototype Master Sample tool, use of other results of ISTM
- Input for Habitat Data Sharing project
- Input for next phase of Salmon Monitoring Advisor website

# Questions?

[www.pnamp.org](http://www.pnamp.org)



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# Coordinated Fish Population Assessments

Columbia River Anadromous  
Fish Monitoring Strategy



Change in data management  
approaches is needed to  
achieve coordinated  
assessments and reporting



# “Coordinated Assessments”: steps to report fish population indicators

1. **High Level Indicators:** define expected outcomes, report metrics, etc.
2. **Coordinated Monitoring Strategy:** prioritize what data to collect
3. **Coordinated Fish Population Assessment:** define what data and information to share
4. **Data Management :** provide infrastructure to share data

