



pacific northwest aquatic
monitoring partnership

Presentation to the Northwest Power & Conservation Council

Program Evaluation Review Committee September 13, 2012

Presented by Jennifer Bayer & Jacquelyn Schei (US Geological Survey)

Pacific Northwest Aquatic Monitoring Partnership (PNAMP)

(Project 2004-002-00)

Regional Data Management Support and Coordination

(Project 2008-727-00)



Can you afford to independently collect, manage, analyze, and archive all the information you need?



Can *anyone* afford to independently collect, manage, analyze, and archive all the information they need?



PNAMP partners all share the need to “do more with less”

PNAMP provides a *forum* to enhance the capacity of multiple entities to collaborate to produce an effective and comprehensive network of aquatic monitoring programs in the Pacific Northwest based on sound science designed to inform public policy and resource management decisions.



PNAMP Signatory Partners



CRITFC



Colville Tribes

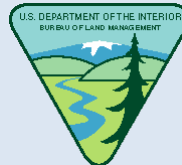


NWIFC

Tribal



EPA



BLM



USFS



ACOE



USBR



Federal



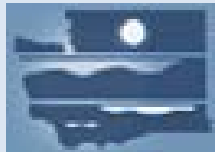
CDFG



WA RCO



WDFW



WA ECF



WA GSRO



State



PSMFC



CBFWA



Regional

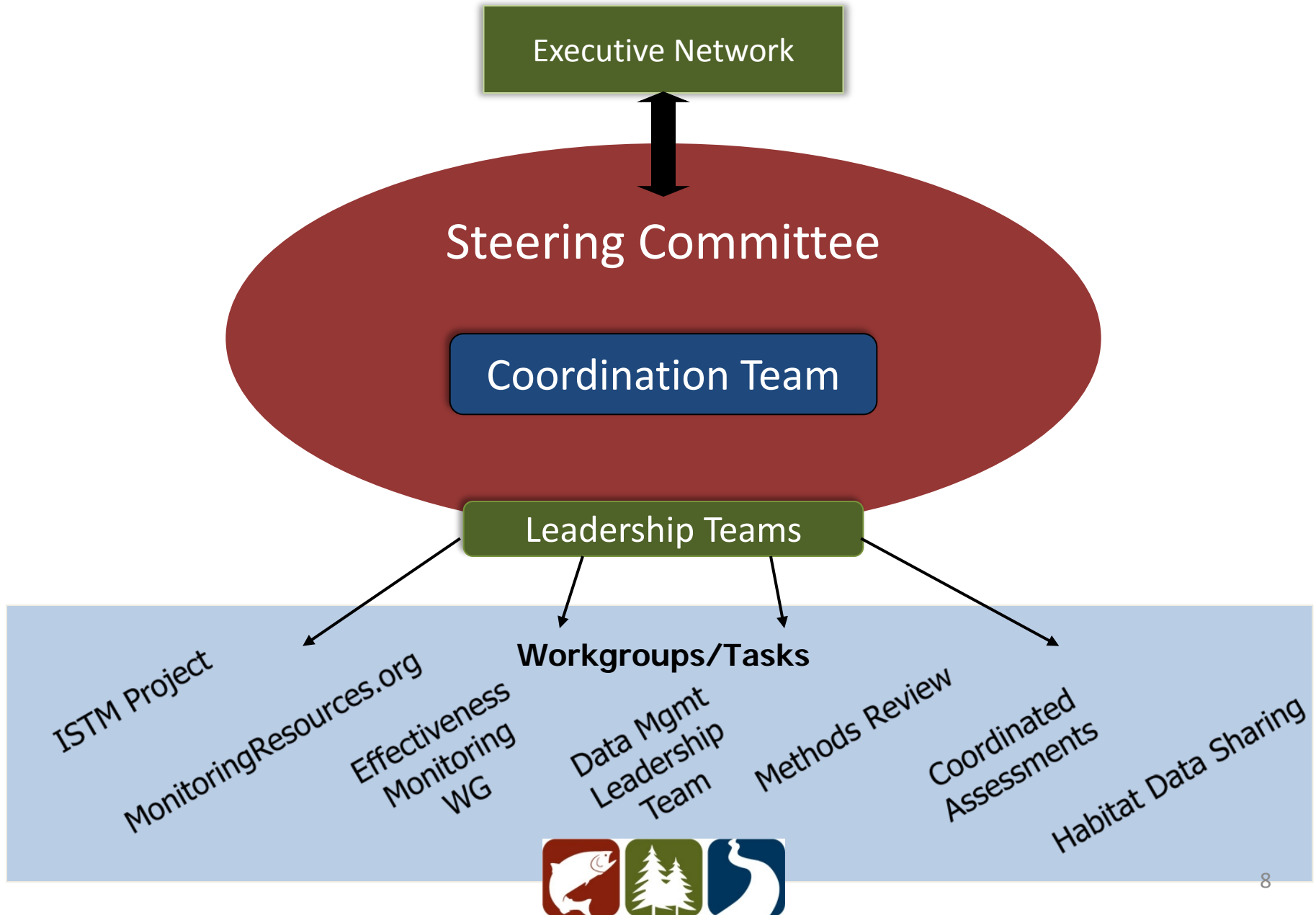
PNAMP Steering Committee

Partner	SC Representative	SC Alternate	SC Courtesy
BLM	Al Doelker		Karen Blakney, Kim Titus
BPA	Jim Geiselman	Russell Scranton	
CBFWA	Tom Iverson		
CCT	John Arterburn		
CDFG	Scott Downie		
CRITFC	Phil Roger	Henry Franzoni	Laura Gephart
EPA	Gretchen Hayslip		
NOAA	(Scott Rumsey)	Bruce Crawford	Elizabeth Gaar
NPCC	Nancy Leonard	Peter Paquet	
NWIFC	Bruce Jones		
OWEB	Greg Sieglitz		
PSMFC	Bruce Schmidt		
USACE	(David Clugston)		
USBR	Michael Newsom		
USFS	Linda Ulmer	Steve Lanigan	
USGS	Steve Waste		Eric Archer, Frank McCormick
WA ECY	Bob Cusimano	Karen Adams	
WA RCO	Keith Dublanica	Jennifer Johnson	
WDFW	Dan Rawding		

<u>KEY</u>
SC rep, ACTIVE
SC alternate or courtesy, ACTIVE

Additional Courtesy Members: Charlie Holderman (Kootenai Tribe), Chris Ellings (Nisqually Tribe), Emmit Taylor (Nez Perce Tribe), Ken Dzinbal (WA PSP), Pete Hassemmer (IDFG), Lance Hebdon (IDFG)

PNAMP Structure & Planning Process

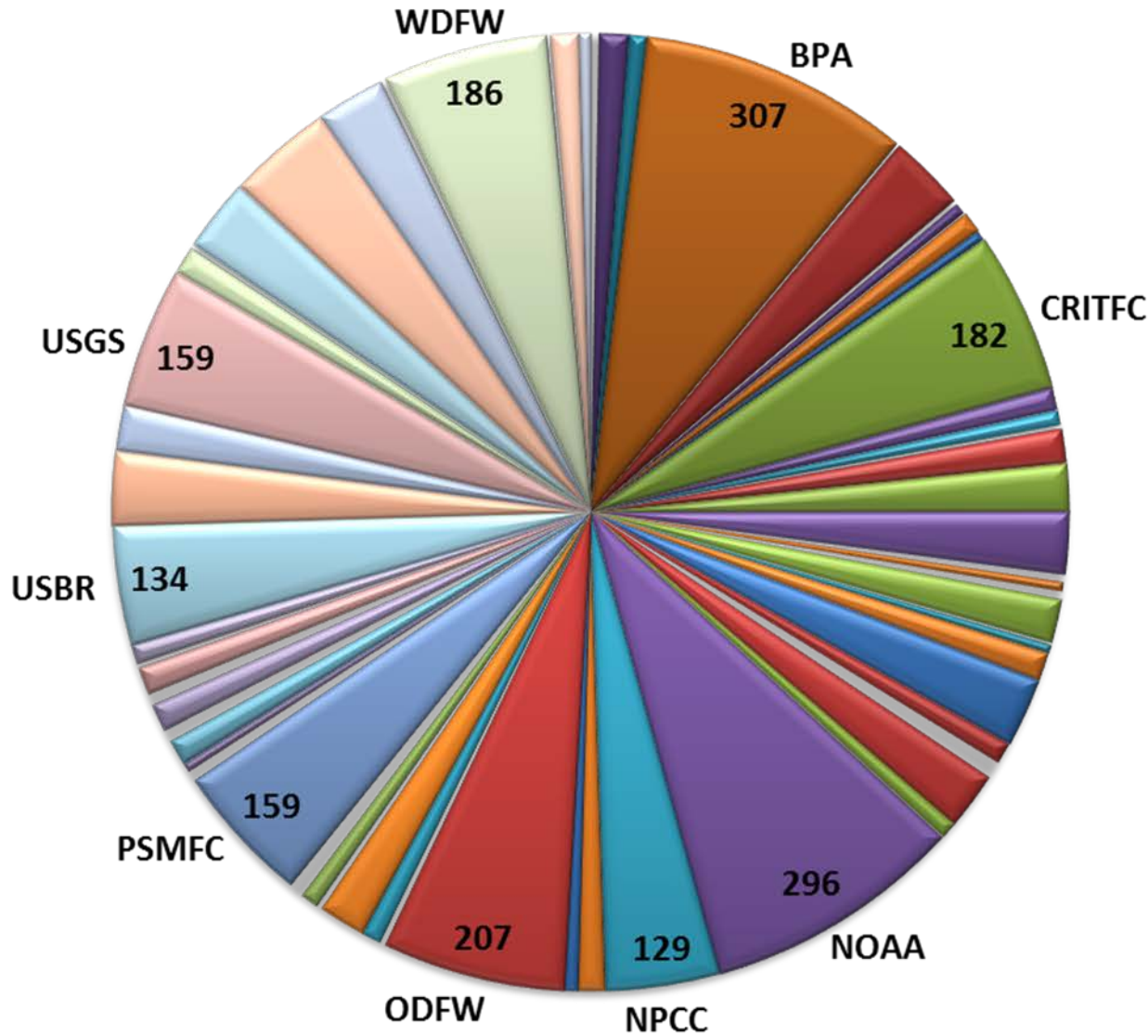


PNAMP Maintains Open and Inclusive Process

PNAMP has seen in-kind participation from individual participants representing more than 85 organizations and direct funding from eight entities.

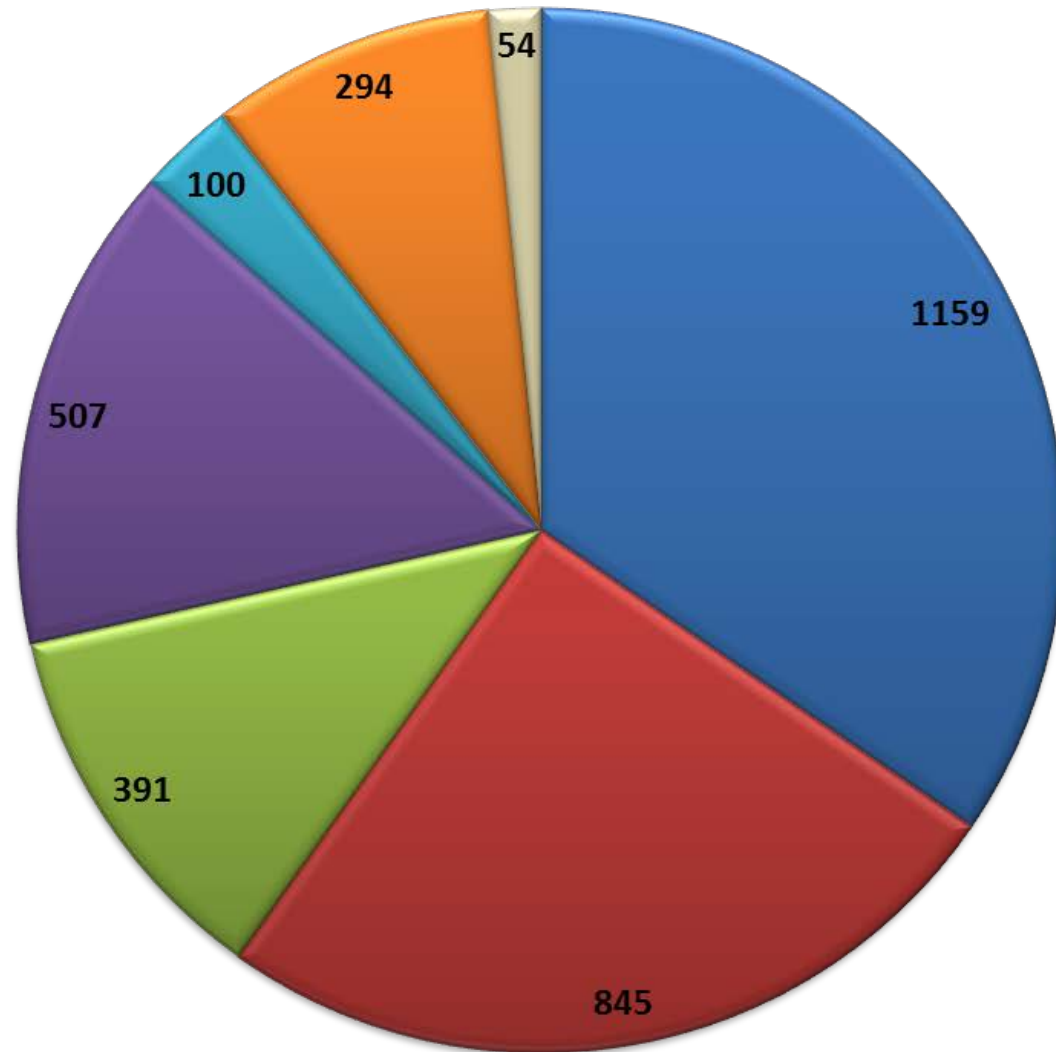


PNAMP In-kind Contributions by Organization



Average hours
per year (2008-
2011)

PNAMP In-kind Contributions by Category of Organization



Average hours per year (2008-2011)

Data Management Partnership History

PNAMP DM Goals in **2005**

- 1) Support inventory and assessment of monitoring projects
- 2) Establish working relationship for data consistency across WGs
- 3) Leverage existing data standards by collaborating with **other data standardization efforts**
 - **NW Environmental Data Network (NED)**
 - **CBFWA DM WG**
 - **CRITFC Tribal DM WG**
 - **PNW RGIC**
- 4) Interact with and support **existing data coordination efforts**



Data Management Partnership History

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Successes, Strengths, Mission Fulfillment

Steering Committee and participants offered similar feedback

- 1. Information sharing (host/convene meetings, workshops)**
- 2. A forum for collaboration & coordination with respect to monitoring programs**
3. Developing specific products (final documents, web resources)
4. Initiating pilot projects and developing recommendations appropriate for use at different scales (HLI, ISTM)



2012

PNAMP Supports Monitoring Collaboration & Coordination

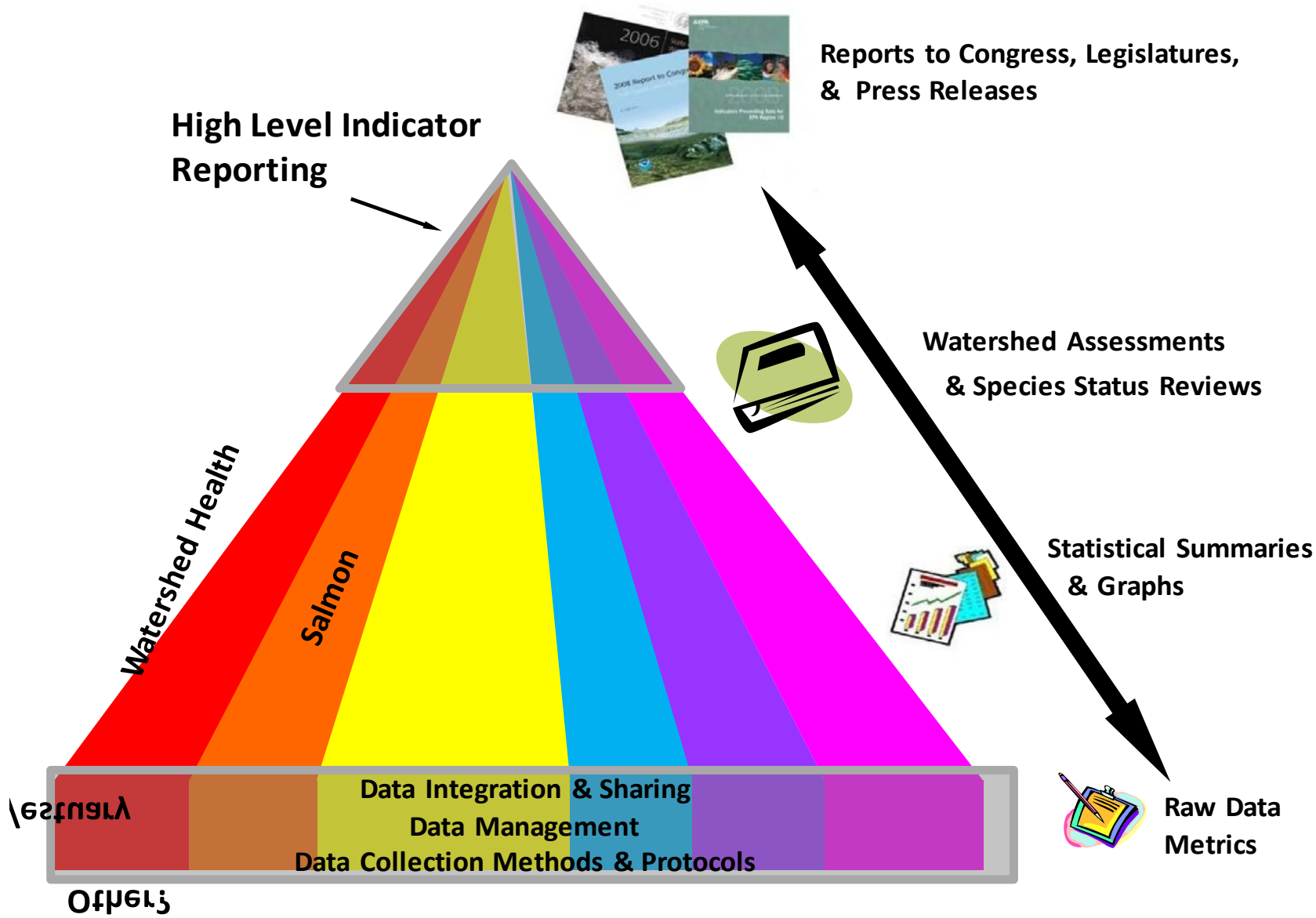
GUIDANCE for monitoring design, methods for data collection, analysis, management, and sharing

TOOLS to make it easier to:

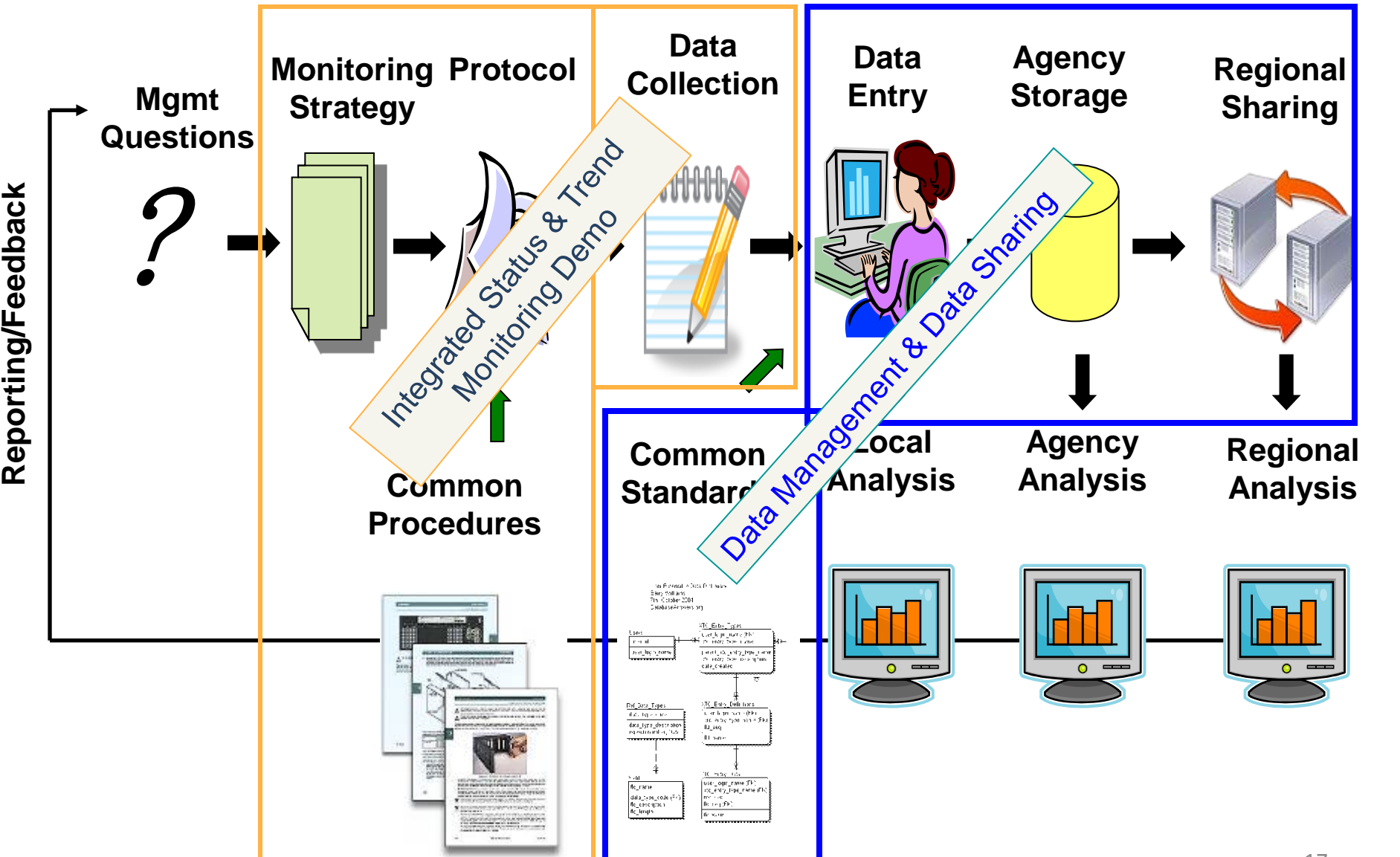
- Design & document monitoring
- Collaborate, discover & share data



Need for Reporting High level Summary Information Is Shared by Many



Steps Needed to Feed into High Level Summary Information



PNAMP Supports the Fish & Wildlife Program

- Sub-basin Planning: PNAMP monitoring recommendations (2005)
- Proposal review & methods documentation: MonitoringMethods.org (2011)
- MERR monitoring approaches: PNAMP Strategy (2005), topical workgroup input (ongoing)
- MERR Data Access: PNAMP DM Guidance (2012)
- ASMS: Coordinated Assessments; ISTM Fish (ongoing)
- TBD HLI for Habitat: ISTM Habitat/HDS (ongoing)



Current PNAMP Projects at a Glance

Data Management & Sharing

- Data Management Best Practices
- Habitat Data Sharing Coordination
 - ID Priority Habitat Characteristics
 - Pilot with WA GSRO for statewide reporting needs (pre-DET work)
 - Macroinvertebrate Data
- Coordinated Assessments Project (with CBFWA, StreamNet)
- Columbia River Basin Population Crosswalk Geodatabase and Online Interactive Mapping Application (with CRITFC)

Monitoring Design & Data Collection

- Methods Review Series
- Integrated Status and Trend Monitoring (ISTM) Demonstration Project
 - Fish, Tributary Habitat, Mainstem Components
- Effectiveness Monitoring (& IMWs) Coordination
- Remote Sensing Forum

Web Resources

- MonitoringResources.org



2013-2017 Proposal Deliverables

Administrative/General Support

- DELV-1: Steering Committee support
- DELV-2: Data Management Leadership Team Support
- DELV-3: Administrative Support provided by PNAMP staff (USGS employees)
- DELV-4: Communication and Facilitation Support

Data Management & Sharing

- DELV-13: Data Management Best Practices
- DELV-7: Facilitate Habitat Data Sharing Project
- DELV-9: Facilitate Coordinated Assessments Task
- DELV-16: Promote Application of the Columbia River Basin Population Crosswalk Geodatabase and Online Interactive Mapping Application

Monitoring Design & Data Collection

- DELV-5: High Level Indicators Coordination
- DELV-6: Facilitate monitoring methods reviews
- DELV-10: Facilitate regional use of results from PNAMP ISTM task
- DELV-8: Facilitate Effectiveness Monitoring Coordination Task
- DELV-17: Facilitate coordination of remote sensing applications for monitoring

Web Resources

- DELV-11: Provide long term support and maintenance for Master Sample Tracking Tool
- DELV-12: Provide long term support and maintenance for MonitoringMethods.org
- DELV-14: Regional deployment of Metadata Builder Tool
- DELV-15: Sustain PNAMP website
- DELV-18: Sustain Salmon Monitoring Advisor web resource
- DELV-20: Develop and maintain Monitoring Site Management online resource
- DELV-19: Integrate PNAMP online resources



PNAMP sustains collaboration... so work builds towards big goals and results don't get lost

- Immediate benefits to partners & participants
 - Documentation adds values to information collected
- Added value to ongoing projects
 - State of the Salmon Project
 - National Fish Habitat Action Plan
- Make new projects possible
 - SW Washington stormwater monitoring coordination (with ISTM)
 - USGS Protocol Registry Comparison & Large Rivers Monitoring Forum
- Discussion Underway
 - LCC's/CSC/LCMAP/NW Knowledge Network
 - Conservation Registry
 - PSEMP



PNAMP is a Communication Forum

- Event Calendar
 - PNAMP activities
 - Partner activities
- PNAMP Tools
- Announcements
- Featured Partner Projects
- What We're Reading

What's Inside

- Projects/tasks pages describe current activities, support WG's
- Archive of documents

www.pnamp.org

pacific northwest aquatic monitoring partnership
supporting aquatic habitat and salmonid monitoring programs

HOME ABOUT EVENTS GET INVOLVED TOPICS PROJECTS TOOLKIT

Upcoming Events | Past PNAMP Events

- Northwest Power and Conservation Council Meeting (Sep 11, 2012 - Sep 12, 2012)
- Fish Screening Oversight Committee Fish Passage Training Session (Sep 17, 2012 - Sep 20, 2012)
- PNAMP HDS Macroinvertebrate Planning Group Meeting (Sep 17, 2012)
- 3rd Annual Pacific Northwest Climate Science Conference (Oct 01, 2012 - Oct 02, 2012)

See more events.

PNAMP Tools

Monitoring Methods

Visit [MonitoringMethods.org](#) to document methods and protocols, to find others' content, or to discuss a topic on the Community Forum. This tool is intended to support documentation and to promote information exchange and collaboration between regional monitoring practitioners.

Salmon Monitoring Advisor

Visit [SalmonMonitoringAdvisor.org](#) to find advice and step-by-step guidelines designed to help practitioners design, implement, and analyze results from monitoring programs. Now hosted by PNAMP.

In 2012, PNAMP will launch a new central location with access to these and other new resources. Check back here for updates.

Events
Find events related to aquatic monitoring

unknown / PNAMP

1 2 3 4 5 6

About PNAMP

PNAMP is a forum for the community of aquatic monitoring practitioners in the Pacific Northwest. PNAMP consists of federal, tribal, and state partners; other interested participants; and a coordinating staff.

- Find out [who we are](#) and [what we do](#),
- Learn how to [get involved](#), and
- Access [events](#) and [documents](#) related to monitoring.

Announcements

General | **Jobs**

- Abstract Deadline for Stream Restoration Symposium - Sept. 15, 2012
- USFS GTR: Fish and other aquatic resource trends in the United States
- Climate-Aquatics Blog #30 - Recording & Mapping Earth's Stream Biodiversity from Genetic Samples of Critters
- ORAFS Summer 2012 Piscatorial Press Newsletter Released
- HTI Announces Release of Latest Product for Acoustic Telemetry for Fisheries Research
- Cricket Crawl: Citizen Science and Mobile Application Development

See more announcements.

Featured Partner Projects

PACFISH / INFISH Biological Opinion (PIBO)

PACFISH INFISH BIOLOGICAL OPINION
Effectiveness Monitoring Program

Don't see your project listed?
Contact [Jacque Schei](#) to have it added.

What We're Reading

- Fish and other aquatic resource trends in the United States: A technical document supporting the Forest Service 2010 RPA Assessment
Published: August 14, 2012
- Reconnaissance of Contaminants in Selected Wastewater-Treatment-Plant Effluent and Stormwater Runoff Entering the Columbia River, Columbia River Basin, Washington and Oregon, 2008-10
Published: June 27, 2012
- Development and Application of Indices to Assess the Condition of Benthic Algal Communities in U.S. Streams and Rivers
Published: June 27, 2011

See all "What We're Reading" documents.
Share what you are reading!

PNAMP Sustains Collaboration

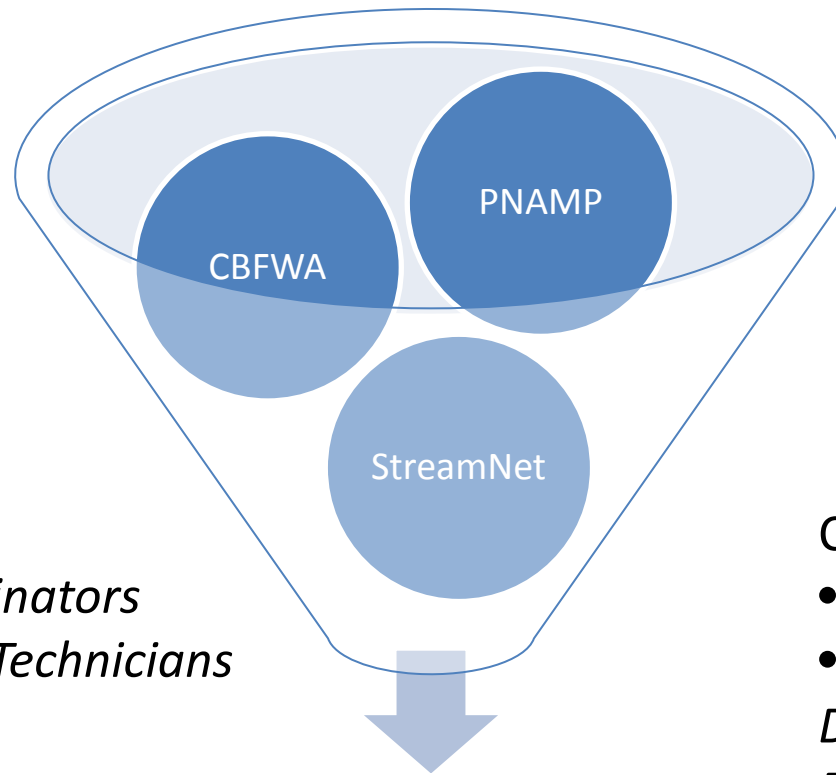
Columbia River Basin

- Federal Agencies
- State Agencies
- Tribes

Federal managers

State Biologists/Coordinators

Tribal Biologists/Data Technicians



Pacific Northwest

- Federal Agencies
- State Agencies
- Tribes

Basin-scale data users

Funding sources

Columbia River Basin

- State Agencies
- CRITFC

Data Technicians

Data exchange expertise

Coordinated Assessments Project



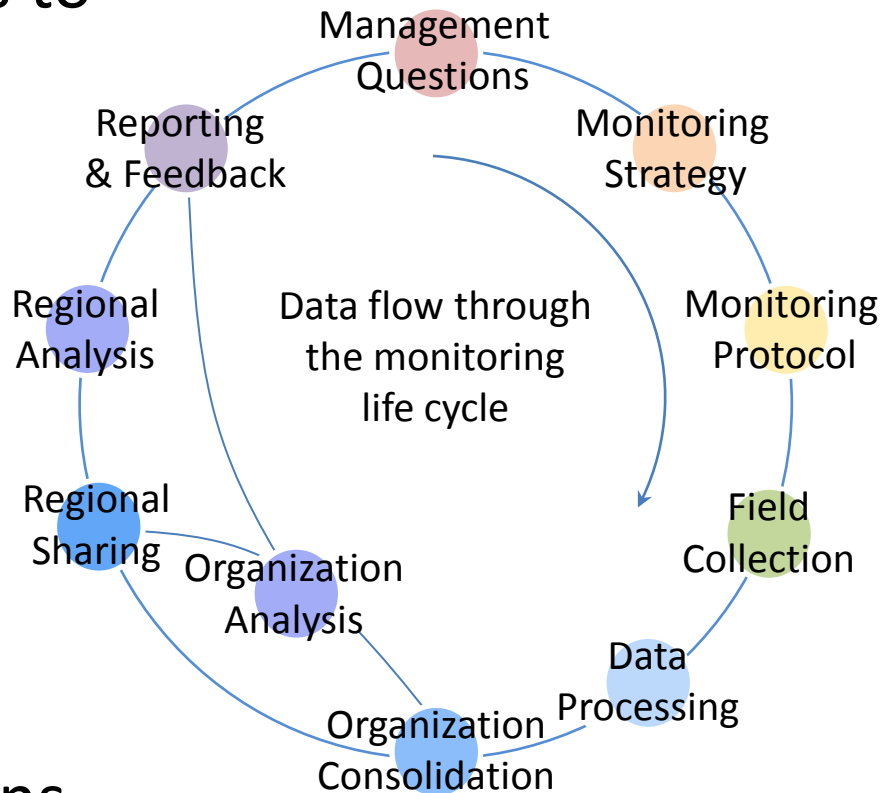
Data Best Practices

- **The Roadmap:** identify best practices for data management and sharing
- **Metadata:** guidance on standards; support & aid metadata creation & posting
- **Data Steward Community of Practice:** support data professionals via expert exchange forums, trainings, etc.
- **Web Tools:** sustain changes over time



Guidance for Implementing Successful Data Management & Sharing

- Provides five major actions to be considered by data managers and their organizations
- Points to best practices and standards
- Highlights the ways regional data sharing can be better implemented
- Provides examples of actions PNAMP partners are currently implementing



Habitat Data Sharing (HDS) Project

- Many partners want to access others' *'habitat data'*
- Conversation includes:
 - What are **priority** habitat characteristics?
 - Fish habitat, restoration effectiveness, land management
 - Macroinvertebrate data
 - Remote sensing data
 - Need for habitat indices
 - Partner readiness to share habitat data
 - Need for Data Exchange Formats (DEF)
 - Discovery of partner habitat data



Monitoring Design & Methods for Data Collection, Management, & Sharing

Focus on **Alignment** of Existing Programs
(from PNAMP ISTM Demonstration Project)

Identify & prioritize decisions, questions, and objectives

Determine adequacy of existing programs, potential efficiencies, existing gaps

Identify monitoring designs, sampling frames, protocols, and analytical tools

Use trade-off analyses to develop recommendations for monitoring including priorities and range of budgets

Recommendations for implementation, data management, reporting, and adaptive management



PNAMP Integrated Status & Trends Demo

NEW TOOLS Assess Alignment of Fish Monitoring Programs

- Document and score monitoring priorities
- Evaluate current monitoring
 - documented criteria for VSP indicators assess bias & precision of methods
- Identify monitoring gaps (difference between priority and current monitoring)
- Define specific monitoring needs based on gaps
- **Could be used to refine ASMS results, repeat in future**



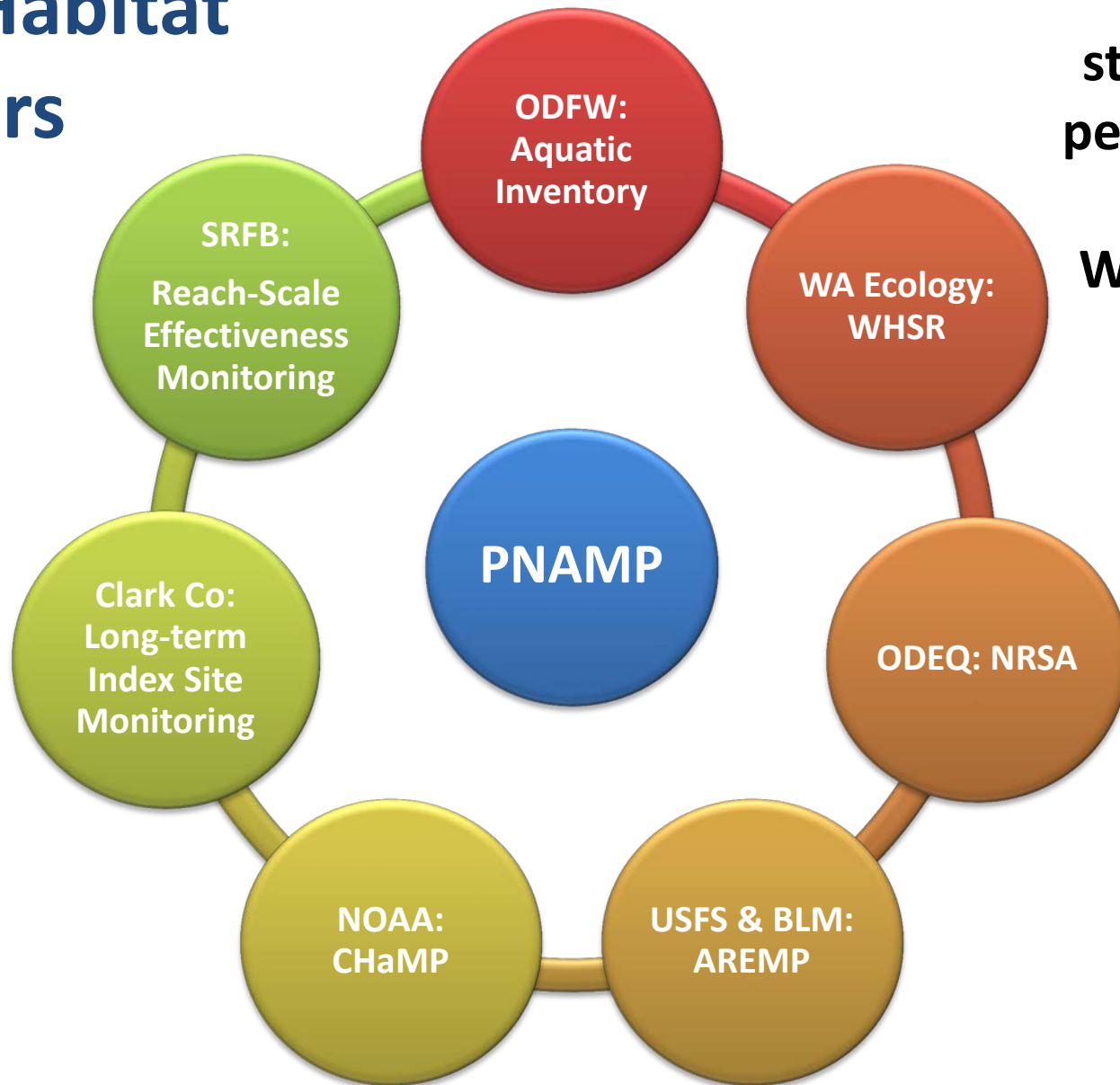
ISTM RESULTS: Lower Columbia River ESU Oregon Coho

Stratum	Coho Population	Recovery Priority	Abundance				Diversity				Distribution	
			Fry/Parr	Juvenile Migrants	Adult Recruits (Harvest)	Spawners	Age Structure	Migration /Spawn Timing	Sex	Origin	Fry/Parr Distribution	Spawner Distribution
Coast	Youngs Bay	Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Big Creek	Low	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Clatskanie	High	0.75	1.00	0.25	0.25	0.25	0.25	0.75	1.00	1.00	1.00
	Scappoose	High	0.75	1.00	0.25	0.25	0.25	0.25	0.75	0.75	1.00	0.50
Cascade	Clackamas	High	0.25	0.25	0.25	0.25	0.25	0.25	0.75	0.75	0.25	0.25
	Sandy	High	0.25	0.25	0.25	0.25	0.25	0.25	0.75	0.75	0.25	0.25
Gorge	Lower Gorge	High	0.25	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	Hood/OR Upper Gorge	High	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25	0.00	0.00

- Development led by ODFW, WDFW, LCFRB
- Deployed first time in Lower Columbia River ESU
- Future use under consideration by other Fish Recovery Boards, states, BPA



ISTM Habitat Partners



**NEW: all
stormwater
permittees in
SW
Washington**

ISTM RESULTS: 1000+ Habitat Attributes Measured by Programs

Seven (Programs Measure...)

Bankfull Depth
Bankfull Height
Bankfull Width
Gradient
Large Wood
Pool Max Depth
Pool Tail Crest Depth
Sinuosity
Substrate Composition
Wetted Depth
Wetted Width

Six

Channel Unit Composition
Macroinvertebrates
Shade
Substrate Particle Size
Temperature

Four

Amphibians Presence
Bearing
Channel Form
Conductivity
Erosion
Fish Presence
Pool Area

Five

Embeddedness
Fish Cover
Flow
Number Of Pools
Riparian Vegetation

Three

DO
Nitrogen
Number Of Channel Units
Phosphorus
Pool Tail Fines
pH
Residual Pool Volume
Solids
Turbidity



RESULTS: Sharability Among 7 Programs

Data Provider =>

Data User =>

	AREMP						CHaMP					Clark Co.					ODEQ					ODFW					SRFB					WADOE														
	CHaMP	Clark Co.	ODEQ	ODFW	SRFB	WADOE	AREMP	Clark Co.	ODEQ	ODFW	SRFB	WADOE	AREMP	CHaMP	ODEQ	ODFW	SRFB	WADOE	AREMP	CHaMP	Clark Co.	ODEQ	ODFW	SRFB	WADOE	AREMP	CHaMP	Clark Co.	ODEQ	ODFW	SRFB	WADOE	AREMP	CHaMP	Clark Co.	ODEQ	ODFW	SRFB								
Bankfull Width	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Residual Pool Depth														X	X	X				X	X	X														X	X	X				X	X			
All Large Wood Metrics																																														
Large Wood Volume and # of Pieces*	X	X			X	X							X	X	X	X	X	X		X	X	X													X	X	X	X	X	X	X	X	X			
Shade at Mid-channel														X	X	X				X	X	X														X	X	X				X	X			
Sinuosity							X						X	X		X				X		X													X	X	X	X			X	X	X			
Substrate Particle Size (e.g. D50)																																														
Temperature	X	X	X	X			X	X	X	X			X	X	X	X	X	X	X	X	X	X			X	X	X	X																		
Macroinvertebrates Counts		X	X		X	X							X	X	X	X	X	X		X	X	X													X	X	X	X	X	X	X	X	X			
Riparian Veg Methods								X		X	X									X		X	X												X	X	X	X			X	X	X			

* for wood >5m length & >30cm diameter

X indicates entities that can use site averaged data from another entity based on 2011 collection methods



protocols
SalmonMonitoringAdvisor
prototype
Explorer
sites
SiteManager
MasterSample
MonitoringResources.org
MonitoringMethods.org
design
methods
SampleDesigner
development
MetadataBuilder



Can *anyone* afford to independently collect, manage, analyze, and archive all the information they need?

NO.

But if goal is to gather enough scientifically sound information to adequately assess results & make decisions about future work, how do they get the information?



How can *we*, as a group, collect, manage, analyze, and archive all the information *we* need?

- Collaborate & coordinate on data collection efforts
 - Knowledge of who is doing what
 - Common definitions
 - Consistent documentation
 - Common data storage platforms
 - Data sharing agreements



How can *we*, as a group, collect, manage, analyze, and archive all the information *we* need?

- F&W Program – FY07-09 project review called for:
 - More consistent reporting
 - Establishing a coordinated data management system
- Recommendations for best practices
 - From PNAMP and others
- Strategies for RME, Data Management
 - MERR & Data Access Framework
 - BPA DM Strategy



Better Documentation

- Help each other gain a better understanding of who's collecting what information, why and how
 - Scientific integrity
 - Promote collaboration and coordination
 - Better use of limited funds
 - Institutional memory
 - Accountability, reporting
 - Minimize uncertainty about utility of others' data



For these needs, we need to have more thorough, consistent documentation available about our monitoring programs and projects.

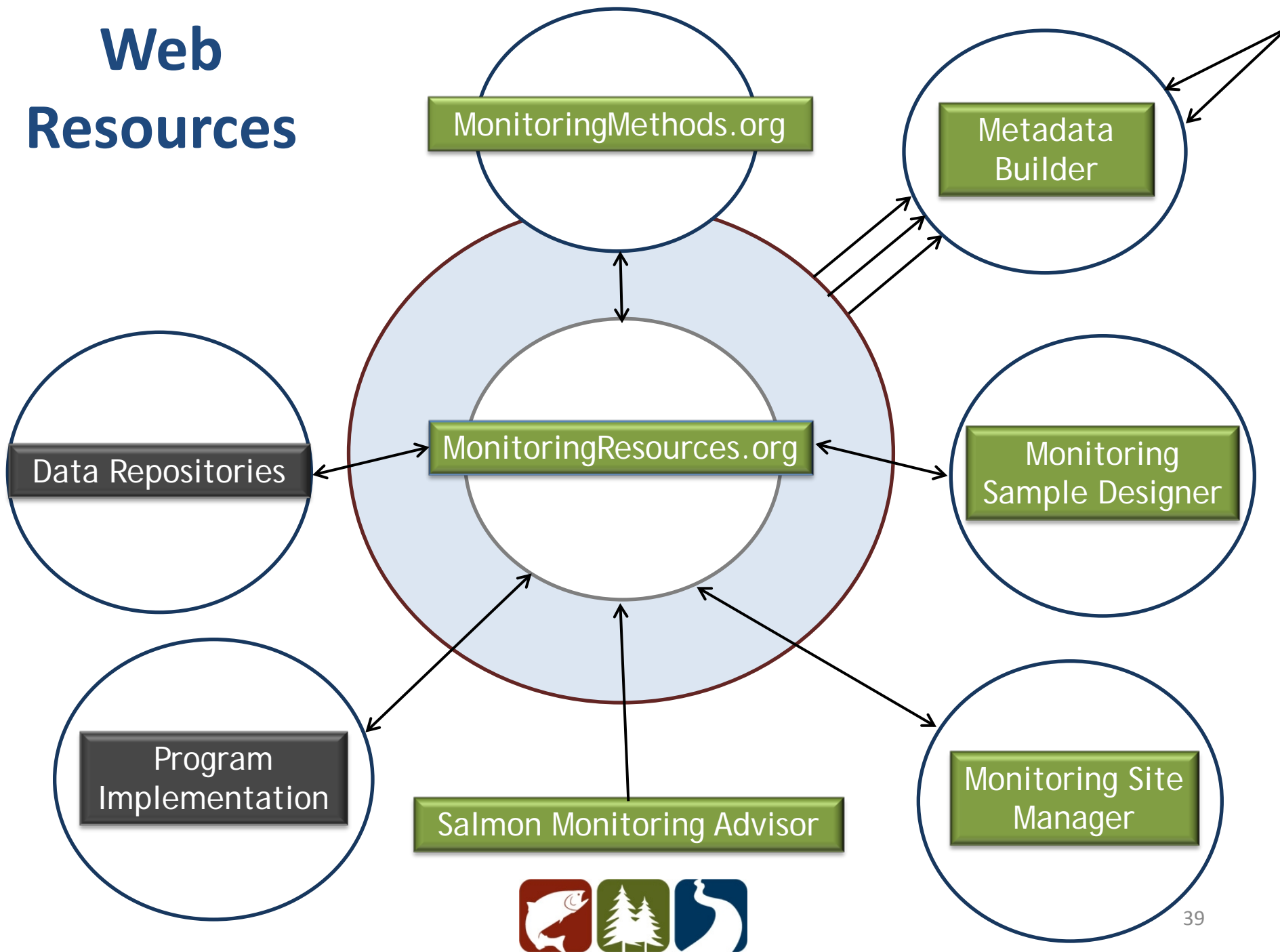


Web Resources

- PNAMP developing tools to make it easier to:
 - Design and document
 - Collaborate
 - Discover data
- Promote consistency in documentation
- Encourage use of common terminology
- Share info between many systems



Web Resources





Monitoring Resources

sponsored by: pacific northwest aquatic monitoring partnership

Home

Browse

Create

Learn

Monitoring Resources.

Learn about regional monitoring programs, and how to document and share info about your monitoring program. Design and manage your program, analyze your monitoring data, and get data from other programs.

Our plan is to integrate the content from [Monitoring Advisor](#) into this site.



LEARN
how to design a monitoring program

DEFINE
your monitoring program

FIND
monitoring sites and data

CREATE
a Sample Design based on a Master Sample

IMPLEMENT
your monitoring program

DOCUMENT
and share monitoring protocols and methods

Monitoring Resources provides a network of information and tools to support many facets of ecological and biological monitoring. This resource provides a central place to document and share your monitoring methods, the ability to describe your monitoring projects and upload your sample sites, and tools for creating sample designs based on a master sample. Monitoring Resources also includes a [Glossary](#) of monitoring terms to help you all get on the same page.

Recent Discussions:
Coming Soon!

- In development; provide central homepage that integrates all tools
- Provide underlying framework for single sign on
- Provide guidance, details of users, projects/programs, repositories

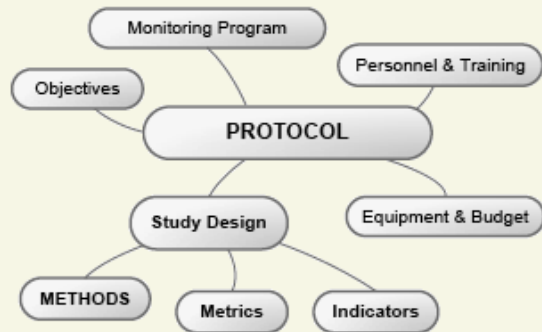


Welcome to MonitoringMethods.org, a tool to document and share information about Protocols & Methods.

- Promote consistent documentation
- Improve access to information
- Promote community discussions
- Streamline creation of metadata
- Help increase interoperability between data systems

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:

Recent Discussions

Below is a quick summary of recent discussions:

RECENTLY DISCUSSED:

- "Review Comments" on Method: 1427
08/10/2012 11:38 AM by *Jacque Schei*
- "Review Comments" on Method: 1433
08/10/2012 11:30 AM by *Jacque Schei*
- "Review Comments" on Method: 342
08/10/2012 09:45 AM by *Jacque Schei*
- "New Fork Length Method Available" on Method: 332
08/09/2012 09:04 AM by *Jacque Schei*
- "New Fork Length Method Available" on Method: 451
08/09/2012 09:00 AM by *Jacque Schei*
- "New Total Length Method Available" on Method: 592
08/09/2012 08:57 AM by *Jacque Schei*
- "New Total Length Method Available" on Method: 590

Quick Stats

With a growing number of Protocols and Methods, it can be difficult to keep up.

AS OF SEPTEMBER 7, 2012:

- 21 Protocols published out of 702
- 289 Methods published out of 1400
- 487 Metric Subcategories

Methods Review

- Identify and promote best practices
- Validate possibility of data sharing
- Help reduce duplicate methods in MonitoringMethods.org

Recent Example: Measuring fish length

- Is a method needed? YES, to identify which type of length measured

How hard can it be, right?

- Look for standard method descriptions in system to reference in protocols



Methods Review

- Various descriptions- examples:
 - Adult fish captured in the Lower Granite Dam adult trap will be **measured from the tip of the snout to the fork in the caudal fin (forklength) in mm.**
 - Length measurements of juvenile and adult fish are made with measuring boards or tapes according to methods described in **Anderson and Neumann 1996. Measurements include total length, fork length, midorbital-hypural length, and postorbital-hypural length.**
 - WDFW personnel will measure hatchery smolts from the **tip of the snout to the fork in the tail in millimeters (mm).** Hatchery and wild origin adults captured at adult traps or found during spawning grounds surveys, or hatchery origin adults from the program captured in fisheries (after the program expands) will be **measured from the tip of the snout to the fork in the tail to the nearest centimeter (cm).**

Comment



"Measuring Fish Length - Input Requested"

This discussion is currently open

06/19/2012 07:09 AM by [Jacque Schei](#) (Subject: General Discussions)

We'd like to have a limited number of methods in [MonitoringMethods.org](#) that are consistent with the common techniques used to measure fish length and ask users to reference these methods instead of creating new methods to describe techniques that are essentially the same thing.

One idea is to have one method that defines all the different fish length measurements (you can see an example here: <http://www.monitoringmethods.org/Method/Details/1428>) and ask users who reference this method in a protocol to customize it and indicate in the customized notes which fish length they are measuring.

A second idea is to have one method in the system for each unique fish length measurement. The title of the method would be similar for each, but would indicate what measurement is described. For example, you may have these methods in the system:

Measuring Fish Length (Fork Length)
Measuring Fish Length (Total Length)
Measuring Fish Length (Mid-eye to Hypural)
Etc.

With some input from you, we can work to 'Publish' methods that will exist in the system for your use in the future - you won't have to worry about referencing a 'Proposed' method that may change. Our question to you is: would you prefer having one method in the system that defines all the different fish length measurements or would you prefer to have a method documented for each of the different fish length measurements?

We'd also like your input on the different types of fish length measurements. You can see some examples in this method (<http://www.monitoringmethods.org/Method/Details/1428>) –are we missing any measurements? Does this sufficiently cover all fishes, adult and juvenile, live fish or carcasses, that you work with? Did we cover the equipment needed? We ask that you post your responses by July 9, 2012.

Whatever the outcome, PNAMP staff will work to enter the method(s) that the community decides on. We would like to ask users with existing methods that describe measuring fish length to delete those methods from the system and reference the new method(s) at that time. If you have additional suggestions, please note that in your reply.

Thanks!

▼ Replies (15) - [Log In to Reply](#)



06/19/2012 09:27 AM by [Ethan Crawford](#)

Fork Length for most live prespaw salmonids. Use MEHP lengths on carcasses(in addition to Fork Length) found when conducting spawning ground surveys for anadromous salmonids.



06/19/2012 09:50 AM by [Andrew Murdoch](#)

I think for a metric like length, a single method that clearly defines the different measurements would be fine (including a great figure). Fork length and post-orbital to hypural plate (POH) are the two measurements recorded for adult salmonids (FL only for juveniles) in the upper Columbia.



06/19/2012 10:33 AM by [Jeffrey Fryer](#)

We've always collected fork lengths, though many years ago collected mid-eye to hypural plate lengths. One inconsistency in measuring fork lengths has been how we measure them. At Bonneville Dam, we have a ruler attached to the top side of the sampling tank and hold the fish up against it to measure fork length. At other sites, we have placed the fish on a measuring board or used a tape measure for measuring length.



06/19/2012 11:11 AM by [Patrick Kennedy](#)

I think that a single method describing all length measurements should be adequate and preferable for my needs. I think keeping with the instructions that methods should be general and protocols should be more specific, then the equipment needs and the descriptions are adequate to reproduce each measurement type. I don't know if the list of measurement types is exhaustive. Andrew's suggestion for POH is a good example, but I can't add to the list beyond that. To the best of my knowledge, with the addition of POH, the list will be complete.

Methods Review

➤ New methods; cited from AFS Fisheries Techniques

[Expand All](#) | [Collapse All](#)



⊗ Basics

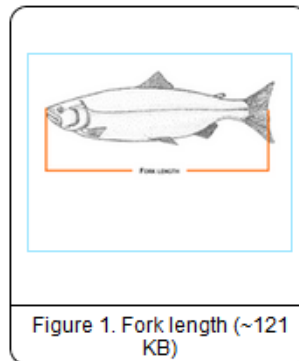
BACKGROUND / ABSTRACT

Fork length is the length from the most anterior part of a fish to the tip of the median caudal fin rays. Fork length is commonly used in fish species that have forked caudal fins - where the dorsal and ventral rays are longer than median rays. Longer rays are often damaged or eroded by contact with rocks, debris, or hatchery walls.

STEP BY STEP INSTRUCTIONS

If using a measuring board, place the fish on its side on the measuring board with its snout against the rigid headpiece and measure from the most anterior part to the tip of the median caudal fin rays, or the fork (Figure 1). If using a tape measure, lay the fish on its side on the tape measure (similar to using a board) or lay the tape just above the dorsal side of the fish to take the measurement. Do not allow the tape to curve along the contoured side of the fish that is facing up as this may introduce bias into your measurement due to girth, especially in adults.

PHOTOS & FIGURES



FORMS

<none>

EQUIPMENT

Measuring board (includes electronic/digitized) or tape measure

DETAILS

ID: 1550

State: Proposed

Version: 1.0

Category: Data Collection

Owner: [PNAMP Support](#)

Method Unit: Metric

Most Recent Comment by:

<none>

Created: 7/31/2012 2:34 PM

Created by: [Jacque Schei](#)

Updated: 8/27/2012 4:07 PM

Updated by: [Jacque Schei](#)

Completeness:



Subscribers

<none>

Tags:

[Edit Tags](#)

Approved:

Approve Methods

METHOD DETAILS

COMMENTS

CHANGE LOG

PHOTOS & FORMS

EDIT METHOD

METRIC ASSOCIATIONS

IMPLEMENTATION NOTES



DETAILS

ID: 1550

State: Published

Version: 1.0

Category: Data Collection

Owner: [PNAMP Support](#)

Method Unit: Metric

Most Recent Comment by: <none>

Created: 7/31/2012 2:34 PM

Created by: [Jacque Schei](#)

Updated: 8/30/2012 7:21 AM

Updated by: [Jacque Schei](#)

Completeness:



Subscribers

<none>

Tags:

[Edit Tags](#)

Approved:

- [Bonneville Power Administration Fish & Wildlife Program](#) (9/6/2012)

[APPROVE...](#)

[Expand All](#) | [Collapse All](#)

Basics

BACKGROUND / ABSTRACT

Fork length is the length from the most anterior part of a fish to the tip of the median caudal fin rays. Fork length is commonly used in fish species that have forked caudal fins - where the dorsal and ventral rays are longer than median rays. Longer rays are often damaged or eroded by contact with rocks, debris, or hatchery walls.

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PHOTOS & FIGURES

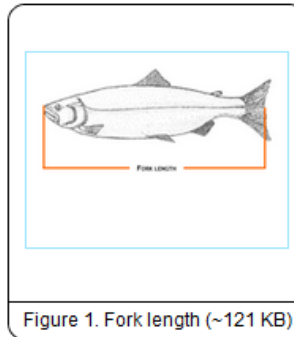


Figure 1. Fork length (~121 KB)

FORMS

<none>

EQUIPMENT

Measuring board (includes electronic/digitized) or tape measure

[Comments on the Basics section:](#)

[Add a comment](#)

Citation



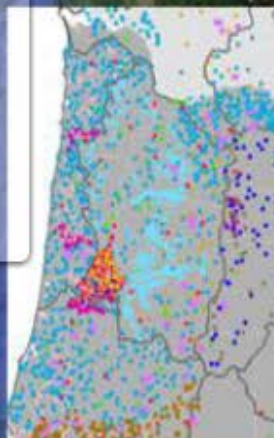
Monitoring Sample Designer

a Monitoring Resources tool

sponsored by: pacific northwest aquatic monitoring partnership

[Home](#)
[Explore](#)
[Design Sample](#)
[Evaluate Site Status](#)
[Analyze Field Data](#)
[About](#)

Welcome to Sample Designer.
Build your survey to exploit the
benefits of being part of a master
sample.



➤ In development; intended user group knowledgeable about GRTS design

[Explore](#)

Learn the steps in designing surveys with master samples.

- Read about GRTS master sample monitoring.
- Investigate individual master samples at Monitoring Sites.

[Design Sample](#)

Build your sample survey.

- Answer a few questions to see if this tool is for you, and to plan your survey.
- Select one or more master samples as the source of your sample sites.
- Define your survey's frame.

➤ Support development of statistically robust GRTS design using a Master Sample, document your design

➤ Output shapefile of sample sites

➤ Will offer basic analysis functions



Monitoring Sites

a Monitoring Resources tool

sponsored by: pacific northwest aquatic monitoring partnership

Home

Explore Sites

Update Sites

About

Welcome to Monitoring Site Manager, where you can explore sites of master samples and monitoring projects, draw from master samples to design your own survey, and update this resource with your sites, attributes and evaluations.



Explore Sites

Find the sites that interest you.

- Learn about master sample sites — map boundaries, attributes, and design documentation. If you are a sample designer, select a master sample for your sample design and (if desired) create your initial survey frame here.
- Review the sample surveys of public monitoring projects. Explore their attributes, sample history and design documentation.
- If you are a sample designer, Monitoring Site Manager provides tables, interactive maps, and export capabilities to help you review your sample sites or your legacy sites as you build your sample.

➤ In development; works with Sample Designer help you?

➤ Site management— import existing sites (legacy), add attributes — use in designs

➤ View master samples & designs

➤ ‘Explorer’ feature — proposed

Update

Add sites, and add attributes and site evaluations

Explore Sites – Monitoring Explorer

Use the filters below to find where monitoring is planned or underway in your area of interest.

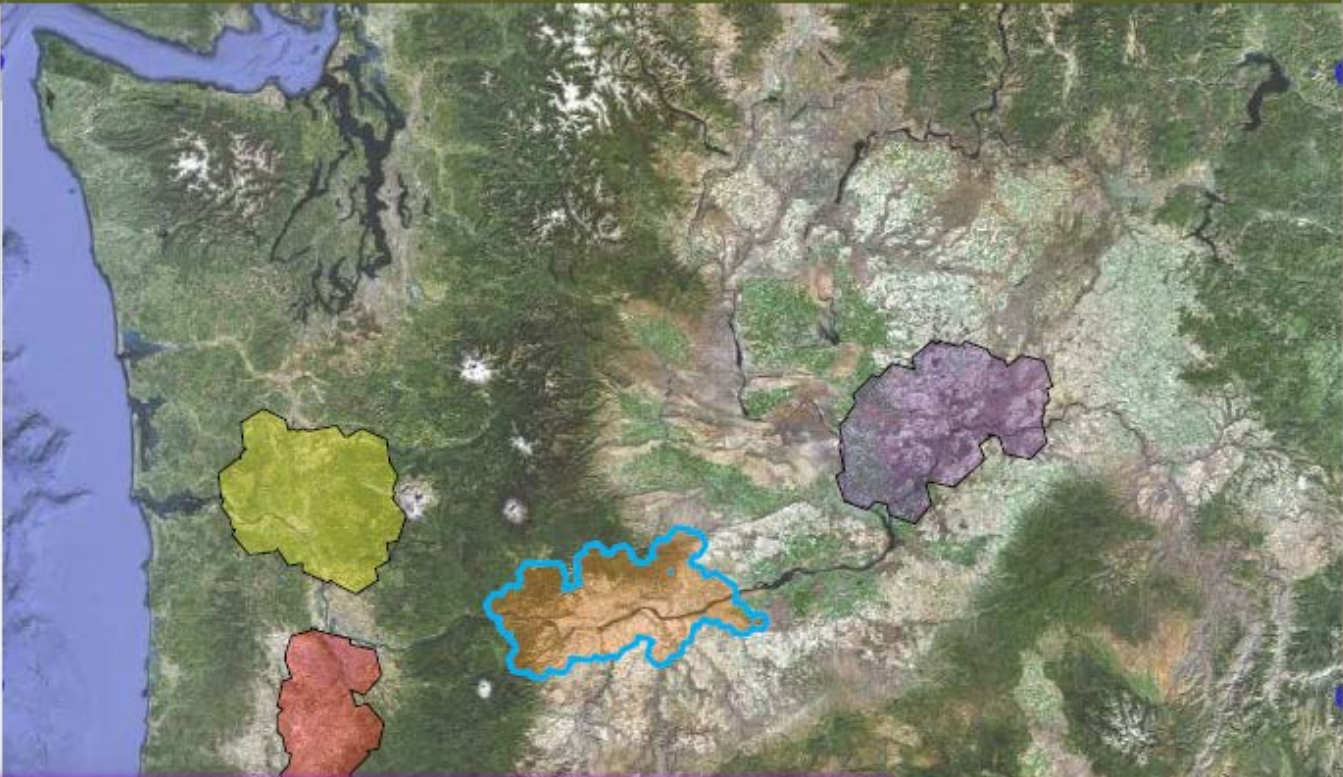
Sort by: **Program Name** | Project Name | Status

reset filters

Monitoring Program or Project Name	Monitoring Status	Data Types	Monitoring Type	State	Watershed (HUC 5)	ESA-Listed Fish (Spawn/Rearing Extent)
<input type="text" value="Enter text"/>	Planning or In-Progress	Habitat	Status & Trend	Washington	Any	Any

Showing 10 programs, 57 projects

- Anderson's Grad Class**
OR Chinook Monitoring
100 Sites
Planning [more...](#)
- CHAMP**
South Fork Salmon
45 Sites
In Progress [more...](#)
- Lower Columbia**
LC Lamprey Monitoring
120 Sites
In Progress [more...](#)
- Phil's Graduate Class**
Secesh Public Lands
25 Sites
Planning [more...](#)
- ...
- ...
- ...
- ...



Search, find information about, and see regional monitoring projects displayed on a map

- With continued support for entering and updating content, this tool will support many 'inventory' needs
- Gather content via web services and manually

Metadata Builder (prototype)

- Concept from PNAMP Metadata WG – support for development of a complete metadata record for datasets
 - Pull information from existing online resources into a metadata record template (prototype BPA-focused)
 - Different organizations = different web services
 - Not all elements will be found; users will need to fill in some elements

Metadata Record:

Create Monitoring Project

Title

Funder

Project

Protocol

STEPS TO BUILD YOUR METADATA RECORD

Title

Contact

Identification

Keywords

Access Constraints

Extent

Distribution

Provide information about geographic and temporal extent for the dataset

Temporal Extent (date range covered by the dataset)

Beginning Date

11/01/2011

Ending Date

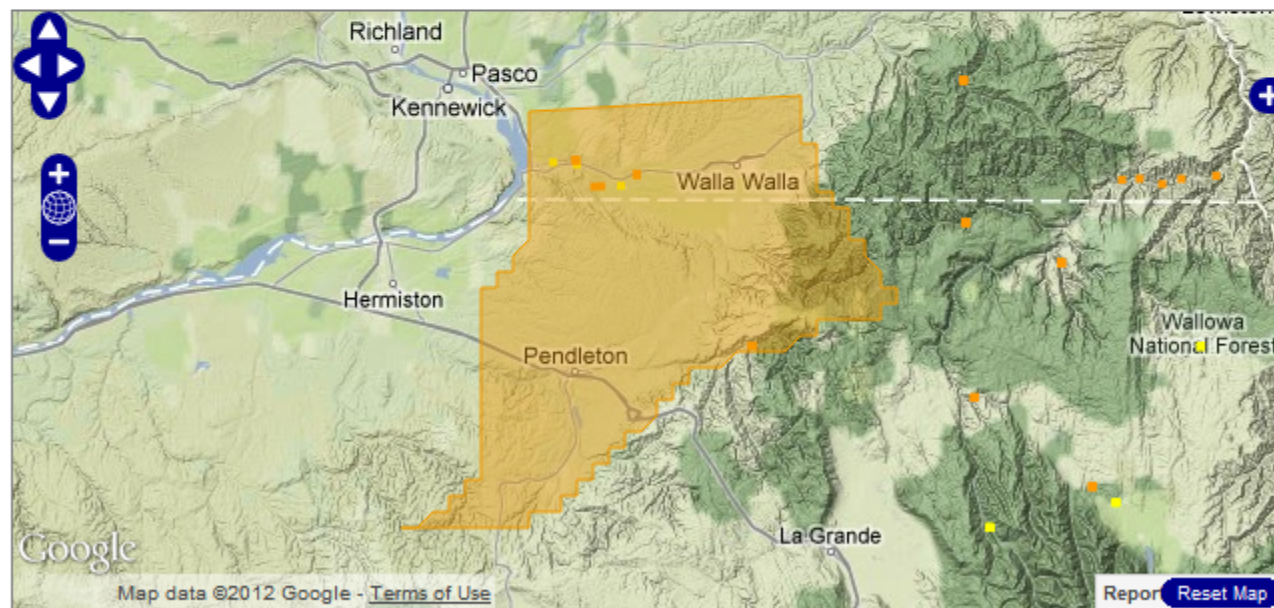
02/28/2013

[Click to reload dates from cbfish.org](#)

Geographic Extent

Describe the geographic extent represented by the dataset. The extent will be described as a polygon that encompasses the area where data were collected. Choose a button below to either draw a polygon on a map or get the coordinates from the list of worksites in cbfish.org that are associated with your project.

To draw a shape below click to creat a point. To finish drawing, double click. Holding shift will let you freehand draw your shape.



North Bound Latitude

46.197178034999

West Bound Longitude

East Bound Longitude

Salmon Monitoring Advisor

- Complete website transferred from NCEAS
- Educational resource – monitoring program design



The screenshot shows the homepage of the Salmon Monitoring Advisor website. The header features a large image of salmon swimming underwater, with the text "SALMON MONITORING ADVISOR" overlaid. A search bar is located in the top right corner. Below the header is a navigation menu with buttons for Home, 1. Goals, 2. Design, 3. Collect, 4. Manage, 5. Interpret, 6. Report, 7. Revise, and Resources. A breadcrumb trail indicates "You are here: Home". On the right side of the header, there are links for "ABOUT US", "SITE MAP", "ACCESSIBILITY", and "CONTACT".

Navigation

- Home
- 1. Goals
- 2. Design
- 3. Collect
- 4. Manage
- 5. Interpret
- 6. Report
- 7. Revise
- Resources

Related Terms

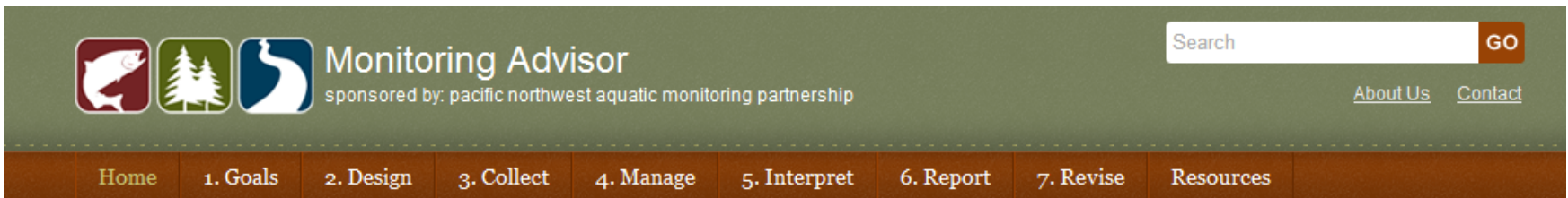
Salmon Monitoring Advisor: Helping users to design and implement salmon monitoring programs

Overview

Designing monitoring programs for Pacific salmon is complicated. The number of technical references on sampling design, fish monitoring indicators, field protocols, and resource management goals can be overwhelming. To date, there is no comprehensive, technically rigorous framework to help practitioners, decision makers, and those who fund monitoring programs to deal with this complex array of information. Our goal is to fill this gap with a comprehensive design process that synthesizes a wide array of information into a web-accessible, systematic framework for designing monitoring programs.

Monitoring Advisor

- Complete website transferred from NCEAS
- Educational resource – monitoring program design
- Integrate generic concepts into MonitoringResources.org
- Future – add topics beyond salmon



The screenshot shows the top section of the Monitoring Advisor website. On the left, there are three icons: a fish, a tree, and a river. To their right is the text "Monitoring Advisor" and "sponsored by: pacific northwest aquatic monitoring partnership". On the right side, there is a search bar with the text "Search" and a "GO" button. Below the search bar are links for "About Us" and "Contact". At the bottom of the header is a navigation bar with the following items: "Home", "1. Goals", "2. Design", "3. Collect", "4. Manage", "5. Interpret", "6. Report", "7. Revise", and "Resources".

Helping Users to Design and Implement Salmon Monitoring Programs

Overview

Designing monitoring programs for Pacific salmon is complicated. The number of technical references on sampling design, fish monitoring indicators, field protocols, and resource management goals can be overwhelming. To date, there is no comprehensive, technically rigorous framework to help practitioners, decision makers, and those who fund monitoring programs to deal with this complex array of information. Our goal is to fill this gap with a comprehensive design process that synthesizes a wide array of information into a web-accessible, systematic framework for designing monitoring programs.

Purposes

- We offer an **organized, carefully-structured procedure** to help users efficiently design and implement salmon monitoring programs that are reliable, informative, and cost-effective.
- The “**Salmon Monitoring Advisor**” **provides advice and guidelines to help users** systematically work through the numerous steps involved in designing, implementing, and analyzing results from monitoring programs to meet particular monitoring objectives.

Highlights

- A [7-step guide](#) for salmon monitoring
- A comprehensive and integrative design system (STRIDE, which stands for Spatial, Temporal, Response, and Inference Design)
- A set of resources including examples, tools, and reference materials
- An interactive, flexible interface that allows users to choose their own situation and compare alternative designs of monitoring programs that might fit that situation.


Web Services with Regional Systems

- Offer web services to exchange information; stay up to date
- Encourage use of bi-directional web services - content is dynamic; always up to date in both systems

Home > Service Documentation

Web Services

We currently offer a SOAP/WCF web service. Our web service calls require a token which allows us to proactively communicate with you and other consumers of our web services in the event we need to change or update our services. Please refer to the [Web Service WSDL](#) for the service definitions. NOTE: The WSDL link above provides an XML document. If you are using a WebKit-based browser such as Safari or Chrome, you will get a blank page since they don't like to display XML.

 [Protocol Reference Web Services, version 1.0](#)

For more information on these web service calls (e.g. required and optional parameters, list of data they return, etc.), please [send us a support request](#).

Request a new [Web Service Access Token](#).

Name	Short Description
DataRepositoriesList	Get list of all Data Repositories.
DataRepositoryGet	Get details of a Data Repository for a given Data Repository ID.
DataRepositoryWebReferenceCreate	Create a new link between a Data Repository in MonitoringMethods.org and an object in an external system.
DataRepositoryWebReferenceGet	Returns a single data repository web reference.
DataRepositoryWebReferenceRemove	Remove an existing link between a Data Repository in MonitoringMethods.org and an object in an external system.

Web Services with Regional Systems

➤ Cbfish.org exchanges info with Monitoring Resources

Screenshot of portion of a proposal in cbfish.org

DELV-1: Okanogan River Basin-wide habitat and salmonid assessment

In 2004, the OBMEP began collecting data throughout the Okanogan River basin. Once 5 years of each data type needed has been collected, these data will be evaluated to compare subwatershed changes over time regarding salmonid habitat. Our analysis will leverage the new and improved EDT3 model to evaluate each of the hydrologic reaches within the Okanogan River Basin. The EDT3 model will provide limiting factors for each hydrologic reach and sub-watershed and a trend in estimated salmonid productivity. Further refinement of these outputs will be accomplished by breaking each limiting factor down to identify the specific input driving this result. Once the input variable driving the limiting factor has been determined, empirical data can be used to evaluate the most relevant metric for status and trend. The derived metric analysis, along with actual adult and juvenile salmonid data, will be used to determine progress toward restoration or degradation and used to focus recovery action efforts in the future. Results will be shared with the Upper Columbia Salmon Recovery Board through their Regional Technical Teams Data analysis workshop and incorporated into the implementation schedule created by the local watershed action teams. In addition to these very specific reports this deliverable will also cover small scale experiments needed to answer important local management questions that require minimal additional data be collected but represent important but yet undefined questions this program will be asked to answer.

Start: 2011 End: 2020

Budget: \$1,150,000

Associated Work Elements: [70. Install Fish Monitoring Equipment](#), [156. Develop RM&E Methods and Designs](#), [157. Collect/Generate/Validate Field and Lab Data](#), [160. Create/Manage/Maintain Database](#), [161. Disseminate Raw/Summary Data and Results](#), [162. Analyze/Interpret Data](#), [189. Coordination-Columbia Basinwide](#), [191. Watershed Coordination](#)

Protocols:

[OBMEP-habitat \(2003-022-00\)](#)

[OBMEP-Population estimates of adult summer steelhead spawners and distribution \(2003-022-00\)](#)

[OBMEP-rotary screw trap \(2003-022-00\)](#)

[OBMEP-snorkel, macroinvertebrate, temperature, and water quality monitoring \(2003-022-00\)](#)

DELV-2: Long-term salmonid data set

Since 2005, OBMEP has been building a long-term data set for evaluation of status and trend in the Okanogan River Basin. The biological component of this includes; standing crop estimates for salmonids and macroinvertebrates at all randomly selected habitat sites, juvenile out-migrant data collection at a rotary screw trap, and annual adult summer steelhead population estimates. In addition we assemble, and assist with data collection events lead by other agencies related to summer Chinook and Sockeye, rather than duplicating these data collection efforts. As this data set becomes more robust it will become the focal point for all data users interested in data related to salmonids in the Okanogan River Basin.

Start: 2011 End: 2020

Budget: \$4,000,000

Associated Work Elements: [70. Install Fish Monitoring Equipment](#), [156. Develop RM&E Methods and Designs](#), [157. Collect/Generate/Validate Field and Lab Data](#), [160. Create/Manage/Maintain Database](#), [161. Disseminate Raw/Summary Data and Results](#), [162. Analyze/Interpret Data](#), [189. Coordination-Columbia Basinwide](#), [191. Watershed Coordination](#)

Protocols:

[OBMEP-habitat \(2003-022-00\)](#)

[OBMEP-Population estimates of adult summer steelhead spawners and distribution \(2003-022-00\)](#)

Links to
protocols →

Web Services with Regional Systems

Work Element Details

Select a work element: AK: 157. Monitor Habitat to determine natural production for fish *

Milestones | Location * | Metrics * | Focal Species * | RM&E Metadata * | Environmental Compliance *

Data Repository Name: [Don't see your data repository name?](#)
Select the repository that will store your dataset.

Data Repository	Location	Contact
<input type="checkbox"/> Status, Trend, and Effectiveness Monitoring (STEM)	https://www.webapps.nwfsc.noaa.gov/stm/	N/A
<input type="checkbox"/> ISEMP - Integrated Status and Effectiveness Mon	http://www.iseemp.gov/	
<input checked="" type="checkbox"/> StreamNet	http://www.streamnet.gov/	
<input type="checkbox"/> The North American Bird Banding Program	http://www.nabbp.org/	
<input type="checkbox"/> Upper Columbia Habitat Work Schedule	http://uc.hws.org/	
<input type="checkbox"/> USACE Adult Fish Counts	http://www.usace.gov/fishcounts/	
<input type="checkbox"/> USGS Gauging Stations	http://www.usgs.gov/gauging-stations/	

Protocol and Number of Sites: [Don't see your protocol or method?](#)
Select a protocol and specify the number of sites for this work element.

Display All Available Protocols

Name	Proposed Project Sites	Sites for this WE
(select a protocol)		0
(select a protocol)		
Ecological Interactions (1995-063-25)		
Genetics (1995-063-25)		
Harvest Monitoring (1995-063-25)		
Natural Production (1995-063-25)		

Methods:
These are the methods for the selected protocol.

Name
*** This protocol has no methods ***

Guidance:
[Protocols] are detailed plans that explain how data are to be collected, managed, analyzed, and reported. Protocols for BPA-funded work are documented at <http://monitoringmethods.org> and become visible in Pisces once submitted at that site. One or more protocols for the project associated with this statement of work may already have been submitted during the project proposal process. The list above defaults to show those protocols. If a protocol has been submitted for your project, and you do not see it on the list, try selecting Display All Available Protocols and type the first few characters of the protocol name. If a protocol hasn't been submitted for your project, and an existing protocol does not apply, click 'Don't see your protocol or method?' and login to <http://monitoringmethods.org> to enter a new protocol.

Check Spelling | Apply | OK | Close

- Pisces & Monitoring Resources exchange information
 - Protocols & Repositories for SOW
 - Contract info/contact info for Metadata Builder; Monitoring Methods

What's in it for NPCC?

- Documentation of methodology; exchange of information provides support for valid aggregation
 - Higher confidence in data
 - FWP HLI reporting support
- Easily review & summarize work completed by:
 - Metric or indicator
 - FWP Strategy RPAs
 - Monitoring Type
 - Location
- Accountability for Fish & Wildlife Program
 - More consistent reporting over time
 - Unprecedented level of transparency

What's in it for users?

- Improved communication
 - Documentation of 'Who's doing what, where, how?'
 - Opportunities for collaboration/coordination
- Access to data management and sharing standards & best practices
- Overall, less entry of project info:
 - Automated metadata record creation
 - Associate documented info with datasets, SOW, reports
 - Long term storage of content
- Potential to lead to more efficient use of limited funds; more informed funding decisions
 - Consistent reporting of metrics & indicators
 - Allow for aggregation of data

BUT...

- System creation, support & training require considerable effort
 - Many people help create tools and content
- Users are often not happy, especially when use is required
 - Change from past practice
 - Some initial work to learn

On the other hand, folks have started to come around...

“I wasn’t sure how I was going to fulfill the needs of this process/database. But with the ability to get those closest to the field work/method able to edit the method descriptions in your database directly I think we can achieve what the region seeks here – this works so much better than me having to get the info from the field guys and trying to enter it myself – and makes the end product much more complete and accurate too.”

Bill Bosch, Confederated Tribes & Bands of the Yakama Nation, comment about Monitoring Methods

➤ Need commitment to support usage of systems so the results can be fully realized

- ISRP Comments from Final Review of Resident Fish, Data Management, and Regional Coordination Category Review Proposals (ISRP 2012-06):

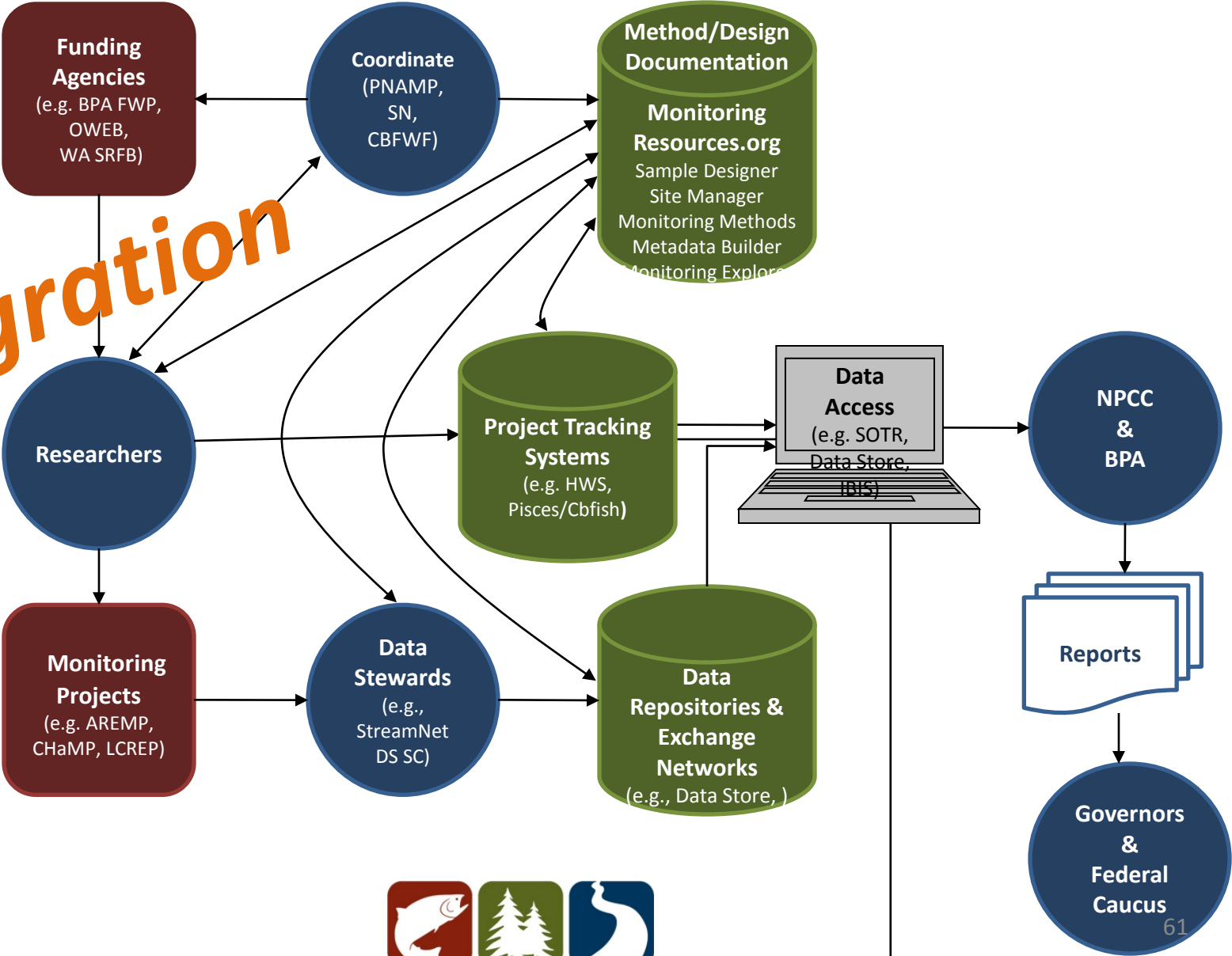
“The continuation of PNAMP activities, particularly web-based coordination and standardization of study protocols and field methods, is beneficial to the region.”

“PNAMP has developed the web-based resource, MonitoringMethods.org, to support data management and sharing. Feedback from users of MonitoringMethods.org should be actively solicited and used to improve the resource. Other web-based tools have been developed or are proposed. The ISRP supports these efforts.”

“The ISRP supports the continued development of the standardized protocols and methods in MonitoringMethods.org.”

How Projects Fit

Integration



What We Need From NPCC

- Continued support & participation: we need long term commitment for maximum benefit
- Details of your priority information needs for
 - Reporting
 - Fish & Wildlife Program amendment process
- Your help encouraging states to participate



Thanks!

NPCC was one of the organizations that started PNAMP and has been a strong participant for the duration.



Questions?

www.pnamp.org

www.MonitoringResources.org



pacific northwest aquatic
monitoring partnership