Northwest **Power** and **Conservation** Council

October 4, 2023

MEMORANDUM

TO: **Fish and Wildlife Committee Members**

FROM: **Kris Homel**

SUBJECT: **Pacific Northwest Aquatic Monitoring Partnership: Supporting the Fish & Wildlife Program Since 2004**

BACKGROUND:

Presenter: Jen Bayer, Coordinator for the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) through the U.S. Geological Survey, and Co-Lead on the Coordinated Assessments Project

Summary: The Fish and Wildlife Committee will hear a presentation on the resources available to the region through the Pacific Northwest Aquatic Monitoring Partnership (PNAMP), a project of the U.S. Geological Survey. The presentation will include information on how PNAMP resources relate to the Council's Fish and Wildlife Program and how they are accessed and shared, along with a discussion of emerging tools or innovations.

Relevance: Regional data and information-management projects are critical to supporting the Program's data management, analysis, access, and communication functions. As part of the Mainstem and Program Support Project Review in 2019, the Council formulated a programmatic issue to address the importance of these projects. The programmatic issue emphasized the need to identify which resources house information derived from Program funded projects and how those resources can be accessed by the public. Over the course of this year, the staff will invite all seven of the data management projects included in the Mainstem and Program Support Review to share similar presentations. The Committee has heard from five projects so far- the Columbia Basin Fish and Wildlife Library, the Inter-tribal Monitoring Data project, Data Access in Real Time,

StreamNet, and the Intermountain Province Subbasin Data Management Project. In October, the committee will hear from the sixth project- PNAMP, which is administered by U.S. Geological Survey under Project #2004-002-00.

Background: A large amount of data is collected throughout the basin by many different projects and having access to that information is critical. This is the role filled by data management projects- they support the Program's data management, analysis, access, and communication functions. Each project is a little different and each fits different needs for their organizations.

The seven data management projects were reviewed in the 2019 Mainstem and Program Support Project Review. In this review, the ISRP highlighted, and the Council agreed with, the importance of supporting regional and sub-regional data management, storage, and dissemination of information necessary for Program implementation and assessment (please see Programmatic Issue #2, pages 8 and 9). In particular, intentional planning for, and dedication of funding is necessary for (1) sharing information that informs decisions and (2) keeping pace with new technologies and knowledge through workshops and other learning experiences. This requires balancing investments in data collection with investments for data processing (data management, analysis, data steward expertise/support) and communication of information.

In an effort to address the Council recommendation and to advance the Council's efforts in the assessment of program performance, there is a need to better understand the information and data sharing resources in the basin, which provide the Council and region with critical Program data and information. In the decision document from the 2019 review, the Council recommended that a subcommittee of the Regional Coordination Forum be convened. The tasks of this subcommittee would be to (1) communicate the role of the regional and sub-regional databases/ repositories in providing public access to information derived from Program funded projects, (2) identify the primary regional databases/ repositories that house information supporting the Program, and (3) address efficient flow of information between regional and subregional databases/repositories, and projects collecting and analyzing data.

Toward this end, the Council has organized a series of presentations on data and information management projects for this and upcoming Fish and Wildlife Committee meetings. The Council developed a set of questions to better understand the specific work each data management project is doing, how they relate to each other, and how they relate to the Council's Program. Some of these questions are asked of every project during their presentation, and others are specific to individual projects. The presentation on PNAMP will include answers to questions 1 - 4 and 7.

The required questions are:

1. Describe the data and resources that you provide to the region.
2. How do these data and resources relate to the Council's Fish and Wildlife Program?
3. How are these resources accessed and/ or shared among organizations?

The additional questions are:

4. What kind of collaborations or relationships exist between your data/repositories/organization, and other data management projects/organizations in the basin (not just within the Program)?
5. As the basin and program continue changing and other information needs arise or change, what opportunities do you have to adapt to these different needs?
6. What do we need to be aware of in the future to continue providing data management for the full suite of work implemented under the program?
7. Are there emerging tools or technologies we should be aware of? New data management needs? Innovations to share?

Through these presentations, we hope to highlight the resources that are available from these projects as they relate to the Program both to better understand the accomplishments of the Program, and to inform the region. Following the series of presentations, the Council will develop a summary of the answers each project provided to their specific questions.

More Info: https://www.pnamp.org/

USGS
science for a changing world

Pacific Northwest Aquatic Monitoring Partnership

Supporting the Fish & Wildlife Program Since 2004

Jen Bayer, PNAMP Coordinator, USGS
October 11, 2023

pacific northwest aquatic monitoring partnership

www.PNAMP.org

U.S. Department of the Interior
U.S. Geological Survey

PNAMP: When, Why, Who?

- Established in 2004 to enhance collaboration among PNW federal, state, and Tribal monitoring programs
- Partnership of 19 charter member entities
- Voluntary participation since 2004 from over 2000 individuals representing more than 350 organizations – all are welcome to participate

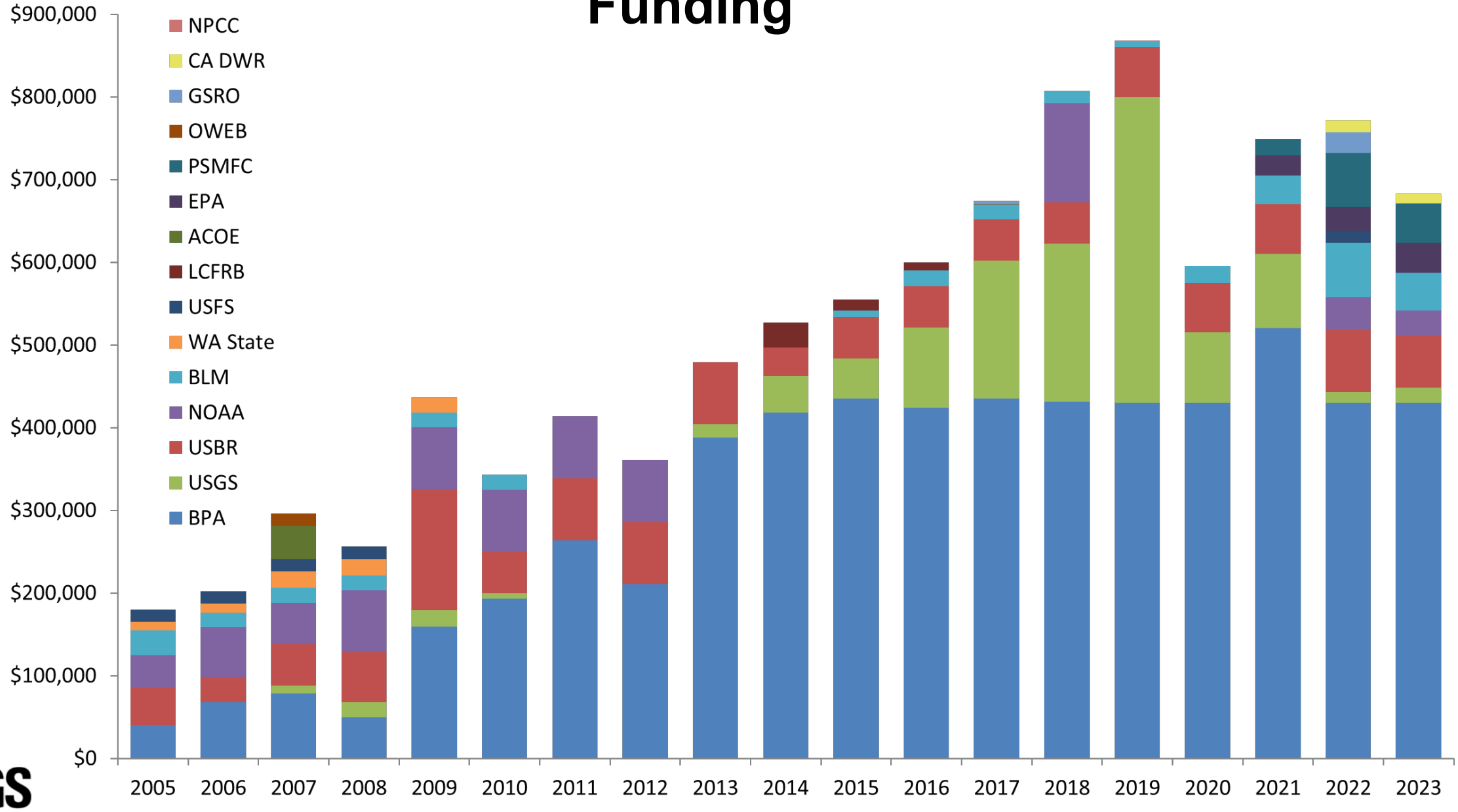
US Army Corps of Engineers

Steering Committee Members Set the Stage for PNAMP

John Arterburn (Colville Tribes)
Patty O'Toole (NPCC)
Mike Brown (BLM)
Scott Collyard (WA Ecology)
Tim Copeland (IDFG)
Jeff McLaughlin (USBR)
Chris Hirsch (USDA FS)
Bruce Jones (NWIFC)
Denise Kelsey (CRITFC)
Lisa Kusnierz (EPA)
Jody Lando (alt. Russell Scranton, BPA)
Nancy Leonard (PSMFC)
Courtney Shaff (alt. Ken Fetcho, OWEB)
Dan Rawding (alt. Brodie Cox, WDFW)
Greg Sieglitz (NOAA)
Steve Waste (USGS)

USGS

Funding



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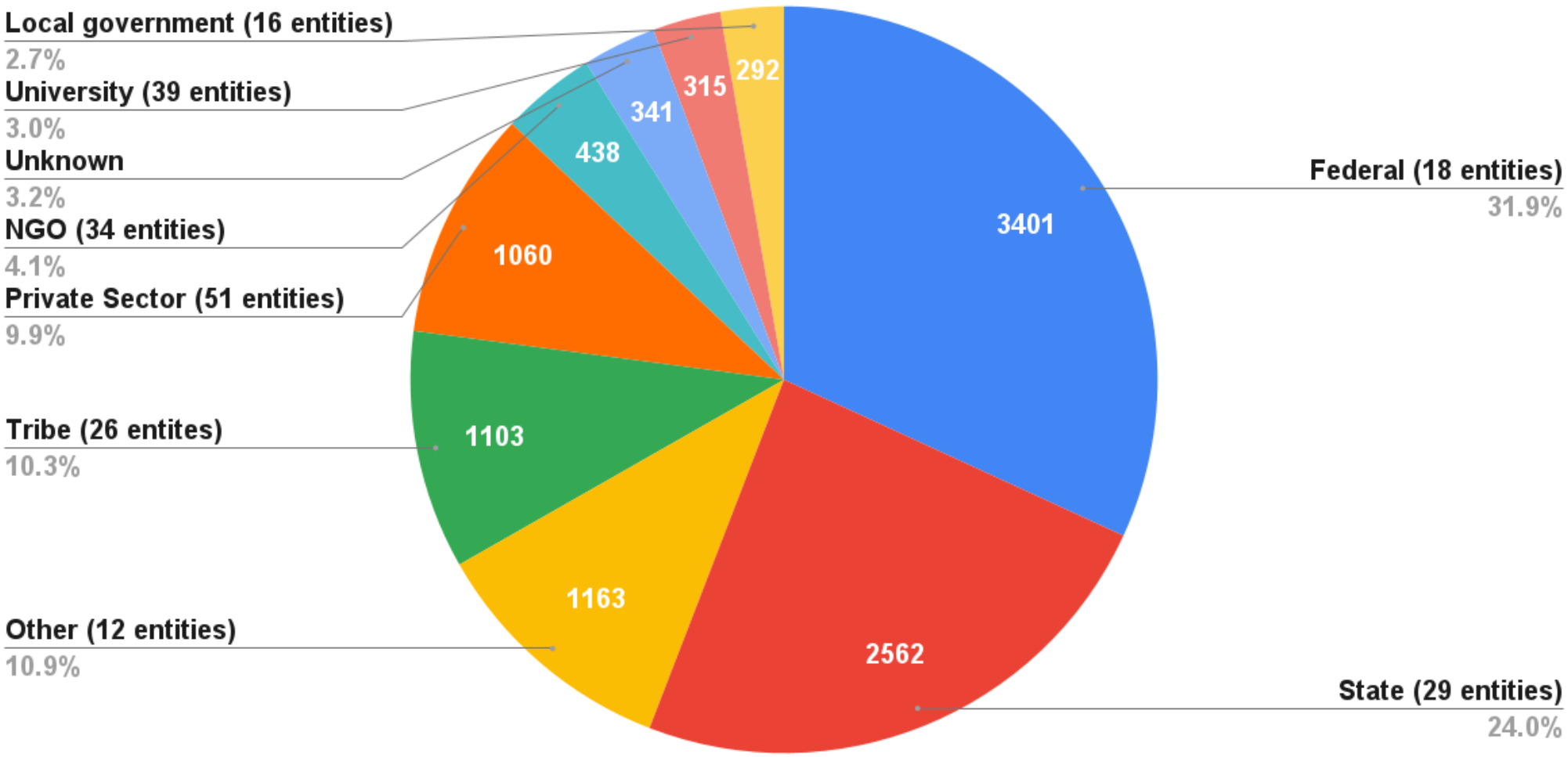
In-kind Contributions



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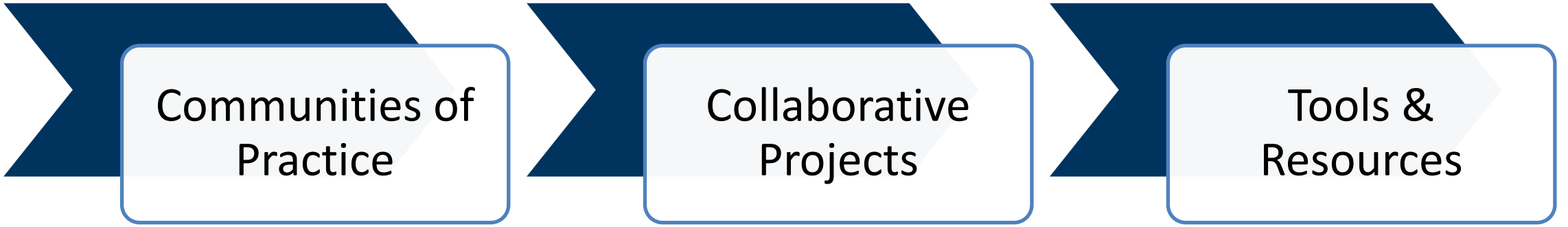
Hours by Organization Type for 2020-2022

PNAMP: What, How?



Host meetings, workshops, work groups to share information about monitoring methods, design and results

Develop strategies for more standardized and coordinated regional monitoring (methods, design, analysis) and improved access to data and information

Develop and support users of online tools to support consistent and detailed documentation for projects & datasets

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PNAMP Communities of Practice & Projects Support the Fish & Wildlife Program

- Strategies for more standardized and coordinated regional monitoring, data management and dissemination of information necessary for informing decisions
- Meetings and workshops about monitoring methods, design and results to aid in adaptive management and help partners to keep pace with new technologies and knowledge
- Foster collaboration and inclusivity to enhance quality, objectivity, utility, and integrity of data

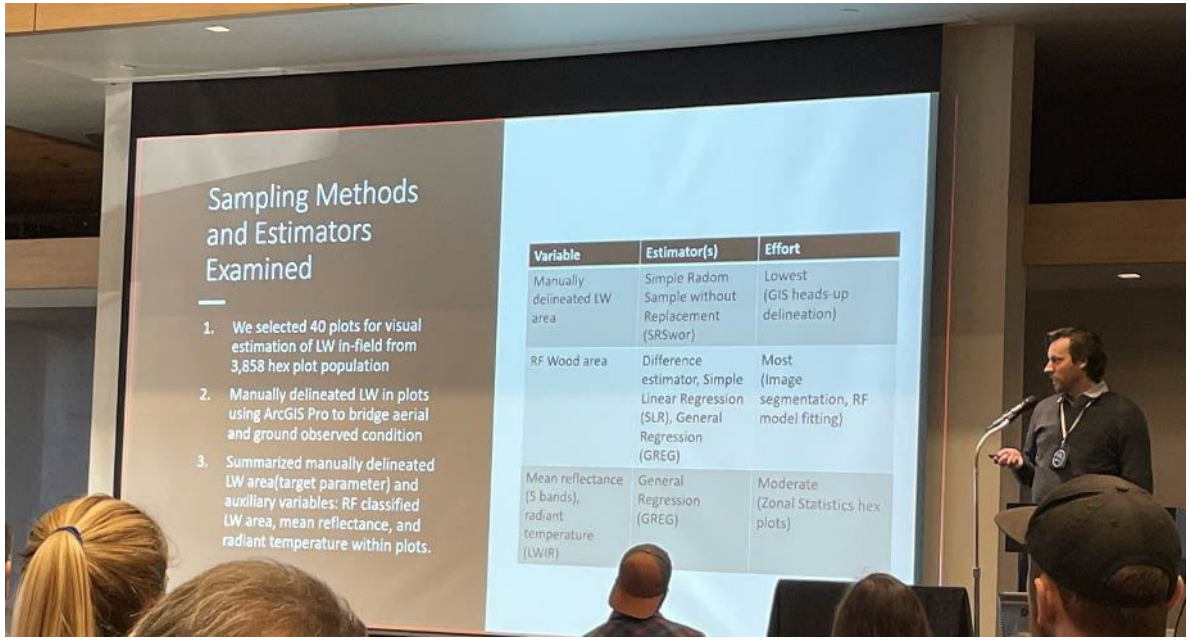

Image: Jen Bayer

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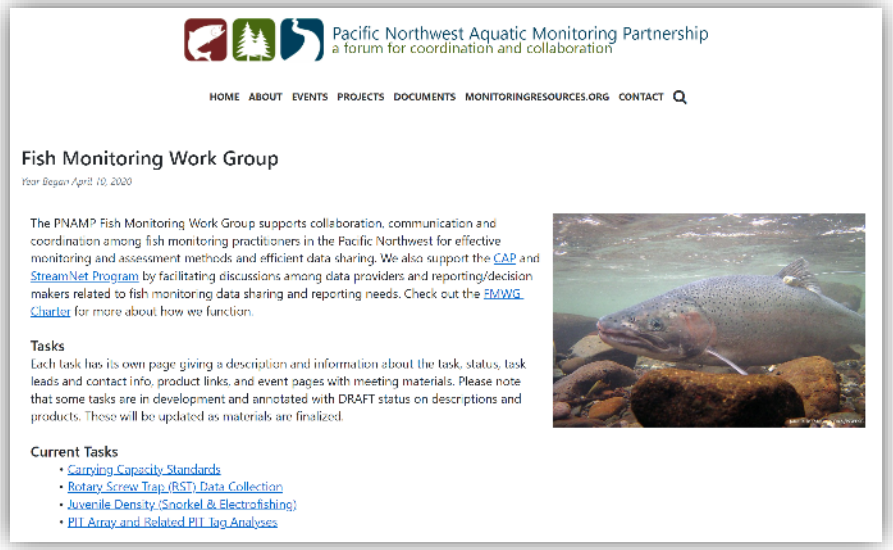
Communities of Practice

- Coordinated Assessments Partnership (CAP)
- Fish Monitoring Work Group
- Remote Sensing Forum
- CRBRP Toxics Monitoring Subgroup
- Intensively Monitored Watersheds Forum
- Emerging Technologies Information Sessions (ETIS)



Coordinated Assessments Partnership
Fish and Habitat Data Exchange

EMERGING TECHNOLOGIES INFORMATION SESSIONS
HOOD RIVER, OREGON

Intensively Monitored Watersheds Workshop
PNAMP 2016
Working Together

COLUMBIA RIVER BASIN RESTORATION PROGRAM
EPA

CRBRP Toxics Monitoring Subgroup

USGS

Collaborative Projects

- Hatchery fish data exchange (HCAX)
- Stream Habitat Metric Integration (SHMI)
- PIT array and related PIT tag analyses support
- Data mobilization recommendations


Image: CRITFC


Image: Jen Bayer

Image: NOAA


Image: NOAA

PNAMP Learning Opportunities & Products Support the Fish & Wildlife Program

- Create opportunities for experts to share knowledge to highlight new approaches, promote best practices and encourage standardized methods
- Facilitate new methods to flow information between regional and subregional databases/repositories and projects collecting and analyzing data
- Facilitate development of needed data exchange standards and data documentation

USGS

CAP: Working Together Improving Access to Salmon Data

StreamNet
Fish Data for the Northwest

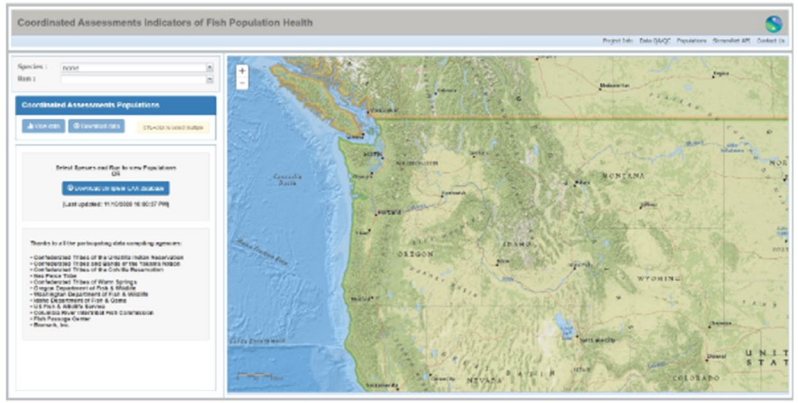
Data

The Coordinated Assessments Partnership (CAP) fish high-level indicators (H
standardized data for fish population HLIs housed in the Coordinated Assess
level HLI data are developed by CAP and shared here via the two query syster

For more information on the process guiding data shared through the CAP, vi

To obtain a data set from a specific date, such as a previous version of the da
link at the bottom of the page or by the 'Contact Us' under the About section.

Click Map or Query Image to Explore Data



CAP Fish HLIs Interactive Map

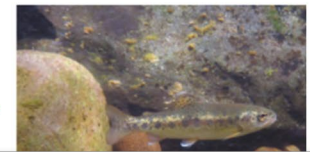
Pacific Northwest Aquatic Monitoring Partnership
a forum for coordination and collaboration

HOME ABOUT EVENTS PROJECTS DOCUMENTS MONITORINGRESOURCES.ORG CONTACT

Fish Monitoring Work Group

Year Began April 10, 2020

The PNAMP Fish Monitoring Work Group supports collaboration, communication and coordination among fish monitoring practitioners in the Pacific Northwest for effective monitoring and assessment methods and efficient data sharing. We also support the CAP and StreamNet Program by facilitating discussions among data providers and reporting/decision makers related to fish monitoring data sharing and reporting needs. Check out the FMWG Charter for more about how we function.



Tasks
Each task has its own page giving a description and information about th
and contact info, product links, and event pages with meeting materials.
tasks are in development and annotated with DRAFT status on descriptio
be updated as materials are finalized.

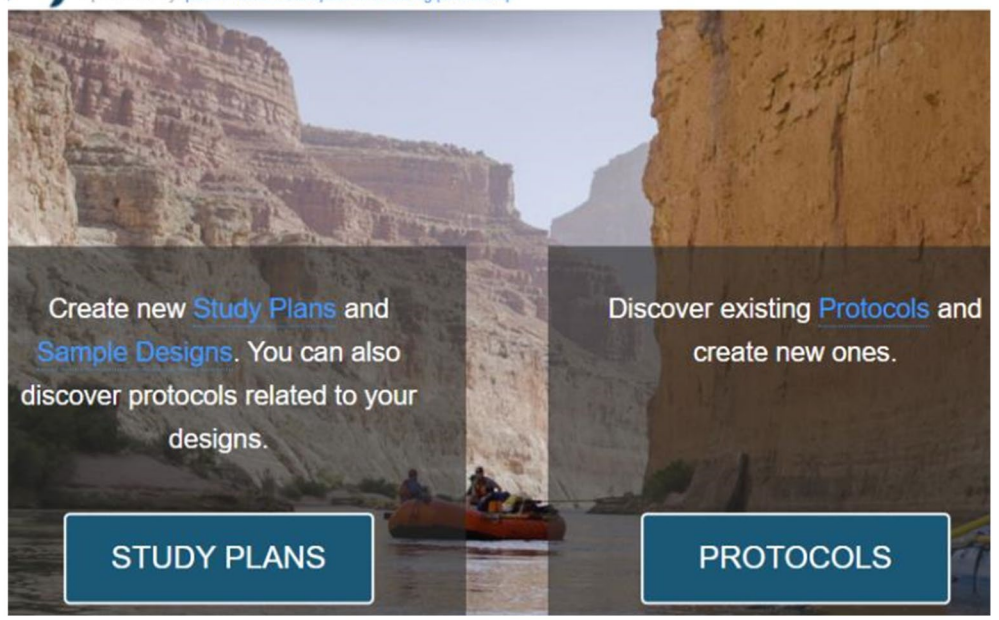
Current Tasks

- Carrying Capacity Standards
- Rotary Screw Trap (RST) Operation
- Juvenile Density (Snorkel & Electrofishing)
- Fish Population Names and GIS Boundaries Task
- MAFAC and NPCC SPI

CAP

Monitoring Resources
sponsored by: pacific northwest aquatic monitoring partnership

HOME | CREATE &



Fish Monitoring Work Group Leads Collaboration

Active Tasks

- Carrying Capacity Standards
- Juvenile Density (Snorkel & Electrofishing)
- Rotary Screw Trap (RST) Operations
- PIT Array and Related PIT Tag Analyses
- Support for CAP Workshop

Completed Tasks

- Smolt Estimation & Analytics Workshop
- Data Display Improvements to Dashboards
- CAP DES Juvenile Outmigrant/Define Smolt Equivalent
- MAFAC Dashboard
- Fish Management Units Boundaries and Attributes

Image: Jen Bayer

FMWG Project: Improving Consistency in Information with Base Layers for Fish Management Units Boundaries and Attributes

FMWG developed recommendations for methods to define fish management units (e.g., population, core area, migratory corridor), names, and boundaries

StreamNet updated the data tools with new GIS layers, resulting in better communication of data, which enables more effective, standardized analyses

StreamNet
Fish Data for the Pacific Northwest

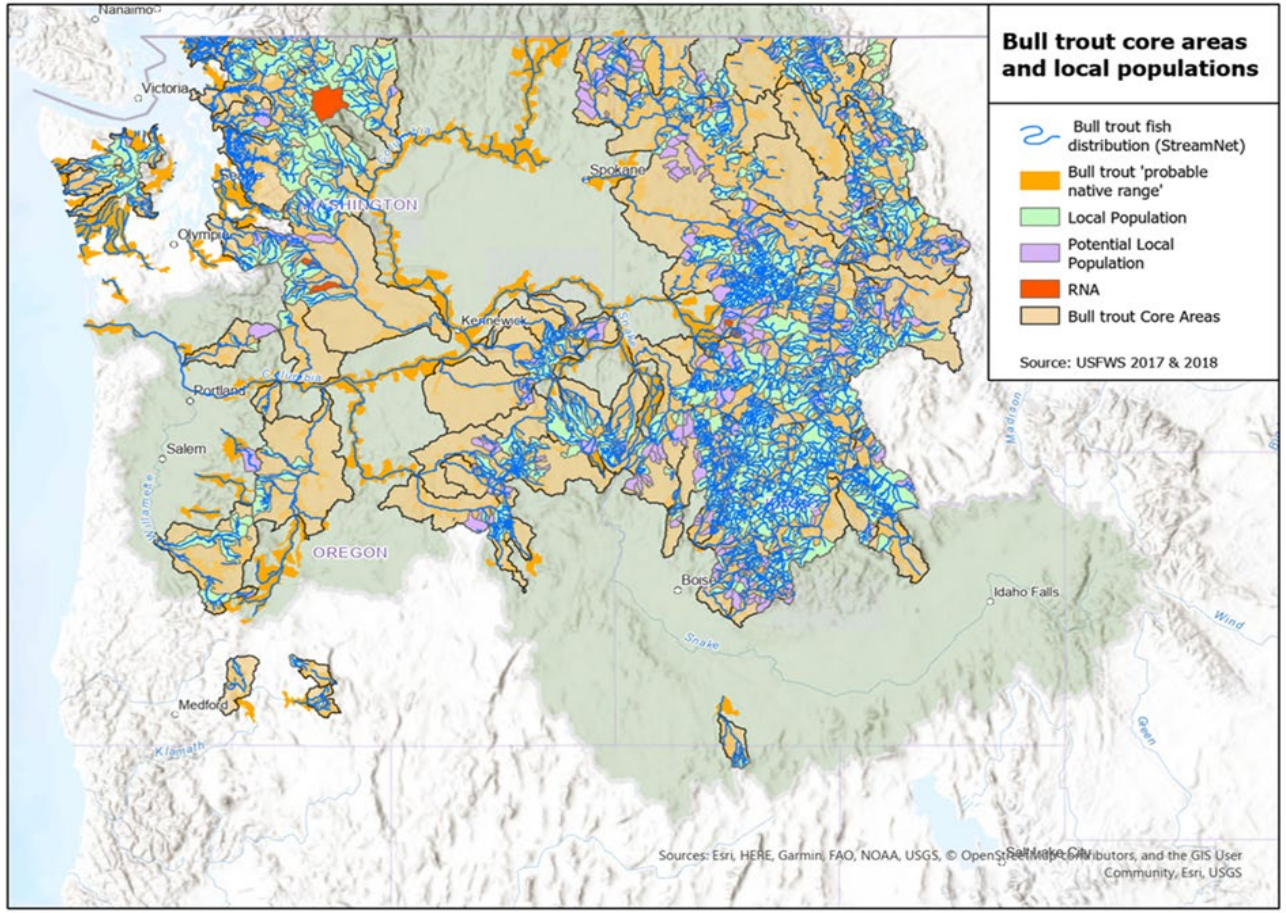


Image from recommendation document: Official Bull trout core areas and local populations (USFWS 2017 & 2018) along with 'probable native range' dataset derived from StreamNet's Generalized Fish Distribution layer.

USGS

PNAMP Tools and Resources Support the Fish & Wildlife Program

Image: Jen Bayer

- Facilitate access to data that is needed for reporting on F&W Program goals, objectives and strategy performance indicators
- Improve access to data by helping partners discover and use appropriate data repositories for domain-specific data and metadata
- Online tools for detailed documentation of projects, supporting metadata for ISRP project reviews

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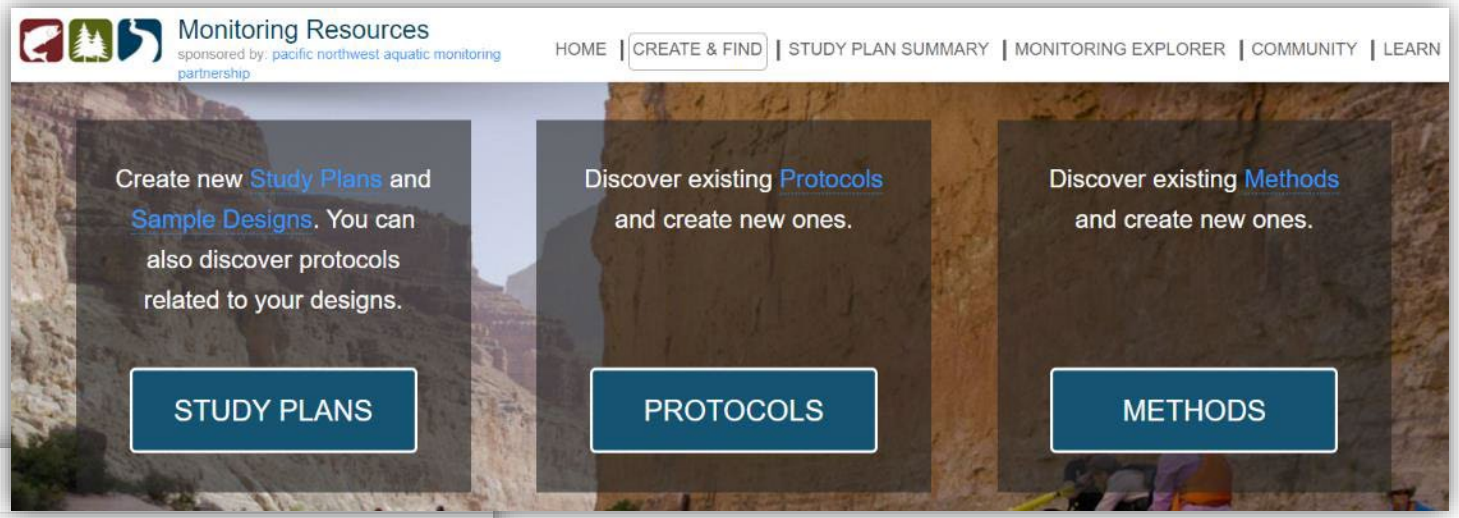
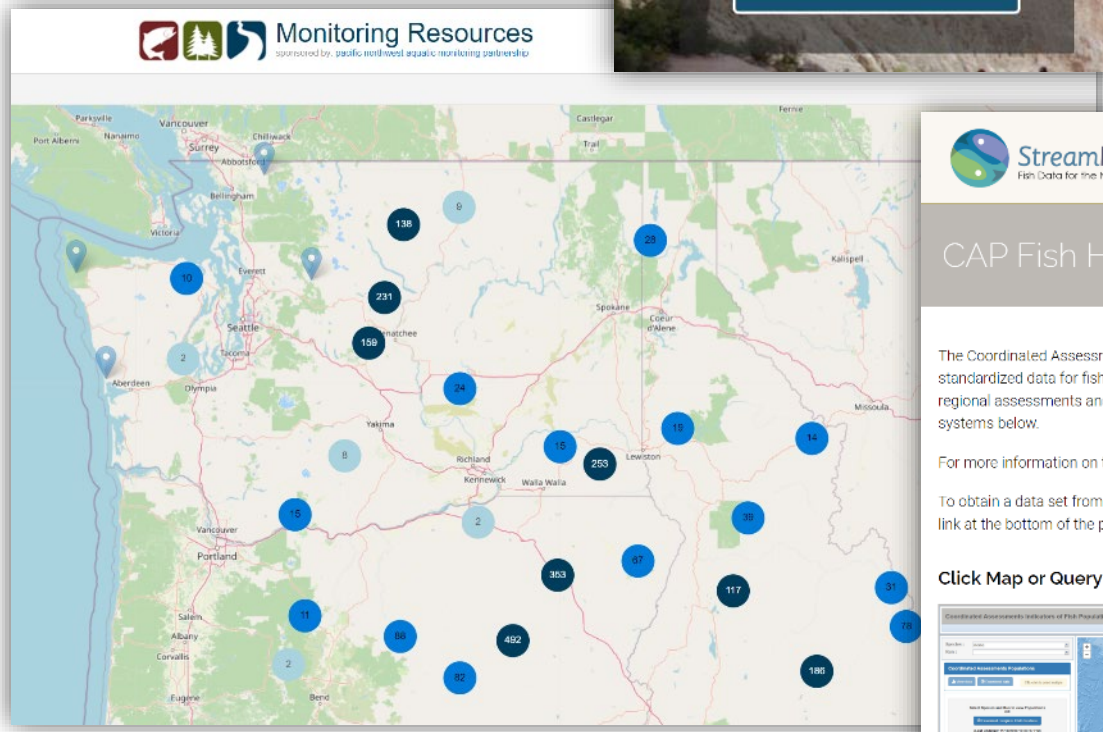
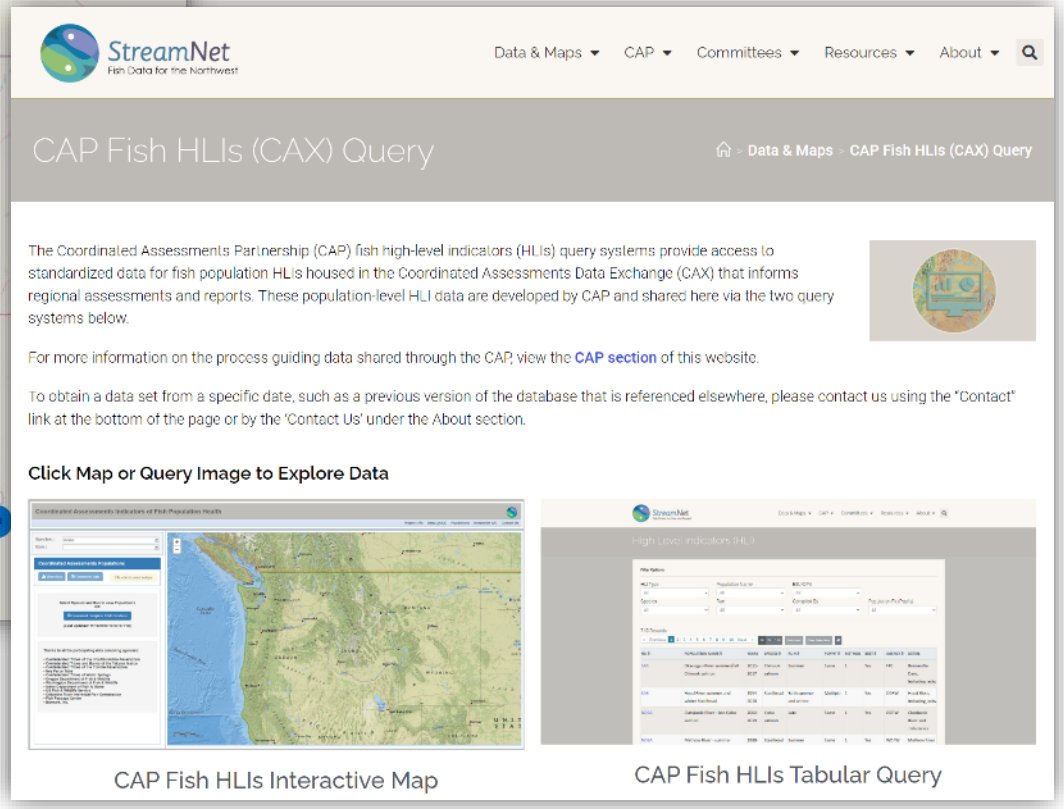
Tools & Resources

- MonitoringResources.org
- StreamNet data access tools







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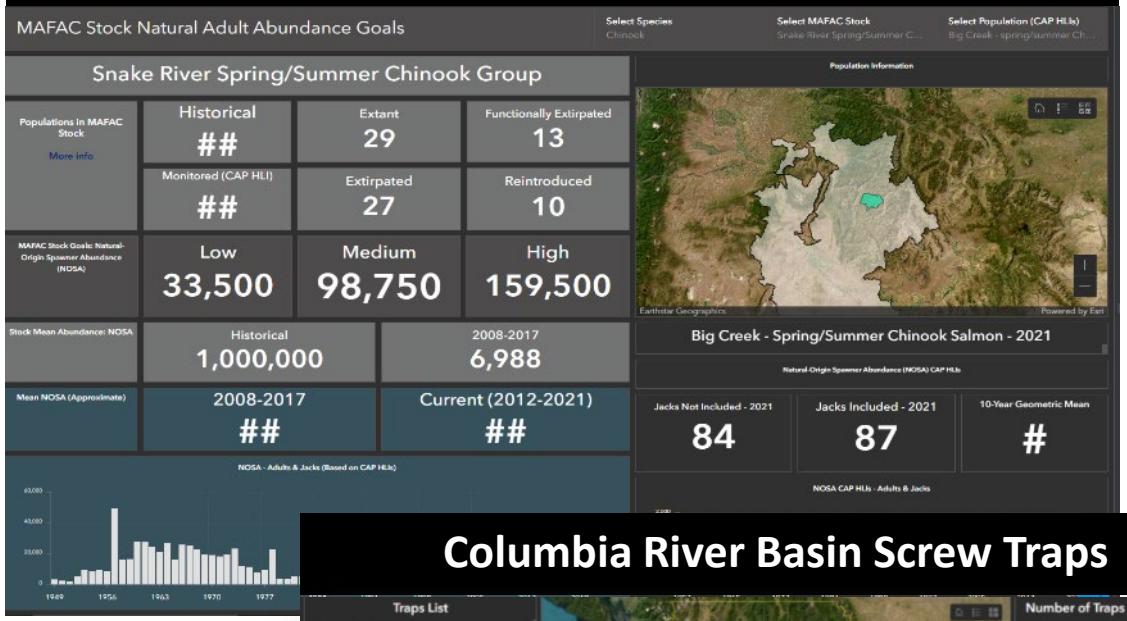
New Products in 2023 and Beyond

2023

MAFAC Stock Natural Abundance Goals and Available CAP Fish HLIs data



Columbia River Basin Screw Traps

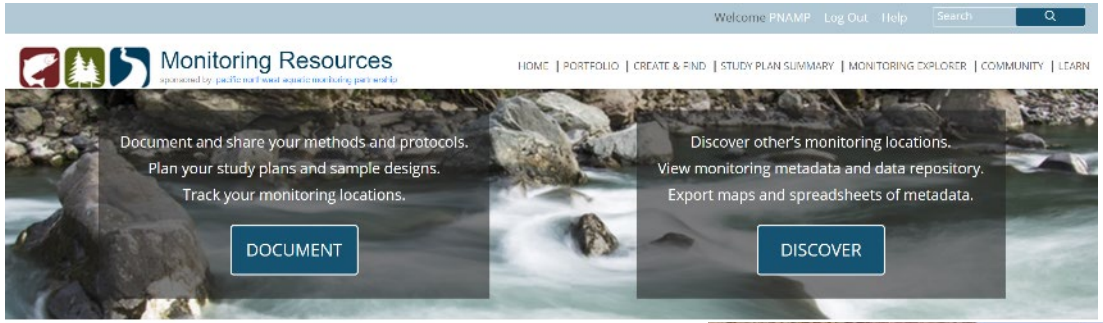
2024

Hatchery CAX

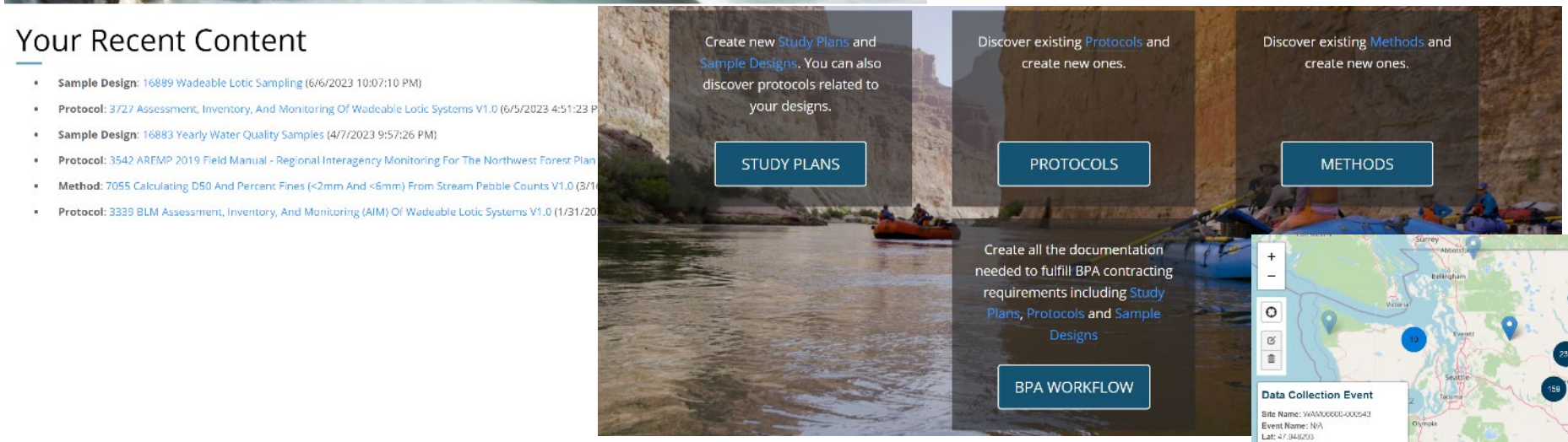
USGS

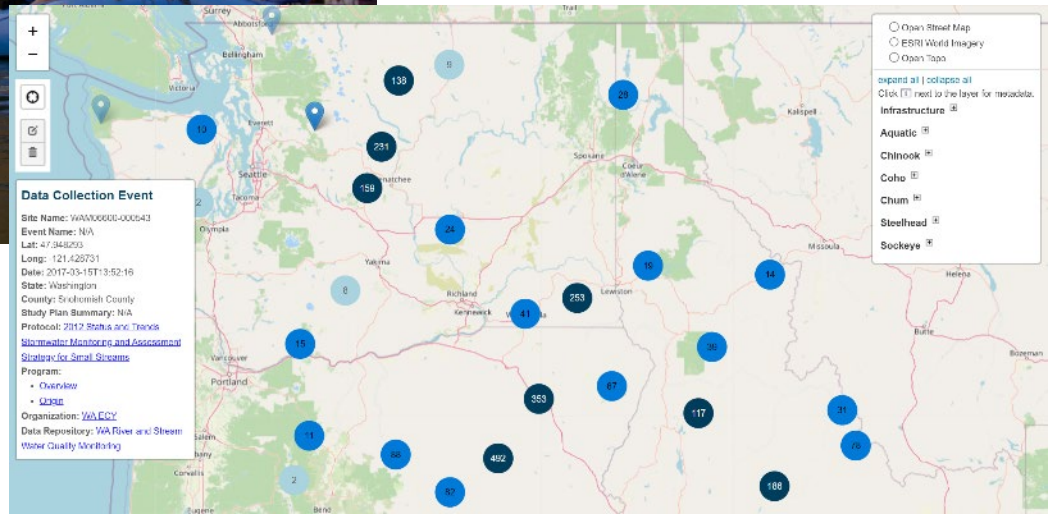
StreamNet
Fish Data for the Pacific Northwest

MonitoringResources.org Supports Fish & Wildlife Program Needs for Data Documentation and Discovery



Streamlined metadata documentation for Project Sponsors and other PNAMP partners





Refining user interface to make it easier for the user to discover data and metadata

USGS

Documenting Procedures in MonitoringResources.org

Study Plan

Study Plan Summary

Study Plan: Rotary Screw Trap Sampling For Wild Chinook Salmon And Steelhead Emigrants In Idaho V2.0

ID: 1766 | State: Finalized | Version: 2.0

Owner: Eric Stark
Owner Email: eric.stark@idfg.idaho.gov

No. of Sample Designs: 5
No. of Methods: 13

Created by: Russell Scranton
Created: 11/4/2020
Updated by: Sam Cimino
Updated: 4/21/2021

- Study Plan Basics
- Protocol
- Sample Designs
- Collection Events
- Area Of Inference
- Quality Control & Reporting
- Personnel & Training
- Schedule & Budget
- External System References

Protocol

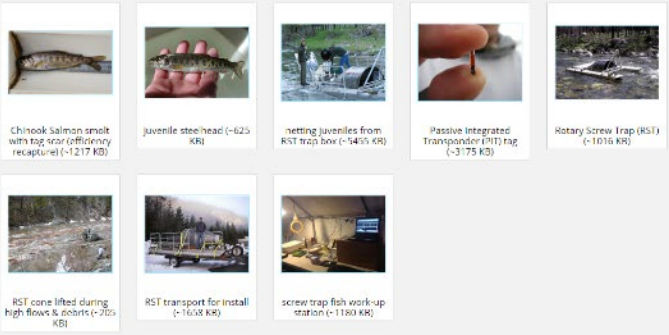
Protocol Title

IDFG ROTARY SCREW TRAPPING for wild Chinook Salmon and steelhead emigrants in the Clearwater and Salmon River basins. v2.0

Citation

Feeken S.F., B. Barnett, F. Feltz, F.J. Stark, M. Davison, J.R. Poole, C. McClure, B.A. Knoth, and M.F. Dobos. 2020. Idaho Anadromous Emigrant Monitoring, 2019 Annual Report. Idaho Department of Fish and Game 20-09:3-9 https://collaboration.idfg.idaho.gov/FisheriesTechnicalReports/Res20-09Feeken2019Idaho%20Anadromous%20Emigrant%20Monitoring%20Report.pdf

Protocol Photos & Protocol Figures



Forms

- RSTs operated by IDFG (NWPCC 2017 Review)
- IDFG process and methods for ageing anadromous salmonids (manual)
- RST Operations Chapter in Salmonid Field Protocols Handbook
- IDFG 2019 Anadromous Emigrant Monitoring Report
- confidence intervals for fish out-migration estimates using stratified trap efficiency methods (Steinhorst et al. 2004)

Protocol Methods (13) Expand All Collapse All

- Rotary Screw Trap Deployment and Operation v1.0 — View full Method
- Trap Efficiency Testing v1.0 — View full Method
- Emigration Trapping (using rotary screw traps) v1.0 — View full Method
- Age at emigration v1.0 — View full Method
- Juvenile Emigration Timing v1.0 — View full Method

Method Title

Juvenile Emigration Timing v1.0

Stepwise Numbered Procedure

Juvenile sampling data should be compiled and organized electronically for the greatest utility, for example, in a spreadsheet, database, or statistical software.

1. Calculate the total number of maiden (unique) emigrants by summing the total by species captured for each day the trap was operating.
2. To determine proportion of passage, a cumulative running total for the season can then be derived by summing the previous daily catch to the current day's catch and continue on for the extent of the data.
3. The sum of the cumulative running total should be equal to the total number of fish recorded to have passed for the monitoring period or season.
4. The daily value for the cumulative running total can then be divided by the season total to produce the cumulative proportion for each day.

- Obtaining scales from juvenile steelhead and Chinook salmon v1.0 — View full Method
- Marking Juvenile Salmonids with Bismark Brown "Y" v1.0 — View full Method
- Scale Processing for Age v1.0 — View full Method
- PIT based Juvenile Mortality Estimates v1.0 — View full Method
- Measuring Fish Length: Fork length v2.0 — View full Method
- Recruits per Spawner (RperS) Calculation v1.0 — View full Method
- Rotary Screw Trap Mark-Recapture Salmonid Outmigration Abundance Estimate v1.0 — View full Method
- Marking, Tagging and Sampling Target Species v1.0 — View full Method

Metrics & Indicators

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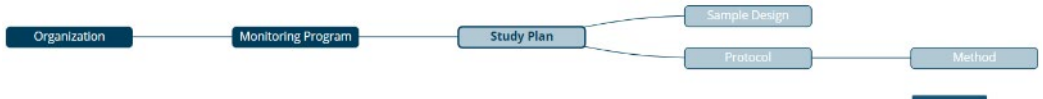
Documenting Collection Events in MonitoringResources.org



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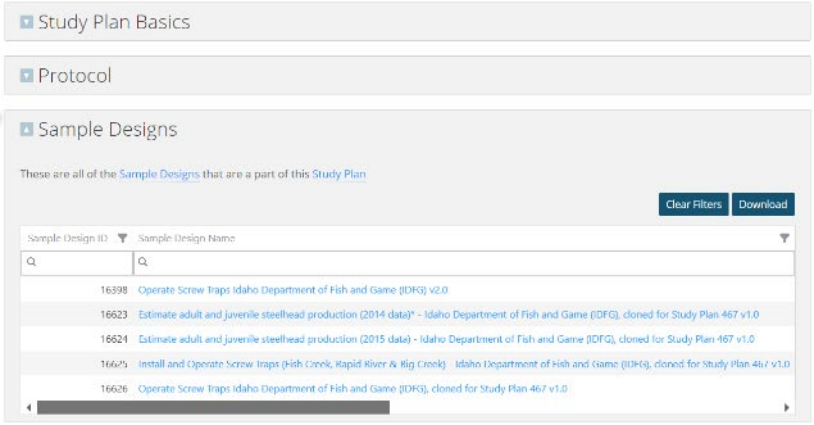

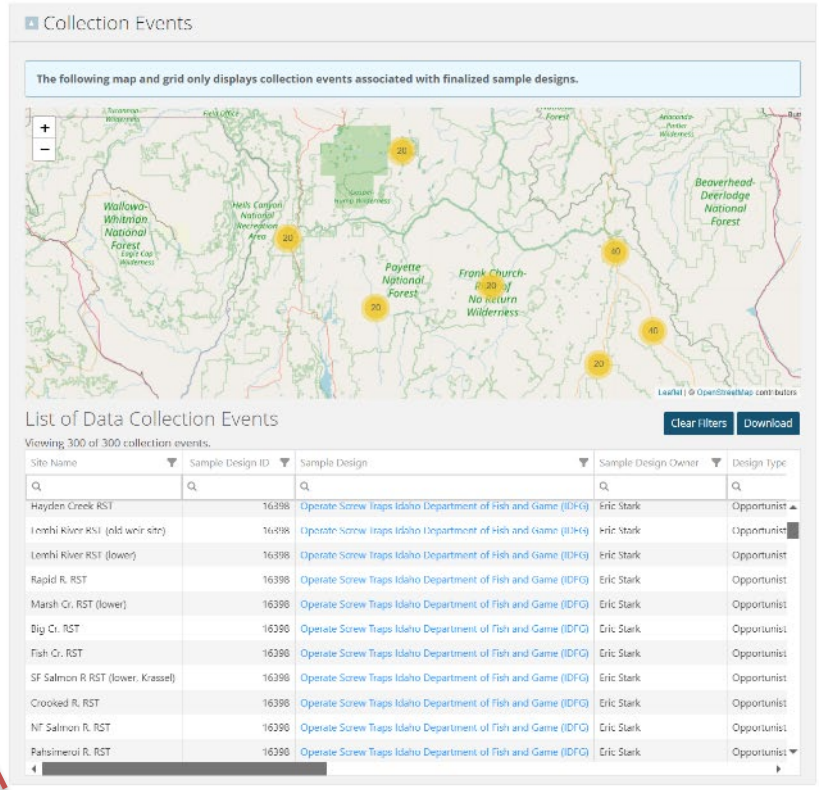

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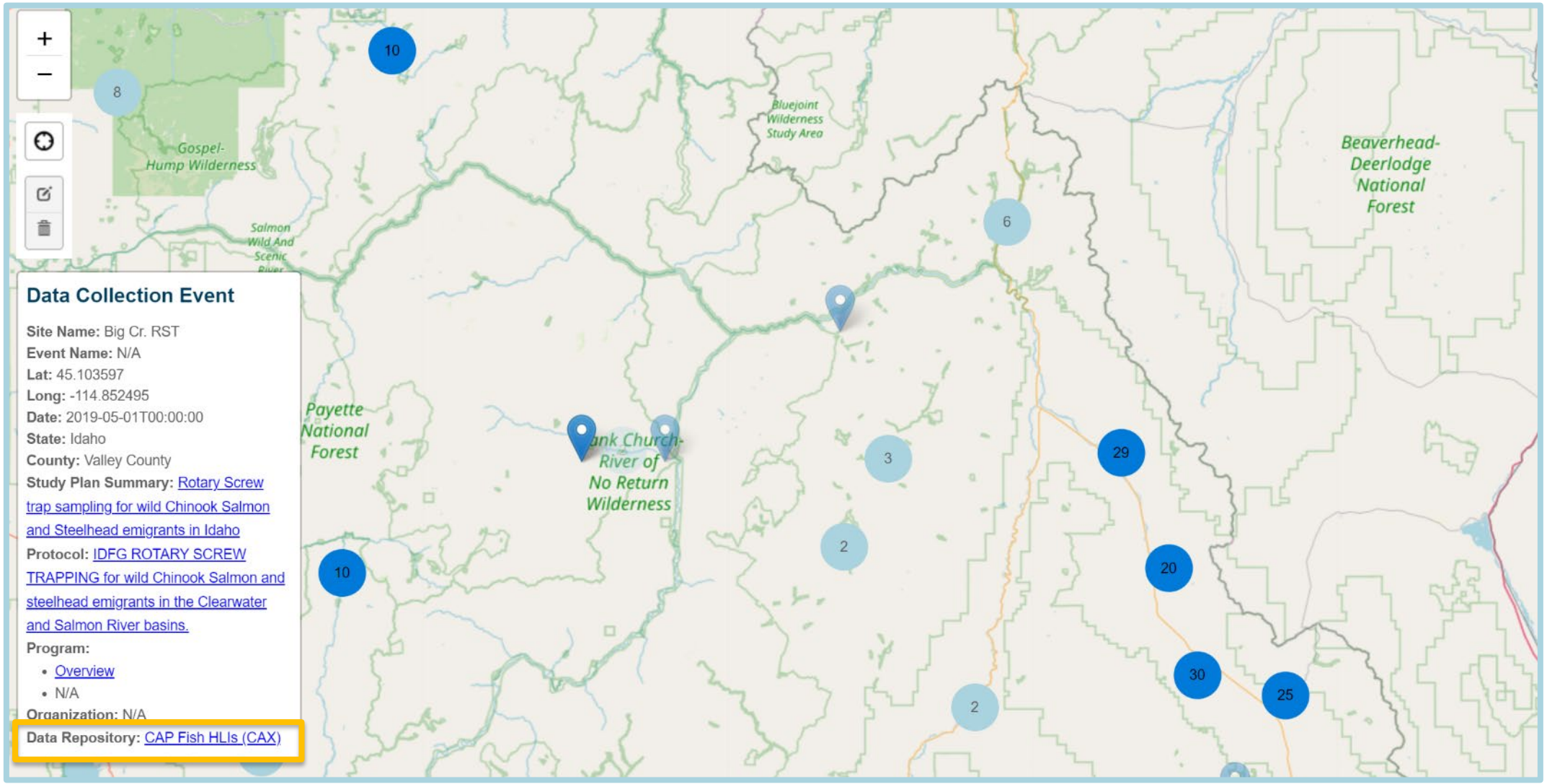
Data and Metadata Discovery



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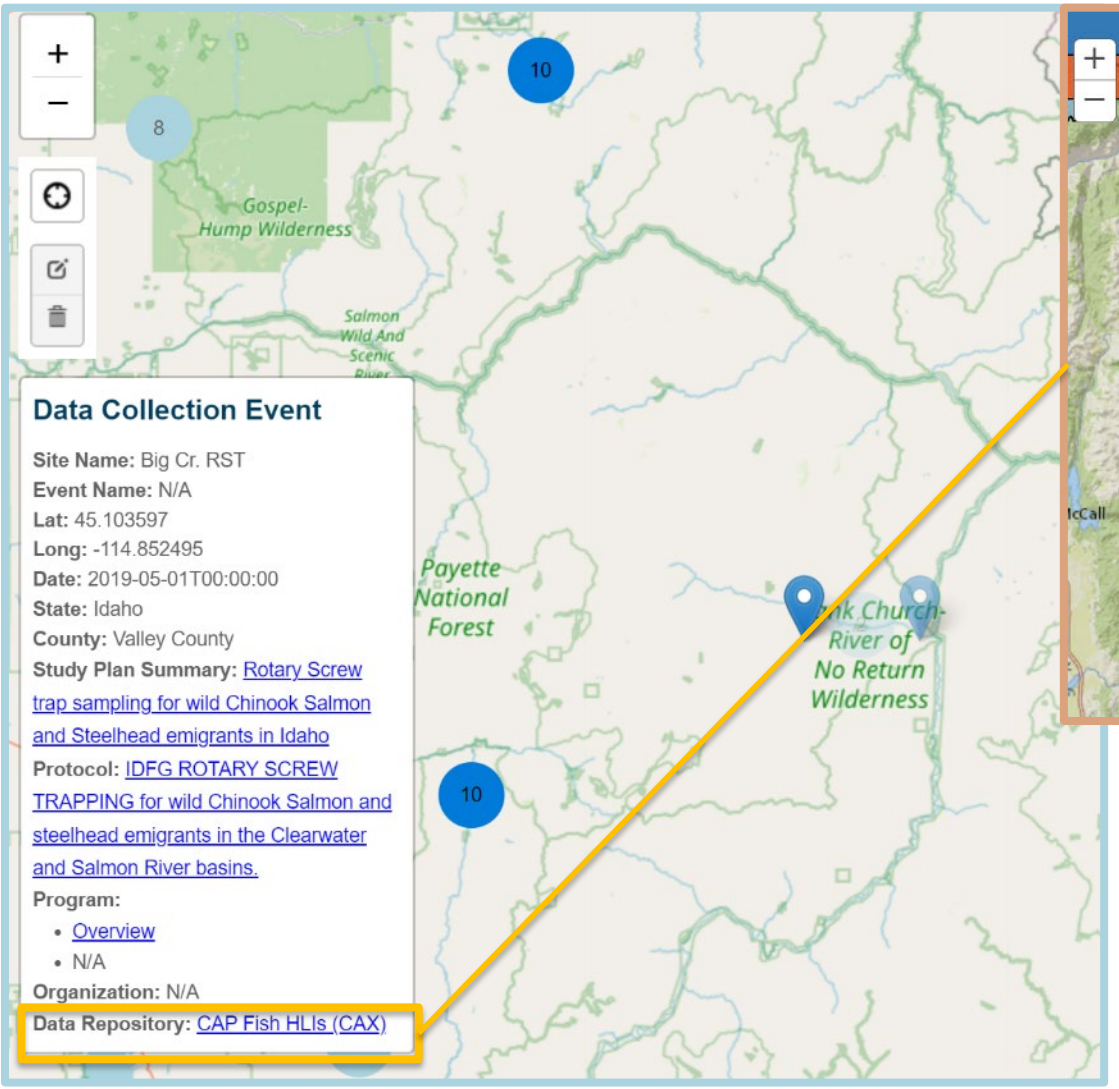
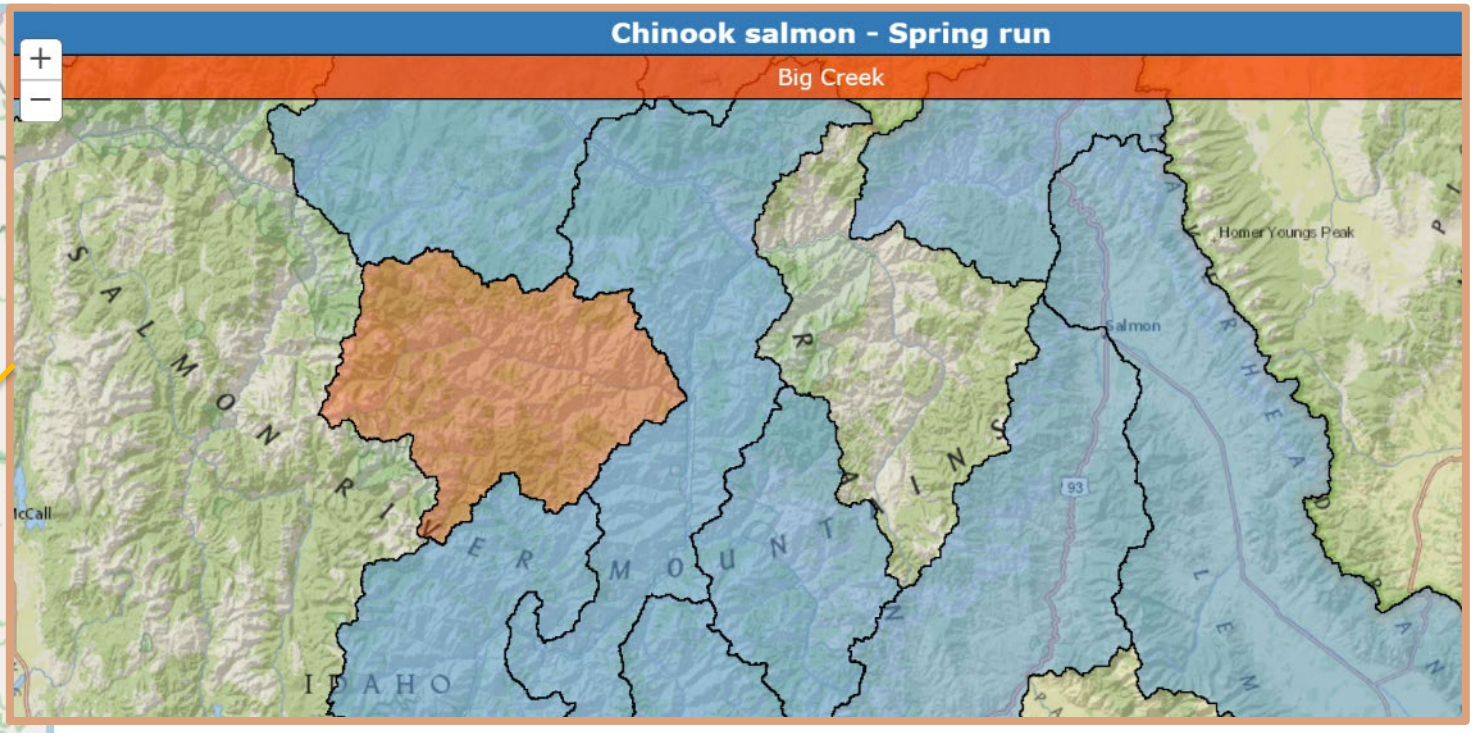
MonitoringExplorer.org

Data and Metadata Discovery





StreamNet – CAP Fish HLIs

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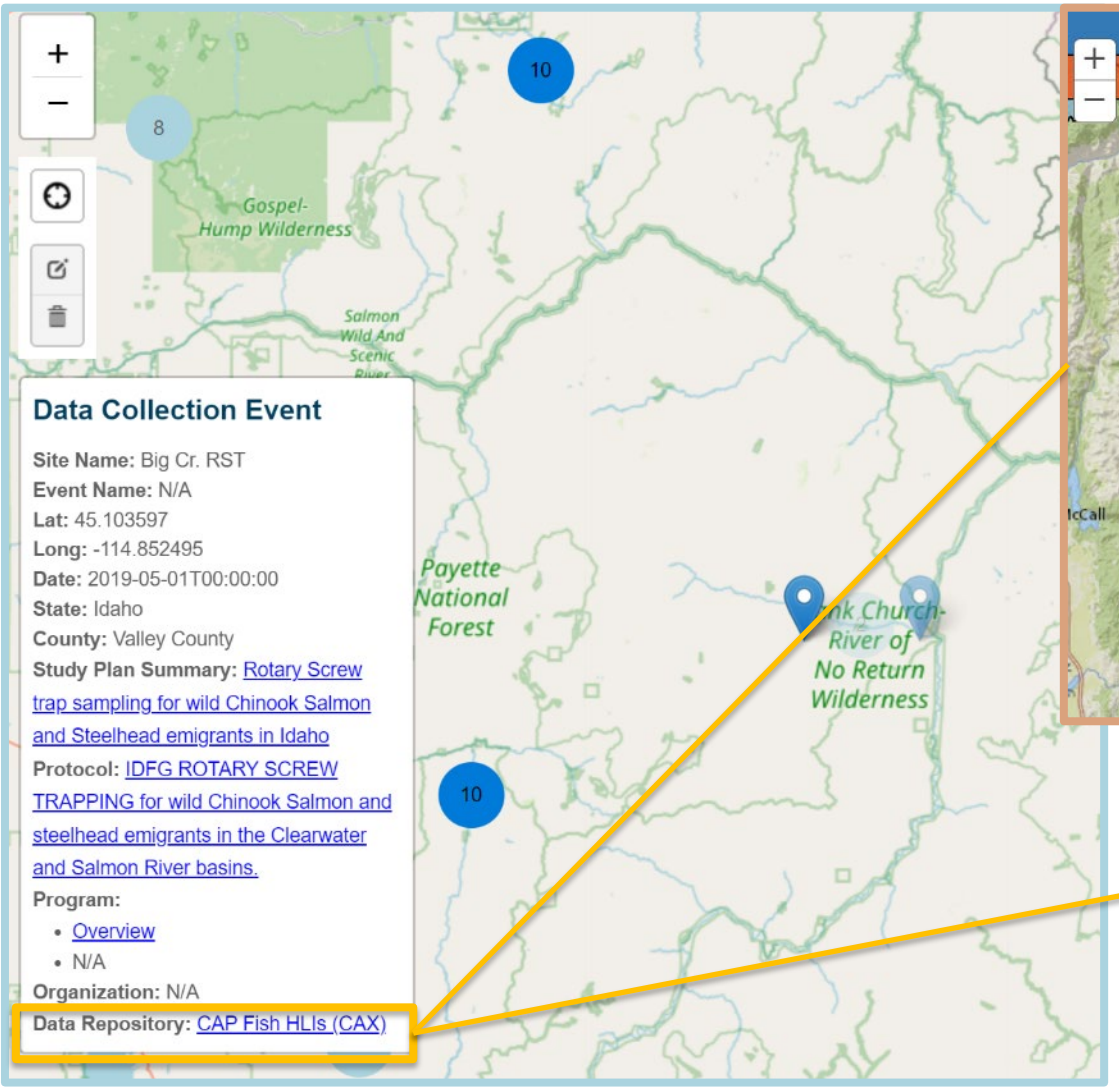
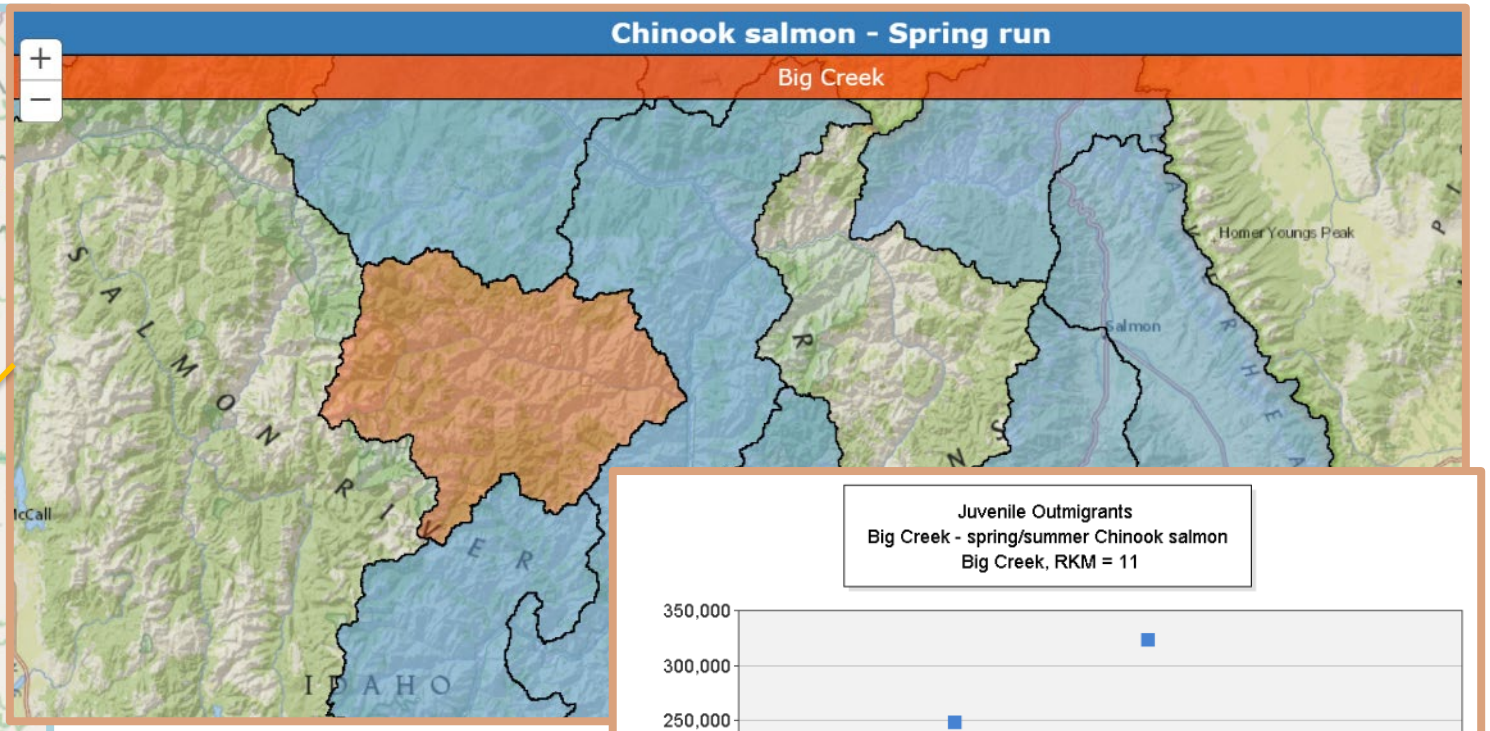
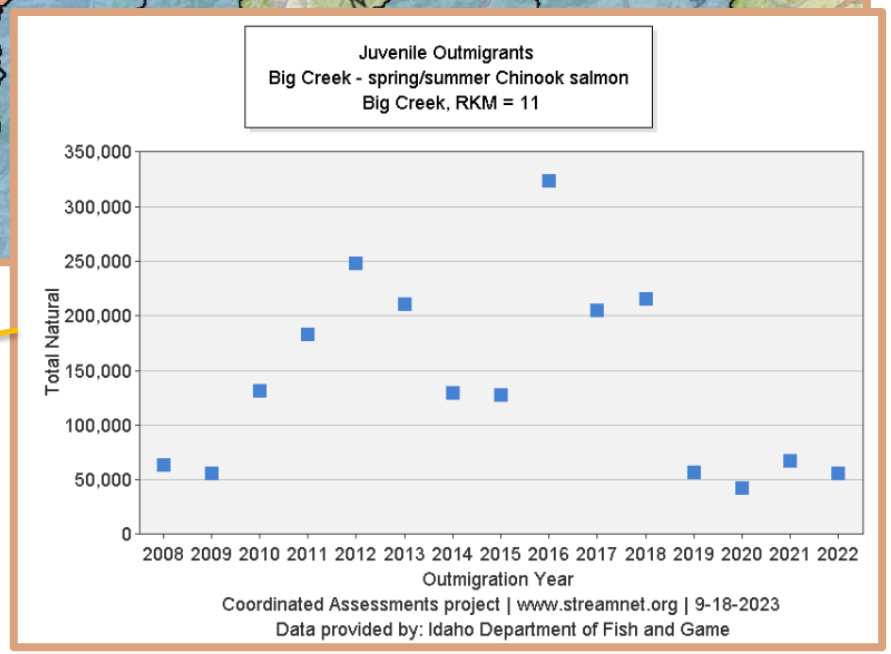
MonitoringExplorer.org

Data and Metadata Discovery







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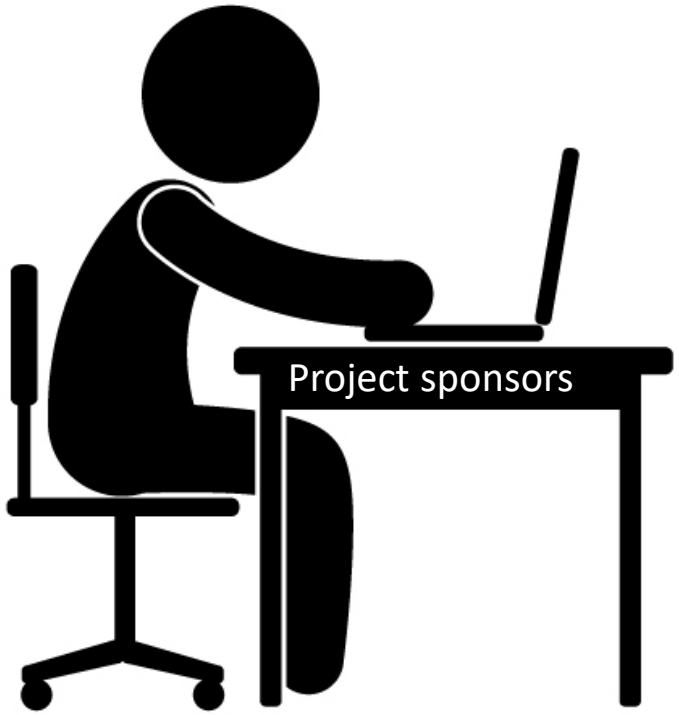
MonitoringExplorer.org

StreamNet – CAP Fish HLIs

Working Together Across Programs

to secure investments, reduce redundancies, and meet FAIR principles



project management

monitoring metadata

datasets, HLIs

reference materials

Pisces Web at CBFish.org

- proposals
- contracts/SOW
- annual reports

BONNEVILLE POWER ADMINISTRATION

MonitoringResources.org

- study plans
- sample designs
- protocols
- methods

pacific northwest aquatic monitoring partnership

StreamNet

- local trends
- CAX
- archived data

StreamNet
Fish Data for the Pacific Northwest

CBF&W Library

- reports
- gray literature
- books
- access to peer journals

COLUMBIA BASIN FISH & WILDLIFE LIBRARY

information exchange

USGS

Adapting to Changes and Planning for Future Needs

Support Open Data by Implementing FAIR and Promoting Awareness of CARE

- Build a culture that values data and promotes responsible use
- Sustain foundations for governing, managing, and protecting data
- Provide access to emerging technologies to enable:
  - Machine-to-machine communication and reproducible workflows for efficient flow of information between projects and data repositories
  - Discovery of published datasets and metadata
  - Easier, more reliable reuse of data

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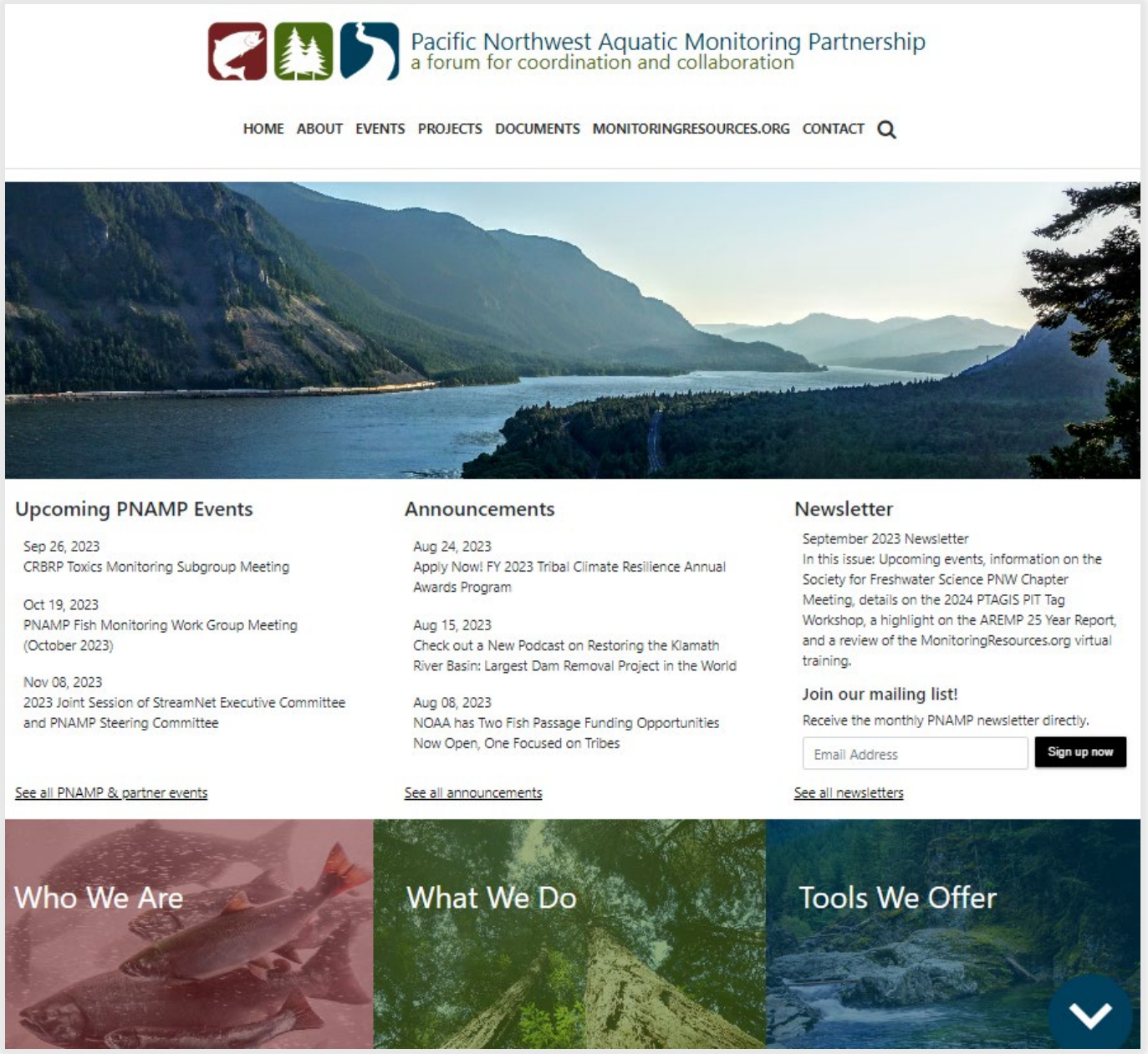
Communications and Outreach

- PNAMP.org website
- Monthly newsletter
- YouTube
- Quarterly status reports
- Annual Reports



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PNAMP Coordination Team

Clockwise from top:
Sam Cimino, Meg Dethloff, Quinnell Flanagan, Amy Puls, and Jen Bayer

Learn more:
www.pnamp.org
www.MonitoringResources.org
[YouTube Channel]
[Newsletter Archive]

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Upcoming Events

Find details at www.PNAMP.org

- PNAMP Steering Committee and StreamNet Executive Committee Joint Meeting Nov 8-9, 2023
- Fish Monitoring Work Group: Oct 19, Jan 18, Apr 18
- Remote Sensing Forum: October, January, April, July
- Toxics Monitoring Subgroup Workshop: Dec 5 (hybrid; Portland)
- PIT Array and Related PIT Tag Analyses short session at PTAGIS Workshop: Jan 30–Feb 1 (Stevenson, WA; in person only)
- HCAX Workshop: March or April
- IMW Lessons Learned for Restoration Design at RRNW, Feb 6-10 (Stevenson, WA; in person only)
- Fish Monitoring Symposium at WA/BC/ID AFS Joint Chapters Annual Meeting: Apr 29–May 2 (Spokane, WA)
- IMW Workshop 2024 TBD
- Toxics Monitoring Subgroup: March, June, September

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