MEMORANDUM

TO: Fish and Wildlife Committee

FROM: Kris Homel

SUBJECT: Update on StreamNet Program: supporting the Fish and Wildlife Program’s information needs since 1988

BACKGROUND:

Presenter: Dr. Nancy Leonard, Program Manager for StreamNet through the Pacific States Marine Fisheries Commission, 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 StreamNet, a project of the Pacific States Marine Fisheries Commission. The presentation will include information on how StreamNet 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 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 three projects so far: the Columbia Basin Fish and Wildlife Library, the Inter-tribal Monitoring Data project, and Data Access in Real Time. In
August, the committee will hear from the fourth project- StreamNet, which is administered by Pacific States Marine Fisheries Commission under Project # 1988-108-04.

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 StreamNet will provide answers to questions 1-7.

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.streamnet.org/
StreamNet Program
Supporting the Fish & Wildlife Program’s Information Needs Since 1988

BPA Project # 1988-108-04
Today’s Topics

• What is StreamNet
• Resources and data
• Supporting the Council’s F&W Program
• Relationships with other data projects
• Adapting to changes and future needs
• Preview: new in 2023 and beyond
A cooperative data management and dissemination project

Focused on fisheries and aquatic data and data-related services for the Pacific Northwest, with a Columbia River Basin emphasis
StreamNet Committee Members

States

Tribes & Tribal Consortium

Government

Interstate Compacts
StreamNet’s Structure for Success

Policy-level guidance and decision-making  
*(added per 2012/2013 NPCC recommendation)*

Implementation support and guidance

- **Technical aspects of data exchange**
  - StreamNet Technical Team

- **Standards for data sharing time series and public query**
  - StreamNet DES Development Team

- **Standards for data sharing CAP Fish HLIs and public queries**
  - CAP DES Development Team

- **Coordination and facilitation (proposals, workshops, newsletters)**
  - CAP Core Team

*Teams include representation from non-StreamNet member organizations*
StreamNet is Dynamic
Evolving with the Region and the Fish and Wildlife Program

Genesis of StreamNet

1980-1984
NED: HAS & PNRS ('83-'95)

1988
CIS ('88-'95)

1992
StreamNet (desktop; '95-'98)

1996
StreamNet (Internet; '98-present)

2000
Enhanced Data Query & Coordinated Assessment (CA) Project initiated (coordinated by PNAMP & StreamNet)

2004
Critical Habitat Mapper (NOAA-F funded)

2005
Data Store archives any datasets

2006
Posted Subbasin Planning Data CRITFC consolidated data to be archived

2010
CA eXchange (CAX) 1st Data Exchange Standard (DES) adopted to display on the Fish HLI (CAX Query webtool)

2012
Integrated Query System Tabular and map query options

2013
HCAX Development of hatchery indicators and DES to display on the Fish HLI query webtool

2021-2023

Interactive Mapper to view/query data Is a custom ARCIMS application
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Resources and Data

Assist partners with building sharing capacity to exchange with StreamNet

StreamNet Supports Data Management and Sharing Capacity

Infrastructure at PSMFC, agencies and tribes
Assisting with personnel, hardware, software, and data systems
Resources and Data

Content and Access

Responding to Regional Data Priorities

StreamNet helps partners adapt to changing data management and data-sharing priorities as directed by Tribal, state, and federal fish and wildlife managers, National Oceanic and Atmospheric Administration—Fisheries, Bonneville Power Administration, and Northwest Power and Conservation Council.

StreamNet is a cooperative information management and data dissemination project focused on fisheries and aquatic data and data-related services in the Pacific Northwest, with a focus on the Columbia River Basin.

Data & Maps  CAP  Committees  Resources

News

www.streamnet.org
Resources and Data

Content and Access

Data & Maps

- CAP Fish HLIs Query
  High-level indicators shared through the Coordinated Assessments Partnership

- Fish Monitoring Data Query
  StreamNet "trends" of resident and anadromous fish time series data

- Data Store
  Datasets available for download that don’t fit our standardized systems

- StreamNet Mapper
  Resident and anadromous fish distributions and data collection locations

- Interactive Dashboards
  Topic-specific tools combining content from multiple sources, such as screw traps usage and regional goals

- Fish Facilities Mapper
  Monitoring locations, including dams, weirs, rotary screw traps, PIT-tag detectors, and hatcheries

- GIS Data Sets
  Fish distributions, facilities, physical features, hydrography, habitat layers, and more

- Protected Areas
  River reaches protected from new hydroelectric development

- HSRG - Hatchery Reform
  Hatchery Scientific Review Group’s documents and tools used to review hatchery programs

- HEP
  Habitat Evaluation Procedures used to assess hydrosystem effects on wildlife habitat

- Subbasin Plans & Data
  Supporting information for the Northwest Power and Conservation Council’s 2001-2004 subbasin plans

- Columbia Habitat Monitoring Program
  Documents and data files produced by the pilot CHaMP project during 2011-2017
## Resources and Data

### Data Content in Actively Updated Data Systems

**FISH MONITORING DATA**

- **13,055** time series data sets (1894 - current)
- **61** anadromous and resident fish species
- **9** data categories (fish counts, harvest, hatchery returns)
- **10** data providing organizations (tribes, states, federal)

**DATA STORE**

- **187** data sets
- **119** data sets annually updated
- **42** BPA projects
- **23** data providers organizations

**CAP FISH HLIs**

- **15,802** high-level indicator (HLI) records (1938 - current)
- **250** salmon and steelhead populations*
- **6** HLI categories
- **238** populations* with natural origin, spawner, abundance HLI
- **79** populations* with juvenile outmigrant HLI
- **11** data providing organizations
Resources and Data

Accessed by Agencies, Tribes, Public others
(2022 usage example)

STREAMNET GIS & QUERIES

533K
REQUESTS MADE TO THE API

4,524
STREAMNET & FISH FACILITIES MAPPERS (UNIQUE VIEWS)

399
GIS DOWN LOADS

10k
WEBSITE VISITORS (UNIQUE)
Resources and Data

*New*: NOAA staff using CAP Fish HLI webservice to automate review analysis

StreamNet Informs Fish Assessments, Recovery, and Mitigation

Sharing and access to standardized indicators informing:
- NOAA status reviews and BiOps
- NPCC Program Tracker
- BPA Decision Tools, BA and EIS reports
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• Adapting to changes and future needs
• Preview: new in 2023 and beyond
StreamNet follows these principles:

- Public accessibility, search-ability, and usability of data in consistent formats to all interested parties.
- Program reporting relies on data sharing systems that provide access to data from federal and state agencies and tribes, and other entities.
- Coordinated data management systems guided by program evaluation and reporting needs.
Support the Council’s F&W Program

2020 Addendum
Part 1: Strategy Performance Indicators (SPI)
Part 2 B. Assessing, Monitoring, and Reporting

StreamNet currently provides:

• Data for Strategy Performance Indicators
• Public access through centralized databases
• Data for reporting program goals, objectives, strategy performance indicators, and other
• Collaborative development and use of standards to improve access to data
• Maintenance of historical and current program data in a structured manner that facilitates public access.
Support the Council’s F&W Program

Resources and Data

Archiving Program foundational resources and programmatic data
Support the Council’s F&W Program

Resources and Data

Archiving Program foundational resources and programmatic data

Secure public repository for BPA, or others, project data

Annually updated by partners
Natural Origin Salmon Abundance Estimates
“NOSA” informs region and Program’s SPI
Support the Council’s F&W Program
Program Strategy Performance Indicators & Program Tracker

Data Currently Accessed via StreamNet
- Wild fish
- Resident fish
Support the Council’s F&W Program
Program’s Topic-Specific Storymaps

StreamNet Hatchery CAX data available in 2024
- Hatchery fish data standards
- Salmon, steelhead, and others
- Number of fish released annually

Exploring future SPI data in 2024 and beyond
- White sturgeon
- Non-native and invasive species
- Predator management
- Pacific lamprey
- Eulachon
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Relationship to Other Projects
Data Partners and Participants of Teams (includes committee member organizations)

States
- Idaho Fish & Game
- Montana Fish & Wildlife Parks
- Washington Department of Fish & Wildlife
- Oregon Fish & Wildlife

Tribes
- Confederated Tribes of the Umatilla Reservation
- Nez Perce Tribe
- Yakama Nation Fisheries

Federal
- NOAA
- US Fish & Wildlife Service
- Bonneville Power Administration
- US Geological Survey

Interstate Compacts
- Pacific States Marine Fisheries Commission
- Northwest Power and Conservation Council

StreamNet
www.streamnet.org
Relationship to Other Projects
Projects Contributing Expertise for Data, Metadata, and Facilitation

More than 170 BPA projects identify StreamNet data systems as a repository for accessing their data

(source PNAMP’s MonitoringResources.org)
Relationship to Other Projects
Connecting Human & Data Through a Shared Forum

Uniting Experts to Inform CAP and StreamNet Products

Standardized Vocabulary and Data Fields
• Juvenile Density (Snorkel & Electrofishing)
• Rotary Screw Trap Data Collection

Standardized Approach for Map Queries
• Fish Management Units Boundaries

From Stream to Screen—Monitoring and Data Management Technology
• Learn about the latest technologies in aquatic monitoring for data collection, data management, and data visualization.
• Network with other monitoring professionals implementing technologies in new ways.
• Next event in 2025
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Adapting to changes and future needs
Connect to Leverage Existing Content and Expertise

**Working Together**
to secure investments, reduce redundancies, and meet FAIR principles

- **Pisces Web at CBFish.org**
  - Proposals
  - Contracts/SOW
  - Annual reports

- **MonitoringResources.org**
  - Study plans
  - Sample designs
  - Protocols
  - Methods

- **StreamNet**
  - Local trends
  - CAX
  - Archived data

- **CBF&W Library**
  - Reports
  - Gray literature
  - Books
  - Access to journals

**Project management**
**Monitoring metadata**
**Datasets, HLIs**
**Reference materials**

**Information exchange**
Adapting to changes and future needs
Update Technology and Approach for Efficient Access and Maintenance
Adapting to changes and future needs

Support Open Data by Implementing FAIR and Awareness of CARE Principles
Today’s Topics

• What is StreamNet
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New in 2023 and Beyond

2023

MAFAC Stock Natural Abundance Goals and Available CAP Fish HLIs data

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Columbia River Basin Screw Traps

- **Traps List**
- **Entities Funding Traps**
- **Number of Traps Collecting Species**

- **Traps**
- **Species/Runs Monitored**

2024

Hatchery CAX

SALMON DATA DISCOVERY

- SALTWATER
- TRANSITIONAL
- FRESHWATER

StreamNet
Acknowledgement
Numerous biologists, data managers, data stewards, data consumers, and developers

- Participants of StreamNet committees and teams
- CAP teams and workshop participants
- PNAMP Fish Monitoring Work Group participants and leads
- CRITFC Library
- CRITFC ITMD project
- States, Tribes, and Federal agencies

Funding
Primary Funder
- Bonneville Power Administration

Other Funding Sources
- PSMFC IJFA
- EPA Exchange Network
- NOAA

In-Kind
States, Tribes, and Federal agencies
Contact StreamNet Program PSMFC Team
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