StreamNet

Northwest Aquatic Information Network

**Annual Report
2003 - 2004**

This Document should be cited as follows:

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Portland, OR 97208

StreamNet Project

BPA Project Number 198810804

2004 Annual Report

October 1, 2003 through September 30, 2004

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January 15, 2005

StreamNet Project

BPA Project Number 198810804
(www.streamnet.org)

Fiscal Year 2004
Annual Report

This report summarizes StreamNet Project activities during fiscal year 2004 (FY-04). Detailed descriptions of accomplishments by individual objective and task are provided in the Project's quarterly progress reports, available on the reports and publications page of the StreamNet web site at www.streamnet.org/about-sn/project_management.html.

What is StreamNet?

StreamNet is a cooperative data compilation, development, and distribution project involving the state, tribal and federal fish and wildlife agencies in the Columbia River basin. It is funded by the Bonneville Power Administration (BPA) through the Fish and Wildlife Program (FWP) of the Northwest Power and Conservation Council (NPCC), and is administered by the Pacific States Marine Fisheries Commission (PSMFC). The project is organized to perform three broad functions:

Agency support: The project supports staff in the Idaho, Montana, Oregon and Washington state fish and wildlife agencies; the Columbia River Inter Tribal Fish Commission (CRITFC); and the U.S. Fish and Wildlife Service (USFWS) who locate, obtain, quality check and format specific types of fish related data. They convert these data into a standard data exchange format (DEF) and submit them, with references, to the regional StreamNet office.

Regional Support: The regional component of StreamNet at PSMFC administers the project, coordinates with the FWP and other regional entities, and disseminates data regionally. As data are received from cooperators they are again quality checked then imported into the StreamNet database. Access to the data is provided on-line via a tabular data query system and interactive map applications at www.streamnet.org. The web site also provides access to independent data sets from other projects, pre-sorted data sets useful for specific purposes (such as for a recent pesticide spraying ruling or subbasin assessments), and general fish information for education purposes.

Reference Support: The StreamNet Library, located at CRITFC, maintains access to all reference documents supporting the data in the StreamNet database, and provides full library services for patrons interested in fish and wildlife in the Pacific Northwest. The StreamNet Library also maintains probably the largest collection of agency gray literature related to fish and wildlife resources in the basin. The library participates in the Inter Library Loan program, and can exchange literature worldwide.

What Data Are in StreamNet?

Currently available data types include:
- Fish distribution
- 1:100,000 scale (100K) routed hydrography (GIS streams layer)
- Adult abundance in the wild (redd counts, peak spawner counts, dam counts, etc.)
- Hatchery releases (currently being revised)
- Hatchery returns
- Dams and fish passage facilities
- Hatchery facilities
- Harvest
- NPCC Protected Areas
- Smolt density model data
- Independent data sets
- Genetics (primarily for trout in Montana)

The project is also working on other data that could be provided regionally if support is obtained, including: habitat restoration / improvement projects, barriers and screened diversions, juvenile abundance and outmigration, age, production factors and run reconstruction, and habitat.

The StreamNet Cooperators

PSMFC administers the StreamNet project, manages the regional database and maintains the regional data delivery system. Six subcontracting agencies perform the project's data development and library functions, provide data services within their agencies and disseminate additional data.

The StreamNet project within CRITFC administers the StreamNet Library and data support programs. It is active in supporting improved data management throughout the basin and especially for subbasin planning in Oregon.

Four state StreamNet sub-projects (ID, MT, OR and WA) are organized within the Idaho Department of Fish and Game, Montana Fish, Wildlife and Parks, Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife. These projects serve as primary conduits of data from the field agencies to the regional StreamNet database and also provide data and data related services within their agencies.

The U.S. Fish and Wildlife Service StreamNet project (FWS) focuses on data generated by the National Fish Hatchery system. It is part of the hatchery data management program within the USFWS.

The cooperating agencies provided additional support to the StreamNet Project through a number of in-kind and direct contributions, including staff salary support, data provided by agency field staff, computers and computer services, travel and office space. The specific contributions vary by agency.

Who Uses StreamNet?

Top users of StreamNet's on-line data query system in FY-04 included federal and state agencies, universities, and private users (Table 1). A total of 955,769 page views were recorded, an increase of more than 5% from 2003, although the number of visits declined (Fig. 1).

Table 1. Most frequent users of the StreamNet web site, in descending order. Includes identifiable IP addresses[1] only; does not include regional StreamNet staff or web robots.

User categories/agencies	Pages	User categories/agencies	Pages
1. Private Internet service providers [2]	24,024	8. U.S. Army	3,493
2. Oregon State University [3]	23,998	9. Bonneville Power Administration	3,118
3. NOAA	21,729	10. Oregon Dept. of Transportation	3,006
4. Oregon Dept. of Fish and Wildlife	11,696	11. California Dept. Fish and Game	2,955
5. Bureau of Land Management	6,631	12. U.S. Fish and Wildlife Service	1,978
6. Private consultants [4]	4,940	13. Oregon Dept. of Env. Quality	1,741
7. U.S. Department of Agriculture	4,856	14. University of Washington	1,343

[1] There were 24,268 page views where the user's IP address could not be derived.
[2] Internet service providers, combined. Represents working from home, remote offices, NGOs, general public, etc.
[3] Includes ODFW Research Lab, Corvallis, and some OWEB staff members
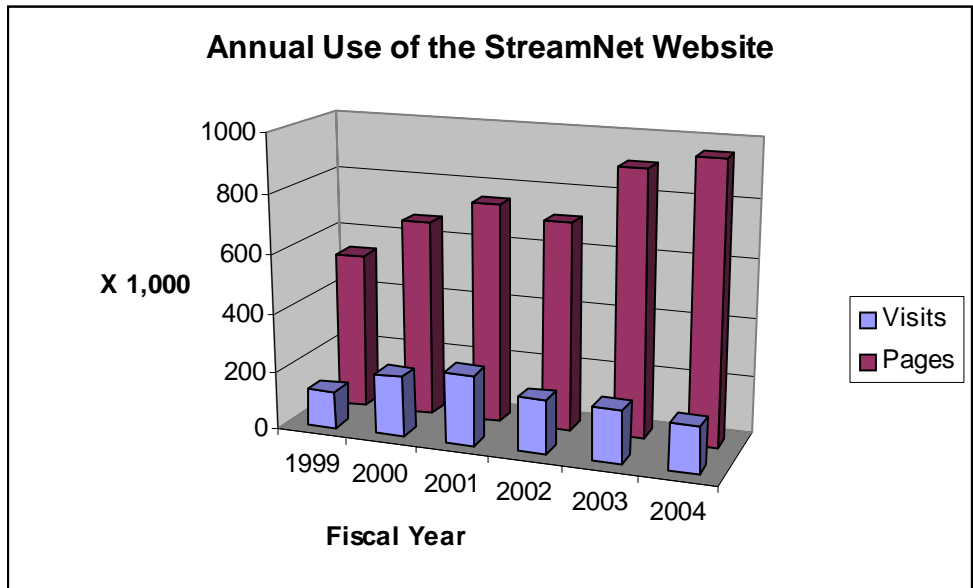[4] Includes multiple consultants, combined

Figure 1. Annual use of the StreamNet website.

Data Development

In FY-04 StreamNet's cooperating projects obtained, quality checked and updated data for all routine data categories. These included fish distribution, adult abundance (including redd counts, dam counts, spawner counts), hatchery returns, facilities, harvest, 100K hydrography,

etc. More specific information on data updates is contained in the quarterly performance reports, available at www.streamnet.org/about-sn/project_management.html.

The number of data updates varied by cooperator. PSMFC loaded a total of 14,165 records into a subset of key data categories during the fiscal year (Table 2). Several additional data categories (hatchery and dam facilities, barriers, fishbarriers, hatchery releases, restoration data, etc.) were also updated, but the update tracking field has not yet been added to those tables

Table 2. Summary of data record additions/updates made to several key data categories.

Data Category	Records
Age Data	631
Dam/Weir Counts	427
Estimated Spawning Population	258
Freshwater Landings	234
Hatchery Returns	10,110
Peak Spawning Counts	876
Redd Counts	1,629

Additional Highlights for FY-04:
- **Fish Distribution:** All state projects played large roles in review of bull trout status and distribution in cooperation with the USFWS. Work included conducting workshops, tool development, database design, and data management and analysis. MT conducted a significant update to the fisheries data in the lower Clark Fork as a result of a Habitat Problem Assessment funded by AVISTA Utilities. OR continued development of data at the 100K and 24K scales for coho, chum, spring Chinook, steelhead, and rainbow/redband trout and developed information for lamprey and whitefish from observation records above existing distribution.
- **Hatchery Returns:** FWS developed programs to move data from the USFWS CRiS format into the new hatchery returns, hatchery disposition and age DEF. OR submitted updated hatchery return data in the new 2003 format through 2002 and partially through 2003.
- **Hatchery Releases:** OR submitted a sample data set of individual releases, a significant step toward obtaining data on individual releases before being pooled into PSC release records. OR spatial location codes were linked to all but 700 of the 9,000+ release sites.
- **Dams and Fish Passage Facilities:** A new version of the Oregon dams GIS dataset was submitted, including approximately 60 off-channel dams and 100+ new fish passage records.
- **Hydrography:** All states and PSMFC worked on updates to the 100K scale streams layer. OR and WA developed a test hybrid 100K/24K scale streams layer with associated fisheries data as an intermediary step toward migrating to a future 24K streams layer, and WA wrote a report documenting this work.
- **Barriers:** MT developed a major update to StreamNet's barrier database from the westslope cutthroat and bull trout assessment processes. OR compiled over 5,000 culverts from the State and County Culvert Inventory dataset.
- **Screens:** Information on 896 Oregon fish screens and passage projects was posted to the ODFW NRIMP website at http://nrimp.dfw.state.or.us/nrimp/information/fishscreen/index.htm. GPS coordinates for 46 fish screens were obtained in three subbasins, with most of the effort required to contact over 100 landowners

- **Restoration Projects:** A new habitat restoration project tracking data structure was developed that will increase data sharing capabilities. MT continued to collect, centralize and maintain all MT stream restoration projects data, including updates to locations and inclusion of BPA mitigation projects.
- **Age:** Cooperators continued developing a DEF for age data. All states, FWS and CRITFC have submitted test age data.
- **Other Data Sets:** ID compiled carcass count/measurement data from spawning ground surveys. OR obtained and posted data on salmon carcass placements for stream enrichment purposes for 2003 and 2004.
- **Independent Data Sets:** PSMFC completed an on-line archive for non-routine data ("Independent Data Sets") on the StreamNet website (http://www.streamnet.org/online-data/ids.cfm) and a tool for submitting data sets and descriptions. Data sets posted in FY-04 included multi-state Yellowstone and westslope cutthroat trout data and Montana's genetic database (MT), and. data and metadata for the Resident Fish Stock Assessment Project in northeast Washington (WA).

Data Management / Dissemination

Data management and dissemination work included routine maintenance and upgrade of multiple databases, GIS and computer systems, websites, and online applications and services at the cooperator and PSMFC levels. Much of this work took place behind the scenes; specific details are available in the quarterly progress reports.

Additional Highlights for FY-04:
- The U.S. District Court in Seattle cited StreamNet as the source for "salmon supporting waters" in Oregon and Washington in a ruling on pesticide spraying. In response, staff answered many requests and posted a presorted spreadsheet of salmon distribution information on the StreamNet website.
- PSMFC reported significant increases in total records for several data categories, including barriers (81% more barriers and 62% more records related to degree of impassability) and dam facilities (51% more dams were identified for a total of 6,217 dams). Approximately 26,000 new locations were added to the georeferencing system, 328 new data trends were created and over 2,900 new escapement records were loaded.
- The online data query system achieved over 99.5% reliability. The web system was improved with implementation of **.**NET, XML through Cold Fusion MX, and improved use tracking.
- ID completed and implemented a business rules engine for their internal databases that maintains data relationships and integrity.
- MT supported two on-line guides: the Montana Animal Field Guide http://fwp.state.mt.us/fieldguide and the Montana Fishing Guide http://fwp.state.mt.us/fishing/guide/. They also provided significant data and data management support to the Comprehensive Fish and Wildlife Plan; MFISH data were also essential in the update of the Montana Species of Concern list.
- OR initiated development of documents describing internal QA/QC processes and developed a set of tools for automated identification and resolution of distribution data quality issues. They

also drafted a fish distribution update protocol document and received agency approval to implement it statewide.

- OR redesigned its barrier database structure, merging all dams (1,308), culverts (5,759) and natural barriers (1,870), with 7 related tables including species-specific passage conditions and various barrier type-specific "detail", and metadata.
- WA continued a major effort to generate standard spatial references for key sampling sites using GPS.
- WA continued to analyze internal format tables, aligning structures to be more compatible with WDFW standards and newer StreamNet DEFs to provide simpler QA checks and ease data conversion and exchange. Initial focus was on tables related to hatchery releases and hatchery returns data.
- All project cooperators collaborated on further development and refinement of DEFs
- WA provided editorial support for drafting the StreamNet *Project Quality Assurance/Quality Control Manual*.
- MT and WA are working on a DEF for resident fish hatchery releases for completion in 2005.
- In addition to on-line data acquisition, the StreamNet cooperators responded to numerous direct requests for data, maps, assistance and information.

Cooperator	Requests
ID	135
MT	85
OR	81
WA	105
PSMFC	101

Library Services

The StreamNet Library completed a significant expansion of space and expanded the collection this year. All cooperators contributed data references to the library during the year.

Additional Highlights for FY-04:
- The StreamNet Library assisted the Johnson Creek Watershed Council with development of the Resource Center; the JCWC is providing the library with materials on Johnson Creek
- The USFWS Vancouver Office donated 60 boxes of materials to the library.
- The library effectively used volunteers and interns to catalogue the map collection and process over 1,000 documents for the backlog and duplicate document program.
- MT converted reference sources to SQL for the Fisheries Division e-library and created an application to access the information on the MFWP internal website. All genetic results were converted to .pdf for increased availability for MFWP staff.
- OR hired a library technician to organize the ODFW Library and update the bibliography.
- WA sent .pdf files of the *Washington State Stream Catalog* to the library to increase accessibility to this classic 1975 publication.
- PSMFC reconciled the growing library collection with the references associated with StreamNet data records, allowing better synchronization and more timely updates. Over one thousand documents in the SN Library database are now available electronically.

Regional Data Services

StreamNet cooperators participated in a variety of regional data-related efforts during FY-04, primarily in support of programs included in the NPCC FWP:

Northwest Environmental Data-network: The Program Manager and CRITFC Project Leader continued participation on the Project Team for NED (formerly the Columbia Basin Cooperative Information System), an effort to define a comprehensive approach to data management in the region.

Pacific Northwest Aquatic Monitoring Partnership: The Program Manager and CRITFC Project Leader participated on the PNAMP Steering Committee, and the Program Manager served on the PNAMP Data Management Module. PNAMP is attempting to coordinate standardization of aquatic monitoring and related data distribution. Various StreamNet staff participated in a regional workshop on fish population monitoring protocols.

Collaborative Systemwide Monitoring and Evaluation Project: StreamNet continued close collaboration with CBFWA's CSMEP effort. ID, OR and WA contributed staff time to conduct data inventories in selected subbasins in each state. OR also developed a database and online data input tool for inventory results. Work on CSMEP caused delay in some other project deliverables.

Subbasin Planning: StreamNet continued strong involvement supporting the NPCC subbasin planning effort:

- CRITFC archived over 8 GB of data files developed during the Oregon Subbasin Planning effort. The CRITFC StreamNet Project Leader led a team (TOAST) that provided technical support to subbasin planners in Oregon.
- ID assisted in completion of 4 subbasin plans.
- MT provided technical assistance to subbasin planning for 2 subbasins, including production of edit maps and data entry. The completed plans were reviewed for potential "data mining"; the only new data type may be fish disease/pathogens. Parts of the plans were integrated into MFWP's *Comprehensive Fish and Wildlife Plan*.
- OR provided data and data management support to subbasin planning as participants in TOAST through posting of information and notices to the subbasin planning forum, participation in meetings and workshops, providing technical and data support, reviewing and monitoring draft plans in Oregon, and reporting.
- WA contributed time, analytical expertise, and data to the authors of the Washington portions of the *Lower Columbia Sub-basin Plan*.
- PSMFC implemented an on-line discussion tool and file sharing system to help subbasin planners exchange information, documents, and data.

Critical Habitat: PSMFC worked with NOAA Fisheries to develop a new IMS application for presentation and review of Critical Habitat designations for 13 anadromous fish ESUs. The application (http://www.nwr.noaa.gov/1salmon/salmesa/crithab/gisdata/disclaimer.html) will be used as a template for improvements to StreamNet's interactive map applications.

Pacific Coastal Salmon Recovery Fund: State and PSMFC staff assisted in NOAA Fisheries' report to Congress on the use of PCSRF funds.

Program Management

Routine program management continued throughout the year for all cooperators, including regular quarterly meetings of the StreamNet Steering Committee, budget management, personnel management and reporting.

Summary

Fiscal Year 2004 was successful for the StreamNet Project. Significant progress was made in updating the existing data in the StreamNet database, involvement with and support of other regional programs increased, and technological improvements were implemented. Data system reliability was excellent, and on-line data query system use increased.