

STREAMNET: THE NORTHWEST AQUATIC INFORMATION NETWORK

8810804

SHORT DESCRIPTION:

Facilitate reasoned decision-making, evaluation, and interagency cooperation through the compilation, maintenance, and dissemination of regionally standardized spatial and tabular data critical to the implementation of the Program and other compatible state and regional efforts.

SPONSOR/CONTRACTOR: PSMFC

Pacific States Marine Fisheries Commission
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SUB-CONTRACTORS:

Columbia River Inter-tribal Fish Commission (and, through CRITFC - the Nez Perce Tribe, the Confederated Tribes of the Umatilla, the Warm Springs Tribe, and the Yakama Indian Nation); Idaho Department of Fish and Game; Montana Fish, Wildlife, and Parks; Oregon Department of Fish and Wildlife; Shoshone-Bannock Tribes; U.S. Fish and Wildlife Service; and Washington Department of Fish and Wildlife

GOALS

GENERAL:

Supports a healthy Columbia basin, Adaptive management (research or M&E), Program coordination or planning, Basinwide, Project responds equally to both of the above.

NPPC PROGRAM MEASURE:

3.2A, 3.3A through 3.3E, 7.6D, 10.5, 12.1, and 12.4

RELATION TO MEASURE:

StreamNet prepares an annual salmon and steelhead status report to be used in the monitoring report called for in 3.2A. StreamNet is the successor to the Coordinated Information System called for in 3.3A. The project also maintains the anadromous fish data base called for in 3.3B and the bibliographic data base and document retrieval system called for in 3.3C. StreamNet is initiating the development of the habitat data base called for in 3.3D and a project tracking data base as called for in 3.3E. StreamNet is working to establish core stream survey features, in part to allow for the habitat objectives evaluation called for in 7.6D. StreamNet manages bull trout distribution data used to evaluate species status and facilitates state-level compilation of other bull trout data. StreamNet is the regional source for the data used in evaluating hydropower as directed in 12.1, and is the official repository for data that is the foundation of the Councils Protected Areas Program, as described in 12.2.

BIOLOGICAL OPINION ID:

Snake R. Rec. Plan (0.3.a); Hydrosystem Operations Biological Opinion; Coho Biological Opinion

OTHER PLANNING DOCUMENTS:

NMFS Snake R. Rec. Plan: 0.3.a - "Consolidate regional efforts to develop a coordinated information and data gathering system." 1.1.a - "compile a comprehensive inventory and summary of historic and present habitat quantity and quality." NPPC Salmon and Steelhead Integrated System Plan: "Because the mission of the Program involves the use of data from many sources, the development of a coordinated information system is integral to SMEP." (page 428)

TARGET STOCK

LIFE STAGE

MGMT CODE (see below)

Non-salmonid species at risk
Native resident salmonids
Anadromous salmonids

BACKGROUND

Hydro project mitigated:

Not applicable.

Project is an office site only

Habitat types:

Project manages and provides data on aquatic habitat including: 1) stream survey data, 2) USFS eastside project data, 3) water quality and quantity data, and 4) cultural development that might affect aquatic habitat.

HISTORY:

The overall goal of StreamNet is twofold: 1) to create, maintain, and enhance a high quality, regionally consistent set of data on fish and related aquatic resources that is directly applicable to regional policy, planning, management, and research, and 2) to provide data and data services in a timely, efficient manner, and in a format that meets the users' needs. Particular emphasis is placed on targeting data development and services to meet specific Fish and Wildlife Program implementation and monitoring/evaluation needs.

StreamNet consolidates data compilation and management activities that were historically conducted through the Coordinated Information System and the Northwest Environmental Data Base. These projects were created by the Council to provide information necessary for Program implementation: CIS for anadromous fish productivity and management, NED regarding Protected Areas and stream-based biological and environmental factors. The rationale for consolidation is two-fold: to provide the region with one comprehensive, high quality package of fish and wildlife data products and services to address emerging Fish and Wildlife Program data needs, and to realize cost savings. Savings result from a combination of administrative efficiencies, elimination of redundancy, and increased focus on critical tasks. Additional out-year savings are likely as increased emphasis is placed on cost sharing with others needing these data. Savings within the Fish and Wildlife Program may be realized as StreamNet provides data services to other Program projects, thus decreasing overall costs of those projects.

StreamNet provides the following services:

1. Data Development. Each year StreamNet participants prepare a data plan that guides data development for the coming year. The project is involved with both adding current year data to existing datasets and acquiring new types of data. StreamNet prepares data exchange standards and formats to encourage regional standardization and facilitates data compilation consistent with these protocols.
2. Products. StreamNet's principal product is its database and accompanying electronic data delivery systems. StreamNet also prepares custom products for use by those involved in the protection and restoration of the region's aquatic resources. An annual report is prepared that depicts the status of salmon and steelhead in the Columbia Basin. Topical reports are prepared that focus on specific aspects of the data development effort.
3. Library Services. The StreamNet Library includes books, journals, technical reports, and newsletters relating to the aquatic resources of the Pacific Northwest, with special attention to anadromous fisheries in the Columbia Basin. The StreamNet library places particular emphasis on "grey" literature not available through standard libraries or reference systems.
4. Data Storage and Delivery. StreamNet utilizes state-of-the-art database and geographic information system (GIS) technology to compile and maintain aquatic resource data. StreamNet data can be provided as tables, charts, graphs, or maps and may be accessed through the Internet, a Distributed Access System, FTP, the StreamNet Library, and custom products prepared by StreamNet staff.
5. Technical Assistance to Agencies and Tribes. StreamNet-funded staff provide significant technical database, GIS, and data transfer support services to state fish and wildlife agencies. The project also helps provide information system capabilities to tribes in the Columbia Basin.
6. Assistance to Watershed and other Fish and Wildlife Program Projects. StreamNet can assist Fish and Wildlife Program-sponsored watershed projects by a) providing baseline information on fish production, distribution, and other factors, b) promoting development of data exchange protocol across watershed projects, c) tracking watershed planning and management activities, d) preparing custom data and map products for use by watershed project participants, and e) serving as a repository for data and reports prepared through watershed projects.
7. Data Requests. Over the past year StreamNet staff in the states and at the regional level responded to over 1700 requests for data and data services. Services were provided to state and federal agencies, tribes, regional authorities, and private groups.

BIOLOGICAL RESULTS ACHIEVED:

This project provides support for a variety of policy, planning, management, and research initiatives associated with the Fish and Wildlife Program and ESA. It does not, in-and-of itself, produce specific biological results. StreamNet supplies production trend, habitat, and other data that is directly applicable to management recommendations contained in the Operations Biological Opinion, the Coho Biological Opinion, and the Recovery Plan for Snake River Salmon. StreamNet anadromous productivity data can be used to evaluate whether Program projects are resulting in measurable gains for fish resources

PROJECT REPORTS AND PAPERS:

Regularly scheduled progress reports are prepared by the contractor and sub-contractors. An annual Columbia River Basin Salmon and Steelhead Report is produced that graphically portrays salmon and steelhead production trends and other summary data of interest to managers and decision-makers. An anadromous fish production data system is updated at least biannually, including documentation and a user's guide. Tabular and graphic information is produced on fish distribution, life stages, barriers, and other topics applicable to natural resource management. These products are packaged and made available through the Internet and, in the case of anadromous fish data, also through a stand-alone Distributed System (DS). Other products include a plan for future data enhancement, data exchange format documentation, stock summary reports, various topic specific reports and map atlases, and white papers that identify opportunities for interagency cooperation in data compilation.

ADAPTIVE MANAGEMENT IMPLICATIONS:

The project is the primary source for regionally consistent fish and wildlife information and, as such, will play a critical role in evaluating the success of the various Fish and Wildlife Program activities. The project will also aid in the tracking of these activities.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

For this project, measurable objectives refer to delivery of data and other products, not to specific biological objectives. Specific goals and objectives are established by means of a 5-year data plan. Presently, the highest priorities for data development are:

1. update existing anadromous fish trend data through the current year and fill data gaps,
2. complete 1:100,000-scale coverage of anadromous and resident salmonid and non-salmonid sensitive fish species throughout the region, including anadromous fish blockages and historic range.
3. prepare regionwide GIS coverages of habitat data, incorporating data compiled through federal land management analyses (e.g., Eastside Assessment), and other state and federal government-sponsored activities.
4. establish mechanisms for compiling and distributing core stream habitat data regionwide,
5. establish a project tracking database to include Fish and Wildlife Program and associated activities,
6. establish a system for supplying data for Fish and Wildlife Program-sponsored watershed projects and for maintaining data prepared through these projects.
7. respond to emerging data needs as defined by such entities as the Independent Science Group.
8. Other priorities include 1) increasing the StreamNet Library's capability to meet the research and reference needs of the region's aquatic resource managers; 2) expanding the information exchange capabilities of the StreamNet web site to include interactive mapping, increased analytic capabilities for tabular data, and remote access to library materials; and 3) expanding the capability of the tribes to contribute to this cooperative data development program.

CRITICAL UNCERTAINTIES:

Uncertainties are of an administrative rather than biological nature. For example, it is possible that one of the participating agencies may choose not to continue to participate in the project. However, this is unlikely given past and current support by these agencies. If this were to occur the project would redirect its activities toward other high priority areas.

BIOLOGICAL NEED:

Virtually every analysis of the Pacific Northwest fish issue calls for the preparation of regionally consistent and easily accessible data. StreamNet seeks to fill this need by providing essential baseline data on fish distribution, production, habitat, and management that is useful for regional policy, planning, management, and research activities.

HYPOTHESIS TO BE TESTED:

This project provides baseline data that can be used to evaluate a variety of management hypotheses, both for individual projects within the Fish and Wildlife Program and for the Program as a whole. The project itself does not test a scientific hypothesis, other, of course, than that it is possible for a variety of disparate groups to work together to productively produce regionally consistent resource data .

ALTERNATIVE APPROACHES:

The data development model employed by StreamNet is a dispersed, cooperative effort among agencies. The alternative would be to compile data in-house or through consultants. What this would gain in efficiency would be more than offset by lack of detailed knowledge of the resource, lack of commitment by agency resource managers to provide data, lack of trust among agencies in the accuracy of the resultant product, and decreased opportunity for interchange of ideas among participating agencies.

JUSTIFICATION FOR PLANNING:

The project provides a foundation of information that is useful in targeting areas for on-the-ground projects and for viewing such a project in the larger regional context. StreamNet can provide technical and data services to these projects and serve as a means for encouraging that data collected in these projects is made available to the larger community.

METHODS:

The fundamental building block for this project is interagency cooperation in the collection, compilation, and dissemination of critical fish and wildlife information. The means for achieving this are 1) establishing agreement on the critical data needs, 2) development of regionally consistent data exchange formats, 3) establishment of effective communication links, 4) use of common data distribution mechanisms, and 5) providing necessary technological support.

PLANNED ACTIVITIES

SCHEDULE:

Planning Phase **Start** ongoing **End** ongoing, though specific targets are set. **Subcontractor** All sub-contractors are actively involved in planning activities though PSMFC often takes the lead.

Task For a Program support project such as StreamNet planning is an ongoing activity. For this project, planning includes 1) consulting with others regarding their data development and delivery needs, 2) establishing objectives, 3) developing strategies for meeting these objectives, and 4) obtaining concurrence from agencies that will be involved in the activity. The products of planning activities are written strategy papers. Ultimately these are incorporated into the project's data plan which serves as the project's fundamental document. Important planning activities for FY 1998 include design of strategies for conducting a habitat assessment, incorporating stream survey data, incorporating estuary and ocean data, and enhancing technical capabilities, especially concerning delivery of spatial data.

Implementation Phase **Start** ongoing **End** ongoing, though specific targets are set for each activity **Subcontractor** Sub-contractors often take the lead in the actual compilation of data.

Task Implementation involves development of 1) data, 2) data delivery systems, and 3) the StreamNet library. Implementation of data development strategies includes the design of data exchange formats, the establishment of procedures for compiling the data, locating the needed data, encoding the data into standard electronic format, providing references to the StreamNet library, and the encoding of references. Implementation of data delivery strategies includes programming, porting of data, testing of delivery systems, and preparation of documentation. Implementation of library strategies includes development of agreements with other libraries, acquisition of materials, and enhancement of library services.

O&M Phase **Start** ongoing **End** ongoing, though specific targets are set. **Subcontractor** Sub-contractors are involved in both updating data and operation of the library.

Task For StreamNet, operation and maintenance include 1) the regular update of data that is subject to change, as for example new data on anadromous fish productivity or water quantity and quality data, 2) regular maintenance and enhancement of the database and data delivery system, 3) ongoing operation of the library, including document cataloging, and 4) responding to data service requests by the region's resource managers.

PROJECT COMPLETION DATE:

Ongoing

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

The only possibility for a budget change would be if regional decision-makers asked StreamNet to perform additional tasks that were not addressed in the budget . There are several factors that may require a change in schedule. These relate to both the nature of the data being compiled and the interagency nature of the project. Changing agency priorities could, for example, result in data that was anticipated to be made available being delayed. Likewise, agency personnel policies could cause a delay in hiring necessary staff. Another possibility would be abrupt changes in regional policy or planning needs that require a reallocation of resources to address emerging issues.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

Decision-makers and managers will have at their disposal necessary biological and management information for both targeting actions and evaluating their effectiveness. Participants in Fish and Wildlife Program activities will have an effective means to access applicable information and to store information collected through the activity. The public will have a means to learn about the region's aquatic resources

Present utilization and conservation potential of target population or area:

Not applicable; StreamNet could provide such data for other projects.

Assumed historic status of utilization and conservation potential:

Not applicable; StreamNet could provide such data for other projects.

Long term expected utilization and conservation potential for target population or habitat:

Not applicable; StreamNet maintains predictive data from Subbasin Planning.

Contribution toward long-term goal:

Regionwide, consistent Information; Electronic Data Dissemination

Indirect biological or environmental changes:

StreamNet would have only a secondary effect.

Physical products:

Electronic data management and delivery systems; library materials and delivery systems.

Environmental attributes affected by the project:

StreamNet will have only a secondary effect.

Changes assumed or expected for affected environmental attributes:

Not applicable.

Measure of attribute changes:

Not applicable.

Assessment of effects on project outcomes of critical uncertainty:

StreamNet is guided by a steering committee representing the agencies and tribes. Project participants report to the steering committee on a regular basis. Unanticipated changes are addressed and evaluated using the steering committee forum.

Information products:

1• The StreamNet data system currently includes the following:

1. Geographic Referencing. StreamNet utilizes the 1:100,000 scale, EPA River Reach file for cataloging, geo-referencing, displaying, and selecting data using both tabular databases and geographic information systems (GIS). This system allows users to query for data by state, county, USGS cataloging unit, drainage basin, or stream name. Data can also be mapped using GIS technology.
2. Anadromous Fish. StreamNet includes detailed natural and hatchery production information for anadromous salmonids in the Pacific Northwest States. Long term time series data are available concerning adult escapement, sport and marine harvest, hatchery return and release, and hatchery and passage facilities. Information on species distribution, use type (spawning, rearing, migration) and migration barriers is also available. Work is in progress on age data, juvenile abundance, hatchery practices, and stock features and characteristics.
3. Resident Fish. Information on the distribution of native salmonids and other at-risk resident species is available for many watersheds. Our goal is to compile this information region-wide. Other types of resident fish information such as abundance trends, hatchery releases, and stock characteristics are added to StreamNet as they become available. The Montana portion of StreamNet maintains a comprehensive, state-of-the-art resident fish database.
4. Aquatic Habitat. StreamNet contains summary information on habitat quality, stream flow, and water quality data as well as information on land ownership patterns and other factors that influence habitat quality. StreamNet is working with the agencies and tribes to establish core stream survey variables and will soon be incorporating stream survey data collected by the agencies and tribes.
5. Resource Protection and Restoration Projects. StreamNet is in the process of compiling summary information on fishery mitigation projects that have been completed or are underway in the Pacific Northwest. Some of the data included will be project location, purpose, target species, and cost. Fish and Wildlife Program project tracking will occur in cooperation with BPA. Also planned is data on watershed planning and related activities. The project also maintains the records from the NPPC subbasin planing process and the data underlying the NPPC Protected Areas rule.
6. Dams, Diversions, and System Operations. StreamNet contains data on hydropower and other dams within the Pacific Northwest states. There are over 5,000 dams in this data set which includes physical characteristics, location, owner/operator, as well as licensing and power generation data. StreamNet is exploring the addition of irrigation diversion data and historical trend data on the operation of mainstem dams (flow, spill, smolt transportation, etc.).
7. Bibliography. The StreamNet bibliography, with key word search capability, has over 12,000 published and grey literature bibliographic citations.

Coordination outcomes:

Interagency coordination is a primary benefit of compiling, managing, and disseminating data using an interagency model. . Data compiled through a collective process is far more likely to be accurate and defensible. Further, by working together to solve data needs the various agencies gain an understanding of the issues faced by each participant and are more likely to work cooperatively on related issues that transcend data management. StreamNet holds a number of interagency forums to explore common needs as, for example, a recent meeting on stream survey methods that will likely lead to further coordination on this topic.

MONITORING APPROACH

While this project does not have specific biological outcomes, StreamNet can provide data that will assist in evaluating overall biological effectiveness of Program components. The effectiveness of the project can be measured, both quantitatively in terms of electronic data and library materials, and qualitatively in terms of responsiveness to the data needs of the Program.

Provisions to monitor population status or habitat quality:

StreamNet is actively involved in acquiring data on both population status and habitat quality.

Data analysis and evaluation:

StreamNet's principal objective is data compilation and reporting. The project does not, as a rule, get involved in analysis and evaluation.

Information feed back to management decisions:

The Council, NMFS, and other agencies with decision-making responsibility are consulted prior to preparing the annual data plan in order to ensure that the project is targeting the appropriate data needs. Contacts with these agencies continues throughout the year and custom data products are prepared for them as requested.

Critical uncertainties affecting project's outcomes:

The StreamNet steering committee collectively resolves project issues.

EVALUATION

The principal means for assessing project effectiveness are 1) measuring performance against the annual work statement, and 2) consultation with representatives of the agencies and programs served by the project.

Incorporating new information regarding uncertainties:

Project managers will prepare proposals for consideration by the steering committee. Council staff and other appropriate authorities will be consulted prior to making significant mid-course corrections.

Increasing public awareness of F&W activities:

The project's web site provides an approachable and effective means to communicate with the public. An education function is being added to the StreamNet web site specifically to promote public education. This feature includes a fish management glossary, pictures and descriptions of fish, and other educational features. Maps also provide an excellent means to education the public. The web site includes numerous educational maps; other maps are produced to aid participants and agency officials in making public presentations. The annual salmon and steelhead report and the on-line database provide additional opportunities for public education by depicting rather complex issues in the form of easily understandable tables, charts, and graphs.

RELATIONSHIPS

RELATED BPA PROJECT

RELATIONSHIP

8801801 (CIS)

OPPORTUNITIES FOR COOPERATION:

This project provides an excellent opportunity to encourage and facilitate cooperation among the various federal and state agencies, tribes, and other interests at both the watershed and regional levels. Data development and access are widely recognized common needs. Working cooperatively on data development and management has proven to create a foundation for the development of more extensive cooperative working relationships. StreamNet provides data services that can assist with a variety of interagency Fish and Wildlife Program projects, including PATH, IHOT, and others.

COSTS AND FTE

1997 Planned: \$1,925,000

FUTURE FUNDING NEEDS:

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$1,900,000	20%	40%	40%
1999	\$1,800,000	20%	40%	40%
2000	\$1,700,000	20%	40%	40%
2001	\$1,700,000	20%	40%	40%
2002	\$1,700,000	20%	40%	40%

<u>FY</u>	<u>OBLIGATED</u>
1995	\$881,000
1996	\$791,833
1997	\$2,020,375
TOTAL:	\$3,693,208

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

<u>FY</u>	<u>OTHER FUNDING SOURCE</u>
1998	unknown

<u>AMOUNT</u>	<u>IN-KIND VALUE</u>
unknown	by agencies, amount unknown but substantial

OTHER NON-FINANCIAL SUPPORTERS:

All of the agencies with sub-contracts also provide significant in-kind contributions and are involved in data collection initiatives that provide data to StreamNet on a no-cost basis. Other organizations, including the U.S Forest Service, the Bureau of Land Management, the U.S. Geological Survey, the Environmental Protection Agency, and the National Marine Fisheries Service have all contributed funding, in-kind services, and/or significant databases to the project. It is anticipated that this will continue in coming years.

LONGER TERM COSTS:

Annual amount should stay constant, except for inflation and the potential demand for new forms of data. It is anticipated that data will always be needed by the Program. At a minimum, annual production trend data for anadromous fish will need to be compiled in order to evaluate Program effectiveness. It is also assumed that new but as yet undetermined data demands will continue to emerge as the Program evolves.

1997 OVERHEAD PERCENT: 15%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

Overhead applies to personnel, travel, and services and supplies. It does not apply to non-expendable equipment such as computers.

CONTRACTOR FTE: 5 people, total of 3 FTE.

SUBCONTRACTOR FTE: 39 people, total of 27 FTE (distributed among 11 sub-contractors)
