The Northwest Aquatic Information Network

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www.streamnet.org

Bonneville Power Administration

Columbia River Inter-Tribal Fish Commission

Idaho Department of Fish & Game

Montana Fish, Wildlife, & Parks

Pacific States Marine Fisheries Commission

Oregon Department of Fish & Wildlife

Shoshone-Bannock Indian Tribes

U.S. Fish & Wildlife Service

Washington Department of Fish & Wildlife

Mission

StreamNet has a two-fold mission:

1) to create, maintain, and enhance high quality, regionally consistent data on fish and related aquatic resources that is directly applicable to regional policy, planning, management, and research, and

2) to provide data and information services in an efficient and timely manner and in a format that meets the needs of users.

Overview

StreamNet is a cooperative venture of the region's fish and wildlife agencies and tribes. The Pacific States Marine Fisheries Commission manages the project, which is implemented through an interagency partnership involving the states of Oregon, Washington, Idaho, and Montana, the Columbia River Inter-Tribal Fish Commission and member tribes, the Shoshone-Bannock Tribes, the U. S. Fish and Wildlife Service, and the Bonneville Power Administration. Additional cooperators include the National Marine Fisheries Service, the U.S. Geological Survey, the Environmental Protection Agency, and the U.S. Forest Service.

StreamNet was established to meet the data needs of the Northwest Power Planning Council's Fish and Wildlife Program and related activities that complement the Program. StreamNet provides decision-makers and fish and wildlife managers with essential baseline data to aid in their efforts to protect and restore the region's fish and wildlife resources.

The project receives funding from the Bonneville Power Administration and is authorized under the Fish and Wildlife Program of the Northwest Power Planning Council. Other organizations provide funding for select project components. Participating agencies contribute significant in-kind services.

Applications

Fish and Wildlife Program. StreamNet's data development and delivery activities are designed to meet specific regional needs. Paramount among these is providing data services necessary for effective implementation of the Northwest Power Planning Council's Fish and Wildlife Program. StreamNet data is of use for an array of Program activities including monitoring and evaluation, adaptive management, project tracking, long-term project planning and selection, public education, policy development, and on-site project implementation. For example, StreamNet maintains anadromous fish population and production data necessary for both analyzing the various impediments to production and determining if specific restoration activities are successful. StreamNet is preparing a project

database that will be useful in tracking projects and developing long-term project priorities. StreamNet can also provide a means for the sharing of information among Program projects and for encouraging data standardization. Fish and Wildlife Program projects wishing to do so may use the StreamNet Internet site as a means to deliver data.

Endangered Species Act Activities. StreamNet can provide data for use in assessing the status of a species or population, evaluating risk, developing recovery plans, and communicating information to decision-makers and the general public. Information on species distribution, life histories, and habitat and resource management factors are of particular relevance and are available through the StreamNet system. StreamNet can also serve as a means to compile, store, and disseminate information collected by agencies for use in ESA evaluations. StreamNet is currently working with the State of Oregon to establish data systems for that state's coho and steelhead recovery efforts.

Other Fish and Wildlife Management Activities. The tribes, states, federal private organizations are all involved in activities that relate to and complement Fish and Wildlife Program and ESA activities. StreamNet can serve as a mechanism for standardizing data compiled by these organizations and for storing and delivering data compiled through projects implemented by these organizations. The StreamNet database and library can also serve as a source of baseline data and reference materials for use by these organizations.

Services

Data Development. Each year StreamNet participants prepare a data plan that guides data development for the coming year. StreamNet 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.

Data Storage and Delivery. StreamNet utilizes state-of-the-art database and geographic information system 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, FTP, the StreamNet Library, and custom products prepared by StreamNet staff. A revised "stand-alone" Distributed Access System is being developed.

Technical Assistance to Agencies and Tribes. StreamNet-funded staff provide significant technical database, geographic information system, 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.

Library Services. The StreamNet Library includes materials 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 less commonly available "grey" literature. Library services include reference, referral, database searching, inter-library lending, and document delivery.

Assistance to Fish and Wildlife Program Projects. StreamNet can assist Fish and Wildlife Program-sponsored projects and related watershed and stream-specific projects by 1) providing baseline information on fish production, distribution, and other factors, 2) promoting development of data exchange protocols across watershed projects, 3) tracking projects and related management activities, 4) preparing custom data and map products for use by project participants, 5) serving as a repository for data and reports prepared through these projects, and 6) delivering project data via the Internet.

Custom Products and Data Requests. StreamNet's principal product is its database and accompanying electronic data delivery systems. StreamNet also prepares custom GIS maps, graphs, and data reports for use by those involved in the protection and restoration of the region's aquatic resources. We also produce topical reports that focus on specific aspects of the data development effort. Over the past year StreamNet staff in the states and at the regional level responded to over 1,700 requests for data and data services. Services were provided to state and federal agencies, tribes, regional authorities, and private groups.

Data Features

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.

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.

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.
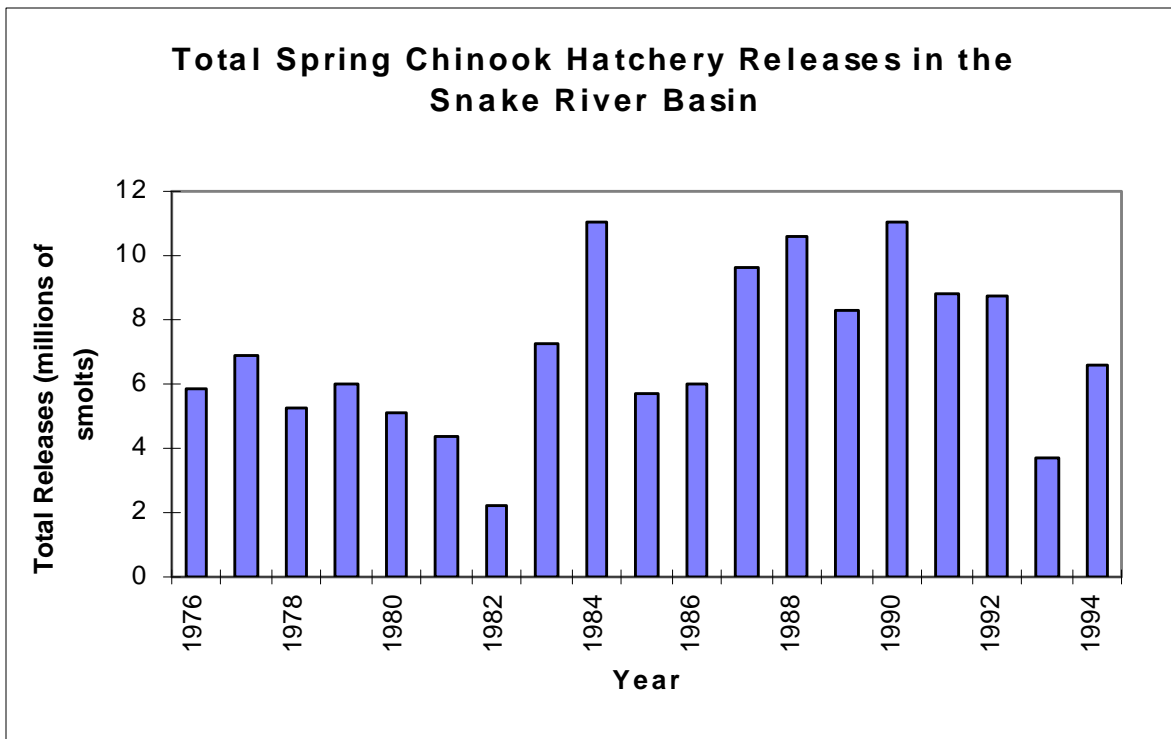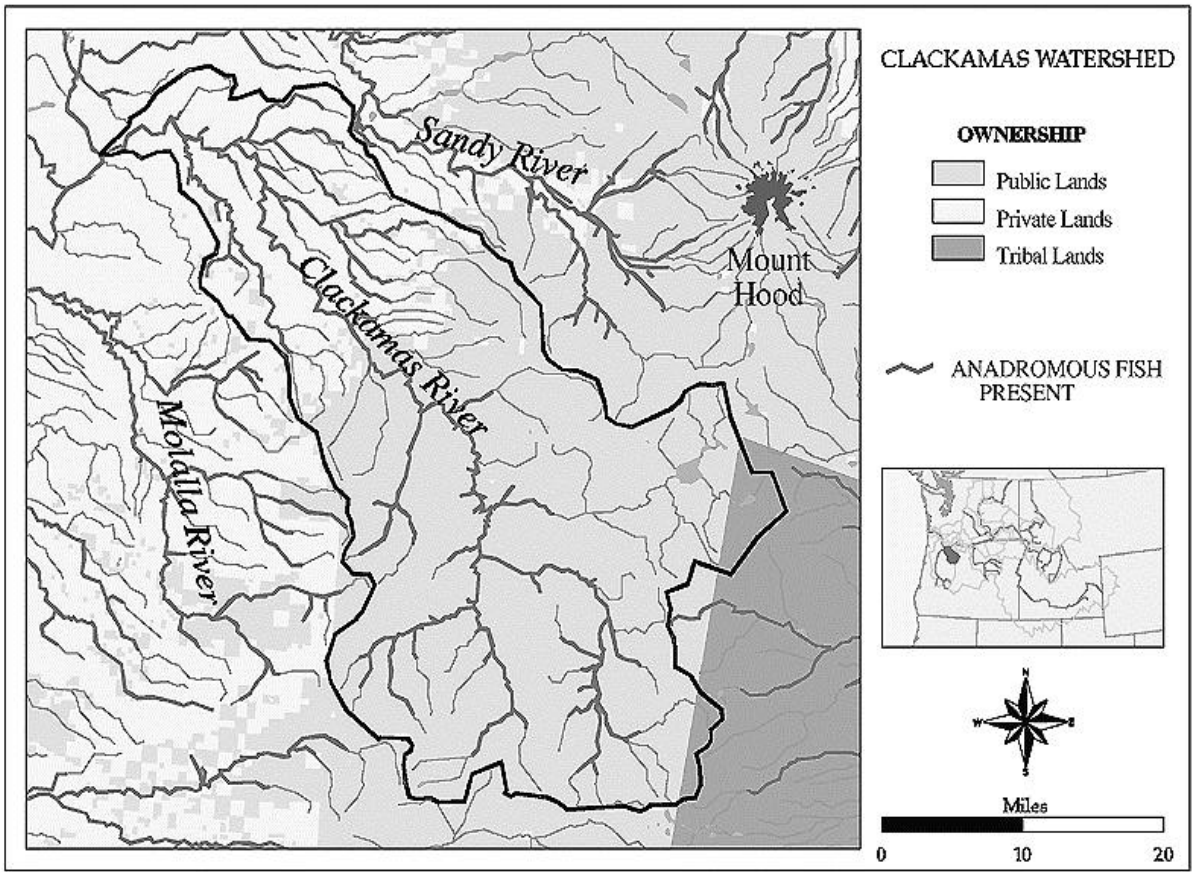
Resource Protection and Restoration Projects. StreamNet is in the process of compiling comprehensive information on fishery mitigation projects that have been completed or are underway in the Pacific Northwest. Some of the data included will be project location, purpose, target species, and cost. Also planned is data on watershed planning and related activities.

Dams, Diversions, and System Operations. StreamNet contains data on hydropower and other dams within the Pacific Northwest states. This data set includes physical characteristics, location, and owner/operator information for over 5,000 dams. In addition, hydropower licensing and power generation data is available for hydroelectric dams. StreamNet is exploring the addition of irrigation diversion data and historical trend data on the operation of mainstem dams (flow, spill, smolt transportation, etc.).

Geographic Referencing. StreamNet utilizes the 1:100,000 scale EPA River Reach file for cataloging, geo-referencing, and displaying data. This system allows users to query for data by state, county, USGS cataloging unit, drainage basin, or stream name. Reach file data can be mapped using GIS technology.
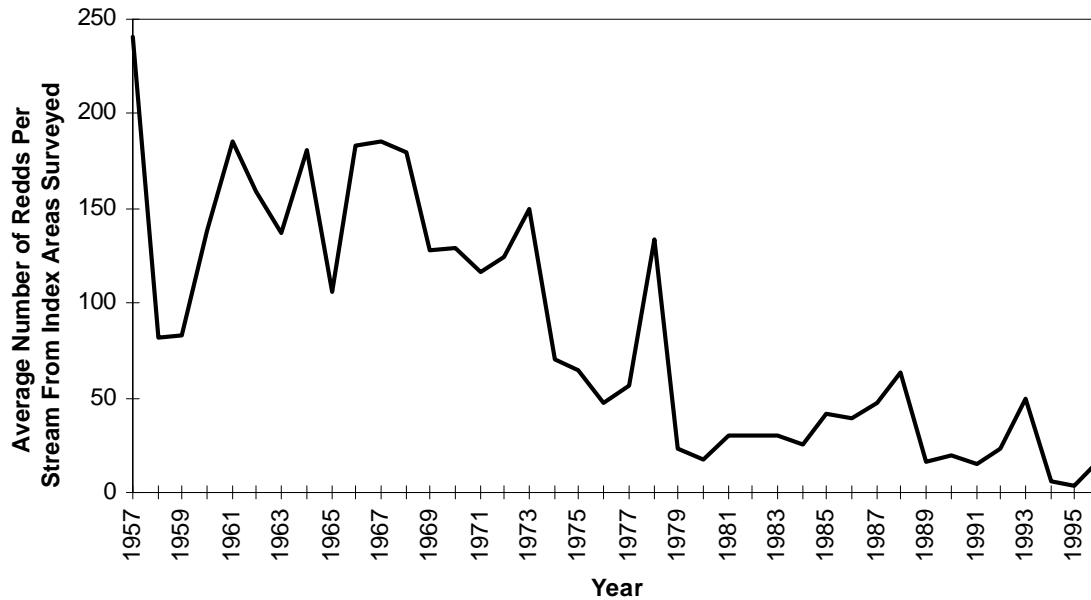
Literature Referencing. Individual data records in StreamNet are linked to a literature citation that identifies and describes the source of that data. These citations can be viewed from the data modules or searched using the reference module. Copies of the source documents can be obtained from the StreamNet library. The library reference module also contains an additional catalog of documents available through partner agencies.

Data Examples

CLACKAMAS WATERSHED

OWNERSHIP
Public Lands
Private Lands
Tribal Lands

ANADROMOUS FISH PRESENT

Sandy River

Clackamas River

Molalla River

Mount Hood

Miles
0   10   20

Total Spring Chinook Hatchery Releases in the Snake River Basin
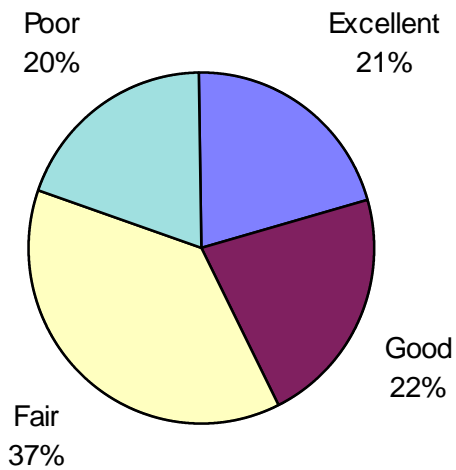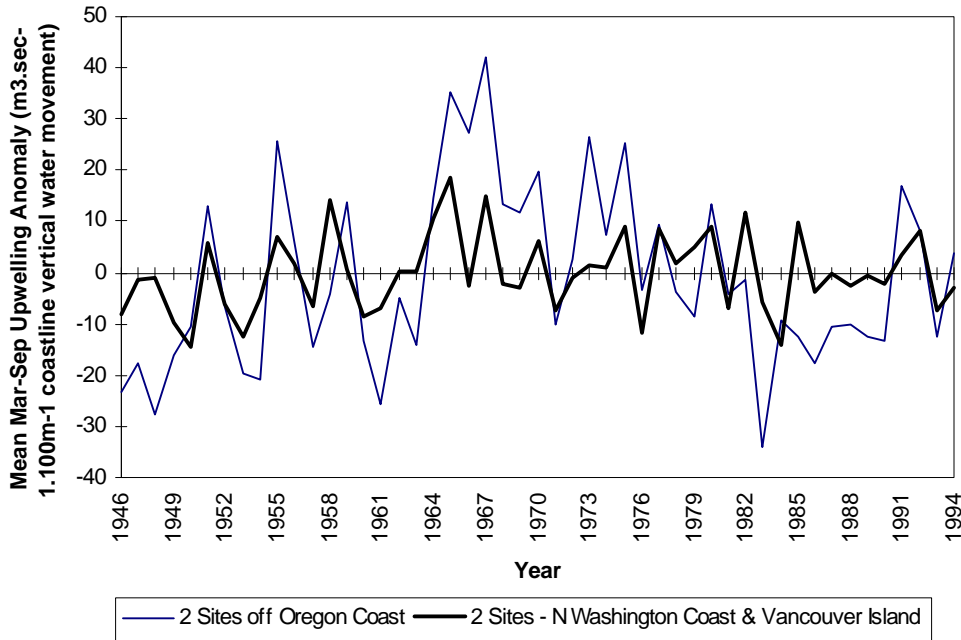
Total Releases (millions of smolts)

Year

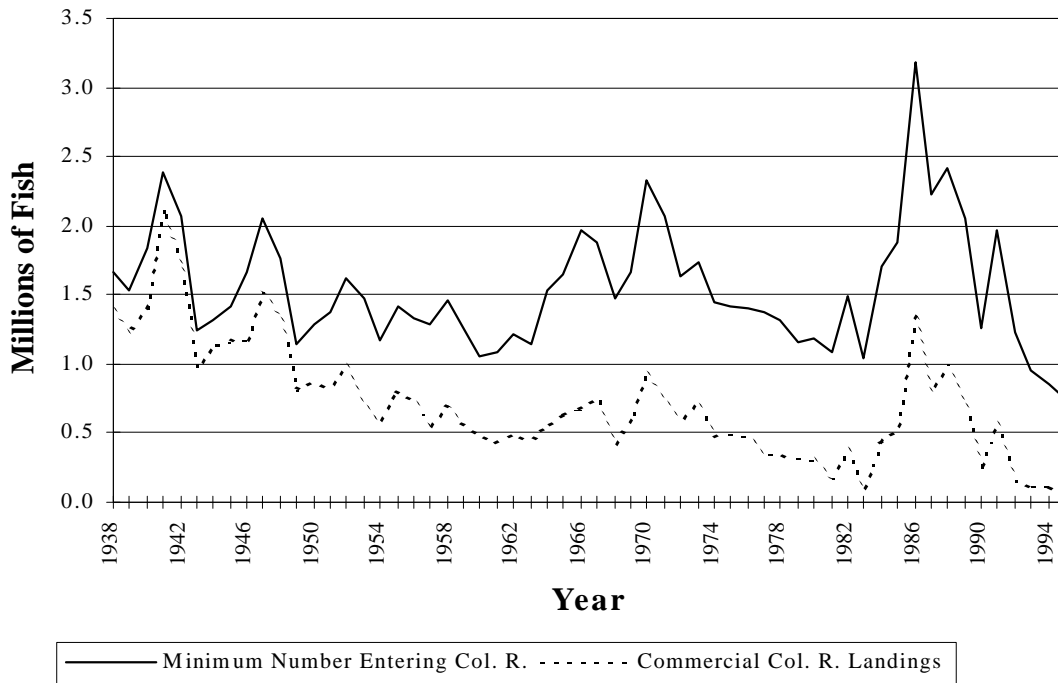**Spring Chinook Redd Counts For Snake River Subbasin**

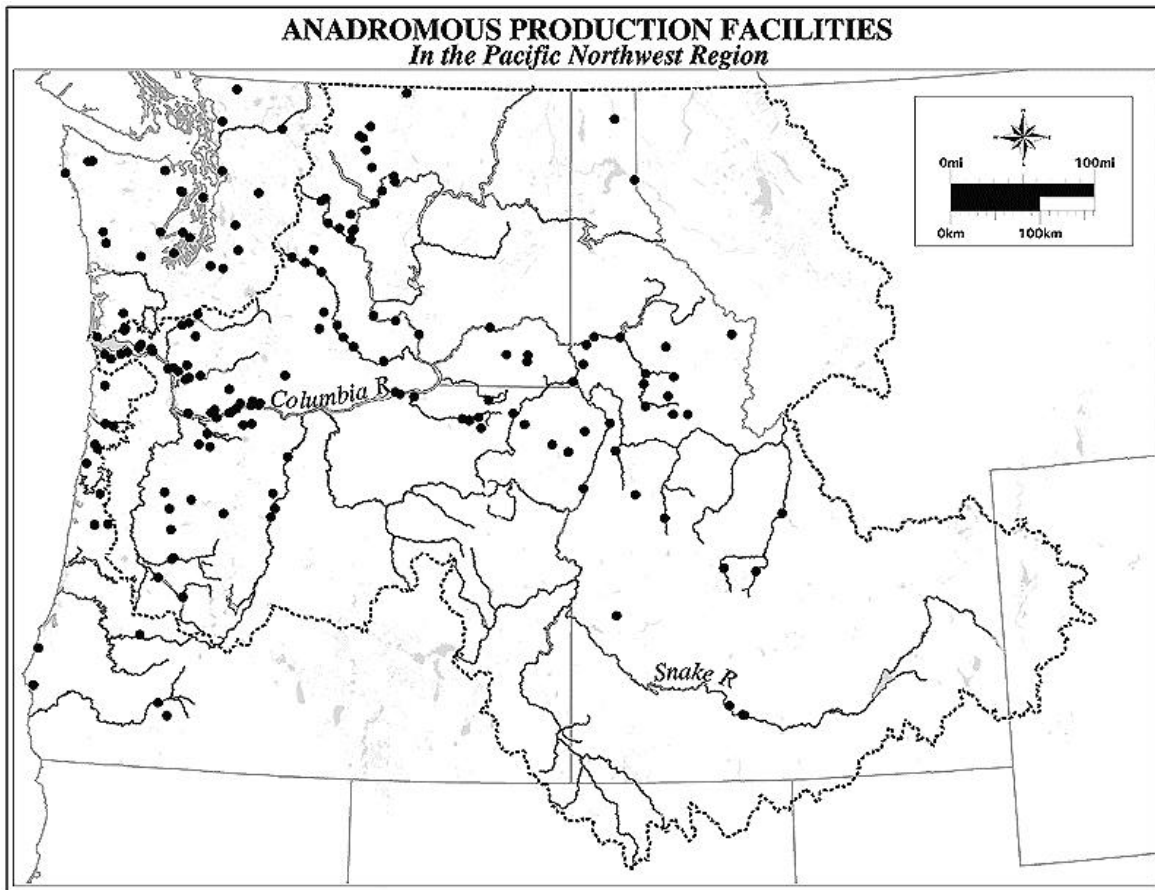**Bonneville to Priest Rapids - Salmon**

Percent of excellent, good, fair, and poor salmon
habitat identified by Subbasin Planners by Columbia
River Region (PSMFC 1995 from Subbasin Planning, 1989).

Mean Mar-Sep Upwelling Anomaly (m3.sec-1.100m-1 coastline vertical water movement)

Year

2 Sites off Oregon Coast   2 Sites - N Washington Coast & Vancouver Island

Upwelling anomalies-difference between current year and 1948-1967 average for four coastal locations. Positive values represent stronger upwelling than normal, negative values represent weaker (PSMFC 1996).

Millions of Fish

Year

Minimum Number Entering Col. R.   Commercial Col. R. Landings

Minimum Numbers (in Thousands) of Salmon and Steelhead, Including Jacks, Entering the Columbia River, 1938-95 and Columbia River Commercial Harvest.

ANADROMOUS PRODUCTION FACILITIES
In the Pacific Northwest Region

StreamNet Reference

Reference No.:	40108
Agency:	Idaho Dept. of Fish and Game
Publisher:	Idaho Dept. of Fish and Game, Boise, ID
Year:	1980
Authors:	Lindland, R., Ball, K., and Reid, W.
Title:	Salmon spawning ground surveys, Job performance report, 1 March 1979 to 29 February 1980
Pages:	i, 34 pp, including appendix with maps
Tables:	6
Figures:	
Begin Year:	1979
End Year:	1980
Contract No.:	
Project No.:	F-73-R-2
Location:	StreamNet Library
Abstract:	Each year regional fishery biologists survey major chinook salmon spawning areas in their respective regions to count the number of redds constructed in trend count areas and to obtain age and sex composition data. The data are made available for trend analysis, management, and research use. Redd counts, sex, and age data for 1979 are presented in a series of attached tables and maps.

Sample source material reference. Each StreamNet data element is linked to a reference of this type.

StreamNet Uses in the Fish & Wildlife Program and Regional Aquatic Resource Management

StreamNet Data

	Fish Production	Distribution	Habitat & Impacts	Project Data	System Operations	Source Documents	Protected Areas
Policy, Long-range Planning	X	X	X	X	X		X
Project Tracking	X	X	X	X	X	X	
Research	X		X			X	
Analysis	X	X	X	X	X		
Monitoring Evaluation	X	X	X	X	X	X	
Watershed Projects	X	X	X	X		X	
Site Projects				X		X	
Public Information	X	X	X	X	X	X	X
ESA Activities	X	X	X		X	X	
Resource Management	X	X	X	X	X	X	

StreamNet Data Services

	Exchange Formats	Data Storage	Data Compiling	Data Delivery	Custom Products	Library Services	Reports
Policy, Long-range Planning		X		X	X	X	X
Project Tracking	X	X	X	X	X		X
Research		X	X	X		X	X
Analysis					X		X
Monitoring Evaluation	X	X	X	X	X	X	X
Watershed Projects	X	X	X	X	X	X	
Site Projects	X	X	X				
Public Information				X	X	X	X
ESA Activities		X	X	X	X	X	
Resource Management	X	X	X	X	X	X	X

Current StreamNet Data Contents

(Available at http://www.streamnet.org)

Anadromous Fish Data Contents

State	Species Distribution	Adult Escapement	Hatchery Releases	Hatchery Returns	Freshwater Harvest	Marine Harvest	Mainstem Dam Operations
Alaska					✓	✓	
California		✓			✓	✓	
Idaho	✓	✓	✓	✓	✓	NA	FY 97
Oregon	✓	✓	✓	✓	✓	✓	FY 97
Washington	✓	✓	✓	✓	✓	✓	FY 97

Other StreamNet Data

State	Reference Data	Resident Fish Distribution	NWPPC Protected Areas	USGS Flow Data	Hatchery Facilities	Dams	Habitat Data	Mitigation Project Data
Alaska	✓							
California	✓							
Idaho	✓	✓	✓	✓	✓	✓	FY 97	FY 97
Montana	✓	✓	✓	✓		✓	FY 97	FY 97
Oregon	✓	✓	✓	✓	✓	✓	FY 97	FY 97
Washington	✓	✓	✓	✓	✓	✓	FY 97	FY 97

Additional Information Available via the StreamNet Internet Site

- Fish Facts - life history information, PNW fish species database, glossary, ocean conditions, photos, "kid pics"

- Library - library holdings, references, links to journals and other libraries

- Map Gallery - GIS maps prepared by project participants and related to PNW fish and wildlife

- Online Map Builder - View species distribution maps built to your specifications

- River Reach System - 1:100,000-scale hydrography and stream IDs, documentation

- Fish and Wildlife Program - project tracking database, links to projects

- Project Management - reports, strategy papers, work plans, public information materials

- Links - systematic links to related sites

- What's New - chronological development of the StreamNet site

- About This Site - statistics and technical information

Contacting StreamNet

Internet address: http://www.streamnet.org. Project e-mail: project@streamnet.org

The StreamNet project office is located at:

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The StreamNet Library is located at:

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