StreamNet

Northwest Aquatic Information Network

Annual Report
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StreamNet

The Northwest Aquatic Information Network

BPA Project Number 198810804

Fiscal Year 2002

Annual Progress Report

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Introduction

This report presents accomplishments of the StreamNet project for Fiscal Year 2002 (FY-02). A summary of significant activities and accomplishments is presented in the Introduction section as an executive summary, and more detailed discussion of activities is presented by individual task in the body of the report. Individual jobs for each objective and task can be found in the StreamNet 2002 Work Statement and detailed accomplishments are documented in the quarterly reports, all of which can be obtained at http://www.streamnet.org/about-sn/project_management.html. Work planned within individual tasks varied by participating agency, as detailed in the work statement.

StreamNet is a cooperative project. Overall project administration is provided by the Pacific States Marine Fisheries Commission (PSMFC), and in this report the central project conducted by PSMFC is referred to as the 'Region'. Approximately 1/4 of project resources were expended by the Regional component of the StreamNet project for maintaining and managing the regional data and database systems, developing and maintaining the data delivery system, and overall project administration. Cooperating projects consist of project-funded staff in the Columbia River Intertribal Fisheries Commission (CRITFC), Idaho Department of Fish and Game (IDFG), Montana Fish, Wildlife and Parks (MFWP), Oregon Department of Fish and Wildlife (ODFW), US Fish and Wildlife Service (USFWS), and Washington Department of Fish and Wildlife (WDFW). These cooperating agencies accounted for 3/4 of project expenditures, but they also provided additional contributions to directly support the project. The specific kinds and amounts of contributed support varied by agency, but included salary support, in-state travel, office supplies, use of computers and computer services, and office space. The cooperating projects focused on data development (obtaining specific types of data, converting them into the regionally consistent Data Exchange Format (DEF), adding georeferencing information to the records, and submitting the data to the regional StreamNet database at PSMFC), maintenance and management of their agency data systems, operation of the StreamNet Library, and administration of their respective portions of the project. The region and cooperating projects all contributed to various data management services at the region wide and individual agency levels.

Executive Summary

A primary focus of the StreamNet project in FY-02 was maintenance and update of ongoing data types. Significant progress was made toward updating data for the primary data categories in the StreamNet regional database. Data updates had been slowed in previous years due to the time required for conversion of georeferencing for most data types from the 1:250,000 scale River Reach Number (RRN) system to the 1:100,000 Longitude-Latitude Identifier (LLID) system (see the annual progress reports for FY-01 and FY-00, available at http://www.streamnet.org/about-sn/project_management.html). In addition, data relating to Protected Areas and Smolt Density Model results, the last data sets in the StreamNet database still in the 1:250,000 RRN format, were converted this year to the LLID system, making them available through the on-line Web Query System. The Protected Areas data were also made available through an on-line interactive mapping application.

All routine project activities continued, including project administration at the full project and cooperating project levels, project management through the StreamNet Steering Committee, maintenance of databases and Internet data delivery systems, and providing data related services to the Northwest Power Planning Council's (NWPPC) Fish and Wildlife Program. As part of system management, a new web server was put in operation, significantly improving speed and reliability of Internet data delivery. The web based data query system was modified to utilize ColdFusion, in preparation for a full conversion to ColdFusion from the custom programming in Delphi. This greatly increased flexibility and the ability to modify query system function, correct errors, and develop new query capabilities. All project participants responded to numerous requests for information (data, maps, technical assistance, etc.) throughout the year.

A significant accomplishment this year was resolution of long standing differences in how fish distribution is defined and presented. By focusing strictly on definitions related to current distribution (ignoring potential and historic distribution for the time being), all project participants were able to reach agreement. This now makes it possible to update anadromous distribution and habitat use data and to also include resident fish distribution in the regional database. The cooperating projects plan to begin delivering distribution update information beginning in the first quarter of FY-03.

StreamNet participated actively in the new approach for evaluating proposals for future work by ongoing projects in the Mainstem / Systemwide Province. The StreamNet Project Manager prepared an overview report (Data Management in Support of the Fish & Wildlife Program Summary, available at http://www.cbfwf.org/files/province/systemwide/subsum.htm) describing the current state of data management in the basin and outlining needed actions. Then, the StreamNet project proposal for FY 03-05 was written to highlight the fact that current support levels only allow for update and management of the current high priority data sets and current levels of services, yet there are other types of data collected by the basin's fish and wildlife management agencies that could be obtained, standardized and made available regionally with relatively small increases to project costs. The proposal was expanded to include both ongoing 'base level' work plus a series of new data types and data services that could be provided if funded. The intent was to initiate a regional discussion of priority data needs in the hope that consensus could be reached on which additional data are highest priority and should be added to the project work statement. By the end of the fiscal year, it was unclear whether this approach would lead to such a dialog on priorities for the project.

StreamNet took an active role in assisting the NWPPC's project to conduct a data needs and data availability inventory in consideration of developing a Columbia Basin Cooperative Information System. This work was contracted to Science Applications International Corporation (SAIC). The StreamNet Program Manager and the CRITFC StreamNet Project Leader (representing CRITFC) both began serving on the Program Team to provide advice and guidance to the SAIC project. StreamNet project staff at the Regional and cooperating agency levels also participated in the project through in person meetings, focus groups, and questionnaires. This level of participation was intended to provide as much assistance as possible to assure that the project has the highest chance of developing useful inventory of data and data needs and realistic recommendations for developing an effective and useful basin wide data management approach.

Activities carried out this year by the individual components of the StreamNet Project are summarized below:

CRITFC

Most of the work performed in FY02 was routine. Significant developments included the shortage of funds and increased time demands for regional scale planning and consultation.

Severe budget constraints required that two positions (all of the projects manager's time and over half of the database programmer) be shifted to other funding sources. This will severely hamper work in FY03 and restoring support for these positions is a priority for continued CRITFC participation. Significant time was spent by StreamNet staff (through other funding sources) working with Council and agency staff to organize subbasin planning efforts. These discussions included a number of data management issues and there is growing regional acceptance of the StreamNet system as an integral component of subbasin planning. A draft contract with the NWPPC was prepared to assist the Library in digitizing the reference material needed for and developed during subbasin planning. This is both a complement to work accomplished by the project and a challenge to incorporate more regional services in the future.

The Library was maintained and provided significant services to the region. A slight decrease in inter-library loan activities occurred when the Assistant Librarian resigned in the spring and her replacement came up to speed. The growing collection of material in FY02 placed severe space constraints on the Library. Much material could not be properly shelved and was stored in boxes. A new lease agreement was completed to obtain additional Library space. This will provide adequate room to incorporate material used for the Council's subbasin planning efforts. The Library continued to develop an electronic collection of material. This was accomplished by capturing documents in electronic format, digitizing key historic reference material, and by linking to other Web sites containing electronic documents.

IDFG

The year 2002 was a bellwether year for IDFG/StreamNet. After much work we finally reaped the benefits of our new internal data management system, the Fish Information System (FIS). The FIS allowed us to complete comprehensive reviews of our core anadromous fish datasets and submit updated, accurate data current to the 2001 field season to the StreamNet database at PSMFC. Because the FIS maintains important internal relationships and referential integrity, we can be confident that these corrections will persist into the future. IDFG/StreamNet and Fisheries Bureau staff are now entering data directly into the FIS. IDFG biologists find our systems valuable and much of this data entry is being accomplished by non-StreamNet IDFG staff, enabling us to directly draw from IDFG data for StreamNet data exchange. Implementation of the FIS has also encouraged many IDFG biologists and offices to utilize StreamNet data standards in their own systems. We continued to make improvements to and administer components of the FIS. Both the Spawning Ground Survey and Juvenile Fish Trapping systems were moved into more distributed environments. Installed on laptops, biologists now use them in the field. Data are transferred using XML and email to the central database.

We added functionality to our ArcView applications. These applications are used by IDFG fishery biologists to integrate their data into StreamNet data standards.

We made important advancements in our infrastructure during the past year. Using non-StreamNet funds, we obtained and installed several new servers, plotters, printers, and scanners. We migrated from ArcInfo 7.2 to ArcGIS 8.2. This infrastructure is now included in the IDFG budget and StreamNet money should no longer have to go into hardware.

We continued to be a major source of data for many users that contact us directly for information. We processed 133 requests for data and technical assistance from private consultants, IDFG staff, or other agency biologists. We provided data and GIS services to subbasin planners for the Boise-Payette-Weiser, Middle Snake, Closed Basins and Upper Snake provinces. Funding was supplied from non-StreamNet sources for the responses to subbasin planners, but StreamNet staff, data, and equipment were used.

MFWP

Montana's MFISH fish distribution and their associated survey data and references were brought current through 2001. In addition to the annual regional visits to obtain data, we provided MFISH data structure and existing data and mapped distribution and participated in all of the Yellowstone Cutthroat and Westslope Cutthroat Assessment meetings. We produced hydrologic unit level maps with westslope cutthroat trout distribution, genetic sampling locations and public land ownership that were used during the meetings and distribution edits were completed on the maps. We exchanged distribution data to the StreamNet database once during FY2002. We completed the creation of a spatial coverage and associated tabular data for the dams in Montana. All data from these meetings have been or will be entered into MFISH. A Montana Dams Layer was created using the Northwest Hydropower System and the National Inventory of Dams, quality

checked using the Geographic Names Information System, and exchanged with the regional database. We also updated and exchanged the hatchery facilities data in Montana, including information on location, design, management and authorization. We continue to collect barrier location, species affected and other fields on stream barriers in Montana, and although we planned to exchange these data in FY2002, that date has been delayed because extensive barriers data was collected during the Westslope cutthroat trout assessment meetings which will not conclude until early FY03. We continued to collect, centralize and maintain all stream restoration projects data for Montana using the Fisheries Division's "Future Fisheries Interface" and exchanged them to Regional StreamNet staff twice during the year. We continued to receive all the genetic analysis results from the University of Montana Genetics Lab for sampled populations of Montana's species of special concern and the data are current through 2001. We explored the creation of a Genetics DEF with the Steering Committee; it appears that if a DEF is created, it will only contain collector information, not analysis. Montana is willing to provide these data to the region as a supplemental database if desired. We continued to work with Natural Resource Information System staff and StreamNet GIS staff to maintain the 1:100,000 NHD hydrography for Montana. This included enhancing the data layer with lakes and reservoirs and including stream level LLID routes. A training session on using the NHD will be conducted by NRIS staff in October, 2002 and StreamNet staff will assist with developing the training program.

We have maintained and enhanced the edit/entry interface for the fisheries survey data distributed to individuals with MFWP Collector's Permits, including federal land management agencies. We explored creating a complete user interface for MFWP biologists, preferably a web based system, but feel the agency is not ready for this; we will attempt to standardize look-up tables for survey methods and fish species across the state. We maintained the U of M system for genetics analysis input and the Future Fisheries for restoration project data entry; no other interfaces were requested for fisheries data. Over 80 data and GIS requests were filled related to fisheries; in addition, with our data and stream and lake hydrography now downloadable from the FWP website, we are having to fill far fewer data requests.

The project leader met with Montana's NWPPC member and staff and MFWP Fisheries Division Administrator to review Montana's StreamNet program during the early summer. It was very well received. At the request of the Montana member, the project leader gave a PowerPoint presentation at the August NWPPC meeting in Helena on the StreamNet program in Montana. The program was well received and generated questions and discussion. The annual Statement of Work for Montana was completed and sent to regional staff. Montana participated in all Steering Committee meetings in FY02. The Project leader provided a Montana Statement of Work and budget to StreamNet regional staff in September.

ODFW

Oregon StreamNet made progress on nearly all assigned tasks, and a number of significant accomplishments and advancements were realized during this fiscal year. The most significant accomplishment was probably the updating and completion of Oregon's 1:100,000 and 1:24,000 fish habitat distribution information. This effort utilized multiple state and federal funding sources, including StreamNet, and the skills of StreamNet staff and biological staff from state and federal agencies, Native American tribes, local watershed councils, and major timber companies. As part of this effort, we significantly increased the amount of information that is available on known obstructions to

fish migration. An accomplishment that should prove valuable in future years is the progress we made to develop our hatchery data submission process. It not only allowed us to update all of Oregon's hatchery return data, but also laid the groundwork to efficiently and accurately compile and exchange hatchery release and return data in the future. Many other accomplishments by Oregon StreamNet are highlighted in the body of this Annual Report.

Major work also went into quality assurance and quality control of Oregon's data during this year. This involved all aspects of Oregon's StreamNet data. It is our plan to continue this focused effort in the coming fiscal year in order to improve the accuracy and completeness of our data so that resource managers and decision makers have the best information available to them.

In FY-2001, we saw an increased involvement by Oregon StreamNet, and StreamNet as a whole in data related activities and projects over past years. That trend has continued through FY-2002. Oregon StreamNet was more sought out by individuals, groups, and agencies as a source for technical support (including database development, management strategies, data-related consultation, and database administration). StreamNet is proving to be a valuable resource at the state and regional levels, for more than just a source for data. With Subbasin Planning and other regional management and assessment efforts becoming more prevalent, StreamNet will probably continue to serve a necessary roll in resource management in the Columbia Basin. This increased reliance on data and information continues to point to the need to improve data management and data flow within and between the data producing agencies. There needs to be an inherent recognition by the data producing agencies that information sharing is better for the resources we manage, and serves to make everyone's efforts more meaningful than any individual goals an agency may have.

One unfortunate event that occurred during this year also needs to be highlighted. Due to budget constraints within ODFW, we were forced to close our library. In past years, the ODFW Library served many StreamNet patrons, and assisted the StreamNet Library in meeting information needs within the basin. However, because ODFW requires that funding be available for the full work period of a position, and ODFW could not provide it's portion of the funding, the Librarian position was reduced to part time, and the position ended when StreamNet funding was exhausted. It is our goal to work with ODFW management staff to restore the funding for the library position and to reopen the library as soon as possible in 2003. Also, due to continued level funding, coupled with the ongoing rise in personnel costs, Oregon StreamNet has had to reduce the number of person months that work on StreamNet tasks, and consequently reduce the number of tasks that can be accomplished. This trend runs counter to the trend of more entities needing more data management and data accessibility support. As an example, we may be forced to choose in future years whether to provide updated abundance trend data or updated hatchery release and return data. Already, many data trends are being left unattended as staff members are forced to work on other projects using other funding. This gives the appearance that StreamNet is falling behind and not maintaining up-to-date information. If this continues, StreamNet may have to remove these data from the online web site as a step to reduce this perception.

USFWS

As the smallest component of the StreamNet project, FWS completed all of its assigned data delivery and administrative tasks.

WDFW.

This year has been our best year for data deliveries and quality control since 1997. Data exchanged included: Salmon natural spawner data for 1998-2000; Hatchery returns data through 2000; Hatchery facilities update (additional facilities, improved location coding); and the Washington state dams dataset (over 1,000 dams). Major quality control was performed on: Juvenile and adult trap data from key Lower Columbia tributary trap sites; Hatchery facilities locations; and Dams locations. Our success is attributable to our ability to cash in on last year's investment in training new compiling staff, our commitment to focusing on any effort that serves as a foundation, and our ability to manage the pressure to engage on too many topics at once. It is better for both external credibility and for internal staff morale to professionally finish a small number of projects than it is to have many more projects stalled in a constant state of partial completion. Our challenges in subsequent years will be to: (a) improve on this year's data deliveries, (b) purge the data flaws for data previously submitted to StreamNet, still existing now due to less stringent quality control on previous data deliveries or subsequent DEF changes, (c) integrate the GIS files and tools, (d) stay abreast of the ever-changing GIS technology without undue interference with data delivery, and (e) efficiently resolve issues that exist because WDFW has already started tying data to a 24K hydro layer and StreamNet has no plans to upgrade to 24K from their 100K hydro layer (due to the absence of a regional 24K layer). The 24K hydro layer issue may dominate other discussions next year as user expectations clash with the difficult reality of creating and supporting such a layer across four states.

Region (PSMFC)

Accomplishments specific to the Regional StreamNet project at PSMFC in FY-02 include routine project administration; maintenance of the database, GIS and Internet systems; and routine data updates. Data were coded to allow distribution by the newly defined NWPPC subbasins. The Protected Areas and Smolt Density Model data were converted from the 1:250,000 RRN system to the 1:100,000 LLID georeferencing system, making them available through the Web Query System (WQS), and the Protected Areas data were also made available through a dedicated interactive Internet mapping system.

A final report was written describing the mass adipose marking of salmon and steelhead at the request of the NWPPC. The first of a series of newsletters was written and distributed to several thousand recipients describing recent accomplishments and feature additions to the StreamNet web site. More than 850 people signed up to receive future newsletters. Several regional and cooperating agency staff gave presentations relating to StreamNet to the Organization of Fish and Wildlife Information Managers annual meeting, held in Portland, OR. Routine project reports (FY-01 annual report and four quarterly reports) were completed, bringing the quarterly reports up to schedule.

Significant improvements were made to the data delivery systems this year. The Web Query System was improved by incorporating ColdFusion software and installation of a new ColdFusion server. This allowed greater flexibility in programming the query system and subsequent resolution of a number of long standing issues and problems. With these changes, speed and reliability were significantly improved, and “up time” for the StreamNet online query system in now approaching 100%. In addition, new ArcIMS software was used to design and implement an on-line interactive mapping system to provide custom display of StreamNet data without users needing GIS software. The system also provides a new capability to locate data in the Stream Net database via map locations.

Several tools and new features were developed this year. An application was completed that converts locational data between the two primary 1:100,000 scale hydrography systems, the National Hydrographic Dataset and the LLID system. This tool is available on the StreamNet web site at http://www.streamnet.org/nhdllid/index.html. It allows data to be converted in either direction, and will simplify addition of data collected using the NHD to be easily incorporated into the StreamNet database. Another feature added to the StreamNet site was the ability to directly access data by Trend Number, bypassing the need to drill down to data using the query system. This is of use to users who have already located data but wish to revisit the same query periodically to obtain new information. This was done in response to user requests, but is considered a feature for experienced users who understand that the Trend Number is an internal tracking mechanism that does occasionally change as the data are maintained.

StreamNet began participation in a regional effort by the NWPPC to conduct a data needs and data availability inventory as preliminary to developing a Columbia Basin Cooperative Information System. This effort was contracted to Science Applications International Corporation (SAIC). The Program Manager and the CRITFC StreamNet project leader (representing CRITFC) both joined the Program Team to assist and provide guidance to the project. Information on data needs and availability are being collected by SAIC through an online questionnaire, face to face meetings, and focus group meetings. Work will continue into next fiscal year and results should be available in the second quarter next year.

A significant change occurred this year in the project renewal process. The NWPPC has enacted a new 'Rolling Provincial Review' process, wherein projects are reviewed once every three years for a three year period, by province, with provinces staggered to spread reviews equally for each of three years. StreamNet is part of the Mainstem/Systemwide Province, which was reviewed this year. The StreamNet Project Manager prepared an overview report (Data Management in Support of the Fish & Wildlife Program Summary, available at http://www.cbfwf.org/files/province/systemwide/subsum.htm) describing the current state of data management in the basin and outlining needed actions.

As described above, the StreamNet project proposal for FY 03-05 was written to include all potential data types that we could develop and deliver if funding was sufficient. This approach significantly expanded the amount of funding requested, but we assume that once regional priorities are established, the actual amount authorized will be significantly less. We took this approach to highlight the fact that there is no existing mechanism to establish regional data priorities, and we hope to initiate a discussion of this point. Final funding decisions are not expected until well into FY-03, so we developed the Statement of Work based on a level funded bridge budget. This level funding scenario makes no accommodation for the fact that expenses, particularly salaries, will in fact increase in FY-03. Since the StreamNet budget is already 85% personnel expenses, the net effect was to decrease the total amount of staff time on the StreamNet contract at both the Regional and cooperating agency levels.

Objective 1 Data Development and Updates, Priority Data sets

Support the need for region wide fisheries data for research, monitoring, modeling, and management through acquisition and regional standardization of new information and updates to previous information for priority fishery data types. These priority data types will be addressed by all data providing agencies, or for specific data types by a single cooperating agency on behalf of the entire project. This Objective addresses both anadromous and resident fish species, although priorities may differ.

Task 1 Distribution and life history (use type)

Document the occurrence, distribution and life history characteristics of native fish species, both resident and anadromous. Project participants have placed a high priority on updating these data during the fiscal year, utilizing newly re-defined use types.

Project	Accomplishments, FY-02

All Longstanding differences in definitions of current fish distribution and habitat use were resolved. These definitions were adopted by the Steering Committee, and data are now being developed under the new definitions. This will now allow for significant data updates, beginning the first quarter of FY-03.

IDFG IDFG has continued to fund people to enter historical and current data into the Fish Information System. Data types include information from IDFG reports, collecting permit reports, incidental observations from redd counts and historical files from IDFG and Bureau of Land Management field offices. The data are readily available to the StreamNet Project. The data also use StreamNet data standards, which eases the translation of the data into StreamNet data exchange format.

MFWP We visited MFWP biologists in 2002 to collect 2000-2001 fish distribution and supporting survey data and reference information. We also obtained distribution data from federal biologists using our developed interface although we are still in need of gathering more historic data from the USFS and BLM which has not been captured before. All of these data collected were entered into the MFISH tables. In addition to our regularly scheduled annually update, we attended and participated in all of the Yellowstone Cutthroat Assessment meetings and entered these data directly into MFISH. We also attended and participated in a similar process with Westslope Cutthroat later this year and the data will all go into MFISH. The MFISH data structure and data have been used for all the assessment and mapping. We produced hydrologic unit level maps with westslope cutthroat trout distribution, genetic sampling locations and public land ownership that were used during the meetings and distribution edits were completed on the maps. We exchanged distribution data in once during FY2002.

ODFW Through the combined efforts of StreamNet and the 1:24,000 Fish Distribution Development Project, Oregon was able to develop and/or update anadromous fish habitat distribution for the Oregon portion of the Columbia Basin. In addition, Coastal Cutthroat distribution was developed in the Scott Canyon 4th field hydrologic unit (includes Hood R. and Fifteenmile Cr.). Other non-comprehensive resident distribution was developed throughout the Columbia basin for rainbow and redband trout. Oregon's fish habitat distribution is available via www.StreamNet.org and at http://osu.orst.edu/dept/nrimp/information/fishdistdata.htm. The fish habitat distribution data were enhanced and improved by adding over 6,300 Fish Presence Survey records. In order to do this, we had to acquired the hardcopy data records, georeference each survey location, and adjust the database structure to ensure that all data anomalies could be adequately identified and addressed. Information from Oregon's Incidental Fish Observation Database was also used to enhance the fish habitat distribution data. While only one new record was actually entered during the year, several new data forms were submitted and will be entered during the next fiscal year. Most of the new forms will serve to confirm distribution that is currently based solely on professional judgment, rather than serving to increase the currently known habitat distribution.

WDFW We spent considerable time on distribution data and data formats to enable StreamNet submissions next year and to improve and expand our distribution knowledge. Prior to a comprehensive effort to assimilate all Washington salmonid distribution data into a single spatial database, we spent time refining categories used and their specific definitions. This paid off when StreamNet staff engaged in detailed discussions that resulted in an improved format for fish distribution (see Task 3.4). To prepare to exchange our first distribution dataset under the new format, we continually researched and proofed our most recently compiled data (bull trout) as the prototype. In September, we held the first in a series of "mapping parties" for the lower Columbia River to begin to assimilate existing distribution datasets into the new WDFW standardized format, which will form the source of future data exchanges. We also improved the spatially enabling of resident and anadromous fish data (including bull trout and coastal cutthroat sampling in lower Columbia River tributaries) which will help support future updates to the distribution datasets.

Region Significant progress was made toward developing an updated fish distribution and habitat use data set at the regional scale. After more than a year, agreement was reached among project participants on coding definitions and database structure for current fish distribution. This agreement allows development of resident fish distribution data in addition to anadromous in the same database, and resolved longstanding issues of different approaches in the individual states. Data are now being developed under the new definitions and will be added to the StreamNet database beginning in the first quarter of FY-03. The new approach captures general interpreted distribution of fish as determined by the best professional judgment of agency biologists, based on documented occurrence plus knowledge of suitable habitat and absence of barriers. Future efforts will be made to also develop data based on documented observations.

Task 2 Adult abundance in the wild

Develop and maintain information on adult abundance for native fish species, resident and anadromous, including escapement, redd counts, peak spawner counts, trap counts and dam and weir counts. Also included in this data category are data gathered during spawning ground surveys regarding straying of hatchery fish onto spawning areas, i.e., marked/unmarked ratio. Priority is given to updating these data through 2000.

Project Accomplishments, FY-02

CRITFC Adult abundance trends were updated through 2001. These included both counts at mainstem hydroelectric dams and in the Yakima River subbasin. The Yakima basin counts are maintained in a central location by the tribe and are, therefore, easier to obtain than similar information from other subbasins and tribes. Tribal escapement data from other locations are more difficult to obtain. CRITFC has little influence over the operation of tribal programs, which are administered and funded separately. In most cases, data from tribal escapement surveys are maintained on individual computers and are not organized or managed in a coordinated manner. Tribal staffs have little time to respond to repeated or extensive data requests. We will address this problem in FY03 by developing value-added data handling tools that may make responding to data requests easier for tribal staff.

IDFG We completed a much needed review of our entire redd count database. The review and corrections included 1) verification of the transect location and count values for each transect, 2) corrected mislabeled species and runs, 3) added data missing from our existing database 4) incorporated carcass counts and 5) examined the location of each trend over time. Although correcting the core fishery data, we found a large variation in the location and length of trends over time. We believe that further review is required to redefine Idaho redd count trends, but were unable to complete it under this year's statement of work. We did develop some tools to help analyze those trends, but put that analysis off for a later time. We brought our redd count database current with the year 2000 field season. We used our existing trend definitions to roll up our redd count data into StreamNet data exchange format. We submitted these data within a couple of weeks of the end of this fiscal year. 2001 field season redd count data began to trickle in toward the end of the year. We compiled this data into our database.

MFWP These data for all surveyed streams in Montana are now complete through Calendar Year 2001 including trend (population estimates), count and references; We have not exchanged these data with StreamNet due to state concerns about redd locations; we will revisit this issue with our Fisheries Division managers and administrators to see if a middle-ground can be reached. During the westslope assessment process, we collected existing field survey data, and will enter next year.

ODFW Oregon StreamNet accomplished the goal of updating all trends with available data through 2000, and many through 2001. We also made three abundance data submissions during the year which was our commitment in the project Statement Of Work. A special effort was made to increase the number of resident fish trends from Oregon, and to update the existing resident trends. QA/QC efforts were increased during the year which led to many Columbia Basin, and some coastal trends being corrected. Due to budget reductions and the lack of non-BPA support, Oregon was forced to abandon it's efforts to update coastal trends, which represents the greatest number of trends in StreamNet from Oregon. This lack of support and resulting static coastal trends gives the perception that StreamNet is not up-to-date or that Oregon is no longer conducting it's coastal surveys.

WDFW This year we assigned one staff member's time almost exclusively to adult abundance (natural spawner) data. This approach enabled us to submit salmon spawner data through 2000 (our first natural spawner update since 1998) and to improve data flow between the compiler and the biologists generating the data.

Region Regional and FWS staff agreed on a process to obtain redd count and hatchery fraction data collected by FWS hatchery employees that have not been captured previously in the StreamNet database.

Task 3 Hatchery releases

Develop and maintain information on the release of hatchery reared fish. Priority is given to updating anadromous release records using RMIS data for anadromous species through 2000. Release data for resident species are currently low priority and will require specific resources in the future. Efforts this year will focus on creating cross references between PSC release codes and LLID stream location identifiers. We will explore means of providing data on specific release locations rather than more general PSC codes.

Project Accomplishments, FY-02

ODFW Oregon StreamNet submitted test release data from a single facility in the Willamette Basin in accordance with our Statement of Work commitment. The compilation process that was developed and tested during this effort should lead to a more complete hatchery release data submission from in future years. Our compilation process will remain fluid unless and until a more stable data exchange format is approved. Efforts to submit data in an unrolled format were only partially successful. Some of the information that would be required in order to have truly unrolled data that adds value to what is currently available from RMIS is simply not easily available from ODFW present system. If the decision is made to further pursue unrolled release data, Oregon will contribute to the extent that is possible.

USFWS National Fish Hatcheries throughout the Columbia River Basin recorded fish release and transfer information in CRiS database files. Lot History information was recorded in Lot History Start files. Copies of these data files were sent to the Columbia River Fisheries Project Office. There, Steve Pastor, with the StreamNet project, ran programs which produced files in the PSC format 4.0. These files where then forwarded to the US Fish & Wildlife Service Western Washington Office to be submitted to the Regional Mark Information Center.

WDFW We postponed progress on a WDFW hatchery release submission to StreamNet when we added a commitment to deliver a Washington Dams dataset, based on a Project-level decision (see Task 1.5). Hatchery releases continued to be a highly requested data category. WDFW submitted frequent updates to the PSMFC RMIS anadromous fish release database.

Region Efforts to update hatchery release data (previously done by obtaining RMIS release data and adding georeferences) has been prevented by the fact that PSC and RMIS codes do not translate completely and unambiguously to the 1:100,000 LLID georeferencing system. We initiated efforts to determine the best means of resolving this problem, either by obtaining release data from the production agencies before data are rolled up into PSC codes, or by developing PSC/RMIS code to LLID cross references. Test data sets have been obtained, but additional work will continue next fiscal year to resolve the problem.

Task 4 Hatchery returns

Develop and maintain information on the return, disposition and straying of adult fish returning to hatcheries, including information on coded wire tags. This is an anadromous related task only. Priority will be placed on updating total return and egg take data through 2000. Development of disposition data is lower priority and would require additional resources.

Project Accomplishments, FY-02

IDFG We completed a comprehensive review of our entire hatchery returns database. The review and corrections included 1) verification of data values, 2) correction of mislabeled species and runs, 3) adding data missing from our existing database and 4) examination of the location of each hatchery. We updated our hatchery returns database to the year 2000 return season. We rolled up our data into StreamNet data exchange format and submitted them to PSMFC. As 2001 return season data became available, we entered it into our database.

ODFW Oregon StreamNet updated all hatchery release trends with available 2000 and 2001 information. As part of this effort, a number of new release trends were added to the StreamNet system. Disposition information was not included with Oregon's submittals as the data exchange format was not finalized during the year.

USFWS National Fish Hatcheries throughout the Columbia River Basin recorded fish return information in CRiS Fish Removal database files, and egg take information in CRiS Egg files. Copies of these data files were sent to the Columbia River Fisheries Project Office. There, Steve Pastor, with the StreamNet project, ran programs which produced files in the StreamNet Hatchery Return format. These files where then forwarded to the StreamNet.

WDFW We made refinements and a major overhaul to our internal database system and process, submitted an update to StreamNet for 2000 return year data and started updating the internal database with recently discovered historic data going back to 1938.

Region Hatchery return data traditionally related to return to hatcheries, but hatchery fish returns to spawning grounds can be a significant phenomenon, yet the extent of such straying is largely unknown. Regional staff and ODFW StreamNet developed an initial database structure for collecting and storing preliminary data of this type. These data, if fully developed, would be valuable for quantifying the success of hatcheries and any effects on naturally spawning populations. Development of this kind of data was proposed as new work as part of the FY-03 project proposal.

Task 5 Dams and Fish Passage Facilities

Develop and maintain information on dam facilities. Enhance the existing StreamNet dams data set by updating relevant data from the Pacific Northwest Hydropower Database and Analysis System (NWHS) and the National Inventory of Dams.

Project	Accomplishments, FY-02
IDFG	Because the work to review our fisheries data sets took longer than anticipated, we were unable to submit our dams. We have, however, added and verified LLID and measure assignments for dams. We have also incorporated hundreds of additional dams not present in the National Inventory of Dams. These data were obtained from the Idaho Department of Water Resources. We still need to cross-reference the IDWR codes to StreamNet codes, before we will be able to submit these data.
MFWP	We completed the creation of a spatial coverage and associated tabular data for the dams in Montana. The layer and data were created using the NWHS and the National Inventory of Dams which we combined, manually checked when there was duplication or discrepancy, and also used the GNIS for quality checking as well as source information. Upon completion, the spatial layer and the tabular data were sent to Gladstone in the StreamNet data exchange format in December 2001.
ODFW	Significant quality assurance / quality control efforts lead to improved locational accuracy for a number of Oregon dams in the StreamNet system. This effort also led to the identification of duplicate dam records, which were removed. Oregon StreamNet exchanged all the necessary information associated with 98% of the dams that exist in Oregon's database. Most of the remaining dams are missing reference information, which is required for submission to StreamNet.
WDFW	To accommodate regional interest, we added a Washington Dams dataset delivery to our Statement of Work this year after our work planning was complete. Despite predictions of 1.5 months of work in the first quarter, it took us about 5 months of staff time, which spanned three (3) quarters. Our GIS programmer was not available to assist in correcting point locations on the spatial layer we inherited, so we did the work in an ArcView Project. This work was useful, since it set valuable foundations for further work. But we learned a valuable lesson about the cost of adding major tasks once available staff time has already been accounted for.

Task 6 Hatchery Facilities

Develop and maintain information on anadromous and resident hatchery facilities, including information on location, design, management and authorization. Information will be updated through 2001 for required fields. We will review the optional (non-required) fields in the DEF.

Project	Accomplishments, FY-02
IDFG	We updated our hatchery facilities data by adding recent personnel changes. We also verified the LLID and measure assignments for each hatchery. Finally, we converted our hatchery facilities data info StreamNet data exchange format and submitted the data to PSMFC.
ODFW	Oregon's hatchery data submissions were all associated with facilities that are already maintained in the hatchery facilities database. Consequently, no temporary or new facilities needed to be added during the year. However, significant improvements were made to the locational accuracy and detailed information associated with our existing hatchery records. In particular, elevation information was added to many of the existing records, while other facilities were made StreamNet ready but locating and inputting required information. We successfully submitted all of Oregon's hatchery facility records to StreamNet by the end of the year.

USFWS The FWS Project Leader sent a current Hatchery Facility database file to StreamNet.

WDFW We submitted Hatchery Facility updates to StreamNet for extra hatchery codes and better hatchery location information. StreamNet staff also worked with the WDFW GIS Manager to provide a base data layer as well as assistance on determining appropriate content and visual representation when hatchery facilities were tapped as a primary dataset for "SalmonScape", the agency's first ArcIMS project. SalmonScape will go public in mid-January 2003.

Task 7 Harvest

Develop and maintain information on sport and commercial harvest. Higher priority is assigned to anadromous species.

Project Accomplishments, FY-02

CRITFC A review of harvest data in the StreamNet system revealed serious problems. The original strategy was to record catches from landing data for each port of landing and to let the user aggregate that data in a variety of ways. That approach was not obvious to the user, was difficult to maintain, and was not implemented in the query system. Consequently, harvest queries returned incomplete and inconsistent data. The Steering Committee agreed to change the approach to one of reporting catch by standardized catch reporting areas used by various management groups.

Ocean harvest data were assembled from Pacific Salmon Commission and Pacific Marine Fisheries Commission reports. The following sets of reports are being tested: 1) written descriptions and a map of coast-wide catch summary areas, 2) Total chinook and coho catch for 6 standard ocean areas, 3) Aggregate Columbia River mainstem commercial, sport, and ceremonial and subsistence catches for 3 reporting areas, and 4) Stock-specific catches for Pacific Salmon Commission Columbia River indicator stocks by catch area.

The review of these new data was not completed in FY02 because the people capable of review did not have the time for the task. This review is done gratis to the project by people with heavy demands on their time for other duties. The review will be completed in FY03 and the new data will be loaded into StreamNet.

ODFW Updated sport harvest information was not obtained by Oregon StreamNet staff until the final quarter of the year. Consequently, only 10 records were submitted to StreamNet. We anticipate being able to update all existing sport harvest records in StreamNet through 2000 during the next fiscal year. A limited amount of punch card data was also acquired and incorporated into Oregon's dataset. This information will be submitted during the first quarter of FY-2003 once we acquire and input the remaining information that has been promised to us.

WDFW Harvest data has not been a high priority for WDFW staff since freshwater data is not easily compilable at this time and marine data are being compiled by others. WDFW resolved the 60K harvest trends previously compiled by PSMFC, handled a few WDFW data requests and spent time reviewing the viability of port locations.

Objective 2 Data Development and Updates, Other Data sets

Support the need for region wide fisheries data for research, monitoring, modeling and management through acquisition of new information and updates to previous information for data sets of medium or lower priority as time and funding allow. This objective includes anadromous and resident species.

Task 1 Habitat Restoration/Improvement Projects

Acquire data sets related to habitat restoration / improvement projects from the multiple agencies, tribes and organizations within the Columbia Basin and compile and maintain them in standardized, consistent formats. This data category is still being organized, but interest in this information is growing. Existing data sets will be maintained and enhanced as practical. Additional sources of this information will be explored.

Project	Accomplishments, FY-02
ODFW	Oregon's commitment related to restoration project data during this year was to update and/or correct errors that may be discovered in existing StreamNet restoration data. No errors were brought to our attention, and consequently no updates were submitted during this year.
WDFW	Habitat Restoration is a low priority for WDFW until new funding and staff work plans will allow us to make significant progress. Yet, WDFW was attentive to a few data and issues that will enable a StreamNet submission for this data type. We participated actively in discussions about the StreamNet DEF, looked at related Limiting Factors Analysis data to assess the usefulness of ArcView Projects for this kind of data analysis and showcased the issues surrounding collecting and presenting Habitat Restoration Project data in the OFWIM Annual Meeting (November 2001).
Region	Efforts to collect habitat restoration projects data were low priority this year. No need for changes to the database structure was encountered. A PSMFC-administered project in California that complements StreamNet has been working with habitat restoration data and suggested several desirable database structure improvements. These changes were proposed to StreamNet, but were not adopted at this time due to this data type being downgraded in priority. These proposed changes have been recorded and will likely be adopted if this data type becomes higher priority in the future.

Task 2 Barriers and diversion/screening

Develop and maintain data sets for barriers to fish migration and diversion structures with information on screening status. This category is still being organized. Existing data on adult barriers will be maintained and updated as practical. Other sources of data will be explored. Work on juvenile barriers, culverts and diversion screening may require additional resources. The primary emphasis is on anadromous species except in non-anadromous areas.

Project	Accomplishments, FY-02
MFWP	We continue to collect barrier location, species affected and other fields on stream barriers in Montana. We are collecting data on all species regardless of life history. Plans were in place to exchange these data to the StreamNet database in FY02 but were delayed because new barriers data is forthcoming as a result of the statewide westslope cutthroat trout assessment meetings, which will not conclude until early FY03.

ODFW Significant quality assurance / quality control efforts lead to improved locational accuracy for a number of Oregon migration barriers in the StreamNet system. In addition, new barriers associated with hatchery facilities were inputted into the system. Ninety six percent of the total number of barrier records in ODFW's database was exchanged with StreamNet. Most of the remaining barriers are missing reference information, which is required for submission to StreamNet, so they cannot yet be exchanged. Our QA/QC efforts also lead to a large number of fish barrier records to be derived. Two separate fish barrier data submissions were made by Oregon StreamNet during the year.

WDFW Due to a lack of available data and other pressing priorities, WDFW did not actively participate in StreamNet discussion related to barriers and screens data this year. Our progress this year establishing a master dam layer AND initiation of an agency effort to identify sources of barriers and screens data will facilitate WDFW StreamNet work on these categories of data in coming years.

Task 3 Juvenile data, abundance and outmigration

Develop and maintain information on smolt production (as determined from smolt traps), juvenile abundance (as determined through snorkel, electrofishing, and other surveys), and smolt density model estimates. Primary emphasis will be on maintaining the existing smolt density model data. The rest of this data category is still under development and may require additional resources to accomplish.

Project Accomplishments, FY-02

CRITFC Reminders requesting smolt data were sent to tribal contacts. These requests were not completed for reasons described under Task 1.2, above. These data types will be included in the prototype data reporting tools developed and tested with Yakama Nation data next year.

IDFG The Juvenile Trapping Application developed by IDFG/StreamNet was used this year during IDFG trapping operations. In addition, outside cooperative agencies and tribes have expressed interest in this application. We also obtained the Idaho General Parr Monitoring Database. The intent is to post these data on the StreamNet web site as an independent data set until we can complete the necessary work to incorporate it into the StreamNet hydrography. Metadata is being developed for the dataset before being submitted to PSMFC.

WDFW We directed the data collection and performed the raw data compilation for the Cedar Creek Watershed adult and smolt trap database to pilot a workable approach to compilation of juvenile outmigrant data. The results of this effort enabled us to more easily compile and submit the relevant adult data to StreamNet and will allow a juvenile data submittal next year.

Task 4 Age

Develop and maintain information on age/sex composition of returning adults, primarily for anadromous species. This is a medium priority, with the primary focus on developing data for a test location for each cooperating agency this year as a means of testing data organization/format and utility.

Project Accomplishments, FY-02

CRITFC Reminders requesting smolt data were sent to tribal contacts. These requests were not completed for reasons described under Task 1.2, above. These data types will be included in the prototype data reporting tools developed and tested with Yakama Nation data next year.

IDFG As part of the review our hatchery returns database, we reviewed all of our related age composition data. The review and corrections included 1) verification of data values, 2) correction of mislabeled species and runs, and 3) the addition of data missing from our existing database. We updated our age composition database to the year 2000 return season. As 2001 return season data became available, we entered it into our database. There is not a finalized StreamNet data exchange format for age composition data. It is being developed in conjunction with modifications to the hatchery returns data exchange format and we anticipate we will be able to submit our age data to PSMFC during FY 2003.

MFWP Currently, Montana fisheries biologists collect fish scales for age analysis on a limited number of our larger rivers and reservoirs; analysis of these scales isn't conducted consistently and these data are not entered consistently into a database. We are not considering at this time to do any further exploration of this data type in Montana.

ODFW Oregon StreamNet staff compiled a limited amount of age data and tested them against the existing DEF. No age data were actually submitted because the data did not fit well into the current DEF. We will continue to seek out new age information and will evaluate previously submitted age data against the current DEF, and will suggest DEF changes as needed in order to incorporate all of Oregon's data.

USFWS CRiS Fish Removal files created by National Fish Hatcheries are combined with Age Composition information to produce an overall Age Composition for most fish returning to National Fish Hatcheries in the Columbia River Basin. Steve Pastor maintains and runs dBASE programs which read these data files and create new files in the StreamNet Age format. This file was sent to StreamNet.

WDFW We continued to internally compile age data and manage the scales database for lower Columbia River tributary fish stocks. The best opportunity to perform a test exchange of age data will be next year after the proposed hatchery returns DEF is finalized.

Task 5 Production factors and run reconstruction

Develop and maintain information on survival, production factors, spawner / recruit estimates, and run reconstruction. This is currently a low priority, but the existing spawner / recruit estimate data will be maintained.

Project	Accomplishments, FY-02
All	No activity was performed on this low priority data type during this quarter.

Task 6 Habitat

Acquire data sets related to fish habitat (including water quality, stream/watershed habitat quality, temperature, invertebrates, and miscellaneous habitat data) from the multiple agencies, tribes and organizations within the Columbia Basin and compile and maintain them in standardized, consistent formats or archive them in original format, as appropriate. This is currently a low priority under the existing contract, and data development will be pursued only on other funding. Data developed on other funding will be organized and included in the StreamNet database.

Project	Accomplishments, FY-02
ODFW	For Oregon, this task was intended to be accomplished on an opportunistic basis. Because no new habitat information became available that could be incorporated into the StreamNet system, no effort was made on this task during the year.

Task 7 Genetics

Develop and maintain information on genetic information and data sources for areas where genetics data exist. Efforts this year will concentrate on organizing existing information, and then working on a Data Exchange Format.

Project Accomplishments, FY-02

CRITFC A prototype catalog of available genetic data sets was developed and demonstrated to genetics researchers and to the Steering Committee. A catalog of collected genetics data was felt to be more appropriate because the available information is not static, with new tests being continuously developed. However, the various agencies could not agree to support the catalog approach, or any other single strategy for reporting genetics data through StreamNet. Therefore a recommendation was made to drop this data category from the StreamNet system for the time being. Individual participants are free to report genetics data individually should they wish to do so.

MFWP We continued to receive all the genetic analysis results from the University of Montana Genetics Lab for sampled populations of Montana's species of special concern and are current through 2001. We updated the associated fish distribution table when new genetic samples warranted editing that field. We explored the creation of a DEF with the Steering Committee; it appears that if a DEF is created, it will only contain collector information not analysis. Montana is willing to provide these data to the region as a supplemental database if desired.

Task 8 Information generated during Subbasin Planning

Work with Subbasin Planners to acquire information that is developed for Subbasin Plans and make it available basin wide in a standardized format. Data that fit the existing DEF will be incorporated in the queryable database. Otherwise, data will be posted 'as is' and made available on the StreamNet website. Actual data development beyond the existing DEF would require additional resources.

Project Accomplishments, FY-02

CRITFC The Northwest Power Planning Council’s subbasin planning efforts have been largely delayed until FY03 and beyond. Consequently, no work was performed on this task in FY02.

MFWP We discussed Montana's subbasin effort with our CBFWA representative and FWP will host the website that will contain the Subbasin Planning documents for the Flathead and the Kootenai Subbasins. We met with contractor and will post the information next fiscal year.

Task 9 Supplemental data sets

Obtain data sets that are important to regional monitoring and management but that do not fit the existing DEF for posting 'as is' on the StreamNet web site. Primary emphasis will be toward resident fish data developed by BPA funded fish and wildlife projects, data developed by cooperating agencies on other funding, and data developed by the FWP.

Project Accomplishments, FY-02

ODFW Oregon's efforts related to acquiring resident fish data are described under Objective. 1, Task 2 as the results were incorporated into our Oregon Trend Dataset. Other efforts centered on developing information to enhance Oregon's species location information. This type of information will be useful as we look to expand Oregon's fish habitat distribution information to other species, particularly game species other than salmonids.

WDFW We obtained copies of resident fish presence and habitat sampling data from the Blocked Area (above Grand Coulee Dam) from staff on the Joint Stock Assessment Project (JSAP), a BPA funded effort to develop a management plan for resident fish in Northeast Washington. We assessed dataset contents and compared them to similar assessments being done on warm water fishes in the lakes of that region, providing guidelines for JSAP staff who want to import the lakes sampling into their datasets. We then began an assessment of how to convert and exchange these data with StreamNet, but were stalled by the lack of development of an appropriate StreamNet format to use. StreamNet's "Fish Survey" dataset may become the appropriate vehicle once finalized, but in the interim, we will look at providing JSAP data to StreamNet for "warehousing" in its native format. The region needs to further discuss whether the level of detail available in datasets like these JSAP datasets is useful or even appropriate for dissemination across the Basin.

Task 10 Carcass placement

Work with management agencies to capture information on placement of salmon carcasses and results from carcass placement projects. This is currently a low priority and will require additional resources to take on as a primary data type. Existing data may be acquired for posting 'as is'.

Project Accomplishments, FY-02

ODFW Oregon StreamNet successfully exchanged carcass placement information from throughout the state of Oregon. While the statement of work stated we would exchange 1999 information, we actually intended to capture 2000 information. This information was posted on the NRIMP web site at http://osu.orst.edu/dept/nrimp/information/index.htm in both html and MS Excel format. A link was provided to this site from the StreamNet site and was labeled an 'as-is' dataset. The provision of this dataset was made possible in part because of Oregon StreamNet's efforts to develop a database to capture this type of information. Other agencies in the basin have expressed interest in using our data structure in their areas of responsibility.

Task 11 Populations - status and delineation

Develop a data set to describe population status as determined by other agencies. This is currently a low priority, and efforts will be exploratory in nature during FY-2002. Links to existing data may be posted on the StreamNet web site.

Project Accomplishments, FY-02

IDFG This task was of lower priority than our objective 1 tasks. Our data reviews and compilation of our core data sets took longer than anticipated and we did not get any work done toward the status and delineations of populations.

MFWP Outside of this contract, we are creating on-line field guides with the Montana Natural Heritage Program; these field guides will include our State Rank for Species of Special Concern. The Field Guides will incorporate our native species management areas and our bull trout and westslope cutthroat trout conservation areas. We have continued to work with FWP Fisheries Division to complete the Native Species Management areas.

Task 12 Develop other data sets

On an opportunistic basis, develop data that relate to other existing data sets in the StreamNet database or would be useful for regional planning, monitoring or management efforts. This is a low priority, but some efforts may be expended if the data appear useful and they can be obtained within current resources.

Project	Accomplishments, FY-02
IDFG	No new efforts were begun this year to develop new datasets. However, we continued to support IDFG fisheries staff in their data entry of collecting permit reports and IDFG/BLM regional office files into the Fish Information System.
ODFW	Oregon StreamNet submitted new photographic data during the first quarter of the year. Efforts were also made to increase the number of photographs for the Central Oregon portion of the Columbia Basin. This is an area where we lacked very many photographs, particularly photos of barriers and dams in the area. Efforts to acquire and exchange a test mark-to-unmarked ratio dataset were halted when it became clear that more discussion was needed to determine exactly what information is needed at the regional level. Hatchery fraction information was compiled and exchanged for Bonneville Dam, but this submission is also viewed as a test dataset because StreamNet's DEF needs to be modified to allow compilers to capture all information that is relevant to regional data users.
Region	Regional staff acquired GIS coverages for evolutionarily significant unit (ESU) boundaries of anadromous fishes from NMFS, and 5th-field and 6th-field hydrologic units (HUC) from the Regional Ecosystem Office. We intend to add the ability to query StreamNet data by these criteria in the on-line query system during fiscal year 2003. Querying by ESU will allow users to more easily obtain data related to specific ESUs of interest. Querying by 5th-field or 6th-field HUC will allow for easier querying of data that relate to land-use decisions related to specific areas. We hope these capabilities will significantly ease retrieval of relevant data for users.

Objective 3 Data Management and Delivery

Provide high quality data management services, with specific emphasis on the creation of regionally consistent data sets and the timely delivery of data to users in formats that meets their policy, planning, and management needs

Task 1 Maintain and enhance tabular database systems at the project and regional levels

Maintain functional tabular database programs at the agency and regional levels to make consistent tabular data sets for anadromous fish, resident fish and to a lesser extent wildlife available through the StreamNet online database system. At both the regional and agency levels, provide database management and administration necessary for accomplishing StreamNet objectives, to include: 1) maintaining and updating the hardware and software systems necessary to support the StreamNet project, and 2) enhancing or optimizing StreamNet database structures and capabilities.

Project	Accomplishments, FY-02

IDFG During 2002 we received funds from IDFG to greatly expand our infrastructure and database management capabilities. We purchased new workstations for all of our staff. These computers were placed on the IDFG computer replacement cycle, so that we are no longer dependent on StreamNet for computers. We also purchased two new Windows servers. These servers now function as separate database and spatial mapping servers. We converted our old database server into a Windows 2000 domain controller. We implemented a comprehensive backup and recovery system on all the servers. In addition to Windows 2000 Server, the following major software was installed on the computers: SQL Server 2000, Microsoft IIS, .Net development framework, ArcGIS 8.2, ArcSDE 8.2 and ArcIMS 4.0. We were also able to add a number of peripherals, including a 42" wide inkjet plotter, an 11X17" color inkjet printer, and a scanner.

MFWP We continued to maintain our system using SQL Server and connections to remote locations continued to be successful. We enhanced the MFISH tables with all the lake information, Wild and Scenic designation, and Navigable rivers and streams, all non-StreamNet funded data.

ODFW Oregon StreamNet engaged in numerous efforts to modify and enhance user interfaces and database structures that aid in converting Oregon data to StreamNet format, thus creating easier data entry processes and enhancing report and query capabilities. Oregon also created new tools to increase efficiency in data capture and to centralize many of our commonly used database functions. Staff continued to spend a great deal of time working with Regional StreamNet to resolve problems with data submission routines related to Oregon's abundance data. New tabular data programs were developed to support both StreamNet and the efforts of Oregon's 1:24K Project, including database structures related to life-stage timing, and fish screens and passage data. We also developed a 2 tiered approach to documenting the contents of our tabular datasets (tabular metadata). We anticipate creating an online tool to allow Oregon StreamNet staff as well as other Oregon data contributors to develop metadata for all Oregon tabular datasets.

USFWS The FWS Project Leader began modifying current programs for the new PSC format 40.

WDFW WDFW staff met several times for detailed discussions of data coding, conversion issues, and work assignments in order to continue smooth progress toward data exchange. Topics such as the major changes required to our internal fish distribution datasets helped highlight the fact that tabular and GIS data management are too closely related to easily separate in our discussions. Staff continued to rely heavily on the contents of the most recent Access database that StreamNet makes available to insure our understanding of the data presented in StreamNet is accurate. This database should be updated at least twice a year to retain its effectiveness in helping us improve data exchanges. Finally, we completed the re-organization of our separate internal Hatchery Returns and Natural Spawner databases to improve the process for future data submissions. Next year we will use two staff members to submit data directly to StreamNet's Regional Data Manager.

Region Routine maintenance and administration of the SQL Server databases and servers continued. SQL Server 7.0 was upgraded to SQL Server 2000 on the test database/ArcSDE server.

Task 2 Maintain and enhance the GIS and hydrography database systems at the project and regional

Maintain functional Geographic Information System programs at the agency and regional levels to make consistent GIS layers for anadromous fish, resident fish and to a lesser extent wildlife available through the StreamNet online database system. At both the regional and state levels, provide GIS management and administration necessary for accomplishing StreamNet objectives, to include: 1) maintaining regional and agency-level GIS systems, including hardware and software, and 2) maintaining a regionally consistent hydrography layer at the 1:100,000 scale.

Project	Accomplishments, FY-02

IDFG As part of our overall infrastructure, we migrated from ArcInfo 7.x on a UNIX workstation to ArcGIS 8.2 managed via a license manager on our Windows 2000 Server domain controller. We also installed ArcSDE 8.2 and ArcIMS 4.0. We have maintained ArcView 3.x for ease of use until we become more familiar with ArcGIS 8.2 and for backward compatibility with existing applications. We have also added a new 42 inch wide plotter for map production, an 11x17 inch color inkjet printer and a scanner for adding imagery to our database holdings.

MPFP Staff met with MFWP Administrators in October to prioritize data development needs, and follow-upped with each division to set priorities for the year. We updated antelope, sage grouse, native fish species management areas (Non-StreamNet funded) and tabular data with associated spatial component for snow track surveys, fishing regulations, and upland game bird projects and are currently updating the Bighorn Sheep, Mountain Goat and Black Bear layers (funded outside StreamNet). We drafted a GIS Data Dissemination Policy for MFWP, developed a 4 hour GPS training course and sent 2 staff to each region during January to present it. We provided ArcView Training for MFWP staff in December and again in March. We completed placing a database of our GIS layers (with metadata, map image and two downloadable formats) on the FWP public and internal website. We provided GPS training to all FWP staff at regional and Headquarter trainings programs in January and February of 2002. They were very well received and included a training manual. We established standards and guidelines for GPS purchase and settings. By providing this training, we anticipate data that we receive will have better location information as to survey and distribution.

We continued to work with Natural Resource Information System staff and StreamNet GIS staff to maintain the 1:100 K NHD hydrography for Montana; we enhanced the data layer with lakes and reservoirs and included stream level LLID routes. A training session on using the NHD will be conducted by NRIS staff in October, 2002 and StreamNet staff will assist with development of the training program.

ODFW Oregon worked to improve the synchronization between ODFW and StreamNet's 100K data, and performed quality assurance / quality control on stream route and arc data throughout the year. We also upgraded our GIS software in order to stay current and compatible with other GIS users. Developing new and updating existing spatial metadata was also a significant focus during the year. Data users have been very complimentary of our metadata, but we continue to make enhancements as the need arises. ODFW's spatial metadata can be found on the web at http://osu.orst.edu/dept/nrimp/information/index.htm.

WDFW The work to code locations or resolve location issues is key to success in preparing and submitting data. WDFW "froze" the contents of the 100K hydro layer, concentrating instead on development of a 24K hydro layer (on other funds) and improving both the content and organization of our fish distribution data. With less access to GIS programming resources, we started using ArcView projects to meet compiling needs, to improve SuperCode records, to provide greater accuracy for point locations and to prepare better partial stream stretch or marine polygon visual aids. Next year WDFW is hiring an extra GIS programmer who can work with the WDFW StreamNet staff to integrate the information we generated outside the internal system and together we can define the best tools and processes to use for future compiling.

Region We conducted GIS data updates and additions and created various tools during the year to improve data connectivity and interoperability. We added cross-tables so that maps and other images can be queried on-line according to subbasins as defined by NWPPC in 2001. And, we assisted a PSMFC administered project similar to StreamNet in creation of a routed hydrography layer for California using standard attributes and formats already in place in the Pacific Northwest, which will facilitate transfer of data between databases.

Task 3 Data management and coordination

This task includes data management after they have been developed. Once data are submitted to the regional database, assure they fit established formats, perform appropriate error checks, and load the data into the StreamNet database and perform routine management of the data. The regions and contributing agencies will collaborate to fix problems and assure seamless loading of data into the database.

Project Accomplishments, FY-02

IDFG We completed comprehensive reviews of our hatchery return and redd count databases in order to insure accurate consistent data to the regional StreamNet system. We continued to compile a list of modifications and additions to the Idaho hydrography route system.

MFWP Database systems used by MFWP StreamNet were maintained.

ODFW Oregon staff worked continually with PSMFC staff to submit appropriately formatted data and to ensure the data are posted online. Much of our effort centered on fish abundance trends, hatchery release and return data, and fish habitat distribution data. We also made the transition to submitting data in MS Access 2000 format.

WDFW We responded to all questions posed by the StreamNet Regional Data Manager following data submissions. Sometimes the data were re-submitted and sometimes the issues were resolved merely by conveying written instructions on how to correct or improve the data. All such "informal" resolutions will eventually be followed up by a re-submission so our internal databases don't become out of synch with the StreamNet database. The WDFW StreamNet Data Manager also improved internal documentation on the final conversion process so that her Region 5 lead worker can exchange some datasets directly with StreamNet next year. This should improve our dataset exchange rate in the face of continual requests to address additional data categories. She also worked with the Regional Data Manager to adopt exchange protocols and revise the existing exchange documentation form.

Region As new data and data updates were received from the cooperating agencies, they were run through a series of QA queries and then either loaded into the StreamNet database or returned to the data developers for additional work. Significant changes in the amount of records in the StreamNet data tables included:

- Doubling of Hatchery Return data,
- Sixteen fold increase in the number of lakes in the WaterBody table,
- A 75% increase in barriers to fish migration,
- Approximately 30% increase in both Escapement data and fish Distribution data,
- Approximately 10% increase in both the number of data Trends and References,
- Approximately a third of the 60,000 series TrendIDs that were originally entered by PSMFC were replaced by records from WDFW, ODFW, IDFG and CDFG, and
- Completion of a georeferencing project to categorize the State, County, HUC4, Region, Province and Subbasin of all location codes.

A major accomplishment this year was conversion of the Protected Areas and Smolt Density Model data sets to the LLID georeferencing system. Previously, these data were geographically referenced only to the 1:250,000 scale river reach number (RRN) system while all other StreamNet data had been converted to the 1:100,000 scale LLID system, preventing full integration of these data with the other data in the StreamNet database and requiring complex programming for the on-line query system to make these data available. Some of the original locations could not be interpreted and mapped onto the new system, however. We have indicated this problem to users, and plan to determine the correct coding for these remaining records in conjunction with subbasin planners during fiscal year 2003.

Task 4 Data Exchange Standards

Establish and maintain data exchange standards to ensure consistent content and format of data that originate from multiple data sources. Track adopted and proposed data exchange formats and location coding (including metadata) for data categories described under Objectives 1 and 2. At the regional level, this task will provide coordination and technical assistance regarding interpretation of database structures and codes. At the agency level, this task will provide similar coordination and technical assistance to activities applicable to StreamNet.

Project Accomplishments, FY-02

CRITFC Proposed DEF changes were reviewed and commented on as appropriate. This was not an area of primary focus for CRITFC because we report a relatively narrow range of data and the associated DEFs are worked out and agreed to.

IDFG Working through Steering Committee meetings, technical subcommittees and the StreamNet forum website, we contributed input and comments on the development of the generalized fish distribution and hatchery return data exchange formats. We also provided feedback on a new protocol for making new or modifying existing data exchange formats.

The Fish Information System (FIS) applications that we have developed continue to pay big dividends. IDFG fishery biologists have found the data to be very useful. The FIS uses StreamNet data standards, which eases the translation of data into StreamNet exchange format. Because of the value of the FIS databases, IDFG fish biologists have begun to incorporate StreamNet data standards into their own stand-alone databases. This increases our ability to make use of these data. One such example was a project funded by the US Fish and Wildlife Service where we combined data from StreamNet and IDFG regional offices for use in delineating bull trout critical habitat.

FWS The FWS Project Leader participated in many discussions regarding a new Hatchery Returns data exchange format.

MFWP As a result of the effort expended on resolving the distribution DEF, the SC is working on a DEF Review Process; Montana StreamNet staff developed a first draft of a DEF process which will be reviewed, modified and adopted in FY03. We worked with CRITFC to develop a draft DEF for genetics data, but it was not adopted in FY02; regional interest is restricted to a database of analysis locations, not that actual analyses.

ODFW Oregon contributed to the development and review of several proposed data exchange format modifications. The most significant of these efforts centered on fish habitat distribution and fish observation datasets. We also succeeded in submitting for review a new fish screen data DEF. If this type of data is deemed a priority as a regional dataset, and certain landowner privacy issues can be adequately addressed, Oregon will look to format and exchange this type of data in future years.

WDFW We engaged in all efforts to finalize the Distribution DEF, adopt metadata guidelines, adopt DEF protocols, revise location coding expectations and amend the existing Habitat Restoration DEF. This work resulted in the adoption of the new Generalized Fish Distribution exchange format last summer. We also led the effort to revise the existing Hatchery Returns DEF, which will be completed in the next fiscal year.

Region Adjustments to the Data Exchange Format (DEF) are ongoing. Version 2002.1 of the DEF <http://www.streamnet.org/online-data/data_exch_form.html> was created, approved, and adopted this year. The key addition was implementation of the new distribution definitions. Several draft changes were created but not yet incorporated into the DEF, including updating georeferencing for all data types, modifying the habitat restoration tables, and new data categories for diversions and screens and for tracking proportion of returns of hatchery and natural origin fishes. A revised Data Exchange Form was created to accompany future data submissions with details and instructions for data loading. The use of Extensible Markup Language (XML) was investigated for its potential to improve data distribution over the web. Initial work with this technology was performed and will be expand next fiscal year.

In addition to the new DEF version, we pursued several avenues to improve data exchange within the project. Several draft data categories were proposed during the year. The need for consistent code interpretation among StreamNet data-contributing agencies and data users was discussed. Each data category, and how every table, field, and code serves the data category, needs explicit definition. A decision was made to create these definitions. Because this will be a large task, it will be implemented gradually over the next several years as the DEF is updated.

Task 5 StreamNet Internet Site

Continue to maintain and enhance the existing client-server system to provide access to StreamNet data products through the Internet. The StreamNet home page will continue to be recognized as the project's primary data delivery vehicle. Priority will be given to incorporating data developed through Objectives 1 and 2 and providing access to reference materials secured through Objective 4. Appropriate training on the use of the system will be provided through a combination of on-line help and in-person training sessions.

Project Accomplishments, FY-02

ODFW We provided review and feedback on several StreamNet website changes and enhancements, including StreamNet's ArcIMS site. Plans to link the StreamNet site with ODFW's Columbia River Management site were not successful during this fiscal yea, although a link was provided from the NRIMP website to the CRM site. The NRIMP site is strongly linked and integrated with StreamNet. ODFW will request that StreamNet's webmaster add the CRM site URL (http://www.dfw.state.or.us/ODFWhtml/InfoCntrFish/InterFish/Index.html) to the links that are currently available on the StreamNet site. A summary of real-time data services that can be provided by CRM also was not completed during the year. Significant improvements were made to the NRIMP website. One of the major improvements was uniting ODFW's spatial and tabular data sites into a single uniform format so users don't have to jump from one site to the other. All the available information can be accessed from one site. The NRIMP site provides some of the same information as on StreamNet, but usually in more detail, which is typically not appropriate for regional use. There are also other Oregon focused datasets provided on the NRIMP site that are not available on StreamNet.

WDFW We provided feedback on the utility of StreamNet's Forum site, On-Line Map Catalogues, ArcIMS applications and some general website display issues.

Region Web site and Web Query System (WQS) speed and reliability were significantly enhanced this year. With the addition of a staff programmer (3/4 time) at the Region, the programmer, database manager, and GIS specialist were able to diagnose and fix most of the problems that had affected reliability of the StreamNet web site and query system previously. ColdFusion software was incorporated into the WQS, allowing more flexible and rapid modification of the system, and a new and faster ColdFusion web server was installed. All of these improvements, which were functional by March, have led to 'up-time' for the web site and WQS to approach 100%.

Other changes to the query system included adding the ability to query data by new geographic criteria, including the NWPPC defined Provinces, the new 2001 Subbasins, and redefined Regions. We designed, tested, and implemented three Internet mapping applications using the new ArcIMS software <http://www.streamnet.org/mapper.htm>. One displays and provides access to the Protected Areas data, while the other two allow custom mapping of spatial data from the StreamNet database and also provide access to tabular StreamNet data through a map based locating tool. A complete review was done of the data provided by the web query system, finding that some available data are not being provided to users of the on-line query system. This resulted from past changes to the web query system not keeping pace with database structure changes. These shortcomings will be addressed in fiscal year 2003, and will be facilitated by the conversion of the query system to ColdFusion.

A total of 35,455 unique IP addresses visited the StreamNet web site during FY-02, many of which made multiple visits to the site. In some cases people may share a computer, in other cases some individual computers are assigned a new numeric address each time they access the Internet, so it is not possible to know the total number of individuals visiting the site. As would be expected, the list of most frequent users of the web site includes federal, state, tribal and educational management and research entities (Table 1). The IP addresses from the large Internet Service Providers represent use from home computers (some of which may be professionals working at home), or remote offices using local ISPs due to no local access to agency networks.

Table 1. Top StreamNet web site users during FY-02 by unique IP address, grouped by category.

1. aol.com	7. r6.fs.fed.us	13. washington.edu
2. noaa.gov	8. state.id.us	14. [unknown domain]
3. attbi.com	9. epa.gov	15. dfw.state.or.us
4. orst.edu	10. 192.94.25	16. army.mil
5. uswest.net	11. blm.gov	17. usgs.gov
6. uu.net	12. [unknown domain]	18. critfc.org

Usage of the StreamNet web site is summarized in Table 2. As would be expected, usage of the data query system accounts for only a portion of overall site use. It takes several pages for users to build a data query, but once the query is built and the user views the available data, it is then possible to obtain new information on each subsequent page. It is not possible to estimate the actual amount of data acquired through the website, since individual data downloads can range from single pieces of information to the entire database, depending on user needs. Individual user sessions averaged more than 1,000 per month, with an average of more than 2,000 data view pages delivered. In addition to

tabular data, users are able to gain various kinds of information while building data queries and by visiting other locations within the web site. The data query statistics are for the tabular data query system only and do not include information gathered using the interactive mapper applications or the map catalog.

Table 2. Monthly use of the StreamNet website during FY-02, with all PSMFC, robot, and search engine cataloging usage excluded.

Month	Overall Page Requests	Data Query Page Requests	Unique Sessions	Data Reports Delivered	Top 10 individuals requesters
October	31,253	(Individual tracking of the Data Query System began in 3/2002)			aol.com, home.com, excite.com, orst.edu, uu.net, uswest.net, wednet.edu, prd.state.or.us, att.net, 169.204
November	25,627				home.com, aol.com, orst.edu, 140.239, uu.net, uswest.net, excite.com, [unknown domain], [unknown domain], state.id.us
December	19,651				goo.ne.jp, aol.com, 152.157, orst.edu, uu.net, attbi.com, uswest.com, state.id.us, washington.edu, [unknown domain]
January	19,031				aol.com, [unknown domain], noaa.gov, orst.edu, uu.net, usgs.gov, attbi.com, uswest.net, shawcable.net, epa.gov
February	25,273				dfw.state.or.us, orst.edu, attbi.com, aol.com, 192.94.25, epa.gov, noaa.gov, uswest.net, uu.net, bpa.gov
March	29,918	7,299	660	1,368	noaa.gov, orst.edu, attbi.com, aol.com, uu.net, 192.94.25, uswest.net, epa.gov, state.id.us, prd.state.or.us
April	38,684	7,760	754	2,062	attbi.com, aol.com, noaa.gov, epa.gov, odot.state.or.us, uswest.net, uidaho.edu, uu.net, 192.94.25, orst.edu
May	28,695	9,128	1,012	1,659	attbi.com, aol.com, noaa.gov, uswest.net, ucsc.edu, [unknown domain], charter.com, orst.edu, uu.net, 206.127.114
June	20,130	8,400	1,052	2,011	attbi.com, noaa.gov, uswest.net, aol.com, blm.gov, orst.edu, state.id.us, 164.159, uu.net, 170.160
July	25,312	8,254	1,502	1,701	noaa.gov, orst.edu, uswest.net, attbi.com, army.mil, usda.gov, aol.com, 164.159, [unknown domain], r6.fs.fed.us
August	31,407	13,775	993	3,880	r6.fs.fed.us, noaa.gov, attbi.com, 128.114, critfc.org, uswest.net, aol.com, state.id.us, easystreet.com, oregonstate.edu
September	27,890	9,377	1,342	2,199	attbi.com, 128.114, noaa.gov, 165.235, aol.com, uswest.net, blm.gov, uu.net, [unknown domain], odot.state.or.us
Total / avg.	322,871	9,142	1,045	2,126	

Task 6 Tool development and maintenance

Provide programming services to project participants to support efficient data entry and transfer. Tools may be developed at the regional or agency levels. Even when developed for within agency use, tools should be shared among all project participants.

Project	Accomplishments, FY-02

CRITFC Staff worked with the Yakama Nation to develop automatic data reporting procedures to ease the reporting of data to the StreamNet system. The Yakama Nation is unique among basin Tribes in that they use centralized data management and storage practices for their fishery data. Their staff only had time to scope the issues involved, however. Development of actual tools to ease reporting will be done in FY03. We will also seek review of these prototype tools by other CRITFC member tribes, with a hope that they may expedite reporting from other tribal programs. Other activity under this task included providing advice and suggestions to staff working on inter-agency M&E and subbasin planning issues. These efforts, however, are only in the planning stage.

IDFG We developed a number of tools and databases for internal use that help us manage our data, provide StreamNet data standards to IDFG databases, and increase StreamNet access to IDFG data. Because of this work several IDFG regional offices and a fishery research office now tie their data directly to LLIDs. Distributed versions of our Spawning Ground and Juvenile Trap systems were implemented on laptop computers so that fish biologists could enter the data directly into the database while in the field. We developed a system to transfer the data using XML sent via email. In some cases we added needed primary keys to provide the referential integrity necessary to assure accurate data in our regional offices. We continued to provide technical support and maintenance to our Fishery Reference and Collection Permit applications and databases. Working with PSMFC staff, we investigated the use of XML to transfer data from IDFG to PSMFC. As part of our ongoing review of our redd count database, we developed an application that lets us visually analyze the locational and chronological characteristics of our trends. This will be used to make our trend definitions more accurate and consistent.

MFWP We have maintained and enhanced the edit/entry interface for the fisheries survey data distributed to individuals with a MFWP Collector's permit, including federal land management agencies. We explored creating a complete user interface for MFWP biologists, preferably a web based system but feel the agency is not ready for this; we will attempt to standardize look-up tables for survey methods and fish species across the state. We maintained the U of M system for genetics analysis input and the Future Fisheries for restoration project data entry; no other interfaces were requested for fisheries data. We are discussing adding a screening database to be used by the Fisheries Division for the new Fisheries Restoration and Mitigation Program funded by the BOR and USFWS.

ODFW Oregon StreamNet had no commitment of work directly under this task. Our tool development efforts were incorporated into the summarization of the other tasks and objectives related to StreamNet data development and compilation. Oregon plans to elevate this type of work during the next fiscal year to develop a comprehensive database system that can accommodate many of the datasets that StreamNet targets.

WDFW Through testing, we discovered new uses for the StreamNet EventCompare tool (identifying potential problems with our distribution records). For Distribution data, our internal staff also created a basic tool to summarize event records that were improperly split into separate records. Next year we will use both tools in a final trial to convert and exchange our Distribution data in the new Generalized Fish Distribution exchange format and can report how the tools fare.

Region Several internal tools were built to facilitate information management and communication, including the Forum, which is an online threaded message board for project participants to discuss ongoing issues, exchange files and information, and to resolve issues or problems. The cooperating project participants did not request any tool development this year. Final testing was completed of the NHD/LLID conversion tool (originally created under a grant from EPA), providing the link needed to convert GIS event data between the two hydrography systems, allowing use of either system, as desired, and easy capture of data created using the NHD into StreamNet.

Task 7 Data / Information Requests

Receive and respond to requests for data and information, source materials, and custom products. Response to requests will be honored within the limits of available resources, with priority given to information requests having direct relevance to the Fish and Wildlife Program. Other priorities will include implementation of the Endangered Species Act and federal, state, and tribal natural resource management activities.

Project	Accomplishments, FY-02
IDFG	We received and responded to 133 requests for data or help that came directly to our office. 47 requests were for project specific species lists, 32 requests for GIS data, 24 requests for tabular data, 25 requests for technical assistance and 5 requests for maps.
MFWP	Over 80 data and GIS requests were filled related to fisheries; in addition, with our data and stream and lake hydrography now downloadable from the FWP website, we are having to fill far fewer data requests.
ODFW	We answered a total of 48 data, 16 map/GIS related, and 56 'other' direct requests during the year, with each category being higher than the previous year. This may reflect that more people are looking for data services in the basin or that more people are becoming aware of the data services provided by StreamNet staff. Nearly, 13,500 indirect requests were satisfied through the ODFW FTP site, which has become a very active ODFW data access point for many users. The FTP site can be accessed at ftp://ftp.dfw.state.or.us/pub/. There were also 23 non-library related document requests filled during the year. Library-specific document requests are summarized under Objective 4, Task 3, Job 2.
WDFW	All staff responded to data requests or requests on how to manipulate software or manage data. The time responding to requests varies for each StreamNet staff member but it averages about 20-30% of their work time. There were over 100 documented requests responded to this year, 60% of which involved map generation (at least 70 maps). The remaining requests were split almost equally between adult returns data and juvenile release data. One-third of the map requests involved custom map generation, while the rest of the mapping requests were handled through a standardized menu-based system built by our GIS programmer. The importance of a good menu-based system becomes apparent when one learns that, in addition to these requests, the system was used to generate 150 detailed maps to support the fish distribution data mapping exercise in September.
Region	Regional staff responded to 218 direct requests for information, data, or help during the year (Table 3). These requests were categorized by type of request and by the affiliation of the person making the request. These statistics represent direct requests only, not the data obtained on-line from the StreamNet website (web query system or interactive mapper).

Table 3. Summary of direct data requests received and addressed by the regional StreamNet Project during fiscal year 2002. These statistics do not include data obtained directly from the StreamNet web site or interactive online mapper.

Type of Request	Number	Affiliation of requestor	Number
Need help to find data	39	Elementary/high school faculty	5
Complex request	2	Elementary/high school student	2
Data interpretation	1	Environmental group	2
Data structure help	7	Federal agency	54
Detailed hatchery release data	1	General public	22
Error report	7	Graduate student	7
General fish biology	11	Industry	4
General fisheries	4	Local government	8
GIS	66	Nonprofit organization	11
Images	2	NWPPC	15
Link request	2	Private consultant	22
Maps	28	State agency	19
Query help	13	Tribe / tribal organization	13
StreamNet references	1	Undergraduate student	3
Other	34	University faculty	12
		Watershed council	1
		Unknown	18
Total	218	Total	218

Objective 4 Library / Reference Services

Provide professional library services to the Columbia Basin's fish and wildlife decision-makers, planners, managers, and researchers by acquiring and cataloging StreamNet source documents and other related material; and by providing open and efficient access to these materials

Task 1 Collection Development

Develop a collection of materials applicable to the mission of StreamNet. Collect, catalog and organize materials to document data sources, Fish and Wildlife Program activities and reports, and other gray literature for access by regional scientists, agencies, interested parties, and other libraries.

Project Accomplishments, FY-02

CRITFC Maintaining and expanding the collection involved both routine and innovative approaches. The Library maintained its subscriptions to a core set of technical journals commonly used by patrons and continued to receive reports and other material as documentation for the StreamNet databases. Over 1,400 items were added to the Library catalog, and additional information was added to existing records. Over 1,100 items were obtained through duplicate exchange programs with other libraries to fill gaps in the StreamNet collection.

The Librarian finished re-cataloging approximately 50 StreamNet references. In addition, several reference documents were identified for filing in the numerical filing system and moved to filing cabinets for easier storage. These documents will be on the priority list for digitization. Additionally, the Library continued to manage significant technical material at the request of the Northwest Power Planning Council and the U.S. Geological Service. This is a strong statement of the competence, ability, and regional service provided by the StreamNet Library. The Library also used a number of other informal links to build its collection at minimal cost to the Program. Fifty boxes of pertinent materials were received from a Canadian library which was forced to close. Personal contacts with other Librarians often resulted in additional material as other libraries pared and reoriented their collections. These documents fill holes in the StreamNet collection or extend our collection in significant areas.

The Librarian continued working with the Regional Data Manager to integrate the library reference information into the StreamNet SQL Server database so that the data may be linked directly with the documentation.

MFWP We provided a CD Update to the StreamNet library with references and publications from the Fisheries Division Library.

ODFW Staff maintained and added to library holdings, and continued to perform numerous maintenance, update and correction activities to the Oregon bibliography in preparation for migrating it to the new system. We also received 33 donations during the first half of the year, ranging in size from a single small box of documents to several boxes. These donations came from a number of different sources including state, federal and private donors. No donations were logged into the Library during the third quarter because staff focused on moving the library to it's new location during that time. A Library wish list was posted on the NRIMP web site to make users aware of needs the Library has for certain documents. The list, which can be found at http://osu.orst.edu/dept/nrimp/library/wishlist.htm, has already proven to be a productive and successful way of acquiring hard-to-find documents for the Library.

ODFW staff successfully provided reference information to the StreamNet Library for new data developed under Objectives 1 and 2. Staff also focused on improving our reference tracking and compilation efficiency.

WDFW Staff continued to process references for any data compiled for StreamNet and submit them to the library in concert with data submitted to StreamNet. In order to expedite data submissions, we started using a temporary reference code if we had data ready for a submission but the reference data wasn't completely ready. The temporary reference code will be replaced in subsequent submissions and the physical reference documents, etc will be then be submitted to the library. Although the reference issues are usually minor, we adopted this approach because we feel it is the most efficient way to minimize the circulation of incomplete physical references while maximizing the pace of data exchange.

Task 2 Provide Access to Collection

Provide user access to the materials described in Task 4.1 by providing facilities for storage of paper and electronic copies of documents, an online catalog of all documents in collections, and staff to answer location questions and respond to requests.

Project Accomplishments, FY-02

CRITFC The Library operated according to published schedules and maintained all physical facilities in working order for the convenience of our patrons. The biggest problem in FY02 was a lack of physical space to house the collection. Over 90 percent of the shelf space was used and a significant amount of material was stored in boxes because it could not be properly shelved. Library staff reviewed alternative storage options from reducing the size of the collection, to converting to high-density shelving, to acquiring more space. The most expedient and cheapest alternative, while maintaining the functionality of the Library to its patrons, was to expand the floor space of the Library. Accordingly, another approximately 1600 square feet of floor space was acquired from the landlord, Ashforth Pacific Corp. This space will be remodeled and added in FY03. The additional lease cost could be incorporated because some staff time was shifted to another contract to support subbasin planning. These costs will have to be added back to the StreamNet budget in FY05.

Access to the collection is being improved by digitizing and publishing core material to the Library Web site. Our digitizing capacity was expanded by CRITFC purchase of a high-speed scanner. Digitizing was focused on historical documents, especially the early Oregon Fish Commission documents, and those frequently requested by patrons which are not copyright protected.

The copier was upgraded to add duplexing capability, making it easier to create hard copies of electronic documents. As these documents age, many agencies rotate them out of public view on their websites, making them difficult to retrieve. Electronic copies also tend to degrade with use and will eventually be unreadable. We are attempting to preserve this large body of work.

The Library began using Dreamweaver to update the library catalog on a regular basis. This process can now be accomplished in a matter of minutes rather than the hour it took previously. We have also begun looking at how we may make the library website more interactive for users to find what they want more quickly. Several more patron web pages have been added for people to access documents they have requested. The catalog is updated monthly.

Task 3 Library Services

Manage the StreamNet Library and provide library services to the StreamNet user community, Fish and Wildlife Program, and the public.

Project Accomplishments, FY-02

CRITFC The library staff answered well over 1,200 requests (inter-library loan requests were not included in totals for half the year) for information, assistance, or material. Requests came from federal agencies (10%), consultants (50%), tribal staffs (28%), and from users who did not disclose their affiliations (12%).

The library web pages were kept up to date for holidays and open hours. We only print the library brochure in small runs to make sure the information stays as current as possible.

Staff continued to evaluate the bibliographies from the 1990 subbasin. Those documents are a focus for expanding the collection. Documents are added to subbasin Web pages as they are digitized. Delivery of electronic documents was changed to web-based rather than sending via email, as most email systems will not accept large attachments anymore.

ODFW Oregon upgraded both hardware and software systems for their Library. Efforts to improve tracking of library services were moving forward, but unfortunately the Library was forced to close at the end of the third quarter because of ODFW budget cuts. Reopening the Library is still a goal for the agency, but it is unclear when that might happen given the current fiscal situation in Oregon. Prior to closing, nearly 900 documents had been provided to more than 80 individual requesters. Since that time, requests have been forwarded to either the StreamNet Library or the Oregon State Library. We provided a CD Update to the StreamNet Library with references and publications from the Fisheries Division Library.

Task 4 Inter-library Coordination

Engage in networking activities with other agency and regional library service providers to provide better access to other collections that will enhance the StreamNet Library and to avoid unnecessary duplication of effort and materials

CRITFC Coordination with other libraries reduces duplicative effort and improves the efficiency of StreamNet Library staff. Coordination is achieved through cooperative professional associations and activities, exchanging material, and sharing professional advice on various issues. Coordination was maintained through a number of professional organizations. The Librarian serves as the Webmaster for Special Libraries Association-Oregon Chapter. She also serves as Treasurer/Membership chair of NRIC (Natural Resources Information Council). The StreamNet Library also hosted the Downtown Portland Librarian's group in September.

The working relationships established in these professional groups leads to a number of less formal cooperative efforts. The most significant of these is the exchange of duplicate material among libraries. The StreamNet Library provided over 200 items to other libraries, and received several times that amount from other libraries. These materials fill gaps in our collection and extend our holdings in important areas for a very low cost (postage only). The Library also advises others about organizing their own collections. In the past we have consulted with the Yakama Nation and the State of Montana about aspects of collection management. In FY02 we answered a request for information from City of Portland Environmental Division on setting up a library catalog and from S.P. Cramer & Associates on setting up a private library.

The ODFW Library closed at the end of June due to budget reductions within ODFW. The StreamNet Librarian worked with Gloria Bourne at ODFW Library to ensure we would have access to portions of that collection and provided services to patrons referred from the ODFW Library.

ODFW General inter-library coordination with the main StreamNet Library as well as other libraries around the world occurred on a regular basis during FY-2002. Inter-library loan transactions were also processed during the year. Library staff assisted several users in gaining direct access to publications at the State Library, and worked to create online links to web-based library resources for users to access.

Objective 5 Services to Fish and Wildlife Program Activities

Provide technical data services to Fish and Wildlife Program decision-makers and appropriate Fish and Wildlife Program projects

Task 1 Data and services to support the Subbasin Planning effort

Within existing data categories and staffing levels and as workloads permit, assist Subbasin Planning efforts by 1) providing data in formats that fit planner needs, 2) working with planners to locate data within the StreamNet database and contributing projects' databases, and 3) advising and assisting planners on data management issues.

Project Accomplishments, FY-02

CRITFC The Northwest Power Planning Council sponsored subbasin planning efforts were delayed in FY02. Most of these activities will occur in FY03 and FY04. Consequently, no work was performed on this task in FY02 under the StreamNet contract.

IDFG We provided queries of our Fish Information System to biologists developing subbasin summaries for the Palouse, Salmon, Boise-Payette-Weiser, Upper Middle Snake, Upper Snake Headwaters, and Closed Basins subbasins. The data consisted of presence/absence tied to LLID and abundance measures where available.

IDFG had the lead role in preparation of subbasin summaries for the Boise-Payette-Weiser, Middle Snake, Closed Basins, and Upper Snake Headwaters subbasins. Using funding supplied by subbasin planning, IDFG/StreamNet staff used FIS data and StreamNet equipment to produce a variety of maps that were included in the summaries. Map types included: location, land use, land cover, vegetation, climate, stream gauges, dams, lithology, managed areas, aquifers, ecoregions, fish distribution, rare plants and animals, protected areas, and 303(d) listed streams.

MFWP No requests were received this year.

ODFW Oregon's participation in Subbasin Planning support primarily centered on the Systemwide Provincial Review process and Oregon Subbasin Planning efforts, including attending coordination and planning meetings of the Oregon Subbasin Planning Coordination Team. We anticipate that Oregon StreamNet will be integral in the progress and eventual success of subbasin planning efforts in Oregon.

WDFW WDFW Region 5 StreamNet staff participated in Vancouver-area meetings and responded to several requests for data deliveries and general advice regarding fish and habitat data related to the Subbasin Planning effort. Having StreamNet staff located in that regional office has given WDFW staff working on subbasin plans very efficient access to this expertise.

Region Because subbasin planning advanced at a rate slower than anticipated, few requests related to subbasin planning were received this year. Regional staff developed a set of low and high resolution subbasin maps for use on the NWPPC's subbasin planning web pages. Another set of maps was produced for CRITFC. In addition, we suspect some of the requests fulfilled and reported under Objective 3, Task 7 were related to subbasin planning, though they were not specifically identified as such.

Task 2 Support monitoring and evaluation efforts

Assist in the development of products that contribute to the monitoring and evaluating (M&E) of Fish and Wildlife Program effectiveness. Specific areas of involvement will include: participation in Program-related monitoring and evaluation work groups; periodic re-evaluation of the StreamNet data plan to ensure consistency with M&E needs; and design of databases and formats to house and disseminate M&E information to the degree possible under the existing contract.

Project	Accomplishments, FY-02
CRITFC	The CRITFC project leader assisted other resource management agencies to develop an M&E project proposal for the Columbia Basin and participated in several interagency meetings concerning this issue. He was a co-author of the monitoring and evaluation summary prepared as part of the Mainstem/Systemwide Province review. No actual work on implementing a coordinated M&E plan was performed in FY02
IDFG	The CRITFC project leader has assisted other resource management agencies to develop an M&E project proposal for the Columbia Basin and has participated in several interagency meetings concerning this issue. He was a co-author of the monitoring and evaluation summary prepared as part of the Mainstem/Systemwide Province review. No actual work on implementing a coordinated M&E plan was performed in FY02.
MFWP	Trying to meet the needs of the region is always a topic at the Steering Committee meetings.
Region	Although several of the StreamNet data types are relevant to monitoring and evaluation of fish populations, no specific requests were received from persons engaged in research, monitoring and evaluation efforts.

Task 3 Support for and participation in regional data management initiatives

Work with regional entities to promote and implement sound data management programs that ensure efficient organization, management and delivery of pertinent fish and wildlife related information within the Columbia Basin. Efforts may include determination of regional data needs, identification of obstacles and challenges to effective regional data management, and development of recommendations and will take place in a collaborative atmosphere.

Project	Accomplishments, FY-02
CRITFC	The project leader is a member of the NWPPC/NMFS Columbia Basin Collaborative Information System project team. Work in FY02 focused on completing the user survey and preliminary analysis of partial results.
ODFW	Oregon provided database management related information to both local and regional entities, as requested, including providing feedback to and participating in the Columbia Basin Cooperative Information System development process.
Region	StreamNet staff participated in several ways with the NWPPC's effort to develop a Columbia Basin Cooperative Information System through a contract with Science Applications International Corporation (SAIC). The Program Manager served as a member of the Project Team to provide general guidance to the project, and staff from the cooperating StreamNet projects participated in various focus group meetings with SAIC staff to describe current data management capabilities and general data needs. The StreamNet Program Manager led development of the data management summary for the Mainstem/Systemwide Province review (Data Management in Support of the Fish & Wildlife Program Summary, available at http://www.cbfwf.org/files/province/systemwide/subsum.htm). This document was intended to provide background information on the current state of data management in the basin for use in reviewing and prioritizing project proposals for data management under the Rolling Provincial Review.

Task 4 Archive function for regional data sets, as requested

Work with regional entities to aid in the capture and distribution of data generated through Fish and Wildlife Program activities and to help determine the most appropriate means of storing and disseminating them. Where data do not fit in existing StreamNet data sets, develop archive functions to at a minimum make data available 'as is', regardless of their current form.

Project	Accomplishments, FY-02
All	No specific requests were received to archive data sets for access on line. We completed an inventory of resident fish projects to determine whether there was resident fish data not currently distributed on line that could be made accessible through this mechanism, but so far have not found any. We will continue to make this service available, particularly as a means of distributing data developed through the subbasin planning process.

Task 5 Data and services as requested by other FWP participants

In consultation with CBFWA, the Council, and BPA, StreamNet will provide technical assistance and data services to Program projects as requested, to the degree possible under the current contract.

Project	Accomplishments, FY-02
CRITFC	The role of StreamNet in managing data and literature developed during subbasin planning was discussed with regional and Oregon planners and coordinators. A preliminary budget for, in part, data management services for Oregon subbasin planners was developed. This work will occur primarily in FY03 and FY04.
IDFG	IDFG/StreamNet has developed a close relationship with the FWP funded Idaho Supplementation Studies. We worked with ISS to develop a spawning ground database and interface for redd count and carcass count data. We also developed a juvenile trapping system. Both systems were used by ISS this past year. They found them very useful and we have worked with them to fix bugs and add enhancements. Both systems allow data entry by field biologists and data maintenance by the project coordinator. Data are then electronically transferred to the FIS and made available to StreamNet. IDFG/StreamNet staff worked with the Upper Snake River Stock Assessment Program to ensure the compatibility of their resident fish data for the FIS and eventually StreamNet. This will facilitate the eventual incorporation of their data into the FIS and StreamNet. We also worked with the Upper Snake Native Salmonid Assessment Project to incorporate StreamNet data formats into their database. At the request of the Northwest Power Planning Council staff, IDFG/StreamNet contacted all FWP resident fish projects in Idaho to obtain information on the types and availability of data being collected. This summary was included in a basin-wide report compiled by StreamNet and presented to the NPPC staff. We coordinated with the Salmon region Steelhead project to provide technical assistance on data requirements for the Steelhead Creel Survey and to review the Coded Wire Tag data formats to extract steelhead release, capture and return summaries.
MFWP	The project leader met with Montana's NWPPC member and staff and MFWP Fisheries Division Administrator to review Montana's StreamNet program. It was very well received. The Montana member requested that the project leader give a similar presentation at the August NWPPC meeting in Helena. The project leader gave a PowerPoint presentation at the August NWPPC meeting on the StreamNet program in Montana. The program was well received and generated questions and discussion.

ODFW Oregon StreamNet staff provided many forms of technical assistance to several different entities throughout the year, including NOAA-Fisheries Technical Recovery Teams, CBFWA representatives, and ODFW biological staff.

WDFW Input from the ISRP and others in the Basin this year indicated a growing interest in the status of resident fish stocks and the data collected to assess them. We assisted in this effort by providing pointers to contacts for Washington resident fish data projects in the Basin to PSMFC and reviewed a draft report by Adam Vellutini on the status of BPA-funded resident fish data collection efforts.

Region Regional staff initiated, and along with cooperating project staff completed, an inventory of BPA-funded projects that had produced data related to resident fish resources and management. Information was obtained from each resident fish project leader about the data and other information that was generated, including content, formats, availability, and other information, and this was collated and included in a report (available at http://www.streamnet.org/about-sn/project_management.html). The inventory process revealed that much of the available data has already been included in the StreamNet database. Efforts to obtain the remaining data will be carried out by StreamNet cooperators in the future as time and funding permit.

Task 6 Protected Areas

StreamNet will a) maintain and provide access to the Council's Protected Areas dataset, b) archive the official version as a historic record, and c) in consultation with the Council, respond to requests for information concerning Protected Areas

Project Accomplishments, FY-02

MFWP Montana's Protected Area database, converted to LLID, was exchanged to the StreamNet database. A conversion was done so that Regional staff didn't have to do anything to the coverage.

Region As described under Objective 3, Task 3, updated georeferencing was added to the Protected Areas database. This accomplishment allowed us to better integrate the Protected Areas database with the other data in the StreamNet database and allow these data to be obtained from an interactive mapping system.

Objective 6 Project Management / Coordination

Provide effective leadership that ensures the production of high quality products targeted at critical applications and the development of these products in a timely, cost-effective manner.

Task 1 Manage project activities

Administer all aspects of the project at the regional and sub-contractor levels, including oversight of budget, personnel, work statement preparation and implementation, coordination among participating agencies, active participation in steering committee work, and project reporting.

Project Accomplishments, FY-02

CRITFC The CRITFC project manager participated in all steering committee discussions and meetings. Normal project and personnel management was provided. Work was very routine this year.

FWS The FWS Project Leader prepared budgets, work plans, and activity reports throughout the fiscal year.

IDFG We prepared and delivered all quarterly reports. We managed our StreamNet budget and leveraged increased funds supplied directly by IDFG. We helped to develop the 2003 project proposal and work statement, including responding to the Federal Caucus, ISRP and CBFWA reviews. The IDFG/ StreamNet project coordinator provided project management and staff supervision to both StreamNet and non-StreamNet staff.

MFWP The annual Statement of Work for Montana was completed and sent to regional staff. We had a full staff meeting in Kalispell in December and laid out work for the fiscal year. Montana participated in all Steering Committee meetings in FY02. The Project Leader completed Performance Agreements for all staff. We have received .5 FTE from the Wildlife Division to create a Non-game Wildlife Information Management System. We will move Steve Carson into this position and he will continue as .5 FTE as the StreamNet data manager. The partial position left by Steve Carson when his position was put on 1/2 time wildlife funding will be filled via a contract for next fiscal year due to job freezing in Montana. The Project leader requested and received pay increase for several staff. The Project leader provided a Montana Statement of Work and budget to StreamNet regional staff in September.

ODFW All aspects of the Oregon StreamNet project were successfully administered, including budget oversight, hiring, maintaining and evaluating personnel, staff work plan and training plan development, project implementation and coordination, Steering Committee and technical issues meeting attendance, and development of the FY-2001 Annual Report and quarterly progress reports for FY-2002.

WDFW The WDFW StreamNet Project Manager and StreamNet Data Manager teamed to participate actively in all StreamNet meetings, submitted interim and final drafts of budgets and work plans, submitted all quarterly and final progress reports, and managed WDFW StreamNet-funded staff to meet the Objectives of the Statement of Work.

Region Project administration continued throughout the year, including performance appraisals of staff, budget management, monitoring accomplishment of the work statement, etc. A new GIS Specialist, Travis Butcher, was hired to fill the vacancy left by David Graves leaving to travel and attend graduate school. Hiring was timed to allow a short period of overlap to maximize efficiency in the transition. Four quarterly meetings of the StreamNet Steering Committee were scheduled and held. A new template was developed and used to produce the FY-01 Annual Report. Quarterly reports were written to document progress, with emphasis placed on improving timeliness, resulting in reports being on schedule by the fourth quarter.

The annual project proposal for FY-03 was significantly modified from previous years. Since current staffing and funding levels do not provide sufficient ability to develop more than the primary high priority data sets covered in Objective 1, a number of new tasks were proposed to allow development of the many other kinds of data that are obtainable but that have not yet been made available on a regional basis. This significantly increased the size of the proposal, although the intent was to initiate regional discussion on priorities, with the assumption that only a few of the highest priority new data types might be approved. This new proposal was submitted to the NWPPC's Rolling Provincial Review process for the Mainstem/Systemwide Province.

Task 2 Participate in Fish and Wildlife Program development activities

Work with regional entities to assist in the area of data management as requested to support development of Fish and Wildlife Program projects and programs. Organize, facilitate, and/or participate in appropriate coordination meetings with BPA, CBFWA, the Council, ESA officials, ISAB/ISRP, and/or staff and management of participating organizations to identify ways StreamNet can effectively contribute to the Fish and Wildlife Program (FWP) and facilitate capture and dissemination of data. Participate in advisory groups, task forces, and other groups whose purpose is enhancing the effectiveness of the Fish and Wildlife Program and its data development activities.

Project Accomplishments, FY-02

CRITFC See report of activities for Objective 5.

MFWP The project leader helped review all the data management projects prior to the CBFWA review; duties were split among the 4 state coordinators to ease the workload.

Region Regional staff participated in a variety of efforts intended to support FWP development. We met with, coordinated efforts, and assisted several agencies during the year in data and database development efforts by providing advice on database design and data to capture and discussing possibilities for integration of their efforts into larger regional efforts. These agencies included US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Kalispel Tribe, Yakama Tribe, Idaho Department of Environmental Quality, and Northwest Forest Plan implementation agencies. The StreamNet Program Manager took the lead author role in developing the Mainstem/Systemwide Province Summary for Data Management under the Rolling Provincial Review process (see Objective 5, Task 3. StreamNet participated with and contributed to the NWPPC's effort to develop a plan for a Columbia Basin Cooperative Information System, as described under Objective 5, Task 3.

Task 3 Coordinate with other related activities

Maintain communications between StreamNet and other applicable regional and state-level fish and wildlife activities beyond the Council's Fish and Wildlife Program to identify means for collaborative data collection, storage, and dissemination. Collaborative data activities will include tribal fishery programs within the Columbia Basin, federal land managers' fishery programs, state fish and wildlife agencies, and, with respect to water use and stream development, state water resource management and environmental quality agencies. Collaboration with coast-wide and private data collection/compilation efforts will be pursued when this supports overall project goals.

Project Accomplishments, FY-02

CRITFC The project leader is a member of the NWPPC/NMFS CBCIS project team to assess Columbia Basin information needs and options. In the third quarter effort was spent developing an information needs survey. Project Leader worked regularly with tribal, state, and federal staffs to coordinate recovery planning and subbasin planning efforts.

IDFG We continued to stress integration of StreamNet with the regularly activities of the IDFG fishery program. Our Fish Information System has been specifically designed to provide IDFG biologists a useful product and to facilitate the capture of data by StreamNet. As our applications gain broader use, they have attracted interest from other agencies coordinating with IDFG.

MFWP We have continued to strengthen the collaborative efforts with the Montana Natural Heritage Program on data management issues including incorporation of all new wildlife data collected into a shared Point of Occurrence database, reviewing all generated Element Occurrence records and creating an on-line field guides for all fish and wildlife species. The StreamNet staff has moved into Department Management which has elevated their exposure within the agency. The fisheries data manager helped organize and participated in the Yellowstone Cutthroat and Westslope Assessment process in Montana. StreamNet staff provided technical staffing at all the meetings.

ODFW Oregon StreamNet staff attended numerous meetings and reviewed several documents associated with data collection efforts, data related legislative mandates, and state and federal data management and integration efforts.

USFWS The Project Leader continued to collect, process, and disseminate information from and to tribal and state fish and wildlife programs.

Region StreamNet staff participated in and/or coordinated with various efforts, such as the OR/WA Framework process to develop 1:24,000 hydrography. The Program Manager assisted USACE staff in review of databases for Corps management of water quality data.

Task 4 Prepare and present public information related to the StreamNet Project.

As needed, produce public information materials and participate in various meetings and forums to explain the project's capabilities and purpose and to generate support and additional data sources. Activities may include brochures, demonstrations, posters and talks.

Project	Accomplishments, FY-02
CRITFC	The StreamNet Librarian presented a paper at the OFWIM Annual Conference and at the Transboundary Conference in Spokane, WA: Towards Ecosystem-Based Management: Breaking Down the Barriers in the Columbia River Basin and Beyond. She also presented a paper at the Natural Resource Information Council on electronic document projects.
IDFG	No public presentations or information were produced by IDFG/StreamNet.
MFWP	A fact sheet was provided to NWPPC members and other participants during the August meeting.
ODFW	ODFW StreamNet gave presentations and participated in outreach opportunities as necessary to promote StreamNet activities in Oregon. These efforts included writing program and data related articles, and creating monthly web features that advance the efforts of StreamNet and NRIMP. Oregon staff also participated in a number of local, state, regional and national conferences and meetings promoting StreamNet's activities.
WDFW	There weren't many opportunities to provide public presentations on StreamNet this year, given budget restrictions and workload. O'Connor delivered a presentation "Scrambling for Data Standards in Habitat Restoration Projects" at the Annual Meeting of the Organization of Fish and Wildlife Information managers (November; Portland, OR) and Lensegrav represented WDFW at Western Washington Sportsman's Show, providing information on WDFW and StreamNet issues to the general public.
Region	Several efforts were completed this year to communicate the data and services available through StreamNet. StreamNet personnel from the Region and several cooperating agencies gave presentations at the annual meeting of the Organization of Fish and Wildlife Information Managers, which this year was held in Portland, OR. A presentation was given at the biennial steelhead biologists' workshop on potential uses of GIS in fisheries management and research. During the last quarter of the fiscal year a newsletter was distributed to 4,040 email addresses collected from mailing lists and web pages. Response to the newsletter was positive, and by the end of the fiscal year 854 people had signed up to receive future newsletters, approximately a 21% signup rate. We plan to issue newsletters approximately 3 times per year as items of interest and new StreamNet features become available. Items of interest will include such things as significant data additions or corrections, improvements to the web query system, additions to the on-line mapping applications, and items of interest added to the StreamNet Library. During this fiscal year we completed a first draft of a white paper describing the information available in our habitat restoration projects database. After finishing edits to this white paper, we plan to create one for each data category over the next several years, to be used to inform users and potential cooperators of the types of information that StreamNet can provide.

Supplemental Information

Work accomplished outside the specific work elements in the SOW

Describe specific accomplishments during the time period that do not relate specifically to any of the Tasks / Work Elements in the annual Statement of Work but that are relevant to the StreamNet Project

Project	Accomplishments, FY-02

CRITFC The Project Leader, as chair of the technical team for the Council's subbasin planning efforts in Oregon, had numerous discussions and meetings scoping and developing watershed assessment methods and defining other technical tasks required to complete subbasin plans. These activities, as well as participation in the Council's CBCIS project and discussions concerning M&E needs and initiatives, are done at no expense to the StreamNet project but can significantly affect support for StreamNet and affect future needs and activities.

IDFG Idaho hatchery release data has historically been captured by StreamNet by importing the Regional Mark Information System database. This work has always been conducted by PSMFC. IDFG StreamNet staff have not been involved in this task in the past. Recently, StreamNet has become interested in capturing the hatchery release data before it is formatted by RMIS. We coordinated with our hatchery staff that deliver data to RMIS. We determined that we could obtain the data prior to formatting for RMIS and that conversion to StreamNet data standards should be relatively straight forward.

Using non-StreamNet funds from the US Fish and Wildlife Service, we combined our bull trout data with local office data sets to provide an updated dataset of bull trout presence and abundance in the Clearwater and Salmon River drainages. These data were used to delineate critical habitat.

We have worked closely with is an IDFG-BLM Challenge Cost share project to compile historic data from IDFG regional offices. We developed and continue to maintain a database and interface, plus the Fish Tools ArcView application for their use.

All of the IDFG redd count data that goes into StreamNet comes from the IDFG Spawning Ground Report. As a service to IDFG and to facilitate accurate data in StreamNet, we helped to develop and write the Spawning Ground Report.

We also worked with the Cutthroat Trout Genetics project to develop a database that could be incorporated into StreamNet in the future.

The IDFG Wildlife Bureau contacted us for technical assistance related to database design for their Female Mountain Lion Quota program. This is a potentially important link for us to make, given the range of information that may be needed in upcoming subbasin assessments and plans.

MFWP We have been closely involved in the development of the Federal Wildlife Conservation and Restoration Program (WCRP) and the State Wildlife Grant (SWG) Program for Montana. The programs have provided funding for native species data collection, survey and inventory; future allocations from the program are dependent on the creation of a /Comprehensive Fish and Wildlife Conservation Plan. The value of this program to data management in Montana has been the need to gather, edit, enter and centralize all existing information on fish and wildlife distribution and occurrence that has not previously been entered into a centralized database. We will receive 2 FTE for 1.5 years to collect and enter the data; most of the effort is focused on wildlife species. We have also created databases for annual monitoring data for bald eagles and loon. In addition to the SWG funding, we have also received .5 FTE to coordinate these data management efforts from the Wildlife Division. Steve Carson has taken on those duties and we have replaced his .5 FTE with a shared position with the Natural Heritage Program.

We have continued to strengthen the collaborative efforts with the Montana Natural Heritage Program on data management issues including incorporation of all new wildlife data collected into a shared Point of Occurrence database, reviewing all generated Element Occurrence records and creating an on-line field guides for all fish and wildlife species.

We are also creating on-line field guides with the Montana Natural Heritage Program; these field guides will include our State Rank for Species of Special Concern. The Field Guides will incorporate our native species management areas and our bull trout and westslope cutthroat trout conservation areas. We have continued to work with FWP Fisheries Division to complete the Native Species Management areas.

We have been closely involved with the development of Montana Fish, Wildlife and Parks' Strategic Information Technology Plan. We have created 5 goals and a series of objectives to develop a data development process, help standardize data collection and evaluate the current organization of the IT/IM staff structure within FWP. These activities will all be positive from a StreamNet perspective.

Staff met with MFWP Administrators in October to prioritize GIS data development needs, and followed up with each division to set priorities for the year. We updated antelope, sage grouse, native fish species management areas (Non-StreamNet funded) and tabular data with associated spatial component for snow track surveys, fishing regulations, and upland game bird projects and are currently updating the Bighorn Sheep, Mountain Goat and Black Bear layers (funded outside StreamNet). We drafted a GIS Data Dissemination Policy for MFWP, developed a 4-hour GPS training course and sent 2 staff members to each region during January to present it. We provided ArcView Training for MFWP staff in December and again in March. We completed placing a database of our GIS layers (with metadata, map image and two downloadable formats) on the FWP public and internal website. We provided GPS training to all FWP staff at regional and Headquarter trainings programs in January and February, 2002. They were very well received and included a training manual. We established standards and guidelines for GPS purchase and settings. By providing this training, we anticipate data that we receive will have better location information as to survey and distribution.

The StreamNet staff has moved into Department Management, which has elevated their exposure within the agency.

ODFW Oregon StreamNet staff sought out and acquired funding to create an online angler assistance web site. The contents of this sight will rely on existing fish distribution information, and will enhance Oregon’s distribution layers with information on species that we don’t currently have distribution information on.

Staff continued to work with NMFS on data needs for the Viable Salmon Population analysis and database development. The TRT Database structure was completed and a great deal of VSP relevant data in the Willamette and Lower Columbia were compiled and entered. We also attended several coordination meetings during the year.

The Assistant Database Manager provided technical support to ODFW's Fish Screening and Passage Program throughout the year. Changes and additions were made to the FishScreen database based on requests made by the Program. Version 2.0 of the FishScreen database was completed this year, including an updated User's Guide, and a new splash screen with copyright and funding statements.

Oregon StreamNet staff continued development of life-stage timing unit data in the Oregon portion of the Columbia Basin. We changed the original design the Timing user-interface to allow the user to add/update/delete the timing information and also to create periodicity tables based on Timing Units. At the present time, we have about 8,000 timing records and 23,000 associated detail records in the Timing Database.

The NRIMP Project Leader drafted and submitted a FRIMA (Fisheries Restoration and Irrigation Mitigation Program) funding proposal in an effort to hire a dedicated person to work on Oregon's barrier data.

Our GIS Analyst implemented FTP security tightening measures. Under the new structure, anonymous users will only be allowed to write to a single /pub/Incoming directory and will not be able to see the files there. Primary users will have password protected access which enables them to upload data to their directories, plus download data from the Incoming directory which will facilitate transfer of files to staff from outside agency staff of the public.

WDFW Washington StreamNet staff members have been called to provide specific data development expertise in areas such as resident fish, habitat, and migration barriers. These staff form a critical part of the core resource data management services in WDFW's Fish Program, and have significant influence on internal decision-making. These staff also participated extensively in the interviews conducted by SAIC during their review of Columbia Basin information management, as well as in some aspects of advising that overall project. Finally, the statewide effort to assimilate all salmonid distribution and use data into a single standardized spatial database has utilized the skills of some staff who contribute part-time to StreamNet. This effort will greatly improve the consistency of Washington's fish distribution data, and position us to provide standard updates much more easily than we can now. In addition, the questions that arise during such efforts relative to the justification for making certain distribution decisions are focusing attention on our fish sightings data, and how we might work to standardize them across the state in the next few years. These data may provide a future key contribution to StreamNet, particularly when visually aligned with the generalized distribution data that they support.

Region To complete an effort begun in previous years under EPA funding, regional staff assisted Oregon Department of Environmental Quality with final corrections to their macroinvertebrates database. Regional staff also assisted ODEQ with database design for their own updated macroinvertebrates portion of their internal LASAR database. This work, along with a talk presented at the annual meeting of the Northwest Biological Assessment Workgroup, continued efforts to help regional agencies and other entities to organize a regional macroinvertebrates database and also allowed PSMFC to pursue funding to help coordinate and conduct this work. These efforts still are needed, and it is hoped that funding will become available soon to complete these efforts, providing the region with a means to organize and share macroinvertebrates data. This work is possible because current project funding covers only a portion of the year for the StreamNet Biological Data Specialist.

During this year materials from StreamNet's two predecessor projects, CIS and NED, were located. These materials were examined for current utility and historical significance. Some items were provided to the StreamNet Library for archiving. Included in these materials were all previous versions of the StreamNet DEF. These were converted to electronic format and stored at the Region for historical research purposes. These materials already proved their value, by answering several outstanding questions during the year about the origin of some of the database fields now in use.