StreamNet Project

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Fiscal Year 2007

Annual Report

October 1, 2006 through September 30, 2007

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Introduction

This report describes work accomplished by the StreamNet Project, Project No. 198810804, during Fiscal Year 2007 (FY-07) from October 1, 2006 through September 30, 2007. Details about the work done to accomplish the Milestones are summarized and reported at the Work Element Title level. The Work Element Titles and Milestones are described in the revised 2007 Work Statement, available at ftp://ftp.streamnet.org/pub/streamnet/projman_files/Revised%202007%20StreamNet%20Work%20Statement.pdf. Work priorities for FY-07 included maintaining and updating existing long term data sets, managing the infrastructure necessary to maintain and deliver data, maintaining the StreamNet Library, providing data services to regional entities associated with the Fish and Wildlife Program, and project administration. Additional focus this year was placed on an attempt to develop long term data priorities and promotion of the value of agency wide consolidated databases within the data source agencies.

StreamNet is a cooperative, multi-agency data compilation and data management project authorized by the Northwest Power and Conservation Council's (NPCC) Fish and Wildlife Program (FWP), funded primarily by BPA. The project is administered by the Pacific States Marine Fisheries Commission (PSMFC). The majority of the project consists of sub-projects within the state fish and wildlife agencies, Columbia River Intertribal Fish Commission (CRITFC) and the US Fish and Wildlife Service (FWS) to acquire, georeference and standardize fish related data; develop databases within the respective agencies; facilitate data transfer regionally; and maintain a library of data references and fish and wildlife related reports and publications. The remainder consists of the regional staff at PSMFC to manage the regional database, disseminate regionally standardized data, provide regional data services and administer the project. Information about the project, fish related data, past reports and other documents are available at the project website at www.streamnet.org.

Activities in FY-07 included routine development, maintenance, updating and posting of various data sets; QA reviews of data; administration of the computer systems (hardware and software) necessary for project operations; data dissemination via the online data query system, interactive map applications and customized delivery; coordination with related projects and regional entities; and operation of the StreamNet Library, in addition to routine administrative activities to continue project function. Another effort was to work with regional entities to develop regional data priorities. An overview of project highlights is presented below, by major Work Element, with more specific details later in the report.

Work Element 159: Submit /Acquire Data

StreamNet's participating agencies continued acquisition, updating, georeferencing and standardization of standard data sets during the year.

Work on the hydrography:
  Routine maintenance of the 1:100,000 (100K) PNW hydrography continued as needed, but emphasis is changing to work at the 1:24,000 (24K) scale. There is not a consistent 24K routed hydrography available for the Pacific Northwest yet. The responsibility for developing the 24 K hydrography rests with others, so while that is still under development, StreamNet has developed a Mixed Scale Hydrography (MSH) for use in displaying the data in the StreamNet database. The MSH essentially consists of all 100K streams plus named streams at the 24K scale plus any other streams that have StreamNet data tied to them. During FY-07 we worked to resolve cross border issues with the MSH and began tying StreamNet data to it. This work will continue in FY-08. We expect the MSH will be our primary working hydrography layer until the responsible entities complete a standardized regional 24K layer. We have participated in meetings related to the 24K development effort and will continue to do so. A primary need for displaying StreamNet data is for the routing system to accommodate whole stream identifiers, and we will continue to work to promote that concept.

Idaho StreamNet (IDFG):
  During FY-07 Idaho StreamNet added two new species distributions to the StreamNet generalized fish distribution: Pacific lamprey and Bonneville cutthroat trout. After spending last year conducting QA/QC on our redd count data, we compiled and submitted 2005 and 2006 index redd count data. Work was continued on QA/QC of our hatchery return and age composition data. We also worked on migrating those data to the new StreamNet Data Exchange Format. This task turned out to be much more time consuming than anticipated because of the QA/QC and the need to manually extract data from comment fields into new data fields, therefore, we did not complete this task. That work will continue in FY-08. The Idaho 1:100,000 scale streams layer received numerous edits over the past year. Those data were submitted to PSMFC for inclusion into the mixed-scale hydrography.

Montana StreamNet (MFWP):

MFWP StreamNet staff successfully contacted all MFWP, other state agency and federal fisheries biologists in 2007 to obtain fisheries field survey data collected during the 2006 season. In order to better track which biologists have been contacted and when and what data has been received, staff developed forms in the MFISH application to track this information. MFWP StreamNet staff updated and/or corrected resident fish distribution for all species from data gathered during the site visits; from reports or documents, genetic results or changes occurring from habitat restoration projects. These updates concluded with 308 "Fish Pres" records being exchanged. 3,807 fish survey records were provided to Regional StreamNet staff as an independent data set for inclusion in the Data Store. The Montana Natural Resource Information System (NRIS) became the steward of the NHD layers in FY06; they anticipate the 24k NHD for Montana will be ready for use in 2 years. MFWP StreamNet staff obtained 186 reference documents from data developed during FY-07 and provided these data to the StreamNet Library and Regional Staff. In addition to StreamNet staff work, the Fisheries Division hired an intern for the summer to scan documents from the Division's library that holds the hard copies of documents referenced in StreamNet.

Oregon StreamNet (ODFW):

Oregon StreamNet met nearly all of its data development work requirements during this fiscal year. Exceptions were related to data not becoming available, prolonged vacancies and/or shifting priorities; this included work on hatchery return data, and application development and maintenance. Many freshwater harvest data records remain stagnant as updated information remains unavailable from ODFW. Data delivered or made available to StreamNet included anadromous and resident fish distribution, barriers, freshwater harvest information, age, hatchery facility data, and 954 new, updated and/or corrected abundance trends. Routine QA/QC efforts were conducted throughout the year. Twenty-nine reference documents were submitted to the StreamNet Library related to these data submissions. In addition, over a thousand game and non-game fish observation records were obtained which will be used to enhance Oregon's fish habitat distribution dataset. Monitoring, evaluating and responding to 100k LLID/ 24k Framework / NHD hydro needs continued to take a great deal of time this year. We successfully migrated 100k events to events that map on the 24K route system, but agreed with Regional StreamNet not to submit migrated data until version 1 of the Oregon mixed scale hydro is completed.

Washington StreamNet (WDFW):

Hatchery Returns, Barriers, Dams and Natural Spawner locations data were exchanged to the regional StreamNet database. Also exchanged over the course of the year were StreamNet data types including: Adult Returns, Estimates of Spawning Populations, Peak Adult Return Estimates, Peak Spawning Counts, Redd Counts, Dam / Weir Counts and WDFW Age Data. All references used for the data exchange were copied and sent to the library for 2005 natural spawn escapement and age data collection.

U S Fish and Wildlife Service StreamNet (FWS)

Data were exchanged for the most recent (2006) returns to National Fish Hatcheries, and numerous historic records of returns were also entered into data files. QA/QC on previously submitted data was also accomplished and will move forward into the new fiscal year.

Columbia River Inter-Tribal Fish Commission StreamNet (CRITFC)

CRITFC GIS staff worked with CBFWA to enhance the Status of the Resource report. Expanded training procedures were implemented to improve the quality of data collected from salmon runs as they pass Bonneville Dam.

The Regional StreamNet office at PSMFC (Region):

Regional data development activities related primarily to independent data sets in the StreamNet Data Store. Several existing data sets were updated and eight new data sets were added, with metadata. A number of new submissions to the Data Store consisted of reports that did not include data files, so those submissions were transferred to the StreamNet Library. The Data Store submission page was modified to direct people submitting reports without data files to the Library. Links to websites that provide data were also added to the Data Store.

Work Element 160: Create/Manage/Maintain Database

All project members performed ongoing systems administration (hardware and software maintenance and management), maintained various data management tools and interfaces, maintained data and database systems, and contributed to ongoing review and development of Data Exchange Formats (DEF). A few key highlights by the individual project members include:

Region:
Routine database management activities included computer system maintenance and upgrades, software license maintenance, data quality assessments, data loading, and maintenance of the various databases and data structure documents. The primary database server was upgraded to a rack mounted Dell 2950 running 64-bit Windows server 2003 operating system and 64-bit Microsoft SQL Server 2005 RDBMS software. The 64 bit technology resulted in greatly increased speed for the online data query system.

CRITFC:
CRITFC data entry and QA/QC applications were rewritten to improve data quality.

IDFG:
Major steps were taken to transfer system administration tasks to the IDFG IT Bureau and remove that burden from StreamNet staff. StreamNet servers were moved and consolidated with IT's servers, a new backup and recovery system operated by IDFG IT staff was implemented. We replaced two servers (database server and ArcIMS spatial server) with new servers. All databases were migrated to the new database server. During the year and at the end of last year, we lost both of our database and software staff. Both positions have been filled with very skilled individuals that have brought positive ideas and energy to development of StreamNet databases. We have also collaborated with a Lower Snake River Compensation Program database and application development project that will provide detailed information about all stages of hatchery operations, from adult trapping, to spawning, incubation, rearing and release in a format compatible to our spawning ground survey data and StreamNet data.

MFWP:
   Other than GIS and databases that are shared with the Montana Natural Heritage Program (which includes MFISH), system administration duties have been moved to MFWP Information Services Division, Network Services Bureau. Changes to the MFISH user interface have allowed amphibian and reptile data collected during the course of a fish survey to be entered. As a result, 176 amphibian, reptile or mussel records were added in 2007. A Scientific Collector Permit report database was completed which houses historic and current Scientific Collector Permit data allowing for new permit information to be entered with the system generating the permit. Fisheries GIS layers were updated for inclusion in the new FWP Mapper application, which exposes over 120 data layers to FWP staff. The application also provides a variety of tools to view, analyze and print the data. Layers that were updated included: genetics, fish distribution, fish survey location and information, private ponds, barriers and dams.

ODFW:
   Oregon StreamNet obtained access to 2 new ODFW test servers for use as application development and testing environments. A replacement plotter was purchased with costs shared with ODFW. GIS software was upgraded to the latest version. We purchased and installed 12 Forest Information and Reporting System (FIRS) GIS applications. Open source software to increase functionality while reducing cost was evaluated during the year. We continued development and management of geodatabases to manage our GIS data, and created a data catalog of all GIS layers in ODFW's geodatabases. Statewide 1:24,000 scale Framework Hydrography datasets and associated attribute data were made available to agency staff. We migrated the inventory tracking database to SQL Server from MySQL with WebFX as the development platform. Development of an online fish observation database was initiated. Routine QA/QC processes were implemented and QA/QC process documentation was updated to reflect lessons learned. Recommendations were provided to Regional StreamNet for addressing "disconnected" distribution events. And, we participated in age data DEF discussions and led a workgroup to develop recommendations for changes to the distribution data DEF.

WDFW:
   Routine database maintenance and management occurred throughout the year. Computer systems were upgraded and repaired as necessary. All applicable QA/QC routines on accumulated data sets were carried out. WDFW converted and exchanged the Washington Department of Fish and Wildlife's Fish Passage and Diversion and Screening database, 2006 age data, and all features from the WDFW Fish Passage and Diversion Screening Inventory (FPDSI) barrier's dataset. This submission completed the StreamNet holdings for this source.

FWS:
   Routine maintenance of the databases and computers continued during the year. Enhancement of various aspects of programs used to manage data internally and as part of the FWS CRiS system was completed opportunistically.

Work Element 161: Disseminate Raw & Summary Data

Data dissemination via the StreamNet web page (www.streamnet.org) continued throughout the year, with "up" time in excess of 99%. The Internet is the project's primary means of data dissemination, primarily through the online data query system and the interactive map applications. Additional online sources of data were through ftp, the Data Store, and direct download from the map and image catalogs.

StreamNet partners continued website maintenance and management throughout the year. In addition to Internet data downloads, project partners responded to direct requests for data and information. Staff in the StreamNet agencies responded to over 1,600 requests for information or assistance during the year (Tables 1, 2 and 3). State government employees made the most requests. Universities, tribal agencies, consultants, federal agencies and the general public also made significant numbers of direct requests. Of the direct requests received, over 700 were fully satisfied, and 43 were only partially satisfied. In a few cases we could only refer people to other sources of information, and some we could not help at all. Inability to help stemmed from the questions posed being inappropriate or irrelevant for the kind of information in StreamNet. Specific actions by the StreamNet partners included:

Region
  The primary means of disseminating regionally standardized data from the StreamNet databases remained the online tabular data query system and several interactive map interfaces. In addition, project participants responded to 52 direct requests for information.

IDFG:
  We responded to approximately 158 requests for data or data summaries that came directly to IDFG StreamNet.

MFWP:
  A new web application to query and report the Montana StreamNet data (MFISH) was designed and partially completed in FY-07 with MFWP funding. The new MFISH will be completed in FY-08. Thirty nine fisheries related internal requests for maps, data or web content were completed this year. Providing data to the public via the FWP website, including fisheries data, is not tracked. There was one mediated request related to fisheries information processed during the year.

ODFW:
  Oregon StreamNet provided input based on ongoing review of the StreamNet website and managed ODFW websites and interactive map applications to improve agency data flow to users and to StreamNet. We enhanced data access by providing ½ meter orthoimagery data to ODFW GIS users. During the year we responded to 185 direct information requests.

WDFW:
  Staff responded to 63 data requests directly during FY-07. In addition, WDFW-provided fish and hydrography layers built and maintained by staff partly funded by StreamNet were used by WDFW's Priority Habitats and Species group to respond to 343 data requests, involving 1,048 maps and 84 digital datasets. In addition, fish and hydrography GIS layers built and maintained by StreamNet were used by WDFW's Priority Habitats and Species group to respond to 1,011 data requests, involving 3,411 maps and 222 digital datasets.

FWS
  Hatchery data were distributed through long established lines of communication, and occasional additional requests which were not specifically related to StreamNet were also addressed.

The StreamNet Library at CRITFC:
  The StreamNet Library responded to 1,090 information requests, including all sorts of inquiries about the project as well as general information about fish and wildlife in the Pacific Northwest. The majority of requests were for documents or publications. Very rarely do we have to tell a customer that we cannot obtain a document for them from our network of resources. In those instances where a request may not be fulfilled due to another library's lending policies, we refer customers to other institutions to fill their request. As a rule, library resources are not available for check out. Library staff usually digitizes documents on demand rather than send out our copies to customers. This process makes delivery faster and cheaper than copying and mailing documents.

Work Element 189: Coordination

StreamNet members at all levels coordinated with and provided data services to a wide variety of entities in support of data management programs. StreamNet staff continued participation in regional efforts such as PNAMP, NED, CSMEP, creation of a standard regional GIS hydrography, and capture of information generated during subbasin planning. An overview of actions included:

Region:
  PSMFC maintained its coordination roles with various regional groups, including PNAMP, NED, CSMEP and CBFWA. Coordination activities with CBFWA included preparation for providing data to the 2006 update of the Status of the Resource (SOTR) Report, meeting with CSMEP and maintaining the metadata tool, development of the StreamNet work plan, and active participation in the Data Management Framework Subcommittee (DMFS). We welcomed the creation of the DMFS as a regional perspective entity (including the management agencies and NED) capable of providing guidance into regional data needs and priorities. Coordination with PNAMP included service on the steering committee, completion of the pilot effort to develop an inventory of monitoring activities, and participation on the Effectiveness Monitoring work group. Coordination with NED included service on the steering committee, initial drafting of a data management guide, and input to the regional data management strategy document. Coordination with data source agencies included setting up a demonstration of a consolidated approach to managing data within a state management agency.

CRITFC:
  The CRITFC Project Leader served on the CSMEP, PNAMP, and NED Steering Committees to improve inter-agency data collection, management and sharing processes and procedures. The CRITFC Project Leader worked with basin tribes to develop a proposal to design data management and sharing procedures for tribal fish data.

IDFG:

IDFG StreamNet participated in the DMFS. We have also provided support and technical assistance to the Idaho CSMEP project, including a list of streams in each identified Major Population Group for CSMEP analysis. The IDFG StreamNet project leader gave presentations to the StreamNet Steering Committee and two separate groups at Oregon Department of Fish and Wildlife on our work to develop databases and applications to automate the capture of data and flow of data to StreamNet and others. The IDFG StreamNet program coordinated with a number of programs within IDFG that are not necessarily funded by the FWP. These include data types that are captured by StreamNet (e.g., redd counts, hatchery returns, and standard stream surveys (for distribution data). The IDFG StreamNet program leader participated in the National Fish Habitat Summit held in Salt Lake City on non-project funding.

MFWP:

MFWP StreamNet Project Manager participated in discussions with state agencies, the Governor's staff and NWPCC staff in creating a Montana Restoration Database; as a result, a position was created at the Department of Natural Resources during the last legislative session to coordinate restoration projects at the state level. MFWP StreamNet staff contributed to the Data Management Framework Subcommittee discussion led by CBFWA and participated in CBFWA Resident Fish Committee. Meetings have been held with Fisheries Division staff during FY-07 to discuss the Division's Management Plan that has been renamed Fish Management Status Report; work will continue in FY-08. A meeting was held in September between StreamNet staff and FWP Fisheries Division staff to discuss the FY-08 SOW.

ODFW:

Oregon StreamNet participated in NED, PNAMP, CBFWA DMFS and CSMEP meetings. We compiled information about bull trout monitoring efforts and added 153 bull trout metadata records to the CSMEP database. Recommended changes to the CSMEP web application were submitted based on need, including coordinating the development of necessary performance measures. Materials related to the NED/PNAMP/PNW-RGIC Executive Data Summit were reviewed, input on the draft agenda was provided, and ODFW Executives were encouraged to attend via electronic and in-person communications. Updating StreamNet trends associated with CBFWA's Status of the Resource Report was a significant focus during the year. We worked with the ODFW GIS Coordination Group and other internal efforts to further information support, and led the effort to draft an ODFW GIS Implementation Plan in support of the agency's GIS Strategic Plan. We prepared and distributed a white paper to train ODFW employees how to access the enterprise geodatabases, created a data catalog of all GIS layers in ODFW's geodatabases, and provided agency staff with network access to the 1/2 meter orthoimagery data. We coordinated with staff from Ecotrust and ODFW Monitoring Program staff in efforts to improve ODFW's ability to manage natural resources information. Coordination of Oregon's effort to develop a statewide barrier inventory database and restoration prioritization system continued throughout the year. Promotion of the concept of holding an ODFW Data Summit continued through verbal and written communications. One staff member attended and participated in the Washington Monitoring Forum Workshop, titled "Transitioning from Dirt Roads to a Data Highway", and the National Fisheries Data Summit, which was supported by non-project funding.

WDFW:
  The WDFW StreamNet staff attended meetings of CBFWA's DMFS in an effort to help guide improvements to regional data management prior to the 2009 F&W Program amendment process. Staff participated in collecting materials related to the NED/PNAMP/PNW-RGIC Executive Data Summit and prepared briefing papers for our attending executives. Personnel attended many meetings with representatives from Washington Department of Ecology (WDOE), Washington Department of Natural Resources (WDNR) as well as Washington Recreation and Conservation Office (RCO) to begin a pilot project exploring the feasibility of creating a unified statewide GIS hydro layer. Finally, Washington continues to create standards for a unified statewide Spawning ground survey and Age database.

FWS
  Coordination between the partly StreamNet funded position in Vancouver and National Fish Hatcheries and Fisheries Offices throughout the Columba River Basin continued during the year. This is essential to completing StreamNet deliverables. Without it there would be no USFWS data in StreamNet.

Work Element 99: Outreach and Education

StreamNet project members participated in various professional and public venues to inform others about StreamNet data and services and to learn about opportunities to expand acquisition of data, including, e.g., units of the American Fisheries Society (AFS, www.fisheries.org) and the Organization of Fish and Wildlife Information Managers (OFWIM, www.ofwim.org). Specific highlights included:

Region:
  PSMFC staff participated in the Oregon Chapter AFS meeting to promote regional data sharing. Only one StreamNet newsletter was published this year, based on available newsworthy project developments. The Program Manager attended the OFWIM annual meeting (at OFWIM expense), presented several papers related to StreamNet, and completed his rotation as an officer in OFWIM. Regional StreamNet took over responsibility for maintaining the OFWIM website, with website content remaining the responsibility of the OFWIM executive committee.

CRITFC:
  The StreamNet Librarian and Library staff participated in six conferences and local professional meetings to actively promote the library and its services.

IDFG:
  IDFG StreamNet made available to the StreamNet Project Manager a Power Point presentation on our database and application development work that he presented to the Organization of Fish and Wildlife Managers.

MFWP:
  MFWP StreamNet staff participated in the Organization of Fish and Wildlife Information Managers, and in meetings related to the national Conservation Strategies.

ODFW:

Oregon StreamNet staff prepared and delivered a presentation on data management and sharing principles at the OWEB Biennial Conference. We also developed and presented a Power Point talk describing the Oregon Fish Passage Barrier Data Standard. A presentation on LIDAR technology and how it might benefit resource management efforts in the state was sponsored during the first quarter of the year. The key points of the draft GIS Strategic Plan was presented to ODFW managers and feedback was solicited regarding content and next steps. We arranged for a demonstration of Idaho's new fisheries data management system to ODFW staff during two separate presentation sessions.

Work Element 119: Manage and Administer Projects

All project members performed routine administrative duties, including supervision, budget management, development of the FY-08 proposal and budget, and program guidance. The StreamNet Steering Committee met quarterly throughout the year and provided ongoing advice and guidance to the project, with participation from all partner agencies. PSMFC provided accrual estimates on schedule, as required by the contract.

Regional staff continued administration of the pilot PNAMP Monitoring Inventory project, including direct supervision of the lead technician. This pilot project was completed in the first quarter.

Significant staff changes occurred in several of the cooperating projects. Oregon StreamNet faced two prolonged vacancies (data analyst and programmer) this year. The data analyst position was eventually filled after long delay, but despite several announcements, no qualified candidate has been found to fill the programmer position. A contract programmer was hired on a temporary basis to cover at least some of the workload, but some planned work was delayed by the ongoing vacancies. Idaho StreamNet also faced two vacancies (database analyst and programmer), but was able to successfully recruit and hire well qualified replacements. The time required to fill the vacancies did delay some planned work, however. Washington StreamNet faced the retirement of its longstanding StreamNet Project Manager at the end of the fiscal year. A successor was chosen before the retirement, however, and both the old and new project leaders attended the fourth quarter Steering Committee meeting to assure a smooth transition.

Work Element 141: Produce Status Report

The StreamNet project submitted all four required Pisces Status Reports during the year.

Work Element 132: Produce Annual Report

The annual report for FY-06 was written in the first quarter and submitted to BPA. This report was a detailed report of all activities, organized by Work Element Title. This completed the transition from our previous routine of four detailed progress reports and an overview annual report to four general Pisces Status Reports and a single detailed annual report.

Detailed Accomplishments

Specific details of work accomplished by the StreamNet Project during Fiscal Year 2007 are presented below. Actions related to the various milestones are summarized at the Work Element Title level.

Work Element: 159   Submit/Acquire Data

Work Element: 159   Submit/Acquire Data

Title no: 1   **Conduct site visits to obtain updated data from biologist**

Description: Conduct scheduled site visits to offices of biologists in state, tribal and federal agencies to obtain the most recently available field data. This approach is used by only one of the agencies cooperating in the StreamNet project.

Deliverable: New data are obtained by the state StreamNet project to update the data categories listed in the other Data Development work element titles.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

MFWP   MFWP StreamNet staff contacted all MFWP, other state agency and federal fisheries biologists in 2007 to obtain fisheries field survey data collected during the 2006 field season. Data included fish distribution; use type; survey, inventory and monitoring of target species; reptiles and amphibians and nongame species. The corresponding MFISH tables were updated with the data collected from biologists and from documents, reports and electronic files.

In order to better track which biologists have been contacted, when and what data has been received, MFWP staff developed forms in the MFISH application to track this information. From this information detailed documentation can be acquired as well as reports run to determine the status of data collection.

Work Element: 159   Submit/Acquire Data

Title no: 2   **Develop anadromous fish distribution data**

Description: Document the occurrence, distribution and life history characteristics of anadromous fish species. Efforts will be made to utilize the current mixed scale hydrography for these data, with intent to migrate to 24K when a regionally consistent 24K routed hydrography becomes available. Maintenance of this high priority data set will continue. The state StreamNet sub-projects will maintain the existing data on anadromous fish distribution and habitat use in their respective states. New distribution information will be incorporated as they become available. Updated distribution data will be converted to the regional Generalized Fish Distribution format and conveyed ("exchanged") to the regional StreamNet database at PSMFC, where they will be incorporated into the database.

Deliverable: Data on the distribution and habitat use of anadromous fish are maintained, and updated as possible, by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC and made available through the online data query system.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

IDFG   The distribution for Pacific lamprey in Idaho was updated. No other anadromous fish distributions required updates.

ODFW   Routine maintenance was performed for anadromous distribution as needed. We updated Coquille coho and winter steelhead distribution to fill gaps in the distribution, incorporated changes in the John Day and Lower Columbia based on input from field biologists, and updated some reference information for mainstem Columbia chum distribution. We evaluated the process of converting 100k and 24k distribution data to events on the 24k hydrography and converted summer and winter steelhead, coho, chum, sockeye, spring and fall Chinook distribution events affected by the mixed scale hydro dataset to events that map on that route system. All Columbia basin anadromous distribution data (100k and 24k) were converted to events on the 24k hydrography. Eighty-eight distribution records that were affected by the new measures of the mixed scale hydrography dataset were submitted to Regional StreamNet.

WDFW   WDFW located the Washington Department of Game Stream Lake Fish Database (SLFD) and converted it from Paradox to Access. The data set was used by the old Washington State Department of Wildlife to act as a centralized data set for regional field originated fish data. Washington will assess how this "observation" data can enhance the fish distribution data. There are 64,430 records of fish occurrence in this data set, which is still undergoing review.

Work Element: 159   Submit/Acquire Data

Title no: 3   **Develop resident fish distribution data (top priority for MFWP, lower priority for others)**

Description: Document the occurrence, distribution and life history characteristics of resident fish species, at the most current available hydrography scale. Existing resident fish distribution will be maintained, and project participants will begin expanding data for additional species. This is high priority for Montana, and new data will be developed by the other states as time allows. Updated distribution data will be exchanged to the regional StreamNet database at PSMFC, where they will be incorporated into the database.

Deliverable: Data on the distribution and habitat use of resident fish (species of primary interest) are maintained, and updated as possible, by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC and made available through the online data query system and interactive maps.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

IDFG   The distribution for Bonneville cutthroat trout in Idaho was updated. No other resident fish distributions required updates. We participated in the Yellowstone cutthroat trout assessment that will result in new distribution data when completed.

MFWP   MFWP StreamNet staff updated and/or corrected resident fish distribution for all species from data gathered during the site visits, reports or   documents. Genetic results from the University of Montana Genetics Lab for cutthroat trout species and redband trout were also used to update fish distribution. Information from the habitat restoration projects data were also used in determination of distributions. These updates concluded with 308 "Fish Pres" records being created or updated and exchanged to Regional StreamNet staff. MFWP also participated in the Yellowstone Cutthroat Trout 2007 assessment update through map product preparation, participation in the meetings, modifying the existing database for data entry, entering the data and providing final review products back to the biologists who participated.

ODFW   Existing resident distribution data were maintained throughout the year. We created an updated (draft) statewide Redband distribution dataset in response to a request from local district staff. Both 100k and 24k Columbia Basin bull trout distributions were converted to Framework events and a quality assurance assessment was performed on the resulting data. We submitted westslope cutthroat trout (WCT) distribution data from the 2002 Assessment, tied to the 100k linework. Eighty-six distribution records that were affected by the new measures of the mixed scale hydrography dataset were submitted to Regional StreamNet.

WDFW   The Washington Location Data Compiler visited regional WDFW offices and field biologists to collect data, conduct mapping parties and finish migrating any relevant Washington regional data into our internal database. Resident observation data were assessed and evaluated on how the data can enhance the fish distribution data collection. These resident observation data were then used to update our internal database with the Eastern Washington westslope cutthroat, white sturgeon, etc. fish distribution data collected during the third quarter.

Work Element: 159   Submit/Acquire Data

Title no: 4   **Develop data for adult abundance in the wild**

Description: Develop and maintain (update) information on adult abundance for native fish species, resident and anadromous, including escapement, redd counts, peak spawner counts, trap counts, dam and weir counts, and resident fish populations (where calculated by other agencies). This is a high priority data type. 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. These are lower priority under base funding. Updated data will be exchanged with the regional StreamNet database at PSMFC at least once per year in the Data Exchange Format (DEF).

Deliverable: Data on the abundance of fish (species of primary interest) in the wild are maintained and updated, by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

IDFG   2005 and 2006 Chinook salmon index redd counts were updated and submitted.

MFWP   3,807 fish survey records were provided to Regional StreamNet staff as an independent data set for the Data Store since there is no current DEF for this data type. The data provided included all fish surveys including one time, index streams, lake netting and all other types.

ODFW   Abundance data compilation, trend updates, and QA/QC efforts continued in Oregon throughout the year. Updates were submitted to Regional StreamNet in March and September, as scheduled, amounting to 954 updated trends. The updated trends were in the following data types: Adult Return-Dam/Weir counts, Adult Return-Estimates of Spawning Population, Adult Return-Redd counts, and Adult Return-Peak/Other Spawning Counts. These updates ranged in years from 1946 to 2007. The year's work brings the total number of Oregon abundance trends to 7,830 spanning the years 1938 through 2007.

WDFW   Washington acquired 2006 spawning ground survey data from WDFW Regions 1,2 and 3 and is performing conversion of the data from WDFW spawning ground survey database format to StreamNet exchange format.

In addition, Washington HQ staff fostered several discussions between WDFW district biologists and tribal and U.S Forest Service biologists concerning the procurement of spawning ground survey data from previous years. Our Staff held meetings with local data managers in April, May and June to obtain the data and set in place a process for data submissions on an ongoing annual basis. WDFW in also undertaking the conversion of 22 years of bull trout spawning ground survey data hard copy forms from the Upper Yakima basin. The records will be included in a future StreamNet submission. The historical WDFW Stream Lake Fish Database (SLFD) is currently under review for possible submission as an independent dataset for the Data Store.

Cedar Creek adult trap data were modified so updates could be sent to the District Biologists for review and eventual submission.

The Vancouver Data Compiler collected escapement data for the natural spawn database return year 2006, and incorporated any remaining 2005 data that was not merged from the previous year. This escapement data was evaluated and delivered to StreamNet at the end of November. WDFW began QA/QC for the data contained in the SGS database for Region 5, and entered more past data for a more complete dataset. All of the GPS coordinates for Region 5 survey indexes were sent to the Olympia SGS data manager. Ongoing efforts to enter historical data as well as 2006 survey data will be done as time allows. Finally, The Vancouver Data Compiler examined the focal species of the SOTR report and compared data listed in the report to data already displayed via StreamNet's website. Necessary corrections were noted for future action.

The Washington Location Data Manager undertook geo-referencing recently obtained Eastern Washington presence /absence data. Washington has also designed a draft format for subsequent GPS or descriptive point location data submissions. This format was passed to Regional biologists for feedback. In addition, the Washington Location Manager prepared more WDFW SaSI data for select species and reconciled this data against the WDFW StreamNet escapement dataset. WDFW finished converting and submitted the last 94 60K trends left to be converted to Washington trends or otherwise deleted.

Work Element: 159   Submit/Acquire Data

Title no: 5   **Develop hatchery return data**

Description: Develop and maintain (update all hatchery trends) information on the return, disposition and straying (e.g., from other hatcheries) 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 2006. Development of disposition data is lower priority and would require additional resources. Updated data will be exchanged with the regional StreamNet database at PSMFC at least annually. This is a high

Deliverable: Data on the return of anadromous fish to the hatcheries are maintained and updated by the state and FWS StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

FWS   All standard hatchery data sets for 2006 were received, checked for quality, converted to the appropriate StreamNet DEF, and submitted to the StreamNet database. Two submissions were made this year in order to increase timeliness.

IDFG   We worked to compile our historic hatchery return data from 1961 through 2003 into the new StreamNet Data Exchange Format (DEF). This work turned out to be time consuming and was not completed in FY-07. The problems included, 1) a great deal of data that has to be extracted from comments or original reports and entered into new data fields and 2) work on other elements of our StreamNet SOW. As a result, the target of exchanging the 2006 data was not met, but will be completed in FY-08.

ODFW   Due to prolonged staff vacancies, limited progress was made on hatchery return data. The process of exporting return data from ODFW's mainframe system and reformatting it into the StreamNet format was piloted this year, with limited success. We obtained and submitted spring Chinook, summer steelhead, and sockeye returns to Round Butte Hatchery from 2003 -2007, but disposition and egg-take information was not included. Efforts to refine the export process will continue in FY-08 when staff vacancies are filled.

WDFW   Washington's Locations Data Manager prepared the locations needed for future hatchery return submissions and uploaded them to the StreamNet database. The Washington StreamNet Data Manager processed the complete WDFW hatchery database, which included records through the 2006 return year. The Data Manager rolled the data up and prepped them for exchange and delivered them to StreamNet headquarters to update the master database.

Work Element: 159   Submit/Acquire Data

Title no: 6   **Develop dam and fish passage facility data (mid-priority)**

Description: Data on dam and fish passage facilities will be maintained and updated on a rotating schedule every three years, with the next scheduled update in FY-08. Previously compiled data of this type, as available, may be exchanged this year.

Deliverable: Data on dam and fish passage facilities are maintained and updated by the state StreamNet sub-projects on a three year rotating basis, beginning in 2008. Previously compiled updated data are exchanged with the main StreamNet database at PSMFC in 2007.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

IDFG   For three of the four participating states, these data were maintained, but no previously compiled data were available for delivery this year. The new three
MFWP   year cycle for updating dam and fish passage data specifies that these data will be updated in FY-08.
ODFW

WDFW   The Olympia Data Compiler completed a review of existing internal and external data sources for Washington dams. It was determined there is no comprehensive database of all dams in the state of Washington. Records for Washington State dams from 9 sources were reviewed and evaluated for submission. A final data set comprised of 1,218 records from the 2002 submission and an additional 1,118 new records is currently being reviewed for location QC.

The first pass at linking various dam sources together was completed in Q1. The Location Data Manager started reviewing samples of the product for a pattern. A recognizable pattern would allow automation to proof the work, make final decisions on which location should be adopted and fill any gaps in the links and best source identifier. Initially we expected to deliver the dam data before the barriers data but switched focus when it was clear the dam data was the more complicated job because of the conflicting source information. The Location Data Manager renewed efforts to finalize Dam data, choosing which point location of many should be the most reasonable.

An additional project was initiated to review fish passage structures at dams not inspected by WDFW personnel for a subsequent submission.

Work Element: 159   Submit/Acquire Data

Title no: 7   Develop hatchery facility data (key dataset, update once per year)

Description: Develop and maintain information on anadromous and resident hatchery facilities, including information on location, design, management and authorization. Information will be updated on a rotating schedule every three years, beginning in FY-07. Data will be updated as necessary and exchanged to the regional database at PSMFC.

Deliverable: Data on hatchery facilities are maintained and updated by the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC on three year rotating basis, beginning in 2007.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

FWS   The hatchery facilities data set was updated throughout the year and submitted along with the other data submissions twice during this reporting period.

IDFG   Updates were made to IDFG's internal hatchery facilities database for IDFG hatcheries. We contacted other agencies and tribes for updates to their facilities, but did not receive a response. We have been waiting for those responses before submitting the data updates to StreamNet.

MFWP   MFWP StreamNet staff updated the public and private hatchery facilities database and exchanged those data in August 2007.

ODFW   Attributes of the hatchery facility table were updated in response to a review of the official Oregon State Highway map. In addition, contact information for two hatchery facilities were updated during the fourth quarter. Hatchery facility data were exchanged in the fourth quarter.

WDFW   Our Location Data Manager informally submitted corrected longitude and latitudes for select hatcheries. A formal submission will occur in the future when the mixed scale hydrography is adopted and all data is resubmitted to jive with the new StreamNet hydrography.

Washington verified and improved a few problematic hatchery locations as discovered during the effort to collect more Eastern Washington Natural Spawner data. This data will be submitted to StreamNet in FY-08 Q1 after our internal point manager dataset format and tools are finalized.

Work Element: 159   Submit/Acquire Data

Title no: 8   Develop hydrography data

Description: Maintain the regionally consistent routed hydrography layer at the 1:100,000 (100K) scale for which StreamNet is the official keeper. This LLID based hydrography has been the basis for georeferencing and displaying locations for all other data in the StreamNet database, and as such is an essential data set. In FY-07 we will continue to maintain these data, but emphasis will shift to development and use of a mixed scale hydrography (100K plus 24K streams that have attached fish data) as an intermediate step toward the eventual conversion to 24K when a regionally consistent routed 24K hydrography becomes available from other entities (potentially several years away). Effort will also be expended toward developing 24K LLID based hydrography from NHD linework.

Deliverable: The 1:100,000 PNW hydrography layer is maintained and updated as needed for internal use and posted on the StreamNet website for use by others. An interim "mixed scale" (100K X 24K) hydrography for use in posting StreamNet data is developed for StreamNet use until the PNW 1:24,000 scale NHD is completed by USGS.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

IDFG   Additions and modifications were made to Idaho's 1:100,000 scale streams layer as requested by IDFG biologists for sampling. The updated streams layer was submitted to PSMFC. We also completed a pilot project under separate funding to transfer 1:100,000 scale routes to the 1:24,000 National Hydrography Dataset. This pilot was funded by the USGS and a final report was submitted to them.

MFWP   The Montana Natural Resource Information System became the steward of the NHD layers in FY-06 and began the process of quality checking the 1:24 K data and performing maintenance of the 1:100 K layer excluding the stream routes, which remain MFWP responsibility. NRIS staff attended a national meeting pertaining to stewardship of the NHD in the third quarter; NRIS anticipates the 24k NHD for Montana will be ready for use in 2 years. MFWP staff will look into adding needed reaches from 24k streams into the current 100k layer; this work would occur in FY-08.

ODFW   We performed routine maintenance as needed and coordinated with Regional StreamNet staff throughout the year. We worked with WDFW and IDFG to address cross-state hydrography anomalies focusing on location and accuracy of observation data occurring on the same streams. We acquired the most recent version of WDFW's mixed scale hydrography (MSH) dataset and evaluated Oregon distribution events affected by the integration of this MSH dataset into the regional hydrography layer.

We continued to participate in efforts to enhance the regional 100k hydro dataset with 24k stream routes, including: attending Framework Hydrography Clearinghouse meetings, coordinating with the Hydro Framework to store LLIDs alongside NHD routes, and developing and testing a methodology for converting 100k event data to the 24k Framework hydrography.

Working with Regional StreamNet staff, we identified and evaluated approaches for submitting updated Oregon hydrography data for inclusion in a regional dataset. The decision was made to wait until version 1 of the Oregon mixed-scale hydrography layer (which will be 24k for the Columbia; 100k for non-Columbia) is complete so all associated events can be submitted simultaneously. Distribution and barrier data were converted to events on the Framework hydrography. Updated events that were affected by the pending regional mixed scale hydrography (WA & OR boarder HUC's are 24K; remainder of Oregon is 100k) were submitted.

WDFW   At the end of FY-06 we submitted the new mixed scale hydrography. We are awaiting approval from the StreamNet Regional GIS Manager before we re-submit all existing data with the new hydrography measures. Meanwhile we are focusing on internal tools and organization that will help support general location data submissions.

The WDFW GIS Data Manager researched the quality of the NHD and feasibility for adopting its linework.

Work Element: 159   Submit/Acquire Data

Title no: 9   **Develop fish barrier data**

Description: Develop and maintain data sets for barriers to fish migration. Delivery of this data type is on a rotating basis every three years with exchange targeted for FY-09. Some preliminary work may be done in FY-07, and some already compiled data may be exchanged.

Deliverable: Data on fish barriers are maintained and updated by the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC. New sources of barrier data are located.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

IDFG   We participated in the Yellowstone cutthroat trout assessment that will result in new barrier data when completed.

MFWP   Information for 2,807 culverts was received from the Lolo National Forest, but due to data formatting inconsistencies further work needs to occur before entering into MFISH. Updated barrier information entered as a result of the YCT reassessment in 2007 was incorporated into the Yellowstone Cutthroat Trout Assessment Database. This information will be incorporated into the MFISH database after it has been reviewed and approved by biologists in FY-08.

ODFW   Priority barriers in Oregon were identified and where appropriate, added to the NRIMP Barrier dataset. In addition, 22 barriers observed incidentally during other activities were added and converted to StreamNet format. Lastly, a newly discovered natural falls on a North Fork John Day tributary was incorporated. This also led to a reduction of summer steelhead habitat.

Work to convert Willamette barrier events affected by version 1 of the Oregon mixed-scale hydrography to events that map on that route system was initiated. Because of differences in locational accuracy, it became necessary to use two separate processes to accomplish the conversion. The locational accuracy was corrected and updated as these data were migrated to the Framework hydrography. We submitted updated location information for 51 barrier records based on updated measures of the mixed scale hydrography.

WDFW   A new data snapshot of Washington Department of Fish and Wildlife's Fish Passage and Diversion and Screening database was obtained and converted to the StreamNet format. WDFW submitted all features from the WDFW FPDSI barrier's dataset. This submission completes the StreamNet holdings for this source.

Work Element: 159   Submit/Acquire Data

Title no: 10   **Develop fish age data**

Description: Develop and maintain information on age/sex composition of returning adults, primarily for anadromous species. Emphasis on this data type will increase in FY-07 now that the DEF is finalized.

Deliverable: Data on age composition of returning adult fish is available through the StreamNet website.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC   Age data from Bonneville Dam sampling was updated without problem. In addition, we tested techniques for automating submission of these data in the future.

FWS   Age data is now routinely included in USFWS data submissions soon after work has been completed on the most recent returns, so these data were submitted along with the other data in the two data submissions during the year.

IDFG   In concert with our work on hatchery returns, we worked to compile historic age composition data from 1961 through 2003 into the new StreamNet DEF. This work turned out to be time consuming and was not completed in FY-07. The problems included, 1) a great deal of data that has to be extracted from comments or original reports and entered into new data fields and 2) work on other elements of our StreamNet SOW.

ODFW   Age data were compiled and evaluated against the most recent version of the StreamNet DEF. Oregon submitted 1,199 age data records ranging from 1992 - 2005 to regional StreamNet in September. These data were for coho, spring and fall Chinook, and summer and winter steelhead at the Powerdale Dam.

WDFW   2006 age data collection was completed, calculated and exchanged with the natural spawn escapement data by the Vancouver Data Compiler. A few corrections were made to the 2006 data collection by the Vancouver Data Compiler. Those changes will be made during the next data exchange in the first quarter of 2008.

Work Element: 159   Submit/Acquire Data

Title no: 11   **Develop other data sets**

Description: On an opportunistic basis, develop other types of data as available or as requested by FWP participants. This relates to data relevant to StreamNet objectives which would be developed by StreamNet cooperators and also includes data developed by other agencies or projects. Actual acquisition, standardization, georeferencing and distribution of these data will be dependent on available time and funding. These data may be included in the DEF in the future, or may be obtained and distributed as independent data sets in native format in the Data Store. Development of other data by StreamNet is a low priority under current base funding. Receiving and posting independent data sets from other entities in the Data Store is a high priority.

Deliverable: Other fish related data (in addition to the standard StreamNet data categories) are obtained and made available through the StreamNet website as they become available on an opportunistic basis. Data sets that do not fit into the StreamNet data exchange formats are posted as independent data sets in their native format in the StreamNet Data Store.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC No work was done on this task with StreamNet funding. See Work Outside the SOW, p 40.

IDFG   IDFG StreamNet staff assisted agency staff members to prepare the 2000 - 2006 General Parr Monitoring data for posting to the StreamNet Data Store. The finalized data will be posted to the Data Store as soon as they are made available to Idaho StreamNet.

MFWP   MFWP StreamNet staff updated 281 genetic records and exchanged a spreadsheet containing all genetic sample records. 97 Restoration Project records were added or updated in the MFISH database and exchanged August 15, 2007. 5,848 habitat survey records have been added to the database and will be exchanged via an independent data set to the Data Store. No updates for diversion screening data occurred during FY-07.

ODFW   Harvest data updates were submitted to Regional StreamNet in March and September, as scheduled, amounting to 172 updated/corrected freshwater harvest trends for the years 1996 - 2005. Additional efforts were made to acquire updated harvest information for more recent years. However, these data remained unavailable through the end of the year. In addition, marine harvest updates remained unavailable. This year's work brings the total number of Oregon harvest trends to 1,047 spanning the years 1938 through 2006.

        Oregon StreamNet pursued and obtained over a thousand game and non-game fish observation records that resulted from Oregon Chub surveys. This information will be used to augment existing and add new distribution information.

We acquired and appended fish presence data sets from OR Dept. of Forestry and provided them to users in the North and South Willamette as well as North Coast watershed district offices for incorporation into the Forest Information and Reporting System (FIRS).

Oregon and Regional StreamNet staff met with ODFW biologists in the upper Willamette to discuss developing and exchanging high mountain lakes data.

Administrative spatial data layers were modified, including edits to the North Willamette and Deschutes ODFW fish district and watershed district boundaries.

We attempted to obtain and post ODFW's creel data, but the effort was placed on hold until staff could be hired to prepare electronic files for sharing.

No requests to post independent data sets from Oregon were received during this project period.

Region   The Data Store data archive was managed throughout the year. We noticed that there were several submissions that did not include data sets, but were instead only reports. In response we took two actions. First, these reports were sent to the StreamNet Library for inclusion in the collection, and they were removed from the Data Store. Second, we modified the Data Publishing Service web page to let people know that if they have reports without data sets, then they should send those directly to the Library. The submissions which contain no data sets will be removed from the Data Store's list during fiscal year 2008. An issue developed with our automated Data Store submission notifications, and four data store submissions were not seen until one to four weeks after they were submitted. We identified the cause of the problem, and a work-around was found and implemented. Only eight new data sets were received and added to the Data Store this fiscal year; several others were updated.

As part of miscellaneous data development activities, PSMFC scanned a photograph of Bear Creek Falls, Wildhorse River drainage of Idaho. Database records were created, and this item is available in the main StreamNet database.

We reviewed the StreamNet links web pages, and added to the Data Store links to web sites that provide on-line data.

WDFW   No work on other data sets was needed during the year.

Work Element: 159   Submit/Acquire Data

Title no: 12   **Library: Collection development**
Description: The StreamNet Library, with input from the other project participants, will develop a collection of materials applicable to the mission of StreamNet. We will 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. The project participants will submit reference documents for all data contained in the StreamNet database to the StreamNet Library.
Deliverable: The collection in the StreamNet Library is maintained and increased by addition of pertinent publications and reports and by reference documents supporting the data added to the StreamNet database.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

CRITFC   Submission of references to the StreamNet Library continued through FY-07. We received documents from each of the participants, except Montana. MFWP maintains a separate library from the rest due to distance and number of documents contained in their library. With the maturation of digital documentation, we are currently pursuing how to best combine the libraries into one digital repository for users.

IDFG   All references for data submitted to PSMFC were submitted to the StreamNet library.

MFWP   MFWP StreamNet staff obtained 186 reference documents for data developed during FY-07 and provided the citations to the StreamNet Library and Regional Staff. In addition to StreamNet staff work, the Fisheries Division hired an intern for the summer to scan documents from the Division's library which holds the hard copies of documents referenced in StreamNet. If additional help can be found in FY-08, we will send the scanned documents to the library.

ODFW   Oregon StreamNet submitted 29 reference documents to the StreamNet Library this year, related to data developed in WE 159; 17 of these documents were new to the StreamNet reference holdings.

WDFW   All references used for the data exchange were copied and sent to the library for 2005 natural spawn escapement and age data collection.

The WDFW Vancouver data compiler created references for the 2006 Natural Spawner Escapement and Age dataset collection. All references were copied and sent to the StreamNet library, with the exception of one report that was in draft form. Once finalized, it will be sent to the library.

In addition, Washington submitted electronic reference documentation to StreamNet headquarters and the Library in order to update existing electronic data submissions with correct dates and ancillary information.

The Vancouver Data Compiler, to reflect any changes and additions for the 2006 Natural Spawn Escapement Dataset collection, created a few new references. They will be sent to the library when data are exchanged.

Work Element: 160   Create/Manage/Maintain Database

Work Element: 160   Create/Manage/Maintain Database

Title no: 1   **System administration**

Description: All StreamNet cooperators will manage and maintain the computer systems (hardware and software) necessary for acquiring, quality checking, formatting in regionally consistent format, georeferencing, backing up, and transmitting tabular and GIS data to the StreamNet database at PSMFC, and for storing, managing, documenting, backing up, quality checking and disseminating the data at PSMFC. This is a high priority work element that is essential to proper functioning of the project, even though it operates largely in the background.

Deliverable: The computer systems used to obtain, store, manage, back up, and distribute data (hardware and software) are maintained in functioning condition and updated as needed at PSMFC and the cooperating agencies.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC   All systems operated normally and without interruption. In addition, we began developing specific data management plans for each significant dataset maintained by CRITFC. These plans describe procedures for data recording, QA/QC, report generation, data sharing and long-term storage. The transition of library catalog software to an open source platform was partially completed in FY-07. Software difficulties and data translation problems were encountered, however, and the release to the public was delayed until FY-08.

FWS   Routine data management operations were performed throughout the year. New QA/QC checks were added, and USFWS IT staff maintained both hardware and software needed to insure system integrity.

IDFG   Standard system administration procedures were conducted on our servers. Major steps were taken to transfer system administration tasks to the IDFG IT Bureau and remove that burden from StreamNet staff. The StreamNet servers were physically transferred and consolidated with IT's servers in their server room. A new backup and recovery operated by IDFG IT staff was implemented. We replaced two servers with new servers: our database server and our ArcIMS spatial server. All of our databases were migrated to the new database server. Work was begun in collaboration with our IT Bureau to provide access through our firewall and develop an Extranet with the intent of providing more efficient transfer of data to the main StreamNet server.

MFWP   Other than GIS, these duties have all been moved to MFWP Information Services Division, Network Services Bureau, except for databases that are shared with the Montana Natural Heritage Program which includes MFISH. To manage those data, a move was made from SQL Server Enterprise Manager to SQL Server Management Studio.

ODFW   Oregon performed system maintenance and upgraded hardware and software, as needed. We upgraded the memory on the computer used to maintain our trend data set from 256 MB to 2 GB. We obtained access to 2 new ODFW test servers for use as application development and testing environments. Significant internal network-related issues were overcome to achieve a working test server system. We shared the costs with other ODFW projects to purchase a new plotter to replace our 9 yr old model that died. Four battery backup units were refurbished this year to protect hardware and data assets.

GIS license renewal was completed during the second quarter. ArcSDE, ArcIMS and ArcGIS were upgraded to version 9.2, and map services were recreated and brought online to allow use. Needed service packs were also installed as necessary to ensure proper functionality. We completed the ArcIMS install on the test web and map servers (mentioned above) which includes Java development tools and also the Apache servlet connector. We also coordinated the purchase and installation of 12 Forest Information and Reporting System (FIRS) GIS applications from the Oregon Department of Forestry (ODF) for use by ODFW field staff, and provided staff with an overview of the program's functionality. We developed guidelines for adding new layers to the FIRS application and provided those out to the FIRS users.

Different open source software options for creating web-based mapping applications were evaluated in an effort to dynamically display spatial information while avoiding internal license restrictions that limit tools that allow this functionality. What appears to be a suitable option was identified and tested. We also evaluated back end programs to generate and serve requested maps.

Geodatabase development and management continued during the year. Domains and relationship classes were maintained in order to ensure data integrity and ease of use. We also completed a white paper that spells out for ODFW employees how to access the enterprise geodatabases, including a data catalog for all GIS layers in the base map (SDE), fish and wildlife geodatabases.

By connecting external hard drives to our existing data and application servers, we were able to provide agency staff network access to the 1/2 meter orthoimagery data (UTM zone 10 only). We also loaded statewide 1:24,000 scale Framework Hydrography datasets, and associated attribute data into SDE. These data are now available to staff with access to the SDE layers.

Staff reviewed Trac and Subversion software packages as possible project management options. We also evaluated ArcGIS Explorer as a possible option for many biologists to use in place of ArcView.

Region   Routine administration of StreamNet servers and computers continued throughout the fiscal year. The primary database server was upgraded to a rack mounted Dell 2950 running 64-bit Windows Server 2003 operating system and 64-bit Microsoft SQL Server 2005 RDBMS software. Implementation of 64 bit technology resulted in a significant increase in speed, making the experience of using the online data query system noticeably faster for users. The primary GIS database server was maintained and a replacement internet map server was brought on line. The new map server (Dell 1950 running 64-bit Windows server 2003) is running ArcGIS Server 9.2 and ArcIMS 9.2. As new internet mapping applications are built they will be based on this new platform which should significantly improve the user experience, taking advantage of the latest improvements in web mapping technology. All desktop GIS software was upgraded to ArcGIS 9.2.

New data delivered by StreamNet partner agencies to the central StreamNet data system were dominated by, in order of greatest percentage increase in records: 1,765 new Fish Age records, 2,226 References, 439 Hatchery Returns, 14,111 Locations, 387 Dams, 2,720 Escapement observations, and 117 Fish Distribution records.

WDFW   All software patches were installed on all working PCs. Backups were performed on all critical data and applications.

A number of hardware failures were encountered and addressed. The Data Manager's computer suffered a hard drive failure; applications were 80 percent restored. The hard drive on the Data Manager's desktop PC crashed again in the 4th quarter and was replaced. A new desktop PC has been ordered and will be installed in the first quarter of 2008. The hard drive on the Data Manager's laptop crashed soon after and is in the process of being fixed. The Location Data Manager's Desktop PC was under repairs for 3 days when the motherboard failed. She tried to use our two laptops during this period but mostly just managed to identify the limitations of the laptops. She filed requests accordingly to improve the laptops.

Work Element: 160   Create/Manage/Maintain Database

Title no: 2   **Application and interface development**

Description: All StreamNet cooperators will develop and maintain computer applications and interfaces that facilitate the entry, management and dissemination of tabular and GIS data at the regional and subcontracting agency levels. This will include development of new applications and tools as well as maintenance or modification of existing applications. To the degree possible, cooperators will share code and applications between agencies and with other data source agencies to maximize project efficiency.

Deliverable: The databases, computer applications and interfaces necessary for obtaining, storing, managing and disseminating data are developed and maintained in such a way that they support accomplishment of project goals.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

CRITFC   We completely recoded data entry and QA/QC checks for salmon sampling data collected at Bonneville Dam. These new applications reduce the likelihood of data entry errors and improve data quality.

FWS   All software involved in both the internal CRiS database and StreamNet specific activities were upgraded as problems or opportunities arose.

IDFG   During the last year and a half, we lost both of our database and software staff members. The Database Analyst/Lead Developer was lost at the end of last fiscal year, and the Developer was lost in the middle of this fiscal year. Despite some delays as a result of the vacancies, this has had many positives associated with it. Our new database analyst/lead developer brought with him an application generator that eases and speeds up the development of new applications. We spent considerable time this year modifying it for our particular needs and to extend its capabilities to include web applications, but the effort resulted in much faster application development time. We also hired a new Developer who, while working with the application generator, is developing a spawning ground survey application which will capture all information from Idaho's spawning ground surveys, including not only redd counts, but also carcass counts, length and age data, marks and tags, and links to associated bio-data, pathology and genetics databases. When completed it will speed the delivery of a number of data categories related to naturally spawning fish. We have also collaborated with a Lower Snake River Compensation Program database and application development project that will similarly provide detailed information about all stages of hatchery operations, from adult trapping, to spawning, incubation, rearing and release in a format compatible to our spawning ground survey data and StreamNet data.

MFWP   As a result of changes to the MFISH user interface, amphibian and reptile data collected during the course of a fish survey can now be entered. To date, 176 amphibian, reptile or mussel records have been added. A Scientific Collector Permit report database was completed to house historic and current Scientific Collector Permit data allowing for new permit information to be entered with the system generating the permit. The database also tracks the data reports received from the collection efforts. Scientific Collector Permits are required by anyone outside MFWP who is interested in collecting field fisheries data.

ODFW   Application and interface development and maintenance efforts were severely limited by the continuing vacancies in Oregon StreamNet's programmer positions. Development of an application to facilitate change requests to Fish Habitat Distribution data remains on hold. A contract programmer was hired during the third quarter to facilitate work on the most critical maintenance and development needs. This primarily consisted of enhancing existing applications and fixing bugs that cropped up over time. Efforts were initiated to build an online incidental fish observation application, and to reestablish access to website use summary statistics. The Trend Database was upgraded with new queries to identify trends associated with particular references. The ODFW Data Clearinghouse was enhanced to allow ownership transfer of records, broken links were reestablished, and incomplete records were populated.

We investigated the possibility of developing an ODFW application similar to the ODF FIRS / FANS application, including reviewing content and functionality of a trial version of the application.

Responsibility for maintaining the CSMEP data inventory application was transferred to Regional StreamNet during the first quarter of the   year. We coordinated with Regional StreamNet staff on updates needed to the CSMEP application.

NRIMP's Inventory Database was migrated from MySQL to SQL Server as its database store, using the WebFX framework as its development platform. A How-To manual was drafted for the NRIMP Inventory Database application.

Region   Routine daily, weekly and monthly database backups were automated to run overnight on all mission critical databases, and periodically are copied to portable media, some of which were stored off-site for security.

PSMFC staff reviewed the FGDC metadata standard for biological data in order to see how and if our Data Store metadata could be converted to this standard. Later, PSMFC personnel attended an NBII/NGDC metadata training. We learned at this training that the metadata we require for the Data Store do not quite meet the requirements for the Biological Profile of FGDC metadata. We wish to address this shortcoming so that Data Store submissions can be seamlessly shared with the national portals run by NBII and Geospatial One-Stop. We also wish to make an on-line metadata entry tool for biological data. However, we learned the FGDC is currently working toward a new metadata standard based on the international ISO metadata standard. To avoid wasted effort we intend to wait until that is completed before creating the online metadata entry tool. This new metadata standard was due to be adopted by the end of calendar year 2007, but the date has been pushed back to early spring 2008. We will stay apprised of the status of that effort. We are also evaluating other metadata entry tools that are available -- if acceptable tools already exist then we do not need to put our effort into this task.

WDFW   The WDFW Data Manager updated the current WDFW StreamNet Hatchery database in order to facilitate the transfer of data from WDFW's Hatchery Division. We created new applications to help manage this data set and check for errors. New crosswalk tables were developed in order to help better report species, run and sub-run codes for each hatchery.

The Location Data Manager merged two key point datasets used to manage facilities and all georeference measures. In this process, she improved the structure to track relevant issues (sources, creation methods), added Domains for dropdown lookups and edited the Data Dictionary. She drafted a program to convert any latitude and longitudes received to the required decimal degree format but still needs to resolve some bugs.

In addition, WDFW Location Data Manager met with Sa Hoang (WDFW Hatchery Sub-Unit) on two occasions to provide training on how to research the equivalent lake for lake release PSC codes and tie it to the georeference. After Sa has developed proficiency they will discuss potential tools that may expedite the process.

Work Element: 160   Create/Manage/Maintain Database

Title no: 3   **Data (content) management**

Description: The StreamNet project will manage data at the regional and subcontracting agency levels to assure timely and accurate data flow from source to final distribution. Activities include exchange of data to PSMFC, data loading, updating data, quality assurance procedures, metadata development, etc. Emphasis will increase on improving timeliness of data development and dissemination, and we will initiate work to develop metadata templates, by data type and over time in pilot subbasins.

Deliverable: Data are maintained and managed at PSMFC and the cooperating projects so that they are available through the StreamNet website and cooperating agency websites. A data delivery timeline application will be posted on the StreamNet website. Work will have started on developing metadata templates. Metadata are published as Web Services.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

CRITFC   During FY-07, the library exchanged data with the region in order to synchronize the reference databases. Age data from sampling adult salmon at Bonneville Dam was updated successfully.

FWS   Data were exchanged with StreamNet twice during the year, indicating that data flow within USFWS met the goals of the StreamNet project.

IDFG   IDFG worked with other StreamNet partners to resolve overlaps and inconsistencies in fish distributions at state borders. We updated several internal datasets in preparation for delivering them to PSMFC, including our trap/weir and spawning ground survey data sets. A lot of time was spent conducting QA/QC on historical hatchery return and age composition data in preparation for migrating those data to the new StreamNet DEF and delivering them to PSMFC.

MFWP   Most of the FWP SQL databases were moved from NRIS to FWP servers; MFISH, as part of StreamNet, stayed at NRIS due to data sharing with the Natural Heritage Program. Fisheries GIS layers were updated for inclusion into the new FWP Map application, which exposes over 120 data layers to FWP staff and also provides a variety of tools to view, analyze and print the data. Layers that were updated included: genetics, fish distribution, fish survey location and information, private ponds, barriers and dams. Tenth of a mile points were generated on stream routes for inclusion into the FWP Map application.

ODFW   Routine effort was spent this year ensuring the data quality (correctness and consistency across the years of data availability) of Oregon's existing StreamNet Trend information, particularly related to species/run/sub run information in existing records (most related to cutthroat), 60K trends, TrendTypeID, TrendStatus information, and for consistency in use of the Null Flag for surveys that were not conducted. Staff coordinated with Regional StreamNet to rectify discrepancies that were discovered during routine QA/QC processes.

With each data submission, we worked with Regional StreamNet staff to ensure exchange compliance. Oregon StreamNet's Quality Assurance/Control draft document was also updated to reflect lessons learned during this effort.

Thirty-two "disconnected" distribution events were reviewed to determine the basis for the downstream gap. We developed recommendations for all disconnected events and provided that information to Regional StreamNet. One event was resubmitted, but the others were either left as is or will be addressed once we complete the conversion to the 24k hydro.

We updated the Fish District GIS layer with new district lines in the lower Willamette / Columbia and made changes to the watershed district boundaries. Metadata were updated for a number of datasets including our Fish District boundaries.

We submitted ODFW's quality criteria data to Regional StreamNet as we worked through conflicting, cross-state distribution records. The purpose of this submission was to help inform their decisions for resolving these conflicts, in the short-term, and for presenting the data in a consistent manner on the Web Query System. We also coordinated with Idaho on a few conflicting records.

Staff began investigating the similarities and differences between ODFW designated populations and WDFW designated stocks, as StreamNet is considering adding additional information to the Trend table to make it easier to group data into units such as stocks or populations.

Region A data delivery timeline application was posted on the StreamNet website for tracking dates for data due, submitted, validated and available online. The application link is: http://www.streamnet.org/online-data/data_updates.cfm .

PSMFC frequently worked with the data contributing agencies in development of tabular data, including formatting, coding, data entry, error checking, and submitting to the regional database. Such discussions were mainly over routine or minor points, as needed. One discussion involved whether to create hatchery "returns" data for fish that were not released from a particular hatchery but did show up there. The specific example was for coho salmon returning to the Willlard Hatchery. We decided the answer is 'yes.'

PSMFC assisted non-StreamNet CRITFC personnel to transform their salmon age data from the mainstem Columbia River dams into StreamNet format. This effort was successful, and age data were received from CRITFC for the mainstem dams for which they have data.

PSFMC pursued final transfer of "trends" (time series data) that had been originally entered by PSMFC to the other StreamNet agencies where the data originate. WDFW subsequently identified trends that should be deleted due to poor data quality or because they were already replaced by other data records. A review of these occurred at PSMFC before the records were deleted.

PSMFC reviewed a desire by WDFW to report steelhead returns by spawn year rather than run year. A review of this issue by PSMFC staff noted that the StreamNet database does not capture run year -- we instead ask for sampling begin and end dates. Thus we never refer to run years or spawning years in our database, and thus there is no issue to address.

PSMFC performed routine tabular data content management, quality assurance, and quality control. We began a thorough review of the age data that have been submitted by the data contributing agencies. The issue of greatest concern to PSMFC staff -- whether the field for brood year is being filled out correctly and consistently -- was indeed being filled out correctly. Other data quality checks involving the agreement between age data and the years and dates assigned uncovered a systematic error by one agency. This was discussed with that agency. Few other errors have so far been encountered, and appear to be keystroke errors rather than problems with DEF interpretation. We are encouraged by the quality of the data submitted. Several more quality control tests are planned for these data.

WDFW Washington prepared and submitted the locations needed for upcoming hatchery return submissions. Washington also created a data dictionary to document the process and format. This effort revealed the need to merge two of the point datasets used for these submissions. The WDFW steward began the process of merging the two datasets and normalizing the attributes used to manage the data.

The Location Data Manager responded to the Region's request to act further on the pending new Hatchery Table exchange format. She started reviewing Washington Department of Ecology's (DOE) effluent permit dataset as a potential source for outflow data. WDFW is currently conducting further analysis of this data while awaiting further clarification from DOE before we can assess this data's value as a source for outflow data.

Title no: 4   **Data exchange standard development**

Description: The project will establish and maintain data exchange standards to ensure regionally consistent content and format of data that originate from multiple data sources. We will maintain adopted and develop proposed data exchange formats for data categories described under Work Element 159. This task will provide coordination and technical assistance regarding interpretation of database structures and codes. The formal process for creating new and revising old DEFs may require significant amounts of time, potentially more than a year, for complex data categories.

Deliverable: The formal Data Exchange Formats that are used to standardize data regionally are maintained and updated as needed. Additions and changes to the DEF are made in accordance with the DEF guidance document. At least one new updated DEF version is adopted during the year.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC
FWS   Work on the DEFs by the project cooperators was relatively light this year due to the fact that no major changes were made. All project participants
IDFG   contributed to discussions on the Forum and at the Technical Committee meetings on DEF related issues. Some discussions related to the Age DEF and a
MFWP   Sightings (documented occurrence) DEF were held.
ODFW
WDFW

Region   The StreamNet Data Exchange Format was not modified this fiscal year, though several minor issues were addressed that will be incorporated into the next version. The quality and completeness of the DEF was largely addressed in previous years, and new major changes generally do not come up unless a new data category is to be pursued. Originally under PSMFC Milestone 6, one to three new DEFs or major DEF revisions might have been pursued this year. However, uncertainties about funding levels and future priorities and direction for the StreamNet project postponed decisions about creating or revising DEFs until after the fiscal year. Nevertheless, several major items were investigated by PSMFC staff to some degree as scoping for future potential changes or additions to the DEF.

At the first technical staff meeting conducted this fiscal year, data compilers from all data contributing agencies indicated they would like to pursue a "sightings" data category. ("Sightings" being unique observations of a species that are not necessarily part of routine trend monitoring.) Under Milestone 7, PMSFC staff members were to pursue development of a DEF for capturing data collected following an EMAP GRTS (Generalized Random Tessellation Stratified) sampling approach. The Regional Fisheries Biologist presented this issue at the first technical staff meeting, and the ensuing conversation uncovered other ways in which several trends can be related to each other. PSMFC, ODFW, and IDFG staff agreed to pursue the EMAP DEF topic. In addressing this, it appears that addressing sightings at the same time could be required. This effort will be continued into fiscal year 2008. A DEF for sightings will likely require involving museum collection curators. The Regional Fisheries Biologist tried to contact several museum curators from across the country to begin this conversation, but none have replied. The Regional Fisheries Biologist also pursued training in collection and management of data collected under and EMAP GRTS approach from staff involved in its creation. Unfortunately, a combination of scheduling conflicts and a later personnel issue prevented this training from occurring this year.

Several other minor DEF issues were pursued but not finalized during the year.

Work Element: 161   Disseminate Raw & Summary Data

Work Element: 161   Disseminate Raw & Summary Data

Title no: 1   **Develop and maintain Internet sites for data dissemination**

Description: StreamNet will continue to maintain and enhance the StreamNet Internet sites to provide access to tabular and GIS data from the StreamNet database. PSMFC will maintain and enhance the primary project website (www.streamnet.org) and associated applications, including the data query system, the interactive map applications and the Data Store. Partner agencies will assist with routine periodic review and comment on the primary website and may disseminate data through websites associated with their agency's StreamNet project and references housed in the StreamNet Library. Priority will be given to incorporating data and references developed through Work Element 159. The website will also be used to archive data sets developed by FWP participants for data that do not fit within the StreamNet DEF (Data Store archive function), including the means to index and search the archive. Metadata will be published as a web service, making all data findable through external portals.

Deliverable: Internet sites for the dissemination of data at PSMFC and the cooperating agencies are maintained and functional. New web pages and features are developed as necessary to maximize the availability and utility of data. Metadata are published as web services.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC The StreamNet Library continued to maintain the StreamNet Library website (www.fishlib.org). The site functioned normally without interruption.

IDFG   We regularly reviewed the StreamNet Web site and provided comments for improvements.

MFWP   MFWP StreamNet staff reviewed the StreamNet query system in preparation for the StreamNet technical committee meeting 9/20/07. Comments on the web query system were given via conference call during the meeting. A new user interface to query and report the Montana StreamNet data (MFISH) was designed and programmed in FY-07 with MFWP funding. The new MFISH will be completed in FY-08.

ODFW   Functionality-related feedback was provided to Regional StreamNet staff throughout the year based on ongoing review of the StreamNet website. We coordinated with Regional StreamNet staff on updates needed to the CSMEP application, and participated in discussions related to improving the StreamNet website and the online query system.

All Oregon StreamNet websites were maintained and updated as needed throughout the year. 1/2 meter orthoimagery data (UTM zone 10 only) was made available to ODFW GIS users via the ODFW network. We continued to manage the Corvallis Research Lab's website, where project results and reports of several major ODFW data collection projects are posted. Several ODFW Progress and Information Reports, and citations for the site's index page were drafted and posted to the site during the year. This gives Oregon StreamNet immediate and direct access to datasets of interest to StreamNet. The Oregon Fish Finder site was enhanced with new information correlating fishing pressure information in Oregon's warmwater fishing brochures with general catch rate information on the Fish Finder site.

Oregon StreamNet staff continued to work with ODFW Fish Division staff to develop web content for the Division. The focus will be on providing intuitive access to information users are looking for rather than a site based on the agency's structure.

Staff vacancies continued to hinder our ability to track and maintain web usage statistics. A contracted programmer spent some time creating an application to provide web statistics, however this was not completed before the end of the year.

Region Routine management and maintenance of the StreamNet Internet sites was performed throughout the fiscal year.

Various web site updates performed or begun this fiscal year included the following:
- Data publishing service page's link to the "NED Portal" used to go to a .pdf document describing what the NED Portal was to be. Since the portal was created and announced this fiscal year, we changed the link to point to the portal itself rather than to the description of what it was to be.
- Synotac Design, LLC was hired this fiscal year to create logos, graphics and html style sheets we can use to improve the look and ease maintenance of the StreamNet web site. Synotac is not involved in web site content, which we control, but rather in helping to improve navigation and user friendliness of the web site. PSMFC contributed part of the contract cost.
- Created an idea for a new StreamNet logo, and shared this idea with Synotac so they could create the graphic.
- Began to plan to reorganize the pages of the StreamNet web site. Our intention is to increase the ease in finding desired information, using the minimum number of mouse clicks.
- Fixed broken links on the web site and added links to our Links pages. Among them were:
  - We updated the link from "firstgov.gov" to "usa.gov" on our Government Agencies links page.
  - We added a link to USGS's StreamStats web site (http://water.usgs.gov/osw/streamstats/index.html) from our Government Agencies links page and our water resource information links page.
  - We added a link to the Federal Depository Library locator web page (http://www.gpoaccess.gov/libraries.html) of the Government Printing Office to the Government Agencies and Sites links page and to the Directories & Search Engines links page.
  - And, we added a link to the NMFS NWFSC habitat restoration projects web page.
- Broken links, outdated information, and other problems in the Public Education section of the web site were addressed. All broken links were corrected, save two outside links which require further research. Some low quality information was removed from these pages, and a link to a poor quality website (endangeredspecie.com) was deleted.
- Two copyright issues were addressed this fiscal year. The first was an incorrect attribution for images that are copyrighted by Nature Discovery. The correct copyright and attribution information was put on the web site, and a signed use agreement was obtained between Nature Discovery and PSMFC for use on the StreamNet and other web sites. The second copyright issue addressed involved photographs which had been attributed to BPA, but which are actually from the 1984 book "Salmon" (first edition) by Atsushi Sakurai and John N. Cole, published by Alfred A. Knopf, New York. The photographs were copyrighted in 1981 by Atsushi Sakurai. This item came up several years ago, and unknown by PSMFC staff was that the StreamNet Librarian had done due diligence in 2001 to gain permission to use the photographs, and thus we can legally use the photographs. This being the case, the images were restored on the "Interactive Salmon Life Cycle" web page (they had been removed in 2001 or 2002), and proper attribution of these photographs was provided on web pages and in the StreamNet query system (where the photographs are also available).
- Fish species names and other information on web pages linked from http://www.streamnet.org/pub-ed/ff/Lifehistory/index.html were corrected or deleted, as appropriate. Incorrect Latin names and many other errors on these pages were addressed. One remaining task for these pages is to restrict the species to those in the Pacific Northwest. Also to be done is a review of life history information on these pages, which we suspect contains errors.
- A problem with display of bull trout distribution in the IMS system was identified and corrected.
- A web page was created to show users the status of data updates. StreamNet personnel from the data contributing agencies can update their own information. We hope this information will be useful to people who need to know when specific data updates will be available.
- Making age data available via the web query system was not completed this fiscal year, though substantial progress was achieved.
- CRITFC staff have worked with CBFWA and NMFS to define "populations" for anadromous salmonids within and outside the Columbia Basin. CBFWA and others would like to query the StreamNet database according to these populations. PSMFC staff examined the nearly-completed population boundaries, and determined how we would deliver data in this manner. This appears straight-forward, but will not be implemented until the final population definitions are completed (expected in fiscal year 2008). There is one complication, in that data can not always be reported by population. For example, fish counts at a dam in a headwater stream may be a good candidate for reporting fish counts for a population. But fish counts at a Columbia River dam will include fish from many populations and thus can not be used in that way. Thus evaluating population boundary X data relationships will be required.

- An error was found in the Protected Areas data category of the query system, where the system does not correctly report multiple records for the same RRN. A detailed problem description and suggested fix were created; implementation of a fix was suspended pending a possible replacement of the current data with a new design that will be more straight-forward and better documented.
- The "BPA Fish & Wildlife Projects" data category was removed from the web query system. This data set described fish and wildlife projects funded by BPA from 1978 through 1998. BPA now tracks this information themselves, and these older data were seldom queried. This data set was archived in and made available via the StreamNet Data Store.
- Looking to the future, in order to make our data delivery system function with other systems in real time, we have begun developing the capability to obtain and deliver data in XML format. The first step -- to create schemas defining the required data structures -- was begun. A schema was completed for hatchery returns data outbound from StreamNet. This includes an integrated schema for age data. This is cutting-edge work in the fisheries field, and we believe this is the first effort ever to create XML schemas for these types of data. We identified our next steps as follows.
    - Because we have the outbound hatchery returns schema completed, it makes sense to next work on the schema for inbound data for this same type of data. That would complete a route from data originator through StreamNet and out to data consumers.
    - Begin creating rigorous data QA procedures using XML and XSLT/XPATH for the hatchery returns data.
    - Begin creating schemas for the next data type.
- StreamNet's public metadata service was maintained and published metadata was updated where appropriate. Via this service, StreamNet metadata is available via regional and national Portals including Geospatial One-Stop and NED. Currently, the SN Metadata Service contains ~80 discrete metadata records documenting spatial datasets, data store items, and data categories available through the on-line WDFW. No specific recommendations were made regarding the StreamNet website.

Work Element: 161   Disseminate Raw & Summary Data

Title no: 2   Respond to data/information requests

Description: Receive and respond to requests for data, maps and other information; source materials; and custom data products at the regional and cooperating agency levels, as appropriate. 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 and data source agencies/departments. Other priorities will include implementation of the Endangered Species Act and federal, state, and tribal natural resource management activities. Custom data development will be dependent on available resources.

Deliverable: Requests for information or assistance are responded to in a timely manner (within one business day at PSMFC). If within StreamNet capabilities, requested help or information is provided as rapidly as reasonably possible within existing resources.

Project | **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC FWS IDFG MFWP ODFW WDFW   During the year, all project participants responded to a variety of requests for data, general information and data related assistance (Tables 1, 2 and 3). Data and other information obtained through StreamNet's various online resources at both the regional and agency levels were not tracked. Oregon StreamNet determined that 64% of the direct information requests it satisfied were from ODFW personnel. In addition to the information requests handled directly by Washington StreamNet, fish and hydrography layers built and maintained by WDFW StreamNet were used by WDFW's Priority Habitats and Species group to respond to an additional 343 data requests involving 1,048 maps and 84 digital data sets.

Region   In addition to the direct information requests reported in Tables 1, 2 and 3, the regional office also continued to provide access to the Protected Areas data set, which received heightened interest this year, most likely as a result of increasing energy costs and increasing interest in non-CO_2 emitting energy. NPCC staff also indicated that they were receiving more requests from FERC for this information. As a result of that increased interest, we initiated significant new effort toward this static data set this year, as discussed under "Work Outside the SOW" (see p. 42).

Table 1. Number of responses to direct data/information requests by StreamNet members during FY-07, by type of request

Type of request	IDFG	Library	MFWP	ODFW	PSMFC	WDFW	Total
Data request	134		10	16	4	18	182
General fish information			15	3	8		26
GIS data / map	14		50	98	11	43	216
Hardware / software technical support	8		5	31	1		45
Help finding information				9	11	1	21
Help with data interpretation / analysis			1	5	1		7
Help with data structure							0
Library / Documents	2	1,090		7	4	1	1,104
Other				8	6		14
Report error or problem				1	1		2
Citing StreamNet / permission					2		2
Beyond StreamNet scope				7	3		10
Total	**158**	**1,090**	**81**	**185**	**52**	**63**	**1,629**

Table 2. Number of responses to direct data/information requests, FY-07, by source of request.

Source of request	IDFG	Library	MFWP	ODFW	PSMFC	WDFW	Total
College / university	2	75	2	5	1		85
General public / other		276		8	12		296
Government, county / local	1			6		2	9
Government, federal	7	74	5	14	16	5	121
Government, state	55	107	69	131	5	40	407
Government, tribal	3	468		2	3	11	484
Nonprofit organization	6			7	6	1	20
Private consultant	81	90	5	6	7	3	192
Regional entity				2			2
Watershed council / group							0
Industry / commercial	1			4	1		6
Unknown	2				1	1	4
Total	**158**	**1,090**	**81**	**185**	**52**	**63**	**1,629**

Table 3. Number of responses to data/information requests during FY-07, by outcome.

Outcome of request	IDFG	Library	MFWP	ODFW	PSMFC	WDFW	Total
Request fully satisfied	158	1,090*	81	126	41	59	1,555
Request partially satisfied				18	4	4	26
Referred to other sources				29	6		35
Could not help at all				10	1		11
In-process				2			2
Total	**158**	**1,090**	**81**	**185**	**52**	**63**	**1,629**

 * Library requests nearly all fulfilled, either from StreamNet Library or through interlibrary loan, but specific breakdown was not recorded.

Work Element: 161   Disseminate Raw & Summary Data

Title no: 3   Library: Provide access to the library collection

Description: The StreamNet Library will provide user access to the materials described in the collection development work element by providing facilities for storage of paper and electronic copies of documents, an online catalog of all documents in the collection, and staff to answer location questions and respond to requests. They will provide library services to the StreamNet user community, the Council's Fish and Wildlife Program, and the general public. They will network 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.

Deliverable: The StreamNet Library is opened to patrons on all business days, and patrons have full access to the collection in person and through phone or Internet requests and to services such as Interlibrary Loan, document searches, etc.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

CRITFC The StreamNet Library was open during regular business hours throughout the year. The Library had users show up in person at least weekly to use the collections. In addition, we responded to approximately 1,100 requests for information through telephone contact or email requests. Some email requests evolved into actual visits to the library as users were seeking access to special collections of materials, including the Vancouver Lake Watershed Partnership materials.

ODFW   Organization and cataloging of the ODFW's Library holdings resumed late in the second quarter and continued through the end of the year. Nearly 8,100 publications were added to the ODFW Library bibliography, bringing the total to over 30,000. Organization should conclude during the first quarter of FY-08.

Work Element: 189   Regional Coordination

Work Element: 189   Regional Coordination

Title no: 1   **Support regional efforts under the Fish and Wildlife Program**

Description: Participate in planning, development and/or coordination meetings with regional projects and programs under the Fish and Wildlife Program to help develop a regional data management framework, to establish data type and data service priorities, and to provide advice in the area of data management, as requested. Provide input on ways StreamNet can effectively contribute to the programs and general advice about data management. Participate in coordination groups (e.g., CBFWA), advisory groups, task forces, and other groups (e.g., PNAMP, NED, CSMEP) whose purpose is to enhance the effectiveness of the Fish and Wildlife Program relative to its data development activities. This also includes planning for the next round of subbasin planning and related activities.

Deliverable: StreamNet staff have participated actively in and supported a number of projects funded through the FWP, including CBFWA, PNAMP, NED and CSMEP. StreamNet is a recognized component of the regional data management framework. Regional agreement is reached on priorities for StreamNet data development for the remainder of the three year funding cycle.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC   The CRITFC project manager served on the CSMEP, NED and PNAMP Steering Committees. These groups are working to develop standard procedures for data collection, data management and data sharing.

IDFG   IDFG StreamNet participated in the Data Management Framework Subcommittee originally started within CBFWA and later expanded to include NED. We have also provided support and technical assistance to the Idaho CSMEP project, including a list of streams in each identified Major Population Group for CSMEP analysis.

MFWP   MFWP StreamNet Project Manager participated in discussions with state agencies, the Governor's office and NPCC staff in creating a Montana Restoration Database. As a result, a position was created during the last legislative session to coordinate the statewide data gathering effort. MFWP StreamNet staff contributed to the Data Management Framework Subcommittee discussion lead by CBFWA and participated in CBFWA Resident Fish Committee discussions and meetings concerning StreamNet and resident fish data. StreamNet staff will participate in the Executive Data Summit via conference call.

ODFW   The Oregon StreamNet Project Leader participated in a number of NED, PNAMP and CSMEP meetings, contributing to discussions about data management-related activities and future direction / funding options. He participated in all CBFWA DMFS meetings. He attended the PNAMP Inventory Meeting in May, where Oregon's work with the Oregon Plan Monitoring Team was shared along with a demonstration of the ODFW Data Clearinghouse as an example of an agency/state-level inventory that should be supported as a vehicle to meet PNAMP's inventory needs.

We compiled information on bull trout monitoring efforts in Oregon, and entered the information into the online CSMEP application. We worked with CSMEP biologists and ESSA Technologies Consultants to develop definitions for performance measures related to genetic studies, as well as bull trout and other resident species. We compiled and entered 153 bull trout records into CSMEP.

Oregon StreamNet staff became familiar with the purposes of the upcoming NED/PNAMP/PNW-RGIC Executive Data Summit and worked to encourage ODFW Executive staff to attend the meeting. We also provided input on the draft agenda for the meeting.

Additional activities included providing input on a draft statement of work for creating a distributed data management system in the Columbia Basin, working to update trends associates with CBFWA's Status of the Resource Report, and reviewing various data management related efforts, such as the OSU Imagery Portal.

Region PSMFC StreamNet continued participation in regional projects and programs related to the FWP, including serving on the steering committees for PNAMP and NED. We also participated with the CBFWA Data Management Framework Subcommittee and CSMEP.

In fiscal year 2006, StreamNet worked with other PNAMP participants to design a survey of aquatic monitoring practitioners in the Northwest and California down to San Francisco Bay. This survey continued into fiscal year 2007, with StreamNet personnel directing the project's technicians and maintaining and modifying the survey's web-based input and output tools. We also compared the PNAMP survey's data to those collected for the national "Natural Resources Monitoring Partnership" survey being done by NBII and provided this input to the PNAMP survey steering group. The environmental group Ecotrust had performed a similar survey prior to the PNAMP survey. StreamNet assisted Ecotrust in converting their data into the PNAMP survey's database format, and then added these data to the PNAMP survey's database. We completed a final report for this pilot inventory effort this fiscal year, and are maintaining the inventory database online. The PNAMP inventory is currently on hold pending decisions about future direction. The files generated by this effort were archived.

The Regional Fisheries Biologist reviewed a habitat restoration database structure proposed to PNAMP by NMFS. This proposal looked good overall, with the exception that streams were not identified. This short-coming was pointed out.

WDFW The WDFW StreamNet Project Manager attended meetings of CBFWA's Data Management Framework Steering Committee to help guide efforts to improve regional data management prior to the 2009 F&W Program amendment process.

Work Element: 189   Regional Coordination

Title no: 2   # Coordinate with and support data source agencies

Description: Coordinate with state, tribal and federal fish and wildlife agencies/departments that develop data of interest to StreamNet's mission to streamline data capture, determine agency data management needs and work to improve their internal data management and data transfer to StreamNet. Demonstrate data management tools and applications developed by StreamNet staff and others to increase interest in and adoption of similar tools to improve data flow and automation. Support development of internal data management capabilities and data automation to the degree possible under existing funding, and attempt to link data tools to reporting and decision making. Encourage data sharing in exchange for help with data management.

Deliverable: Data capture and management tools demonstrated to agencies and regional groups. Increased involvement with tribes and development of plans to increase capture of tribal data. Commitment of agencies to increased data flow automation.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC The lack of routine availability of tribal data has been identified as a critical data gap in regional sharing efforts. The CRITFC project leader worked with the basin tribes and the NED to develop a proposal for assessing tribal data management and sharing needs and developing plans to address those needs. The proposal is awaiting funding.

IDFG IDFG StreamNet collaborated with IDFG to help build the Idaho Fish and Wildlife Information System. Efforts focused on helping to develop a spawning ground survey application and providing technical assistance to a standard stream survey system and a lakes and reservoirs system. We also provided assistance to the development of a hatchery database management system. These systems will results in more efficient and timely data transfer to StreamNet, and the region in general, by organizing Idaho data into comprehensive, standardized databases and developing automated data exchange capabilities. The IDFG StreamNet project leader gave presentations to the StreamNet Steering Committee and two separate groups at Oregon Department of Fish and Wildlife on our work to develop the Idaho Fish and Wildlife Information System.

MFWP   The new FWP Mapper, an internal web application for FWP employees, includes 20 fisheries data layers, generated from data in MFISH; this will allow fisheries biologists to spatially view their data and encourage data quality checking. Meetings have been held with Fisheries Division staff during FY-07 to discuss the Division's Management Plan, which has been renamed the Fish Management Status Report; work will continue in FY-08. A meeting was held in September between StreamNet staff and FWP Fisheries Division staff to discuss needs for FY-08; including a review of the FY-08 SOW.

ODFW   In response to a NPCC staff request, we evaluated the amount of data reported to StreamNet from Fish and Wildlife Program Projects and provided our findings in the format requested.

Oregon StreamNet staff reviewed the contents of the ODFW Recovery Planning web application to identify data sources in order to fill StreamNet data gaps. Where applicable, trends were updated using data that was found.

The Project Leader met with Oregon's CBFWA representative to demonstrate the Recovery Planning and Data Clearinghouse sites and to encourage him to support ODFW projects posting their data on these sites. We also provided him with the PowerPoint presentation for Idaho's Information Management System to familiarize him with the system so he can discuss the ideas with others as he has opportunity.

We routinely introduced the concept of holding an ODFW Data Summit with agency staff on an opportunistic basis. An "Issue Paper" was drafted that spells out the problems with our agency's current approach to resource planning without appropriate geospatial tools. The paper will be used to inform the Strategy Leadership Team to make the case for an agency Data Summit. We also completed drafts of an ODFW Data Summit Briefing paper with review and comments solicited for each. Lastly, we encouraged Conservation Strategy staff to promote the need for a Data Summit during regularly scheduled meetings and during presentations.

Staff members continued to chair the ODFW GIS Coordination Group and participate in several Group and Subgroup meetings. Much of the effort this year focused on developing an Implementation Plan in support of the approved ODFW GIS Strategic Plan which the group finalized during FY-06.

Region   StreamNet, as part of its strategic plan, is encouraging data source agencies to increase emphasis on data automation. In FY-07 we worked with the IDFG and ODFW StreamNet projects to organize and conduct a demonstration of the IFWIS to ODFW at the main office and the research lab. Our intent is to demonstrate that the agency and StreamNet both benefit when the agency adopts a comprehensive approach to databases by data type. We intend to encourage and support this approach with all data source agencies.

WDFW   The WDFW StreamNet Project Manager contacted a representative of the Colville Tribe to offer support for data systems development for converting data to StreamNet exchange formats. This initial contact will be followed up in FY-08.

Work Element: 189   Regional Coordination

Title no: 3   **Coordinate with related activities outside of the FWP**

Description: Maintain communications between StreamNet and other applicable regional, federal, tribal, private and state-level agencies and activities beyond the Council's Fish and Wildlife Program to identify means for collaboration on data capture and management. On request or as possible, work toward capture of data not currently being entered in StreamNet.

Deliverable: Coordination with fish and wildlife programs outside of the FWP on additional data types not in StreamNet is conducted as possible or needed.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

CRITFC The CRITFC Project Leader serves on the NED and PNAMP Steering Committees. These groups include agencies and data in the Pacific Northwest beyond the boundaries of the Columbia Basin. These groups are developing broad scale data collection, management, and sharing principles and practices.

IDFG   The IDFG StreamNet program coordinated with a number of programs within IDFG that are not necessarily funded by the FWP. These include data types that are captured by StreamNet (e.g., redd counts and hatchery returns) as well as data not currently captured by StreamNet (stream surveys, lakes and reservoirs surveys). The IDFG StreamNet program leader participated in the National Fish Habitat Summit in the fourth quarter.

MFWP   MFWP StreamNet Project Manager participated in discussions with state agencies, the Governor's office and NPCC staff in creating a Montana Restoration Database; as a result, a position was created during the last legislative session to coordinate the statewide data gathering effort.

ODFW   Oregon StreamNet staff coordinated with Ecotrust and the ODFW Monitoring Program to develop a process for ODFW staff to review State of the Salmon (SOS) Inventory results. In addition, we coordinated with these same groups concerning an approved funding proposal for Ecotrust to help ODFW document the data and data management needs of the Monitoring Program. It was decided that StreamNet had a role to play in this effort, as a significant portion of the functionality needed by the Monitoring Program is currently available through StreamNet.

Our GIS Analyst coordinated with a number of groups and efforts throughout the year, including attending Oregon GIS Project Leaders meetings, obtaining good insight regarding Strategic and Implementation Plan content, and learning about GIS applications in other agencies. In addition, he attended the 8th Oregon Geographic Information Council Framework Standards Forum in McMinnville, as well as regular Framework Hydrography meetings to stay up on the process of migrating the Framework data to the NHD format and Hydro Event Management Tools.

Staff continued to coordinate Oregon's effort to develop a statewide barrier inventory database and restoration prioritization system. Work this year focused on developing a fish passage barrier Bioscience Framework standard, which was completed and approved during the 4th quarter. Much of this work was funded by non-StreamNet sources. Efforts to obtain additional funding for the inventory and prioritization proposal continued throughout the year.

We met ODOT to review their application for managing their culvert information called the Drainage Facilities Management System, and to strategize a future combined effort with ODFW since their system meets many of the requirements of ODFW's Fish Passage Inventory Project.

One staff member attended the Washington Monitoring Workshop, titled "Transitioning from Dirt Roads to a Data Highway", and used the opportunity to draft a description of what good data management is. Staff also attended the National Fisheries Data Summit in Utah (on non-project funding) and completed the post-meeting online survey. We attended the NOAA presentation/meeting on potential data management support to the ODFW Corvallis Research Lab. We also attended the Oregon Explorer Launch gathering at OSU with the Conservation Strategy Coordinator.

Staff coordinated with Conservation Strategy staff in an effort to develop an online fish and wildlife observation database. Staff attended a noon time presentation on the Conservation Registry development effort.

Oregon StreamNet and ODFW representatives met with the Dept. of Administrative Services staff to express opposition to the proposed Enterprise GIS Software Standard which DAS is establishing via administrative rule.

Staff attended the one day National Hydrography Dataset track of the USFS / BLM Geospatial 2007 conference in Portland. In addition to updates on the status of the data, presentations were given on data stewardship, event editing and specific applications.

Region PSMFC' StreamNet's Fisheries Biologist worked with the state of Oregon's Fish Passage and Barrier Framework data Standard. The state of Oregon was directed to create a standard data format for sharing fish passage barrier data in the state, and PSMFC was invited to participate in creation of the standard. Multiple meetings were attended by personnel from many federal, state, and local entities. Oregon, lead by Oregon StreamNet's GIS specialist at ODFW and with suggestions from the StreamNet Regional Fisheries Biologist, successfully completed the Standard on time. The Standard can be found at http://www.oregon.gov/DAS/EISPD/GEO/docs/bioscience/OregonFishPassageBarrierDataStandardv1.pdf.

Work Element: 99   Outreach and Education

Title no: 1   **Professional and public involvement**

Description: As needed, produce public information materials and as possible participate in various meetings and forums (public or professional) to explain the project's capabilities and purpose and to generate support and additional data sources. Activities may include brochures, issue papers, demonstrations, guidance documents, posters and talks to public, policy or professional groups and organizations.

Deliverable: Materials describing the project are made available, and professional groups are informed about the project and its services.

Project	**Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC   The StreamNet Library staff participated in six conferences and other activities to actively promote the library and its services as well as the StreamNet Project as a whole to agencies who may not have known about the data held by StreamNet. These conferences and meetings were convened by IAMSLIC (national), Portland Librarians Group, Vancouver Lake Partnership and the Lower Columbia River Estuary Partnership.

IDFG   IDFG StreamNet Project Manager provided a copy of a Power Point presentation to the StreamNet Program Manager on Idaho's database and application development work that he subsequently presented to the Organization of Fish and Wildlife Information Managers.

MFWP   FWP Mapper trainings were given to internal FWP employees. This demonstrated the data currently available and prompted discussion of other fisheries related data that could be incorporated into the MFISH system and potentially shared with StreamNet.

ODFW   One staff member gave a presentation on StreamNet, NRIMP and data management and sharing principles at the OWEB Biennial Conference. In between presentation sessions he gave demonstrations of the StreamNet, NRIMP, and Conservation Opportunity Areas websites to interested conference attendees.

The GIS Analyst developed a Power Point presentation for the Oregon Fish Passage Barrier Data Standard. The presentation was delivered at the Framework Forum on June 27th where the group decided to move the standard on to OGIC for adoption at their September meeting.

Oregon StreamNet sponsored an October 18th presentation on LIDAR technology and how it might benefit resource management efforts in the state. This is a growing source of information that agencies can make tremendous use of for wildlife habitat mapping and even potentially fish habitat mapping including passage barriers.

Staff presented the key points of the draft GIS Strategic Plan to ODFW managers and solicited feedback on content and next steps. We received the approval of the plan and direction to proceed with the development of an Implementation Plan, which will lay out the various options and costs of the Plan.

Staff attended all Data Management and some other appropriate sessions at the 43rd Annual Oregon AFS Chapter conference in Eugene, and conversed with a number of people about the StreamNet and other NRIMP efforts.

We arranged for Bart Butterfield (IDFG) to come to Oregon to demonstrate Idaho's new fisheries data management system in two separate presentation sessions.

Region   One StreamNet Newsletter was published this fiscal year, on March 26, 2007. A second newsletter was attempted, but too few items of broad enough interest for a newsletter were available. Rather than send a newsletter to approximately 1,000 people simply to meet a work statement deliverable, we decided to delay the next newsletter until there are enough items to justify the newsletter. No changes to other project outreach documents were needed this year.

WDFW   No opportunities or needs arose this year.

Work Element: 119   Manage and Administer Projects

Work Element: 119   Manage and Administer Projects

Title no: 1   **Manage project activities**

Description: Administer all aspects of the StreamNet project at the regional and cooperating agency levels, including oversight of budget, personnel (including training and staff development), work statement / budget preparation and implementation, coordination among participating agencies, and project guidance through active participation in steering committee work.

Deliverable: Project staff and budgets are effectively managed, work detailed in the SOW is accomplished, and required SOW/budget documents are prepared and submitted on schedule.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

All   All project participants contributed to overall project management and accomplishment of the Statement of Work. All participants participated in the quarterly Steering Committee meetings to provide project guidance and in new quarterly technical staff meetings. Routine administrative duties including staff supervision and appraisal, budget tracking and work progress tracking was accomplished. All participants contributed to preparation of project documents and budgets. Significant effort was expended on the FY 2007-2009 project proposal early in the fiscal year and on development of the FY-08 proposal and work plan. A few specific additional activities are discussed below.

IDFG   Idaho StreamNet had two significant vacancies this year with the departure of our database analyst and our main programmer. Both vacancies were filled with very skilled people. As a result of the vacancies, we had some cost savings but also had to delay some data delivery.

MFWP   The StreamNet Kalispell office was closed following the retirement of the last employee there involved in StreamNet activities. Changes in StreamNet staff included: Steve Carson moving to Alaska and Bill Daigle being hired to replace Jeff Hutten and Steve, both of whom were only ½ time on StreamNet.

ODFW   Oregon StreamNet continued to be severely impacted by the new and prolonged vacancies. Attempts to fill two programmer positions have been hampered by 1) a very competitive market for programmers with the skills we need, and 2) the lack of resources to fund both positions due to continued level funding. We hired a contract programmer to address the most critical database and application enhancements and fixes, and to fulfill other non-StreamNet contract deliverables. We were also without a Data Analyst for the first quarter of the year, but that position was filled in January. We hired a temporary Data Technician to backfill some of the compilation time lost during the first quarter due to vacancy, and the third quarter due to maternity leave. We lost our long-term Data Technician at the start of the 4th quarter, but we successfully filled that position before the end of the year. We refilled our part time Library Technician position during the second quarter to continue organizing and cataloging the Library. We also successfully reclassified three permanent positions on the project.

Region   In addition to the quarterly Steering Committee meetings, we held two technical meetings planned and hosted by PSMFC, at which technical data creation and management personnel exchanged concerns and ideas about various technical topics. It is anticipated that in the future these meetings will occur quarterly, spaced between the quarterly Steering Committee meetings.

PSMFC administered the PNAMP Pilot Inventory of monitoring activities. This effort continued from fiscal year 2006, and ended December 31, 2007. Personnel supervision, budget tracking, and final reporting were carried out by StreamNet personnel on the StreamNet contract, while the technician time was covered by a separate contract from BPA.

PSMFC this year hired a biologist for three months to assist with updating the Protected Areas data set. This person was trained and supervised as he made significant progress until leaving in favor of a permanent position approximately 1/2 way through his three month tenure. The database was reviewed and checked, and source documents were located and organized. Work to resolve the remaining location issues which resulted from our attempt to convert the database from the original 1:250,000 scale River Reaches to the current 1:100,000 scale or where necessary to the mixed scale hydrography were begun, but could not be completed before the technician resigned.

WDFW   Washington's longstanding Project Manager retired at the end of the fiscal year, and the new Project Manager participated in the summer meeting with the retiring Project Manager to help assure a smooth transition.

The Project Manager provided written comments on the draft Deadlines Policy, Meeting Management proposals, the draft cross-state data coordination agreement (related to fish distribution data conflicts in SE WA and NE OR), and publicly accessible sections of the new Data Submissions Web page.

Work Element:132   Produce Annual Report

Work Element: 132   Produce Annual Report

Title no: 1   **Annual report**

Description: Produce a detailed annual report for FY-06 project activities within 60 days of the end of the previous fiscal year.
Deliverable: The FY-06 annual report is submitted to BPA and uploaded to the BPA reports page.

Project   Accomplishments During Fiscal Year 2007, summarized by Work Element Title

All   All project participants contributed input to the FY-06 Annual Report and assisted with editing and final preparation. The report was drafted in the first quarter, but the amount of unanticipated work needed to finalize the FY 2007-2009 project proposal and the FY-07 Statement of Work caused actual submission of the report to be delayed until the second quarter.

Work Element: 185   Produce Pisces Status Report

Work Element: 185   Produce Pisces Status Report

Title no: 1   **Quarterly Reports**

Description: Submit a quarterly Status Report through Pisces within 15 days of the end of each of the first three quarters, and by the last day of the fourth quarter.
Deliverable: Quarterly Pisces Status Reports are submitted on schedule.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

All   All project participants collaborated in developing quarterly Status Reports and submitting them to BPA through the Pisces project tracking system.

Work Accomplished Outside the SOW

Description: This section describes activities that were conducted by StreamNet participants during FY-07 that were not specifically identified in the FY-07 Statement of Work. In some cases, these activities addressed unanticipated needs directly related to StreamNet's objectives. In other cases these actions relate to work done by staff on the StreamNet project that were accomplished on other funding, since the StreamNet contract does not cover all project staff full time. Work done on other funding is reported here only when related to or supporting StreamNet objectives.

Project   **Accomplishments During Fiscal Year 2007, summarized by Work Element Title**

CRITFC The following work related to StreamNet goals was conducted with non-BPA funds.

The CRITFC Project Leader was the lead author on a report titled "A Strategy for managing fish, wildlife, and habitat data: Columbia River Basin framework." This report is jointly endorsed by the CBFWA and NED and provides a coordinated approach for developing a regional information sharing network. Two presentations were made to the NPCC to describe features of this coordinated strategy.

CRITFC GIS staff coordinated data development efforts with CBFWA to enhance their Status of the Resource report. This includes developing an interface for accessing the subbasin planning data and capturing analyses conducted to support recommendations for amending the Fish and Wildlife Program.

CRITFC GIS staff developed applications to assist tribal biologists in developing project plans for funding under the Pacific Coast Salmon Restoration Fund. These applications allowed users to identify limiting factors at the 5th HUC level and examine existing fish restoration projects in those areas.

FWS   The USFWS StreamNet project leader spent less than two months of his time working under the StreamNet contract to develop national fish hatchery data for the regional StreamNet database. All of his other time was funded by the USFWS. That other data work for USFWS benefitted StreamNet in that having a consolidated database of national fish hatchery data makes conversion of the data to the StreamNet DEF much more straightforward, requiring less work under the StreamNet contract.

MFWP   The Project Manager attended the OFWIM conference in West Virginia; many of the presentations will positively affect StreamNet activities in Montana. StreamNet PM and staff continued to provide data management support and solutions for monitoring and providing products from the Comprehensive Fish and Wildlife Conservation Strategy. The PM has been Involved in the review of the National Synthesis of all the Wildlife Action Plans in the US. StreamNet staff have designed and MFWP resources have been used to rewrite the MFISH web-based query and reporting. Significant GIS Requests that have been filled during the year include: Derived Habitat Variables for YCT & WCT Sample Sites; Landowner identification along Big Spring Creek where MFWP is involved in a Class Action suit concerning PCB use in the Big Spring Creek Hatchery; support to conservation activities associated with Montana's west slope Conservation Agreement and enabling Montana's state hatcheries on the FWP website. Montana as the steward of the multi-state Yellowstone Cutthroat Trout Assessment spent considerable time creating a database for data edits, entering updated data and creating a map project linked to the database.

ODFW   We continued to support the database application designed to track Restoration and Enhancement Program funding applications through enhancements and fixes. This work was performed by a contracted programmer. The application has an ArcIMS component that allows the user to produce map images related to their proposed application for funding. This application has been a great training opportunity for future data compilation systems that will speed the flow of data to StreamNet.

Oregon StreamNet staff support of the Comprehensive Wildlife Conservation Strategy (Conservation Strategy) continued throughout the year, mainly focused on providing data development through GIS and analytical support. Support of the ArcIMS web application, Conservation Opportunity Areas (COA) Explorer (http://nrimp.dfw.state.or.us/website/coaexplorer) continued as well. The site provides access to the Strategy's COAs, along with other relevant layers (e.g. habitat, vegetation).

The effort to convert the Fish Screening and Passage Database from MS Access to an online SQL database was resumed when a contracted programmer was hired during the 3rd quarter. Prototypes of the various components of the site were developed, along with data flow and data model diagrams.

Data compilation of Oregon Watershed Council datasets resumed during the 2nd quarter. By the end of the year, 389 watershed council datasets with metadata were available on the NRIMP Data Clearinghouse website, with 137 being added this year. Staff also created draft data templates in MS Excel and MS Access for five survey types that are useful for population monitoring. Watershed councils will be asked during FY-08 to evaluate these templates for their use as data management and storage tools.

Wildlife Division GIS support continued throughout the year, including:
•   filling general map requests,
•   updating wildlife area maps,
•   geo-referencing winter range-related data and performing QA/QC on layer attributes,
•   creating and editing big game and game bird regulation, access and habitat, controlled hunt unit and travel management area layers and maps.

Assistance with cougar management efforts continued during the year, correcting and updating management zone maps. Additional support was provided through plotting bear survey sites, plotting and running kernel density analyses on elk survey points, and initiated boundary data collection in order to produce a wind farm layer. Element occurrence data requests were fulfilled using the Oregon Natural Heritage Information Center (ORNHIC) database.

GIS staff were enlisted to develop GIS data layers of marine fisheries regulations. This was a priority project that came through the Governor's office. They also created the maps used in a new set of warmwater angling brochures. For the first time, maps used our angling regulations were produced in-house by NRIMP GIS staff. This involved working with managers and field biologists to correct errors and incorporate changes, helping to coordinate the printing process, and safeguarding image quality during printer and website posting processes.

Several funding proposals were crafted and submitted, including proposals for: Sage Grouse Database development, fish passage barrier data development, ODFW District data compilation, and non-Columbia fish distribution data conversion to the Framework hydrography.

Work on the mapping component of the Comprehensive Wildlife Conservation Registry, also known as the Registry of Conservation Actions, continued throughout the year. Several functions on the map component were completed, errors were corrected, improved Google Maps controls were incorporated, tutorials added, and interface enhancements were made. An article about the Registry was written and published in the Wildlife Society Newsletter. Staff attended a meeting with BPA and Conservation Registry partners to discuss the relationship between the Registry and BPA's Pisces system. The Registry is still in beta-test mode. For more information, see http://www.conservationregistry.org/.

GIS support was provided to an effort to identify statewide linkages for wildlife movement. Three data development workshops were held during the year. For these workshops, we compiled necessary datasets, provided data layers and maps of the species distribution grids, created the geodatabase structure for the linkage areas, provided mediation and digitizing services during the workshops, and coordinated data entry following the workshops.

A NRIMP staff member (who is not funded by StreamNet) participated in training during the year, including a free ESRI presentation on the new cartographic representations for ArcGIS 9.2, Oregon AFS, a workshop on the use of Subversion, Trac, and Automated Build software, and the Urban Ecological Research Consortium of Portland/Vancouver.

Public presentations were given at the OFWIM meeting and the Wildlife Society board meeting on the Registry of Conservation Actions; GIS demonstrations were given at the GIS Day celebration at the state capitol; and a lunch time presentation was given on the use of GIS to resurrect legacy wildlife data

Region   The work to develop and supervise the PNAMP Monitoring Inventory project was performed by PSMFC StreamNet staff. This project, planned for FY-06, extended into FY-07 even though not planned for this yea. It does, however, relate to the general milestone of supporting FWP activities in the region. PSMFC StreamNet staff developed and maintained the online tools, conducted overall administration and oversight, and contributed to the final report. The actual work of the project was conducted by technicians who were hired by PSMFC on a separate contract with BPA.

Heightened interest in hydropower development and an increased number of inquiries (see WE 161, Title 2) led to additional work on the Protected Areas data set. We reexamined the Protected Areas database and realized that the information could be presented in a better fashion, and that documentation for this important data set was not available with it, as the documentation and explanations of the data set were not all in one place or easy to find. Our solution to these issues is to create a single web page explaining what the Protected Areas data set is, with links to all the resources people would need. Because this data set has been low priority due to lack of interest for over 10 years -- before any of the current Regional Staff worked for StreamNet -- we also thought a review of the data set was in order. Last, we wished to update the georeferencing of this data set to the modern system we use for our other data sets today. The current georeferencing system requires locating a stream reach code on hand-drawn maps. These maps were only available in hard copy form in a few locations. Our first step was to create PDF documents of these maps and post them to our ftp site. That first step has been accomplished, with 128 documents plus other files identified and made available on the StreamNet ftp site at ftp://ftp.streamnet.org/pub/streamnet/ProtectedAreas. Included are approximately 22 items published in the Federal Register by NWPPC, FERC, and BPA that relate to the protected areas list.

To address other aspects of the protected areas work, we hired a biologist for a three month period to help locate relevant documents, review the documents we received from NPCC and BPA to find changes to the protected areas list that had been approved by the NWPPC, and ensure those changes are indeed reflected in the database. After that work, he began converting the georeferencing of the data set to our current standard. All but the last step of this plan was completed; the person we hired left for a permanent position before he was able to make significant progress toward updating the georeferencing.

We made good progress toward documenting this data set, ensuring its accuracy relative to NWPPC decision documents, reforming the data structure, locating and creating PDF copies of relevant documents, and creating a web page to tie this all together. Because of the great amount of effort this has required, and because there are currently out-standing issues regarding date of the final update, the effort was not completed by the end of the year.

WDFW   The Vancouver compiler worked a few hours for the Goose Check Station program, while other employees were unable to fill in. WDFW staff attended a conference call for start of the new monthly BDS meetings.