

Second-Tier Database for Ecosystem Focus

**Annual Report
2002 - 2003**



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Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

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Second-Tier Database for Ecosystem Focus

Annual Report

October 1, 2002 - September 30, 2003

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Prepared by
Chris Van Holmes
and Christine Muongchanh
University of Washington

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Abstract

The Second-Tier Database for Ecosystem Focus (Contract 00004124) provides direct and timely public access to Columbia Basin environmental, operational, fishery and riverine data resources for federal, state, public and private entities.

The Second-Tier Database known as Data Access in Realtime (DART) integrates public data for effective access, consideration and application. DART also provides analysis tools and performance measures helpful in evaluating the condition of Columbia Basin salmonid stocks.

Introduction

Information resources for the Columbia Basin are resident among a diverse number of Governmental organizations within the region. Effective management and research of river and fishery issues frequently require timely data access in a format useful for comparison, analysis and decision support. It is precisely this requirement that DART addresses.

DART (Data Access in Realtime), is a second-tier database warehouse containing historic data back as far as 1862, and current real-time data maintained by daily accesses to regional primary-tier sites. By design, DART has been developed to integrate diverse datasets and allow data be displayed in text and graphical formats via an interactive forms based web-site (<http://www.cbr.washington.edu/dart/>). As users identify data and analysis needs, they are developed and incorporated into DART's capabilities. Project personnel work closely with the primary-tier organizations to ensure quality and timeliness of the data and with end users to provide data utility.

Project Activity

Objective 1 – Data Services for Modeling, Monitoring, and Evaluation

Provide electronic data integration

Data acquisition from numerous primary sites with the region was performed on a daily basis. Datasets, products and services were integrated within a relational database based on date and location, then immediately made available over the World Wide Web and Internet. Data sets include headwater flows and temperatures, regional climactic data, water quality, project operations, ocean conditions, as well as fish

passage, transportation and releases. Text and graphical formats provided current real time information as well as historic data as far back as 1862. Year-to-date updates from the primary sources were applied as available on a daily, weekly and monthly basis.

Provide monitoring and evaluation

Regional integrated electronic products and services were distributed via the Internet throughout the fiscal year to support BPA and ESA mandated activities. Realtime interactive services supported the BPA FWP and the Technical Management Team in adaptive management and recovery efforts. Products to support ISAB requests to evaluate ESU recovery efforts were implemented and expanded. User-defined PIT-tag release and observation summaries providing an overview of tagged stocks with on-line analytical tools for estimating reach specific survival and travel-time estimates were improved. Adult migration data and analysis was incorporated into DART. Hydrosystem performance measure tools indicating smolt exposure to system conditions were improved and expanded. Smolt-to-Adult ratio analyses for Columbia Basin hatchery releases were expanded. Reach-specific survival analyses were also expanded.

Objective 2 -- Provide Public Services

DART provides a public internet interface year-round to support planning and decision making for the operations of the Federal Columbia River Power System. Active users include Federal, State and interested public and private entities. These services compliment and enhance the value of primary data sites and are an important step toward regionally integrated data services. DART personnel also respond to numerous specific data requests each year.

DART Coordination

Inter-organizational

Frequent contacts were made with PSMFC, U.S. Army Corps of Engineers, Grant County PUD, Chelan County PUD, Douglas County PUD, USGS, Sno-Tel, NOAA, USBR, and Fish Passage Center to establish year 2003 data acquisition and quality control. Frequent contacts were made with PSMFC, U.S. Army Corps of Engineers, Grant County PUD, Chelan County PUD, Douglas County PUD, USGS, SNOTEL, PFEL, NOAA, NWS, NCDC, and Fish Passage Center to synchronize data from 2003 and to report and correct data anomalies. Data availability, data file format, and meta-data issues were addressed through feedback with the primary sources. At the request of the Yakima-Klickitat Fisheries project, addition of the YKFP adult passage data was initiated.

The Technical Management Team was supported throughout the migration season. Reports, assessments, and new and improved database analysis tools were provided to

users. Grant, Chelan, and Douglas County PUD adult monitoring programs were supported by integrating their daily adult data collection with timely reporting through DART.

In-House Support

In-house support was provided to Dr. John Skalski and Dr. James Anderson's research groups, providing data sets and application support throughout the year on an as needed basis. This included providing PTAGIS observation data for survival and travel-time analysis, and adult passage data for adult passage modeling, and CWT data for smolt-to-adult return analysis. The CRiSP model was supported with hydrosystem and fish passage data.

Historical Data Set Development

Historical transportation and hatchery release data sets were synchronized with the primary sources to reflect changes in data structures. Extensive climate data through the end of year 2002 were obtained and integrated with daily loads. The Pacific Northwest Climate index was updated through 2002.

During this year, all available CWT releases and recoveries from RMIS were obtained from RMIS. The smolt index data-set was re-synchronized with FPC's primary data. Historical year and expanded observation site data was obtained and loaded from PSMFC's PTAGIS. We also obtained the complete daily transport records. At the request of the primary data holders, DART is developing reporting tools to assimilate historical and current adult passage data from the Yakima-Klickitat Fisheries project.

Daily Services and Operations

Daily Data Acquisition

Daily data acquisition continued throughout the year from primary sites. Riverine values including outflow, spill, water temperature and a variety of hourly water quality values were loaded, updated and processed. Salmonid migration data was integrated with these ecological measures.

The changeover of data sourcing from the new USGS web pages was completed for the entire Columbia Basin. New protocols were developed to handle Chelan County PUD adult data sets for 2003.

At PUD request, DART has continued to obtain the adult passage data for Wells, Rock Island, Rocky Reach and Priest Rapids dams directly from the PUDs to provide web-based data access.

Tagging session header files and PTAGIS observation records were acquired from PSMFC on a daily basis. The current year's observation total exceeds 1.3 million records. Release and observation site datasets were updated to reflect changes and additions.

Daily flow, stage and intermittent temperature data is acquired from 103 USGS sites to provide information concerning headwater conditions. Daily temperature and precipitation records from 58 sites throughout the region provide information on weather and climate. Adult passage and smolt passage indices were loaded daily from 12 main stem dams.

New Data products

Daily data acquisition continued throughout the year from primary sites. Water quality and operations data including outflow, spill, water temperature and a variety of water quality values including hourly were loaded, updated and processed. Salmonid migration data was integrated with these ecological measures.

The query choices for the Columbia Basin Performance Measures web tool (<http://www.cbr.washington.edu/perform/>) were expanded to include transportation. In addition, Spill Percent and Turbidity data were added to the list of river conditions which can be associated with fish passage timing.

DART's ESU pages added the ability to generate 10-year averages for inflow, outflow, elevation, spill, and temperature. Adult PIT-tag return pages were updated to include expanded observation sites and to allow species-run-rearing-type analyses.

The adult conversion rate report was improved by adding hot links that allow the examination of the underlying data.

Lamprey counts were added to the adult passage queries.

DART Maintenance

The DART Hatcheries Information and Locations web page were updated.

(<http://www.cbr.washington.edu/hatch/>)

The Columbia Basin Research web site including the complete Columbia River DART web pages were updated. The layout of the main DART web page as well as expanded the help and overview pages were organized to provide more detailed information to DART users.

Normal DART maintenance was conducted throughout the year. Data loads were monitored and reviewed on a daily basis. Performance tuning, indexing rebuilds and daily monitoring of incoming web user database access continued. Pre-migration date and specification changes were implemented and a variety of program edits and modifications were completed in preparation for the start of the migration season. Weekly updates were made to data specifications. Year-to-date updates were performed daily for adult passage counts, weekly for PTAGIS data and monthly for ocean conditions and water quality.

New PTAGIS specifications required extensive rework of all the PIT-tag query pages to allow expanded queries and reports

The Smolt index pages were also reworked to preserve as much rear-type specific data as available from FPC. Extensive restructuring of the Observation Summary Report was made to improve performance, reducing query length by 65%.

The update of the Columbia Basin Research web site was completed. The layout of the main DART web page as well as expanded the help and overview pages were organized to provide more detailed information to DART users.

Normal DART maintenance was conducted throughout the year. Data loads were monitored and reviewed on a daily basis. Performance tuning, indexing rebuilds and daily monitoring of incoming web user database access continued. Weekly updates were made to data specifications. Weekly year-to-date updates were performed to synchronize datasets with primary sources.

Quality Control

Data quality was monitored throughout the year on a daily basis and adjustments were made as needed. Primary sites were contacted concerning data omissions, anomalies and format changes. Additional data filters were added to aggregate data to prevent the display of non-null anomalies. The start of the migration season is filled with data file format changes and data outliers that require constant attention. Primary source data was archived to retain primary data in its original form for data redundancy. Turbidity data was filtered to remove data anomalies from source file publication errors. Feedback was provided to primary data sources to correct obvious data anomalies.

DART Web Support

Questions from the public regarding data or information are answered as they are received by the DART Coordinator or the Web Coordinator. We provided individual data support to: BPA, Pacific Northwest Laboratories, Kootenai County, Northwest Indian College, University of Idaho, Idaho State University, TransCanada, Avista Corp., MEVATEC Corp (Fisheries Engineering Team), US Forest Service, USACE, NOAA/NMFS, Washington Department of Fish and Wildlife, Chelan County Public Utility District, Grant County Public Utility District, Douglas County Public Utility District, Fisher Fisheries, LTD, Northwest Power Planning Council, Spokane Tribe Dept. of Natural Resources, Oak Ridge National Laboratory, ISAB, SAIC, Ellis Ecological Services, Inc, Pacific Northwest National Laboratory, Parametrix, Washington State Dept. of Ecology, Washington State Legislature, USGS, Yakima Nation, Parrish Lab-University of Washington, Battelle PNNL, Columbia River Research Laboratory, Yakima-Klickitat Fisheries Project, The Seattle Post Intelligencer, Digimarc Corporation, CRITFC, Reliant Resources, CTUIR, Eugene Water & Electric Board.

Problems Encountered during the Year

Throughout the year, there were unannounced modifications of primary source data files. Changes were made in location, format, and content. This results in data load failures. Constant monitoring is required to maintain data integrity and coverage.

Three disk failures caused DART to be unavailable for brief periods. The mirrored disk backups provided rapid restoration of services.

Hardware Support

The E450 database server was upgraded with a new motherboard, two additional 400 Mhz microprocessors and six 18.2GB SCSI disk drives. These upgrades allow the continued expansion of on-line data analysis and aggregation products, improved the backup and recovery processes, and provided sufficient data storage to complete the 2003 calendar year.

Three failed 9GB hard drives were replaced and an additional 18GB drive was installed in the database server.

To assure a high level of system reliability, the database backup procedures were reviewed and modified. The boot drive on the database server was re-partitioned to allow for the installation of operating system patches.

Software Support

Commercial Software Maintained:

- Ingres (database management)
- Oracle 8 Enterprise Edition
- Developer/2000
- Oracle Enterprise Manager
- Webworks Publisher
- JSVR for Ingres

A DART query usage statistics for 2003 contract is included in this annual report as an Appendix A.

Appendix A: DART Query Usage Statistics for 2003

OCTOBER 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	1821	11.26%	0.77%	6.32%	37.95%	3.29%	0.82%	16.91%	22.52%
Adult	6955	6.69%	0.63%	3.98%	22.37%	2.59%	5.33%	20.99%	37.41%
ESU	16	0.00%	6.25%	0.00%	62.50%	6.25%	0.00%	18.75%	6.25%
PIT Tag	61	9.84%	34.43%	8.20%	45.90%	0.00%	0.00%	1.64%	0.00%
Smolt	124	4.84%	21.77%	39.52%	24.19%	0.00%	6.45%	3.23%	0.00%
Climate	21	9.52%	4.76%	14.29%	19.05%	33.33%	0.00%	0.00%	4.76%
Total Graphic Queries	8998	7.60%	1.20%	4.99%	25.77%	2.76%	4.38%	19.74%	33.50%
Detail & Composite Reports									
River	2872	2.82%	0.10%	0.24%	22.91%	2.12%	3.20%	3.97%	64.62%
Adult	11379	5.58%	0.83%	4.53%	18.90%	5.59%	2.36%	26.09%	35.28%
ESU	407	0.00%	0.25%	0.74%	76.90%	0.98%	0.25%	4.18%	11.06%
Hatchery	86	20.93%	0.00%	1.16%	48.84%	3.49%	3.49%	8.14%	13.95%
PIT Tag	416	7.93%	1.68%	8.89%	56.97%	1.44%	5.05%	10.58%	7.21%
Smolt	57	15.79%	1.75%	0.00%	15.79%	7.02%	5.26%	35.09%	19.30%
Climate	74	6.76%	0.00%	4.05%	33.78%	12.16%	0.00%	6.76%	12.16%
CWT	5	20.00%	0.00%	0.00%	40.00%	20.00%	0.00%	20.00%	0.00%
Total Report Queries	15296	5.11%	0.70%	3.71%	22.47%	4.73%	2.54%	20.77%	39.08%
Total Queries	24294	6.03%	0.88%	4.18%	23.69%	4.00%	3.22%	20.39%	37.01%
HTML requests	220999	0.54%	0.08%	0.62%	2.46%	0.52%	0.31%	2.11%	3.17%
NOVEMBER 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	1302	15.36%	4.76%	2.84%	23.89%	11.67%	2.38%	15.75%	23.20%
Adult	2417	4.01%	0.91%	5.42%	17.50%	5.71%	4.10%	27.06%	35.13%
ESU	52	3.85%	7.69%	0.00%	76.92%	1.92%	0.00%	1.92%	3.85%
PIT Tag	19	5.26%	0.00%	0.00%	26.32%	0.00%	0.00%	52.63%	15.79%
Smolt	320	13.44%	0.63%	0.00%	13.44%	23.44%	0.00%	0.63%	45.00%
Climate	38	2.63%	0.00%	0.00%	68.42%	0.00%	0.00%	2.63%	13.16%
Total Graphic Queries	4148	8.29%	2.17%	4.05%	20.44%	8.82%	3.13%	21.05%	31.46%
Detail & Composite Reports									
River	1846	4.12%	0.81%	0.16%	15.38%	3.63%	2.76%	18.47%	54.60%
Adult	4249	6.17%	0.71%	6.10%	17.35%	8.54%	3.53%	24.12%	33.18%
ESU	113	13.27%	0.00%	1.77%	23.01%	7.96%	0.00%	19.47%	34.51%
Hatchery	213	1.41%	0.00%	12.68%	14.55%	13.62%	0.00%	31.46%	25.82%
PIT Tag	308	0.00%	2.27%	2.60%	57.79%	7.79%	7.79%	12.01%	8.44%
Smolt	113	3.54%	0.88%	0.00%	55.75%	2.65%	0.00%	21.24%	15.93%
Climate	193	0.00%	0.00%	0.00%	7.25%	76.17%	0.52%	9.33%	3.63%
CWT	20	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%	80.00%
Total Report Queries	7055	5.10%	0.75%	4.24%	18.95%	9.10%	3.20%	21.74%	36.56%
Total Queries	11203	6.28%	1.28%	4.17%	19.50%	9.00%	3.18%	21.49%	34.67%
HTML requests	25299	2.60%	0.57%	1.29%	11.99%	3.58%	1.38%	11.01%	20.67%
DECEMBER 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									

River	1412	10.27%	0.14%	2.48%	30.10%	5.74%	10.98%	14.09%	26.20%
Adult	1680	3.75%	0.30%	6.13%	19.64%	5.71%	1.01%	26.90%	32.98%
ESU	20	5.00%	0.00%	0.00%	75.00%	10.00%	0.00%	10.00%	0.00%
PIT Tag	105	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%
Smolt	43	41.86%	0.00%	0.00%	39.53%	2.33%	0.00%	0.00%	13.95%
Climate	53	0.00%	0.00%	0.00%	1.89%	37.74%	0.00%	15.09%	43.40%
Total Graphic Queries	3313	6.85%	0.21%	4.17%	26.77%	6.07%	5.19%	19.95%	28.92%
Detail & Composite Reports									
River	1565	0.64%	1.15%	0.58%	8.69%	1.98%	1.98%	7.67%	75.34%
Adult	2167	7.48%	0.32%	5.95%	20.07%	5.58%	3.51%	27.46%	28.98%
ESU	282	0.00%	0.00%	0.71%	2.48%	2.48%	0.35%	87.59%	4.26%
Hatchery	156	0.64%	0.00%	8.33%	12.18%	12.18%	9.62%	10.90%	46.15%
PIT Tag	380	2.11%	5.00%	1.32%	41.32%	4.21%	3.16%	7.63%	35.26%
Smolt	126	11.90%	0.00%	1.59%	9.52%	1.59%	0.79%	0.79%	73.81%
Climate	105	0.95%	0.00%	0.00%	12.38%	57.14%	0.00%	19.05%	9.52%
CWT	13	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
Total Report Queries	4794	4.11%	0.92%	3.34%	16.25%	5.34%	2.84%	21.74%	44.39%
Total Queries	8107	5.23%	0.63%	3.68%	20.55%	5.64%	3.80%	21.01%	38.07%
HTML requests	11112	4.48%	0.76%	2.99%	19.87%	5.25%	2.52%	24.42%	37.28%

JANUARY 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	2184	17.81%	6.41%	4.03%	28.71%	3.75%	1.10%	7.01%	31.18%
Adult	1758	2.33%	0.51%	3.13%	24.12%	3.81%	1.88%	24.57%	35.55%
ESU	16	0.00%	0.00%	0.00%	62.50%	0.00%	0.00%	25.00%	12.50%
PIT Tag	19	0.00%	0.00%	10.53%	42.11%	0.00%	10.53%	31.58%	0.00%
Smolt	138	5.07%	25.36%	0.00%	36.96%	6.52%	15.22%	4.35%	0.00%
Climate	102	12.75%	28.43%	0.00%	20.59%	24.51%	5.88%	3.92%	3.92%
Total Graphic Queries	4217	10.67%	5.05%	3.44%	27.06%	4.34%	2.04%	14.35%	31.11%
Detail & Composite Reports									
River	2084	8.83%	0.72%	2.64%	9.84%	0.91%	1.01%	4.32%	71.64%
Adult	2302	7.04%	0.48%	5.86%	18.77%	4.82%	3.39%	24.85%	34.27%
ESU	68	1.47%	0.00%	4.41%	48.53%	0.00%	0.00%	32.35%	13.24%
Hatchery	99	0.00%	0.00%	0.00%	41.41%	5.05%	4.04%	6.06%	36.36%
PIT Tag	239	14.64%	0.00%	2.09%	28.87%	3.77%	15.06%	20.92%	13.81%
Smolt	53	18.87%	45.28%	1.89%	3.77%	0.00%	1.89%	15.09%	11.32%
Climate	67	10.45%	2.99%	4.48%	26.87%	28.36%	1.49%	16.42%	7.46%
CWT	86	0.00%	1.16%	1.16%	3.49%	0.00%	1.16%	77.91%	15.12%
Total Report Queries	4998	7.98%	1.06%	4.06%	16.07%	3.26%	2.84%	16.53%	47.70%
Total Queries	9215	9.21%	2.89%	3.78%	21.10%	3.75%	2.47%	15.53%	40.11%
HTML requests	21928	3.23%	0.82%	1.48%	11.88%	2.14%	1.71%	10.57%	23.40%

FEBRUARY 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	8457	3.23%	0.27%	0.33%	4.48%	82.64%	0.07%	1.68%	7.20%
Adult	2408	4.40%	0.17%	4.19%	21.76%	1.99%	1.58%	25.54%	39.45%
ESU	10	0.00%	0.00%	30.00%	30.00%	0.00%	0.00%	30.00%	10.00%
PIT Tag	43	0.00%	13.95%	11.63%	46.51%	0.00%	0.00%	23.26%	4.65%
Smolt	183	13.66%	16.39%	0.00%	18.58%	1.64%	0.00%	3.83%	45.36%

Climate	56	7.14%	0.00%	1.79%	35.71%	28.57%	0.00%	10.71%	3.57%
Transport	20	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	95.00%
Total Graphic Queries	11177	3.66%	0.56%	1.23%	8.77%	63.13%	0.39%	7.01%	14.91%
Detail & Composite Reports									
River	1691	5.91%	0.35%	5.85%	12.00%	11.65%	5.38%	3.61%	54.64%
Adult	3319	6.66%	0.72%	2.89%	21.03%	3.74%	3.16%	27.78%	33.11%
ESU	40	0.00%	0.00%	0.00%	22.50%	0.00%	0.00%	17.50%	55.00%
Hatchery	207	0.00%	0.00%	0.00%	50.24%	0.48%	0.00%	36.23%	10.63%
PIT Tag	291	1.37%	0.00%	1.03%	51.20%	6.19%	0.69%	20.62%	11.00%
Smolt	59	6.78%	11.86%	0.00%	27.12%	1.69%	0.00%	20.34%	30.51%
Climate	47	2.13%	0.00%	8.51%	8.51%	10.64%	8.51%	29.79%	29.79%
CWT	36	0.00%	0.00%	0.00%	19.44%	0.00%	0.00%	66.67%	11.11%
Transport	21	4.76%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	61.90%
Total Report Queries	5711	5.80%	0.77%	3.54%	20.84%	6.06%	3.54%	20.57%	37.61%
Total Queries	16888	4.38%	0.63%	2.01%	12.85%	43.83%	1.46%	11.59%	22.58%
HTML requests	12838	4.56%	0.96%	2.35%	17.25%	4.74%	5.57%	21.61%	40.47%

MARCH 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	1862	13.10%	0.86%	4.62%	22.66%	5.10%	0.86%	19.23%	33.30%
Adult	7010	5.75%	0.94%	4.27%	17.86%	1.33%	1.80%	32.95%	34.68%
ESU	12	0.00%	0.00%	41.67%	8.33%	0.00%	0.00%	50.00%	0.00%
PIT Tag	68	0.00%	0.00%	0.00%	58.82%	1.47%	0.00%	16.18%	23.53%
Smolt	302	9.27%	2.65%	4.64%	28.81%	36.09%	7.95%	5.30%	4.97%
Climate	21	9.52%	0.00%	0.00%	0.00%	28.57%	0.00%	0.00%	4.76%
Transport	4	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Total Graphic Queries	9279	7.30%	0.97%	4.35%	19.42%	3.28%	1.79%	29.11%	33.23%
Detail & Composite Reports									
River	2695	2.04%	0.26%	1.78%	7.98%	1.48%	0.26%	7.94%	78.18%
Adult	15292	8.25%	0.78%	3.17%	18.47%	1.57%	1.68%	29.22%	36.55%
ESU	76	1.32%	0.00%	0.00%	6.58%	2.63%	0.00%	27.63%	60.53%
Hatchery	163	4.29%	0.00%	0.61%	28.22%	20.86%	1.23%	22.70%	22.09%
PIT Tag	657	1.67%	0.15%	3.96%	56.62%	7.31%	3.50%	15.83%	10.81%
Smolt	83	20.48%	14.46%	1.20%	16.87%	12.05%	2.41%	4.82%	27.71%
Climate	65	7.69%	1.54%	0.00%	21.54%	20.00%	0.00%	38.46%	10.77%
CWT	32	6.25%	0.00%	6.25%	12.50%	12.50%	3.13%	53.13%	6.25%
Transport	21	0.00%	61.90%	0.00%	14.29%	0.00%	4.76%	14.29%	4.76%
Total Report Queries	19084	7.12%	0.73%	2.94%	18.31%	2.05%	1.53%	25.63%	41.30%
Total Queries	28363	7.18%	0.81%	3.41%	18.67%	2.45%	1.61%	26.77%	38.66%
HTML requests	29183	5.51%	0.98%	2.57%	17.14%	2.64%	3.22%	23.40%	43.05%

APRIL 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	3922	7.06%	2.01%	4.56%	11.42%	1.07%	1.73%	53.29%	18.77%
Adult	16195	3.90%	0.40%	3.55%	20.43%	1.77%	2.39%	30.73%	36.17%
ESU	89	10.11%	0.00%	48.31%	21.35%	4.49%	0.00%	8.99%	6.74%
PIT Tag	139	2.88%	0.00%	9.35%	55.40%	3.60%	0.00%	23.74%	4.32%
Smolt	266	6.02%	6.39%	5.64%	59.02%	3.38%	1.13%	1.13%	16.92%
Climate	61	6.56%	0.00%	11.48%	8.20%	14.75%	0.00%	6.56%	50.82%

Transport	19	0.00%	0.00%	0.00%	94.74%	0.00%	5.26%	0.00%	0.00%
Total Graphic Queries	20691	4.55%	0.78%	4.02%	19.40%	1.72%	2.21%	34.39%	32.29%
Detail & Composite Reports									
River	3200	1.44%	0.56%	1.59%	36.31%	0.56%	2.13%	6.47%	50.84%
Adult	34656	5.95%	1.27%	3.36%	18.30%	2.08%	1.27%	33.09%	34.48%
ESU	153	5.23%	0.65%	4.58%	12.42%	9.80%	0.65%	33.99%	32.68%
Hatchery	184	2.72%	5.43%	4.89%	25.54%	21.74%	1.63%	17.39%	20.11%
PIT Tag	1996	4.71%	3.46%	4.81%	36.22%	4.41%	1.60%	31.96%	10.17%
Smolt	132	4.55%	3.03%	0.76%	41.67%	0.76%	0.76%	9.85%	38.64%
Climate	96	2.08%	0.00%	4.17%	20.83%	39.58%	0.00%	19.79%	12.50%
CWT	70	8.57%	0.00%	0.00%	41.43%	1.43%	20.00%	15.71%	7.14%
Transport	14	35.71%	0.00%	0.00%	50.00%	0.00%	0.00%	7.14%	7.14%
Total Report Queries	40501	5.52%	1.34%	3.29%	20.75%	2.27%	1.38%	30.72%	34.41%
Total Queries	61192	5.19%	1.15%	3.54%	20.30%	2.09%	1.66%	31.96%	33.69%
HTML requests	48807	4.94%	0.97%	3.02%	18.89%	2.66%	2.85%	25.88%	39.69%

MAY 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	2433	11.84%	1.73%	4.60%	29.80%	2.71%	0.29%	19.81%	28.40%
Adult	13062	6.17%	0.88%	3.43%	18.87%	1.64%	1.71%	31.89%	35.25%
ESU	139	4.32%	0.72%	52.52%	26.62%	4.32%	0.00%	10.07%	1.44%
PIT Tag	127	0.79%	0.79%	4.72%	73.23%	0.00%	0.00%	7.87%	13.39%
Smolt	575	7.13%	4.70%	3.13%	29.91%	0.17%	18.96%	8.00%	13.74%
Climate	219	0.00%	0.00%	0.00%	14.61%	63.01%	0.00%	1.37%	21.00%
Transport	36	0.00%	0.00%	0.00%	77.78%	0.00%	5.56%	16.67%	0.00%
Total Graphic Queries	16591	6.88%	1.12%	3.96%	21.24%	2.56%	2.04%	28.46%	32.78%
Detail & Composite Reports									
River	3123	2.63%	0.29%	1.60%	14.79%	2.59%	2.05%	10.85%	54.31%
Adult	24712	4.62%	0.57%	3.31%	19.18%	3.50%	1.75%	30.98%	35.71%
ESU	70	12.86%	0.00%	2.86%	32.86%	4.29%	8.57%	12.86%	22.86%
Hatchery	115	0.00%	0.00%	0.87%	30.43%	6.09%	6.09%	34.78%	21.74%
PIT Tag	2204	3.77%	3.31%	7.71%	33.35%	3.63%	0.64%	33.03%	14.56%
Smolt	152	3.29%	2.63%	0.66%	26.32%	1.32%	1.97%	19.08%	42.11%
Climate	82	1.22%	0.00%	1.22%	18.29%	40.24%	0.00%	6.10%	31.71%
CWT	186	1.08%	0.00%	0.54%	87.10%	0.00%	0.00%	3.76%	6.45%
Transport	28	7.14%	14.29%	0.00%	14.29%	0.00%	10.71%	32.14%	21.43%
Total Report Queries	30672	4.32%	0.75%	3.40%	20.27%	3.50%	1.72%	28.76%	35.83%
Total Queries	47263	5.22%	0.88%	3.60%	20.61%	3.17%	1.84%	28.65%	34.76%
HTML requests	38575	4.60%	1.05%	3.45%	20.51%	3.54%	3.75%	26.32%	35.55%

JUNE 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	2398	16.93%	1.50%	4.50%	24.69%	3.42%	1.71%	18.81%	27.86%
Adult	9162	7.61%	0.45%	3.26%	16.15%	1.40%	1.43%	32.42%	37.28%
ESU	85	1.18%	2.35%	23.53%	44.71%	1.18%	0.00%	11.76%	15.29%
PIT Tag	173	10.98%	13.29%	0.00%	52.60%	0.00%	0.00%	12.14%	10.98%
Smolt	439	6.83%	8.20%	0.00%	44.42%	13.90%	4.56%	7.52%	14.12%
Climate	35	68.57%	0.00%	0.00%	5.71%	0.00%	0.00%	14.29%	8.57%
Transport	18	16.67%	0.00%	0.00%	27.78%	0.00%	11.11%	44.44%	0.00%

Total Graphic Queries	12310	9.59%	1.12%	3.47%	19.52%	2.21%	1.58%	28.42%	33.96%
Detail & Composite Reports									
River	2787	2.73%	0.04%	1.11%	21.28%	3.01%	5.31%	13.13%	45.17%
Adult	17003	7.02%	1.38%	3.08%	17.84%	2.67%	1.58%	29.92%	36.16%
ESU	126	2.38%	0.00%	0.00%	58.73%	3.17%	1.59%	3.97%	30.16%
Hatchery	147	13.61%	0.00%	0.68%	21.77%	2.04%	2.04%	22.45%	37.41%
PIT Tag	1288	6.99%	4.50%	7.07%	29.43%	3.73%	3.26%	29.27%	15.45%
Smolt	193	8.29%	1.55%	0.00%	36.79%	4.15%	4.66%	27.46%	17.10%
Climate	43	27.91%	0.00%	2.33%	20.93%	11.63%	0.00%	4.65%	30.23%
CWT	52	0.00%	0.00%	3.85%	21.15%	0.00%	5.77%	26.92%	42.31%
Transport	16	25.00%	0.00%	0.00%	31.25%	6.25%	6.25%	25.00%	6.25%
Total Report Queries	21655	6.53%	1.37%	3.00%	19.43%	2.80%	2.20%	27.44%	35.88%
Total Queries	33965	7.64%	1.28%	3.17%	19.46%	2.59%	1.98%	27.79%	35.18%
HTML requests	30188	6.31%	1.10%	2.31%	20.05%	2.67%	4.27%	25.52%	35.76%

JULY 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	2169	17.15%	3.92%	3.96%	25.63%	7.79%	0.37%	21.62%	19.18%
Adult	8470	12.00%	0.77%	4.18%	15.27%	1.62%	1.59%	34.91%	29.49%
ESU	145	12.41%	17.24%	2.07%	39.31%	0.00%	0.69%	2.07%	26.21%
PIT Tag	134	16.42%	11.94%	2.99%	57.46%	0.00%	0.75%	2.24%	8.21%
Smolt	304	24.67%	5.59%	0.00%	30.59%	2.63%	24.01%	8.88%	3.62%
Climate	41	0.00%	0.00%	0.00%	9.76%	0.00%	0.00%	4.88%	7.32%
Transport	14	14.29%	0.00%	0.00%	14.29%	0.00%	0.00%	71.43%	0.00%
Total Graphic Queries	11277	13.35%	1.84%	3.96%	18.46%	2.78%	1.93%	30.78%	26.40%
Detail & Composite Reports									
River	2896	4.28%	0.14%	1.14%	34.63%	3.21%	2.07%	8.67%	36.08%
Adult	15703	6.97%	1.83%	3.09%	19.88%	2.22%	1.31%	30.52%	33.55%
ESU	314	2.87%	29.30%	0.00%	50.00%	0.00%	1.59%	1.91%	10.83%
Hatchery	261	70.50%	1.53%	3.07%	8.05%	3.83%	0.00%	4.21%	8.81%
PIT Tag	1008	16.57%	3.47%	10.62%	28.37%	1.19%	5.46%	18.65%	15.48%
Smolt	156	20.51%	2.56%	0.00%	26.28%	3.85%	11.54%	24.36%	10.90%
Climate	33	15.15%	0.00%	0.00%	30.30%	0.00%	0.00%	21.21%	24.24%
CWT	29	0.00%	0.00%	3.45%	13.79%	0.00%	0.00%	34.48%	48.28%
Transport	33	0.00%	3.03%	3.03%	81.82%	0.00%	0.00%	0.00%	9.09%
Total Report Queries	20433	7.90%	2.09%	3.11%	22.86%	2.30%	1.68%	25.96%	32.15%
Total Queries	31710	9.84%	2.00%	3.41%	21.29%	2.47%	1.77%	27.67%	30.10%
HTML requests	26942	7.12%	1.39%	2.67%	20.99%	3.45%	3.65%	24.33%	33.32%

AUGUST 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	1590	13.71%	1.82%	4.21%	21.82%	5.66%	1.32%	24.09%	26.86%
Adult	8390	13.21%	0.60%	3.58%	15.40%	1.94%	1.72%	29.27%	34.28%
ESU	76	23.68%	25.00%	2.63%	15.79%	0.00%	1.32%	6.58%	25.00%
PIT Tag	99	5.05%	6.06%	0.00%	71.72%	3.03%	1.01%	10.10%	3.03%
Smolt	270	25.56%	0.74%	2.96%	12.96%	1.11%	3.70%	48.52%	4.44%
Climate	16	31.25%	0.00%	0.00%	0.00%	6.25%	0.00%	25.00%	12.50%
Transport	12	25.00%	0.00%	0.00%	50.00%	0.00%	8.33%	16.67%	0.00%
Total Graphic Queries	10453	13.64%	1.01%	3.61%	16.87%	2.49%	1.70%	28.61%	31.94%

Detail & Composite Reports

River	1842	5.32%	0.16%	1.36%	7.93%	5.59%	2.77%	20.74%	47.29%
Adult	17993	6.53%	1.39%	2.86%	17.23%	1.56%	1.27%	33.86%	34.95%
ESU	240	7.08%	3.75%	2.92%	41.67%	1.25%	0.83%	34.17%	8.33%
Hatchery	163	4.91%	3.07%	0.00%	14.11%	0.00%	3.68%	8.59%	65.03%
PIT Tag	764	5.37%	3.53%	5.76%	34.03%	3.80%	1.31%	26.31%	19.90%
Smolt	411	4.87%	31.14%	0.24%	27.49%	0.73%	22.14%	5.35%	8.03%
Climate	52	5.77%	5.77%	0.00%	3.85%	1.92%	0.00%	50.00%	25.00%
CWT	25	20.00%	8.00%	0.00%	4.00%	4.00%	4.00%	28.00%	32.00%
Transport	20	5.00%	40.00%	0.00%	10.00%	25.00%	10.00%	10.00%	0.00%
Total Report Queries	21510	6.36%	2.02%	2.75%	17.42%	1.98%	1.82%	31.74%	34.83%
Total Queries	31963	8.74%	1.69%	3.03%	17.24%	2.15%	1.78%	30.72%	33.88%
HTML requests	26775	6.48%	1.07%	2.36%	17.50%	4.16%	3.39%	28.80%	35.01%

SEPTEMBER 2003	Total	%Gov	%Mil	%US	%IP	%Edu	%Org	%Net	%Com
Graphic Queries									
River	1553	16.29%	0.06%	9.53%	24.02%	1.67%	1.09%	21.51%	23.76%
Adult	14887	10.59%	0.53%	4.66%	16.79%	1.57%	3.46%	27.04%	35.23%
ESU	43	2.33%	2.33%	9.30%	30.23%	4.65%	11.63%	6.98%	32.56%
PIT Tag	114	1.75%	2.63%	0.00%	86.84%	0.00%	0.88%	1.75%	6.14%
Smolt	110	11.82%	5.45%	25.45%	6.36%	0.00%	15.45%	32.73%	2.73%
Climate	34	23.53%	0.00%	0.00%	8.82%	0.00%	0.00%	44.12%	23.53%
Transport	20	0.00%	0.00%	0.00%	95.00%	0.00%	0.00%	0.00%	5.00%
Total Graphic Queries	16761	11.06%	0.54%	5.21%	17.98%	1.56%	3.31%	26.34%	33.69%
Detail & Composite Reports									
River	1787	7.89%	0.00%	0.90%	6.27%	3.92%	2.74%	17.74%	51.15%
Adult	32812	7.45%	0.91%	3.04%	17.64%	2.29%	1.05%	31.71%	35.64%
ESU	221	5.43%	0.90%	2.26%	48.42%	2.26%	9.05%	9.50%	21.72%
Hatchery	129	3.10%	1.55%	3.10%	66.67%	2.33%	0.00%	8.53%	13.95%
PIT Tag	1018	14.54%	3.05%	5.89%	49.02%	1.28%	2.85%	13.85%	9.53%
Smolt	311	4.18%	0.00%	0.32%	40.51%	0.00%	6.11%	13.83%	35.05%
Climate	44	15.91%	0.00%	0.00%	15.91%	2.27%	0.00%	20.45%	45.45%
CWT	24	8.33%	0.00%	0.00%	50.00%	0.00%	0.00%	16.67%	25.00%
Transport	78	10.26%	0.00%	0.00%	88.46%	0.00%	0.00%	0.00%	1.28%
Total Report Queries	36424	7.63%	0.91%	2.97%	18.69%	2.32%	1.27%	30.07%	35.43%
Total Queries	53185	8.71%	0.80%	3.68%	18.46%	2.08%	1.91%	28.89%	34.88%
HTML requests	29522	9.01%	1.09%	3.99%	24.67%	3.49%	4.31%	38.33%	55.13%
Total Graphic Queries	129215	8.39%	1.13%	3.91%	19.18%	7.93%	2.27%	26.01%	30.65%
Total Report Queries	228133	6.21%	1.18%	3.21%	19.77%	3.01%	1.82%	27.59%	36.28%
Total Queries 2003	357348	7.00%	1.16%	3.47%	19.55%	4.79%	1.98%	27.02%	34.24%