

Second-Tier Database for Ecosystem Focus

Annual Report
2001 - 2002



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Second-Tier Database for Ecosystem Focus

Annual Report

October 1, 2001 - September 30, 2002

Contract number

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Table of Contents

Abstract.....	3
Introduction.....	3
Project Activity	3
Objective 1 – Data Services for Modeling, Monitoring, and Evaluation	3
Provide electronic data integration	3
Provide monitoring and evaluation.....	4
Objective 2 -- Provide Public Services	4
DART Coordination.....	4
Inter-organizational.....	4
In-House Support.....	5
Historical Data Set Development	5
Daily Services and Operations	5
Daily Data Acquisition.....	5
New Data products.....	5
DART Maintenance	8
Quality Control	9
DART Web Support	9
Problems Encountered during the Year	10
Hardware Support.....	10
Software Support	10
Appendix A: DART Query Usage Statistics for 2002	11

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, and fish passage.

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 developed and launched. Smolt-to-Adult ratio analysis for Columbia Basin hatchery releases was implemented.

Objective 2 -- Provide Public Services

DART provides a public Internet interface year-round to support planning and decision making for the operation 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 quarter.

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, SNOTEL, PFEL, NOAA, NWS, NCDC, and Fish Passage Center to coordinate data transfer, acquisition, and quality control for the contract year. Beginning-of-year data anomalies, data availability, data file format, and meta-data issues were addressed through feedback with the primary sources. The Technical Management Team was supported throughout the migration season. Reports, assessments, and new database tools were provided to ISRP and ISAB. 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's and Dr. James Anderson's groups. This included providing PTAGIS observation data for survival and travel-time analysis, adult passage data for adult passage modeling, and obtaining a complete set of transportation data for evaluating model parameters.

Historical Data Set Development

A complete set of transportation data was obtained from the Fish Passage Center. Project water temperatures from scrollcase and water quality sensors were separated for current and historical years.

Daily Services and Operations

Daily Data Acquisition

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.

At PUD request, DART continued to obtain the adult passage data for Wells, Rock Island, Rocky Reach and Priest Rapids dams directly from the PUD to improve timeliness of data reporting.

Tagging session header files and PTAGIS observation records were acquired from PSMFC on a daily basis. The current year's observation total exceeded 1,400,000 valid 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 mainstem dams.

New Data products

DART added date restriction data selection capabilities to many of its query pages enabling researchers to select data from desired time windows.

DART's ESU pages added the ability to generate 10 year averages for inflow, outflow, elevation, spill, and temperature.

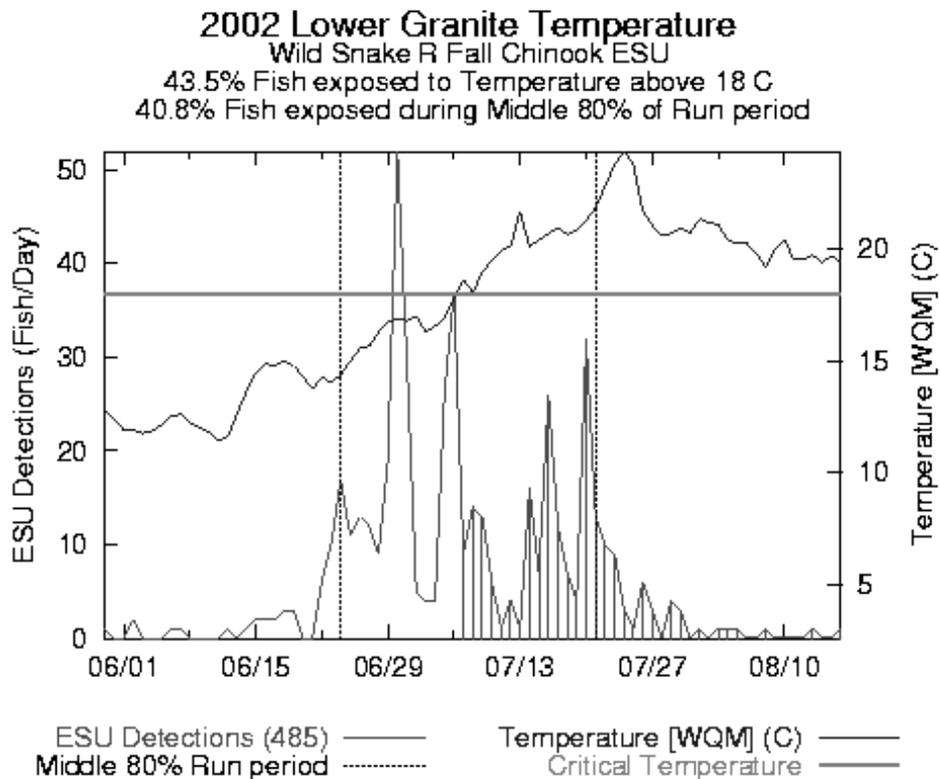
DART is presenting a number of new products that enhance the usefulness of the system. DART now includes adult ESU run timing analysis:
(<http://www.cbr.washington.edu/dart/esu/analysis.html>)

DART has expanded the analysis of adult returns to provide mean travel times, observation summaries, and conversion rates:

(http://www.cbr.washington.edu/dart/pit_obs_adult_obs_de.html)

Dart has also incorporated a Northwestern *Regional Temperature Data Analysis*: This specialized analysis within DART derives seasonal stream temperature profiles using primary data from the EPA STORET and StreamNet databases. Algorithms fit the temperatures with three and six parameter algorithms to generate complete seasonal profiles for hundreds of streams in the NW. Temperature profiles for NW regional streams are developed in a systematic manner and applied to fish presence. Daily water temperatures for the mainstem of the Columbia and Snake rivers are used directly where daily fish distributions are also known. Annual temperature profile parameters are related to surveyed presence / absence information for other streams and temperature compliance in streams is illustrated with spatial temporal mapping tools.

DART has developed the first hydrosystem performance measures using a stock *Exposure Analysis*: This service, available for spring 2002, integrates river flow, temperature, and total dissolved gas distributions with fish distributions to provide a real-time spatially explicit picture of the exposure of juvenile and adult salmon to water quality properties. The analysis includes tools for synthesizing environmental and biological data. Below is an example of Snake River Fall ESU exposures to temperature in the Lower Granite Project.



EXPOSURE SUMMARY

Wild Snake R Fall Chinook ESU Query Parameters

Year	2002
Project	Lower Granite
River Parameter	Temperature
Critical Temperature Value	18 C (user set value)

Total Run (May 30 - Aug 16)

Total Number of Fish	485
Temperature Exposure Index	18.19 C
Total Percent Fish Exposed	43.5 %
Total Number of Fish Exposed	211
Number of Days Fish Exposed	30

Middle 80% of Run period (Jun 24 - Jul 21)

Number of Fish	404
Temperature Exposure Index	18.1 C
Percent Fish Exposed	40.8 %
Number of Fish Exposed	165
Number of Days Fish Exposed	15

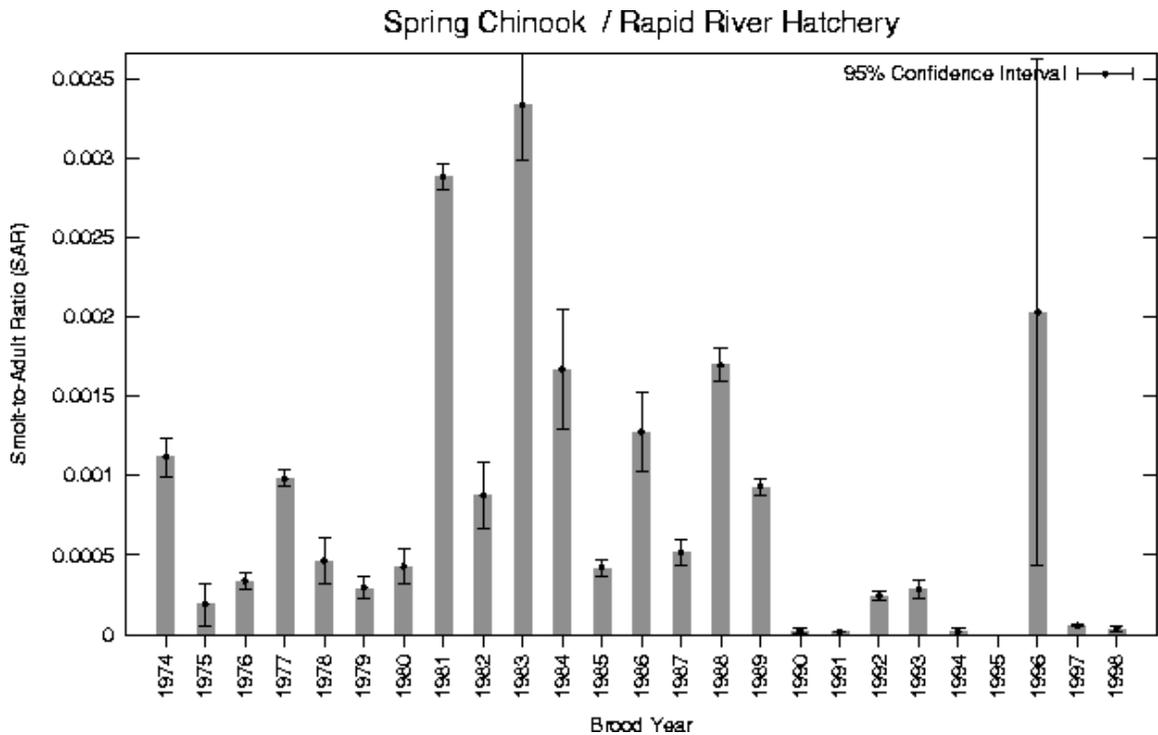
Run Dates

First Day of Run	May 30
10% of Run passed	Jun 24
50% of Run passed	Jul 6
90% of Run passed	Jul 21
Last Day of Run	Aug 16

Date(s) When Temperature Crosses 18 C Line

Jul 7

DART now includes a *CWT SAR Analysis* presenting the currently available CWT recovery data from Washington, Oregon and Idaho hatcheries presented as brood-year SARs.



DART Maintenance

Normal DART maintenance was conducted throughout the quarter. 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. Year-to-date updates were performed daily for adult passage counts, weekly for PTAGIS data and monthly for ocean conditions and water quality. Occasional updates to smolt index data were performed as needed.

A complete review of the DART help pages was performed and updates made to enhance the usefulness of DART.

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.

A new INGRES Database monitoring software package, DBAnalyzer III from Data Management Technologies Inc. is being evaluated.

Quality Control

Data quality was monitored throughout the contract on a daily basis and adjustments were made as needed. Primary sites were contacted concerning data omissions, anomalies and format changes. 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. Additional data filters were added to aggregate data to prevent the display of non-null anomalies. Mainstem project temperature data was cleaned to remove zero values and improve the accuracy of 10 year averages. Feedback was provided to primary data sources to correct obvious data anomalies.

DART Web Support

Data and meta-data requests from the public were filled as they were received. Issues with primary data raised by users were resolved. Browser and Proxy Web server issues were researched and resolved. Reports and database objects were modified to accommodate user requests when appropriate.

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, Northwest Power Planning Council, USACE, NOAA/NMFS, University of Idaho, Idaho Office of the Governor, Battelle PNNL, Idaho Department of Fish and Game, Chelan County Public Utility District, Grant County Public Utility District, Douglas County Public Utility District, NewsData Corp, Mobrand Biometrics, Inc, Washington State University, Project Performance Corporation, The Salt River Project, The Idaho Statesman, Snohomish County Public Utility District #1, and LGL Limited Pacific Northwest Laboratories, Kootenai County, Northwest Indian College, 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, Fisher Fisheries, LTD, US Department of Fish and Wildlife, David Evans and Associates, Bridgewater Group, Inc., Western White Water Assoc., RH2 Engineering, Inc., El Paso Merchant Energy, University of Missouri-Columbia, OEMI, Oregon Department of Environmental Quality, Yakima-Klickitat Fisheries Project, Washington Department of Ecology, and Georgia-Pacific.

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 database server was upgraded with 500mb additional RAM.

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

Software Support

Commercial Software Maintained:

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

A report on DART Query Usage Statistics is also included in Appendix A.

Appendix A: DART Query Usage Statistics for 2002

OCTOBER 2001	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	7289	3.37%	1.47%	1.50%	19.44%	1.58%	0.69%
Adult	10190	6.97%	0.42%	3.94%	18.27%	4.05%	2.58%
ESU	80	11.25%	0.00%	0.00%	78.75%	0.00%	0.00%
PIT Tag	58	6.90%	62.07%	0.00%	0.00%	20.69%	0.00%
Smolt	176	35.80%	0.00%	16.48%	12.50%	21.02%	0.00%
Climate	24	0.00%	0.00%	0.00%	4.17%	16.67%	0.00%
Total Graphic Queries	17817	5.79%	1.04%	3.03%	18.89%	3.26%	1.76%
Detail & Composite Reports							
River	2109	8.16%	28.02%	0.71%	13.70%	7.54%	3.13%
Adult	15474	5.64%	2.17%	3.06%	19.90%	6.05%	1.81%
ESU	70	10.00%	12.86%	0.00%	8.57%	2.86%	0.00%
Hatchery	99	1.01%	1.01%	1.01%	11.11%	11.11%	36.36%
PIT Tag	444	6.53%	0.23%	2.93%	48.87%	6.08%	3.60%
Smolt	54	0.00%	9.26%	12.96%	35.19%	11.11%	1.85%
Climate	37	2.70%	8.11%	5.41%	29.73%	18.92%	0.00%
CWT	10	0.00%	0.00%	0.00%	10.00%	40.00%	0.00%
Total Report Queries	18297	5.91%	5.17%	2.80%	19.86%	6.30%	2.18%
Total Queries	36114	5.85%	3.13%	2.91%	19.38%	4.80%	1.97%
HTML requests	23332	6.44%	1.38%	2.84%	19.06%	5.79%	2.61%
NOVEMBER 2001							
	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	6597	2.80%	0.86%	1.05%	4.61%	2.32%	0.50%
Adult	3454	3.16%	0.67%	4.08%	19.77%	8.19%	4.57%
ESU	42	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
PIT Tag	111	35.14%	32.43%	0.00%	17.12%	12.61%	1.80%
Smolt	117	15.38%	4.27%	0.00%	52.14%	5.98%	0.00%
Climate	48	6.25%	0.00%	0.00%	27.08%	4.17%	2.08%
Total Graphic Queries	10369	3.41%	1.17%	2.03%	10.82%	4.43%	1.87%
Detail & Composite Reports							
River	1437	7.86%	28.11%	4.73%	8.98%	4.80%	2.51%
Adult	5885	6.41%	3.16%	2.67%	17.15%	4.94%	3.19%
ESU	33	3.03%	18.18%	0.00%	21.21%	15.15%	0.00%
Hatchery	186	3.23%	0.00%	2.15%	21.51%	3.76%	19.35%
PIT Tag	226	16.81%	0.88%	3.98%	41.15%	5.31%	12.39%
Smolt	84	2.38%	4.76%	1.19%	58.33%	20.24%	0.00%
Climate	44	20.45%	0.00%	2.27%	18.18%	2.27%	11.36%
CWT	76	1.32%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Report Queries	7971	6.86%	7.55%	3.01%	16.75%	5.04%	3.68%
Total Queries	18340	4.91%	3.94%	2.45%	13.40%	4.69%	2.66%
HTML requests	14931	5.91%	1.08%	2.40%	18.85%	6.33%	3.53%

DECEMBER 2001	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	6427	1.79%	0.59%	4.87%	2.85%	1.01%	0.14%
Adult	1793	1.95%	0.50%	6.97%	15.84%	13.39%	1.78%
ESU	24	0.00%	0.00%	0.00%	66.67%	4.17%	4.17%
PIT Tag	41	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Smolt	43	0.00%	0.00%	0.00%	81.40%	6.98%	0.00%
Climate	10	0.00%	0.00%	30.00%	40.00%	0.00%	0.00%
Total Graphic Queries	8338	1.80%	1.00%	5.29%	6.27%	3.71%	0.50%

Detail & Composite Reports							
River	1263	8.08%	47.19%	2.45%	4.99%	1.98%	1.82%
Adult	2645	2.95%	9.00%	8.28%	13.01%	7.37%	11.19%
ESU	49	0.00%	12.24%	0.00%	44.90%	6.12%	4.08%
Hatchery	83	0.00%	0.00%	2.41%	24.10%	3.61%	10.84%
PIT Tag	103	0.97%	0.97%	8.74%	25.24%	27.18%	12.62%
Smolt	122	9.84%	3.28%	70.49%	11.48%	0.82%	1.64%
Climate	23	21.74%	0.00%	21.74%	17.39%	4.35%	0.00%
CWT	8	0.00%	0.00%	0.00%	37.50%	0.00%	12.50%
Total Report Queries	4296	4.61%	19.67%	8.19%	11.55%	5.96%	8.05%
Total Queries	12634	2.75%	7.35%	6.28%	8.07%	4.47%	3.07%
HTML requests	12072	2.96%	0.85%	2.92%	24.54%	4.66%	3.18%

JANUARY 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	6690	2.38%	0.63%	2.18%	5.99%	2.14%	0.66%
Adult	1670	3.47%	0.48%	6.35%	23.17%	4.19%	3.53%
ESU	10	70.00%	0.00%	0.00%	10.00%	0.00%	0.00%
PIT Tag	2	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%
Smolt	85	20.00%	10.59%	0.00%	41.18%	25.88%	0.00%
Climate	38	7.89%	0.00%	5.26%	10.53%	2.63%	0.00%
Total Graphic Queries	8495	2.87%	0.69%	2.99%	9.76%	2.78%	1.22%

Detail & Composite Reports							
River	1180	3.73%	16.53%	1.02%	11.61%	21.69%	1.69%
Adult	1987	2.87%	3.67%	3.88%	17.56%	4.83%	4.53%
ESU	25	8.00%	8.00%	0.00%	36.00%	0.00%	4.00%
Hatchery	125	20.80%	0.00%	1.60%	31.20%	8.00%	4.80%
PIT Tag	139	31.65%	0.00%	4.32%	32.37%	11.51%	2.88%
Smolt	73	9.59%	0.00%	0.00%	41.10%	31.51%	1.37%
Climate	28	3.57%	0.00%	17.86%	46.43%	14.29%	3.57%
CWT	3	0.00%	0.00%	0.00%	66.67%	0.00%	0.00%
Total Report Queries	3560	5.08%	7.58%	2.87%	17.53%	11.38%	3.46%
Total Queries	12055	3.53%	2.73%	2.95%	12.05%	5.32%	1.88%
HTML requests	11385	5.50%	1.34%	2.27%	27.33%	6.90%	3.75%

FEBRUARY 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	4847	3.49%	0.37%	1.01%	3.22%	2.33%	2.79%
Adult	2536	15.73%	1.93%	2.60%	14.67%	3.47%	1.81%
ESU	18	0.00%	0.00%	0.00%	94.44%	0.00%	0.00%

PIT Tag	21	23.81%	0.00%	0.00%	0.00%	0.00%	0.00%
Smolt	69	28.99%	11.59%	0.00%	15.94%	0.00%	1.45%
Climate	36	0.00%	0.00%	0.00%	2.78%	0.00%	0.00%
Total Graphic Queries	7527	7.88%	1.00%	1.53%	7.40%	2.67%	2.42%

Detail & Composite Reports

River	873	19.59%	0.00%	1.26%	13.52%	5.15%	0.69%
Adult	2390	7.99%	1.09%	2.72%	19.08%	4.98%	2.22%
ESU	218	0.00%	0.00%	0.00%	66.97%	3.67%	9.63%
Hatchery	180	2.22%	1.11%	10.00%	18.89%	31.11%	2.22%
PIT Tag	164	5.49%	5.49%	1.22%	25.61%	4.27%	28.66%
Smolt	247	1.21%	4.05%	2.43%	43.32%	0.40%	2.02%
Climate	122	11.48%	0.00%	1.64%	6.56%	4.10%	0.00%
CWT	7	0.00%	0.00%	0.00%	14.29%	57.14%	0.00%
Total Report Queries	4201	9.33%	1.12%	2.48%	21.71%	5.83%	3.24%
Total Queries	11728	8.40%	1.04%	1.87%	12.53%	3.80%	2.71%
HTML requests	10246	6.38%	1.54%	1.88%	21.73%	6.96%	2.85%

MARCH 2002

	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	7631	3.77%	0.38%	2.73%	6.21%	1.64%	2.86%
Adult	8266	5.60%	1.46%	3.74%	16.71%	2.66%	1.11%
ESU	10	10.00%	0.00%	0.00%	60.00%	10.00%	0.00%
PIT Tag	30	30.00%	0.00%	13.33%	46.67%	3.33%	0.00%
Smolt	132	0.76%	6.06%	3.03%	58.33%	12.88%	0.00%
Climate	66	0.00%	0.00%	6.06%	28.79%	31.82%	0.00%
Total Graphic Queries	16135	4.72%	0.98%	3.28%	12.22%	2.39%	1.92%

Detail & Composite Reports

River	1599	2.50%	0.44%	2.81%	23.64%	2.13%	1.44%
Adult	13326	5.54%	1.33%	1.97%	19.89%	2.72%	1.99%
ESU	48	0.00%	0.00%	0.00%	50.00%	10.42%	0.00%
Hatchery	183	7.10%	0.55%	0.00%	24.59%	11.48%	2.19%
PIT Tag	449	3.79%	0.67%	8.91%	34.74%	7.80%	1.34%
Smolt	68	0.00%	1.47%	0.00%	61.76%	7.35%	2.94%
Climate	39	5.13%	0.00%	10.26%	25.64%	15.38%	0.00%
CWT	12	0.00%	0.00%	0.00%	0.00%	0.00%	41.67%
Total Report Queries	15724	5.15%	1.20%	2.23%	21.02%	2.98%	1.94%
Total Queries	31859	4.93%	1.09%	2.76%	16.56%	2.68%	1.93%
HTML requests	26829	4.77%	1.49%	2.14%	21.06%	4.11%	2.07%

APRIL 2002

	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	8399	4.24%	0.29%	2.25%	11.78%	2.51%	0.71%
Adult	23880	5.18%	1.58%	4.79%	20.09%	4.10%	1.60%
ESU	89	2.25%	0.00%	0.00%	86.52%	7.87%	1.12%
PIT Tag	157	1.27%	7.01%	0.00%	41.40%	29.94%	0.00%
Smolt	449	22.49%	5.35%	3.34%	51.45%	10.02%	1.78%
Climate	71	0.00%	0.00%	4.23%	29.58%	46.48%	0.00%
Total Graphic Queries	33045	5.14%	1.32%	4.09%	18.70%	4.00%	1.36%

Detail & Composite Reports

River	2338	4.83%	0.73%	14.84%	19.89%	2.78%	4.06%
Adult	40707	4.73%	0.78%	2.96%	19.91%	2.73%	1.70%
ESU	581	0.00%	0.34%	0.34%	93.80%	1.38%	0.52%
Hatchery	345	1.74%	0.29%	4.93%	41.74%	7.83%	2.32%
PIT Tag	1059	1.79%	6.99%	6.70%	44.00%	8.59%	1.79%
Smolt	213	16.43%	8.45%	2.35%	34.74%	3.76%	0.00%
Climate	73	15.07%	0.00%	1.37%	26.03%	19.18%	0.00%
CWT	28	0.00%	0.00%	0.00%	71.43%	0.00%	0.00%
Total Report Queries	45344	4.66%	0.95%	3.64%	21.70%	2.92%	1.81%
Total Queries	78389	4.86%	1.11%	3.83%	20.44%	3.38%	1.62%
HTML requests	56899	4.32%	1.04%	2.93%	22.03%	5.75%	1.61%

MAY 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	8555	2.38%	0.51%	2.26%	9.70%	1.81%	0.92%
Adult	23624	4.14%	0.38%	5.31%	19.16%	2.59%	1.69%
ESU	90	0.00%	4.44%	0.00%	84.44%	0.00%	0.00%
PIT Tag	79	1.27%	0.00%	2.53%	35.44%	1.27%	2.53%
Smolt	539	13.91%	5.19%	0.00%	59.55%	5.94%	0.19%
Climate	53	15.09%	0.00%	15.09%	24.53%	13.21%	3.77%
Total Graphic Queries	32940	3.84%	0.50%	4.43%	17.59%	2.45%	1.47%
Detail & Composite Reports							
River	2316	11.18%	0.56%	7.90%	21.33%	3.41%	8.85%
Adult	45025	5.25%	1.09%	3.59%	22.76%	3.07%	1.89%
ESU	478	0.42%	0.21%	1.46%	90.38%	1.88%	0.00%
Hatchery	267	4.87%	0.75%	0.75%	25.09%	10.86%	5.24%
PIT Tag	903	2.88%	1.55%	4.43%	30.34%	24.70%	6.20%
Smolt	252	13.49%	4.37%	8.73%	30.16%	6.75%	0.40%
Climate	71	15.49%	0.00%	11.27%	8.45%	5.63%	23.94%
CWT	34	0.00%	0.00%	0.00%	8.82%	0.00%	0.00%
Total Report Queries	49346	5.49%	1.08%	3.81%	23.51%	3.54%	2.32%
Total Queries	82286	4.83%	0.85%	4.06%	21.14%	3.10%	1.98%
HTML requests	57576	4.81%	0.91%	3.91%	23.98%	3.43%	2.18%

JUNE 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	8288	4.80%	3.99%	0.98%	54.43%	2.14%	0.43%
Adult	10001	5.90%	0.70%	4.61%	20.23%	2.19%	1.47%
ESU	21	0.00%	0.00%	0.00%	95.24%	0.00%	0.00%
PIT Tag	41	56.10%	4.88%	0.00%	39.02%	0.00%	0.00%
Smolt	447	18.34%	3.36%	2.68%	54.59%	12.30%	2.46%
Climate	6	16.67%	0.00%	0.00%	16.67%	33.33%	0.00%
Total Graphic Queries	18804	5.82%	2.22%	2.95%	36.24%	2.41%	1.03%
Detail & Composite Reports							
River	2049	17.33%	1.71%	5.76%	23.13%	1.37%	7.32%
Adult	19256	5.42%	1.09%	3.87%	25.69%	2.70%	2.64%
ESU	76	0.00%	1.32%	0.00%	89.47%	2.63%	0.00%
Hatchery	186	2.69%	0.54%	1.08%	29.57%	20.97%	13.98%
PIT Tag	446	5.16%	5.83%	4.04%	36.55%	21.52%	10.31%

Smolt	183	13.66%	3.28%	3.28%	43.17%	1.09%	2.19%
Climate	62	41.94%	9.68%	4.84%	11.29%	1.61%	6.45%
CWT	6	0.00%	0.00%	0.00%	0.00%	16.67%	66.67%
Total Report Queries	22264	6.63%	1.28%	4.01%	26.02%	3.09%	3.33%
Total Queries	41068	6.26%	1.71%	3.52%	30.70%	2.78%	2.28%
HTML requests	29537	6.30%	1.08%	3.29%	25.82%	3.71%	2.72%

JULY 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	8462	7.30%	2.74%	0.76%	70.60%	3.20%	0.57%
Adult	8441	10.76%	2.16%	4.54%	23.60%	1.75%	1.54%
ESU	67	0.00%	0.00%	0.00%	41.79%	7.46%	0.00%
PIT Tag	48	50.00%	0.00%	2.08%	35.42%	0.00%	0.00%
Smolt	484	57.02%	4.13%	0.00%	16.74%	9.50%	0.21%
Climate	35	11.43%	0.00%	0.00%	37.14%	8.57%	0.00%
Total Graphic Queries	17537	10.44%	2.47%	2.55%	46.22%	2.70%	1.02%

Detail & Composite Reports							
River	2333	26.45%	1.76%	5.49%	20.75%	3.43%	3.47%
Adult	18292	7.55%	1.14%	3.64%	24.15%	2.84%	1.46%
ESU	119	1.68%	0.00%	0.84%	52.94%	3.36%	0.84%
Hatchery	163	5.52%	0.00%	2.45%	23.93%	3.68%	3.68%
PIT Tag	248	6.85%	2.82%	5.24%	35.48%	5.65%	0.00%
Smolt	273	9.16%	2.56%	3.30%	16.12%	1.10%	0.00%
Climate	58	25.86%	1.72%	8.62%	10.34%	6.90%	0.00%
CWT	10	10.00%	0.00%	10.00%	10.00%	10.00%	40.00%
Total Report Queries	21496	9.62%	1.23%	3.84%	23.93%	2.94%	1.67%
Total Queries	39033	9.98%	1.79%	3.26%	33.94%	2.83%	1.38%
HTML requests	24690	9.85%	1.45%	3.42%	29.88%	3.93%	2.22%

AUGUST 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	4164	4.83%	1.46%	2.98%	65.59%	1.37%	1.68%
Adult	9872	10.15%	1.41%	5.16%	20.43%	2.15%	1.02%
ESU	58	1.72%	0.00%	1.72%	62.07%	0.00%	0.00%
PIT Tag	29	10.34%	0.00%	0.00%	75.86%	0.00%	0.00%
Smolt	127	25.20%	3.15%	12.60%	38.58%	6.30%	4.72%
Climate	25	0.00%	0.00%	40.00%	28.00%	20.00%	0.00%
Total Graphic Queries	14275	8.68%	1.43%	4.62%	34.06%	1.98%	1.24%

Detail & Composite Reports							
River	1926	17.55%	0.31%	4.05%	22.17%	1.87%	4.98%
Adult	20601	6.88%	1.10%	3.63%	21.51%	2.76%	2.04%
ESU	368	0.54%	0.00%	0.54%	82.34%	2.17%	0.00%
Hatchery	149	6.71%	0.00%	0.00%	11.41%	3.36%	26.17%
PIT Tag	358	5.87%	0.00%	14.53%	33.52%	3.07%	0.84%
Smolt	165	10.30%	7.88%	1.82%	23.03%	2.42%	1.82%
Climate	44	2.27%	2.27%	6.82%	40.91%	6.82%	4.55%
CWT	6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Report Queries	23617	7.65%	1.05%	3.75%	22.67%	2.69%	2.38%
Total Queries	37892	8.04%	1.19%	4.08%	26.96%	2.42%	1.95%

HTML requests	31054	6.64%	1.23%	3.48%	26.73%	2.77%	1.81%
SEPTEMBER 2002	Total	%Gov	%Mil	%US	%IP	%Edu	%Org
Graphic Queries							
River	2170	10.78%	3.78%	4.29%	39.40%	5.81%	1.06%
Adult	11832	7.41%	0.64%	4.53%	22.84%	1.72%	3.00%
ESU	9	22.22%	22.22%	0.00%	11.11%	11.11%	0.00%
PIT Tag	42	9.52%	0.00%	0.00%	30.95%	0.00%	0.00%
Smolt	134	26.87%	0.00%	0.00%	51.49%	4.48%	0.00%
Climate	27	22.22%	0.00%	0.00%	59.26%	14.81%	0.00%
Total Graphic Queries	14214	8.15%	1.13%	4.43%	25.73%	2.39%	2.66%
Detail & Composite Reports							
River	1345	8.85%	1.49%	3.05%	26.10%	2.38%	7.06%
Adult	22451	6.07%	1.08%	4.52%	21.13%	3.50%	1.64%
ESU	191	3.66%	2.09%	3.14%	38.74%	10.99%	12.04%
Hatchery	159	1.26%	3.77%	0.00%	32.08%	12.58%	0.63%
PIT Tag	373	4.56%	0.27%	8.58%	49.06%	1.34%	3.49%
Smolt	119	8.40%	0.00%	1.68%	6.72%	9.24%	14.29%
Climate	40	0.00%	2.50%	2.50%	20.00%	12.50%	0.00%
CWT	13	0.00%	0.00%	0.00%	7.69%	0.00%	0.00%
Total Report Queries	24691	6.14%	1.11%	4.44%	21.95%	3.56%	2.10%
Total Queries	38905	6.88%	1.12%	4.43%	23.33%	3.14%	2.30%
HTML requests	29522	6.15%	1.06%	4.09%	24.19%	3.43%	2.52%
Total Graphic Queries	199496	5.72%	1.25%	3.60%	21.95%	2.93%	1.51%
Total Report Queries	240807	6.19%	2.05%	3.69%	22.20%	3.67%	2.39%
Total Queries 2002	440303	5.98%	1.69%	3.65%	22.08%	3.33%	1.99%