Northwest Power and Conservation Council

Fourth Annual Report to the Northwest Governors on Expenditures of the Bonneville Power Administration

to Implement the Columbia River Basin Fish and Wildlife Program of the Northwest Power and Conservation Council

1978 - 2003

February 2005

Council Document 2005-05

U.S. Army Corps of Engineers

Detroit Lake on Oregon's North Santiam River, in the shadow of Mount Jefferson, is an example of the multiple uses of rivers and dams in the Columbia River Basin — recreation, flood control, and hydro-power generation.

Executive Summary

For Fiscal Year 2003, the Bonneville Power Administration reported total costs of $506.8 million for its Columbia River Basin fish and wildlife activities. This brings the grand total, 1978-2003, to $6.37 billion. That amount does not reflect $1.04 billion Bonneville has received since 1995 for a portion of it's expenditures to improve fish passage at dams. The credit, which is explained on page 6 of this report, effectively reduces the grand total to $5.64 billion.

These costs, which were supplied to the Council by Bonneville and not independently verified by the Council, are detailed in the Appendix of this report.

- $1,163,400,000 ($140.7 million in 2003) for the Council's direct program.
- $16,500,000 ($6.5 million in 2003) for "high priority" and "action plan" projects identified by Bonneville. The high-priority projects were intended to bring immediate benefits to all species listed for protection under the Endangered Species Act in advance of subbasin planning. Draft subbasin plans were submitted to the Council in May 2004 and, after public and scientific review, amended into the fish and wildlife program in late 2004 and early 2005. The "action plan" projects were intended to bring immediate benefits to ESA-listed salmon and steelhead that were affected by altered hydropower dam operations in the spring and early summer of 2001 to offset impacts caused by drought.
- $634,100,000 ($52.6 million in 2003) to reimburse the U.S. Treasury for the power-generation share of other federal agency costs to mitigate the impact of hydropower on fish and wildlife. Primarily these reimbursements are paid to the U.S. Army Corps of Engineers, Bureau of Reclamation, and U.S. Fish and Wildlife Service for efforts to improve fish and wildlife survival apart from the Council's program, such as operation and maintenance of fish passage facilities and federal fish hatcheries. Since 1997, Bonneville has funded these investments directly rather than reimbursed the Treasury for them.
- $1,034,300,000 ($56.7 million in 2003) in payments for bonds issued by Bonneville to pay for capital investments to improve fish passage at the dams.
- $2,317,900,000 ($171.1 million in 2003) for power purchases to replace hydropower that could not be generated because of legally required river operations that protect migrating fish but reduce hydropower generation.

The spending amounts in this report were supplied by the Bonneville Power Administration at the Council's request and were not independently verified by the Council or any other party.

- $1,205,400,000 ($79.2 million in 2003) in forgone revenue, the calculated value of hydropower that could not be sold because of legally required river operations to assist fish passage and improve fish survival, such as water spills at the dams. Fish passage was not the only source of forgone revenue. See page 6 of this report.
- $1,437,754,000 on fish and wildlife, which includes $1,096,601,000 on anadromous fish projects; $183,690,000 on resident fish (those that don't swim to the ocean); and $157,463,000 on wildlife.

Peter Lewellyn

The Western Meadowlark is one of the species whose habitat was affected by the construction and operation of hydropower dams.

Background

In July 1999, the governors of Idaho, Montana, Oregon and Washington asked the Northwest Power and Conservation Council to begin reporting annually on expenditures of the Bonneville Power Administration to implement the Council's Columbia River Basin Fish and Wildlife Program. This is the Council's fourth annual report. It provides an update through Fiscal Year 2003 and also includes information on salmon and steelhead in the Columbia River Basin. Information in this report was supplied by Bonneville in response to requests from the Council.

The Northwest Power Act and the Northwest Power and Conservation Council

The Northwest Power Act of 1980, a federal law, authorized the states of Idaho, Montana, Oregon and Washington to form the Northwest Power and Conservation Council (it was known until 2003 as the Northwest Power Planning Council). The Act directs the Council to prepare a program to protect, mitigate and enhance fish and wildlife of the Columbia River Basin that have been affected by the construction and operation of the hydropower system. The Act also directs the Administrator of the Bonneville Power Administration, the federal agency that sells electricity generated at federal dams in the Columbia River Basin, to use the Bonneville fund in a manner consistent with the Council's program to protect, mitigate and enhance fish and wildlife.

The Columbia River Basin Fish and Wildlife Program

The Council is a planning, policy-making and reviewing body. Consistent with the Northwest Power Act, the Council develops the fish and wildlife program and monitors its implementation. The program is implemented primarily by Bonneville but also by the region's fish and wildlife agencies and tribes, the U.S. Army Corps of Engineers, the Bureau of Reclamation and the Federal Energy Regulatory Commission and its licensees. The program directs scientific research; habitat protection, including acquisitions and easements;[1] and construction projects to improve habitat and fish passage, and hatchery development and operation. The program also establishes certain reservoir elevations and flow requirements to protect anadromous and resident fish and their habitat. Other measures call for using stored water to maintain appropriate water temperatures and protect streambeds.

Since 1996, the Council and Bonneville solicit projects to implement the program. The Council submits project proposals for review by the Columbia Basin Fish and Wildlife Authority,[2] the Independent Scientific Review Panel[3] and the general public and

1 Habitat acquisitions are credited against identified habitat losses attributable to the construction of hydropower dams. The crediting unit is called a "Habitat Unit," which is a measure of both the quantity and quality of the acquired site and, thus, its suitability for targeted species. In 2004, the Council and Bonneville continued negotiations that began in 2003 over two important issues: 1) whether, and if so how, to change the formula for calculating habitat unit acquisitions against identified losses, and 2) whether Bonneville should use its capital borrowing authority to acquire habitat.

2 The Authority is an association of state and federal fish and wildlife agencies and the 13 Indian tribes in the Columbia River Basin. The Authority coordinates planning and implementation of fish and wildlife management issues among its members.

3 The Independent Scientific Review Panel was created by the Council in response to a 1996 amendment to the Northwest Power Act that called for greater scientific scrutiny and public accountability of expenditures through the Council's program. The 11 members of the Panel are nominated by the National Academy of Sciences and appointed by the Council.

then recommends projects to Bonneville for funding. The Council also requests NOAA Fisheries and the U.S. Fish and Wildlife Service to provide input on projects required to meet their Endangered Species Act obligations.

In May 2004, the Council received 59 draft subbasin plans that were developed over nearly a two-year period by local entities, state and federal fish and wildlife agencies, and Indian tribes to assess environmental conditions and fish and wildlife populations in tributary subbasins throughout the Columbia River Basin. As the Council amends subbasin plans into the fish and wildlife program, they will be used to direct the solicitation, review and recommendation of projects to implement the program.

Fiscal Year 2003 Expenditures, by Category

Direct program expenditures

Direct program projects are those that are reviewed by the ISRP and CBFWA and then recommended to Bonneville by the Council.

For 2003, Bonneville reported direct-program costs of $152.3 million.[4] Habitat projects accounted for $39.4 million or 25.9 percent of the total; fish production accounted for $34.9 million or 22.9 percent; expenditures related to mainstem survival of fish in the Columbia and Snake rivers totaled $3.6 million or 2.3 percent[5] ; and fish harvest programs accounted for $1.9 million, or 1.2 percent. Bonneville also reported direct program costs of $32.6 million for research and evaluation, or 21.4 percent of the total; $20.9 million or 13.7 percent for monitoring; $6.4 million or 4.2 percent for regional coordination efforts related to the fish and wildlife program, such as the work of the Columbia Basin Fish and Wildlife Authority; and $12 million or 7.9 percent for Bonneville's internal program support.

The program addresses hydropower impacts on anadromous fish, resident fish, and wildlife. Anadromous fish are those that spawn in freshwater, migrate to the Columbia River estuary as juveniles, spend their adult lives in the Pacific Ocean, and then return to their freshwater birthplaces to spawn and die. Resident fish are those that live and migrate within freshwater rivers, streams, and lakes.

In 2003, Bonneville's costs attributed to anadromous fish totaled $105.3 million, spending on resident fish totaled $22.7 million, and spending on wildlife totaled $7.6 million. These total $135.6 million, which is $16.4 million less than the total. The difference is in Bonneville's external and internal program support costs. External program support ($4.4 million in 2003) includes costs such as data management to support all programs. Internal program support ($12 million in 2003) includes contracts for program review and independent analysis of the program, and Bonneville's overhead and personnel costs.

Bonneville obligated $152.3 million to fish and wildlife in 2003. Anadromous fish costs accounted for 69 percent of the total, resident fish expenditures accounted for 14.9 percent, external and internal program support accounted for 10.8 percent, and wildlife expenditures accounted for 5 percent.[6]

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4 Bonneville reported these amounts as "obligations," or planned spending amounts. Actual expenditures, detailed in Table 1 and 2, page 25, were lower.

5 These do not include expenditures on fish passage facilities at the federal dams, which are reported separately in the "reimbursable" category and are not funded through the Council's direct program.

6 Through the Council's program, wildlife losses attributable to construction of the dams were identified. Losses attributable to dam operations remain to be quantified. The Council and Bonneville worked with the region's wildlife managers and Indian tribes to develop a system of crediting habitat acquisitions against the losses. Taken together, acquired and enhanced acres are counted as mitigation against losses. Habitat unit gains, which result when inundation of reservoirs creates new habitat for certain species, are estimated and subtracted from total losses to calculate net losses. Bonneville estimates the development of the hydrosystem caused a total loss of 404,567 habitat units for all affected species. There were compensating habitat unit gains of 53,487, leaving a net loss of 351,080 habitat units. Bonneville reports that through Fiscal Year 2003, 160,145 habitat units have been acquired through acquisitions of habitat or habitat-protection agreements. An additional 11,285 habitat units have been acquired but not yet credited to losses for specific species. That leaves 190,935 habitat units left to mitigate, although the total could be higher to the extent mitigation exceeded losses in some areas. See Table 14C in the appendix of this report.

Power purchases

Measures in the Council's program and in the 2000 Biological Opinions on Hydropower Operations issued by NOAA Fisheries and the U.S. Fish and Wildlife Service can take water away from hydropower generation. These include river and dam operations to assist juvenile fish passage. To make up the lost generation when these operations occur, Bonneville buys electricity from other suppliers and charges the cost against the fish and wildlife program as an expense. These purchases are part of Bonneville's larger wholesale power purchases. Bonneville buys power from other suppliers when the federal power system can't produce all the power Bonneville's customers need.

To determine how much of its power purchases to attribute to lost hydropower, Bonneville performs two annual calculations of its total power purchases — one that includes the fish passage operations and one that does not. Bonneville attributes the difference in power purchases to the fish requirements and, therefore, assigns the costs to its fish and wildlife budget. In 2003, Bonneville assigned power purchases totaling $171.1 million to its fish and wildlife budget.

Forgone revenue

River and dam operations can result in lost income for Bonneville. The budget term for the lost income is forgone revenue. To determine forgone revenue, Bonneville calculates the net value of the hydropower revenues lost as a result of fish operations on an annual basis. Bonneville charges forgone revenue against its fish and wildlife budget as an expense. In 2003, Bonneville calculated forgone revenue of $79.2 million.

Reduced hydropower generation is the primary cause of forgone revenue, but other uses of the river system also take water away from power generation. The dams of the Federal Columbia River Power System were authorized for multiple purposes in addition to hydropower. These include irrigation, navigation, recreation and, at some dams, flood control. Collectively the non-power uses of the dams account for 22.3 percent of their authorized purposes, and hydropower accounts for 77.7 percent.[7]

In the Northwest Power Act, Congress established a crediting system for Bonneville, which allows the agency to pay all of the costs of mitigating the impact of dam operations on fish and wildlife and then receive a credit against its annual debt-service payment to the U.S. Treasury for the 22.3 percent attributable to non-power uses. The law authorizes credits in two categories of expenditures, the direct program and replacement power purchases. In 2003, Bonneville calculated a total credit of $152.3 million. This brought to $1.04 billion the amount of credit Bonneville has taken for fish-related expenses since 1995, when the credits first were taken.

7 The largest of the non-power uses is irrigation, which accounts for net water withdrawals from the Columbia/Snake river system of about 14.4 million acre-feet of water annually. According to a Council analysis, this volume of water, were it left in the river and used to generate hydropower instead of being withdrawn for irrigation, would yield about 625 average megawatts of electricity (that is, averaged across all 12 months) with a value of about $145 million per year (this calculation assumes an annual average value for wholesale electricity of $28 per megawatt-hour).

High-priority and action plan projects

In 2001, 2002, and 2003, Bonneville provided funding for what it determined to be "high priority" and "action plan" projects it believes deliver on-the-ground, immediate biological benefits to threatened and endangered fish that were affected by the drought and emergency hydropower operations in 2000 and 2001. "High priority" projects were intended to bring immediate benefits to species listed for protection under the Endangered Species Act. "Action plan" projects were intended to bring immediate benefit to anadromous fish — ESA-listed as well as unlisted species — directly affected by emergency hydropower operations that were imposed during the drought year of 2001. That year, Bonneville declared a power emergency and sharply reduced the amount of water spilled over dams during the spring and early summer salmon and steelhead migration period in order to keep water in reservoirs for power generation. Many juvenile fish were barged downriver, but fish entering the river below McNary Dam cannot be collected for barge transportation. The reduced spill primarily affected these fish but also affected those from farther upriver that were not collected for transportation. In 2001, Bonneville assigned $2.9 million to high-priority and action plan projects; in 2002, the amount was $7.1 million, and in 2003 the amount was $6.5 million.

U.S. Army Corps of Engineers

Lower Granite Dam, here spilling water to aid juvenile fish passage, is one of four federal dams on the lower Snake River

Endangered Species Act Status of Columbia River Basin Fish Populations

Species	Status	Date listed
Sockeye, Snake River	Endangered	1991
Chinook, Snake River Fall-run	Threatened	1992
Chinook, Snake River Spring/Summer-run	Threatened	1992
White Sturgeon, Kootenai River	Endangered	1994
Steelhead, Upper Columbia	Threatened	1997
Steelhead, Snake River Basin	Threatened	1997
Steelhead, Lower Columbia River	Threatened	1998
Bull Trout, Columbia Basin	Threatened	1998
Chinook, Lower Columbia River	Threatened	1999
Chinook, Upper Willamette River	Threatened	1999
Chinook, Upper Columbia River Spring-run	Endangered	1999
Chum, Columbia River	Threatened	1999
Steelhead, Upper Willamette	Threatened	1999
Steelhead, Middle Columbia River	Threatened	1999
Coho, Lower Columbia	Threatened	2004

Jeff Pierson

The Snake River canyon near Twin Falls, Idaho.

Fiscal Year 2003 Spending Issues

In these annual reports, the Council includes updated information on key issues related to funding and implementing the fish and wildlife program. Here is a brief review of current issues:

Budget formulation in response to Bonneville's financial crisis

In early December 2001, Bonneville Administrator Steve Wright told the Council Bonneville would increase spending to implement the program and the 2000 Biological Opinions during the current rate period to an average of $36 million per year in capital funding and $150 million per year in expense spending.[8] This would increase average annual spending from $127 million to $186 million. Wright said the commitment to $150 million for the expense part of the budget likely would yield an annual average of $139 million in actual expenditures.

In 2002, however, Bonneville faced a financial crisis as the result of the West Coast energy crisis of 2001. The financial crisis arose from Bonneville's power purchases in 2000 and 2001, when wholesale power prices increased dramatically. In Fiscal Year 2001, Bonneville spent nearly $3 billion on power purchases and assigned $1.39 billion to the fish and wildlife budget. This caused the agency's cash reserves to decline by more than $800 million. In November 2002 Wright announced Bonneville faced a revenue gap of $1.2 billion for the 2002-2006 rate period and, as a result, needed to reduce its expenditures. A month later Wright told the Council that Bonneville could spend no more than $139 million on implementation of the direct program in Fiscal Year 2003.

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In response, the Council worked with Bonneville and the Columbia Basin Fish and Wildlife Authority to develop spending estimates and caps for individual projects in the program and forwarded these to Bonneville in February 2003. In all, the Council recommended about $34 million in fish and wildlife spending deferrals and reductions for the fiscal year. In order to ensure expenditures stayed within the cap, a detailed project spending tracking system and a funding reallocation system were developed to monitor spending and evaluate projects that were likely not to accrue their planned budget amounts. Money that had been approved but was not likely to be spent in the fiscal year was made available to projects that were severely impacted by the 2003 decisions. In this way, expenditures were managed, projects were funded, and work was accomplished with expenditures of $140.7 million.

Subbasin plans

In May 2004, culminating nearly two years of work, locally developed plans that will guide future fish and wildlife projects in the Columbia River Basin were submitted to the Council for review. The draft plans for tributary subbasins of the Columbia River were developed collaboratively by local landowners,

8 Actual spending was lower: $140.7 million for the direct program and $11.6 million in capital funding.

state, federal and local governments, Indian tribes, and interest groups representing industries and environmental advocates.

A total of 59 draft subbasin plans were submitted to the Council. The draft plans were reviewed by the Council's Independent Scientific Review Panel (ISRP) and also made available for public review and comment. Those reviews ended August 12, and following the issue of draft amendments and further public comment the Council amended the plans into the fish and wildlife program late in the year and in early 2005. The plans will help guide the Council's decisions on which projects to recommend to Bonneville for funding, beginning with Fiscal Year 2006.

Each subbasin plan includes an assessment of environmental conditions, an inventory of existing and historic projects and past accomplishments, and a management plan for addressing problems and improving survival of species. The plans are designed to integrate local, state, federal and tribal goals for fish and wildlife recovery, including the Endangered Species Act .

Crediting wildlife habitat acquisitions against identified losses

The Council and Bonneville are continuing to discuss the issue of how to accurately credit acquired habitat for wildlife against identified habitat losses. In 2004, the Council and Bonneville also continued working on a long-term financial plan for wildlife mitigation.

Wildlife habitat purchases can be expensive. Bonneville continues to use its capital borrowing authority to buy land when it is necessary for certain projects, such as construction of a fish hatchery. The Council has recommended that Bonneville use its borrowing authority to buy wildlife habitat, as well, in order to reduce the annual costs of these purchases. A standard for capitalizing wildlife habitat purchases was developed as part of the long-term financial plan, and Bonneville has used it for project implementation in a few instances with limited success.

Long-term funding agreement

In 2002, a six-year budget agreement that established an annual average funding amount for the Council's program expired and was not renewed. In order to restore some certainty to long-term funding of the program, the Council, Bonneville and others are working to develop an agreement or understanding that includes the Bonneville fish and wildlife funding commitment for the next several

Derek Dammann

River otter habitat was reduced by the construction and operating of hydropower dams, and is bring restored through the Council's program.

years, as well as agreement regarding rules for project review and funding and for program, project and budget management.

The Council has identified key issues that must be addressed in a new long-term funding agreement, including 1) integration of Northwest Power Act and ESA requirements through the Council's project review and recommendation process; 2) financial impacts of new ESA measures and others that will exceed available funding; 3) development of a methodology for determining the types of costs that will come with subbasin plans and what could be done with a given amount of money; and 4) which of Bonneville's costs should be included in the agreement (direct program, reimbursables, past capital investments) and how to allocate funds among them.

Plans for scientific research and monitoring and evaluation

For more than 20 years the Council has supported a diverse range of research efforts, and these have substantially advanced the state of scientific understanding of fish and wildlife restoration. In order to focus on key research needs, the Council drafted a Columbia River Basin Research Plan for the primary purpose of guiding the development of a research program that would be implemented through the fish and wildlife program (see Document 2004-13 on the Council's website, www.nwcouncil.org).

The draft plan, which the Council plans to complete early in 2005 following a public comment period, is intended to assist policymakers and decisionmakers responsible for natural resource management within the Columbia River Basin. The plan also will provide useful guidance to planners, researchers, and project sponsors. The plan recognizes other research plans as important components of a potentially integrated regional research program and provides a framework for establishing linkages between existing and new research. The plan recommends research to be funded through the fish and wildlife program, as well as recommendations for research that will require collaborative, multi-party funding commitments by the Council and other entities with similar research mandates.

In a related matter, the Council also has supported the Pacific Northwest Aquatic Monitoring Partnership (PNAMP). The purpose of PNAMP is to coordinate important scientific monitoring information at the appropriate scope needed to inform public policy and resource management decisions. Members of the partnership have included state, federal, and tribal personnel with a common interest in coordinating monitoring of various aspects of watershed conditions, fish populations, project effectiveness monitoring, and management of resulting data. Through a public, collaborative process involving state, federal and tribal fish and wildlife scientists, managers and policymakers, and interested members of the public, the Council and NOAA Fisheries will be promoting the development of a system to serve as a repository for high quality, reliable and verifiable information that would be available to a broad range of users, including fish and wildlife program managers, researchers, scientists and the general public. A goal is to make all of the relevant data accessible through single Internet queries.

Artificial production review

In 2004, the Council culminated several years' work and recommended changes in the way fish hatcheries are operated in the Columbia River Basin. The recommendations seek to reform hatchery operations so that in the future hatchery production and natural production of fish will be better integrated in order to increase the geographic range and genetic diversity of fish production while reducing risks to the survival of weak, naturally spawning runs.

Based on its review of all 227 hatcheries and hatchery programs in the basin, the Council developed three broad recommendations for public review and comment:

- The Council, NOAA Fisheries, and Bonneville should facilitate a regional discussion that clearly identifies basinwide goals and priorities for salmon and steelhead. The Council's subbasin planning is an appropriate process to design and implement long-term goals and priorities, and strategies to achieve them. This will reduce disparities among production policies of existing hatcheries.
- Agencies that oversee hatcheries should adopt prioritized criteria to reduce hatchery risk to weak, naturally spawning stocks through techniques such as 1) improving broodstock management; 2) integrating naturally spawning fish into hatchery broodstocks or reducing excessive straying of hatchery-bred fish; 3) improving fish passage; 4) preventing disease and 5) improving water quality. Each hatchery should have a plan for future activities based on its genetics management plan and recommendations for fish production developed in the subbasin planning process.
- Each hatchery should be reviewed periodically to direct changes and assess progress toward goals and objectives for the facility.

Appendix A: Graphs

Figure 1: BPA Fish and Wildlife Cumulative Expenditures 1978-2003

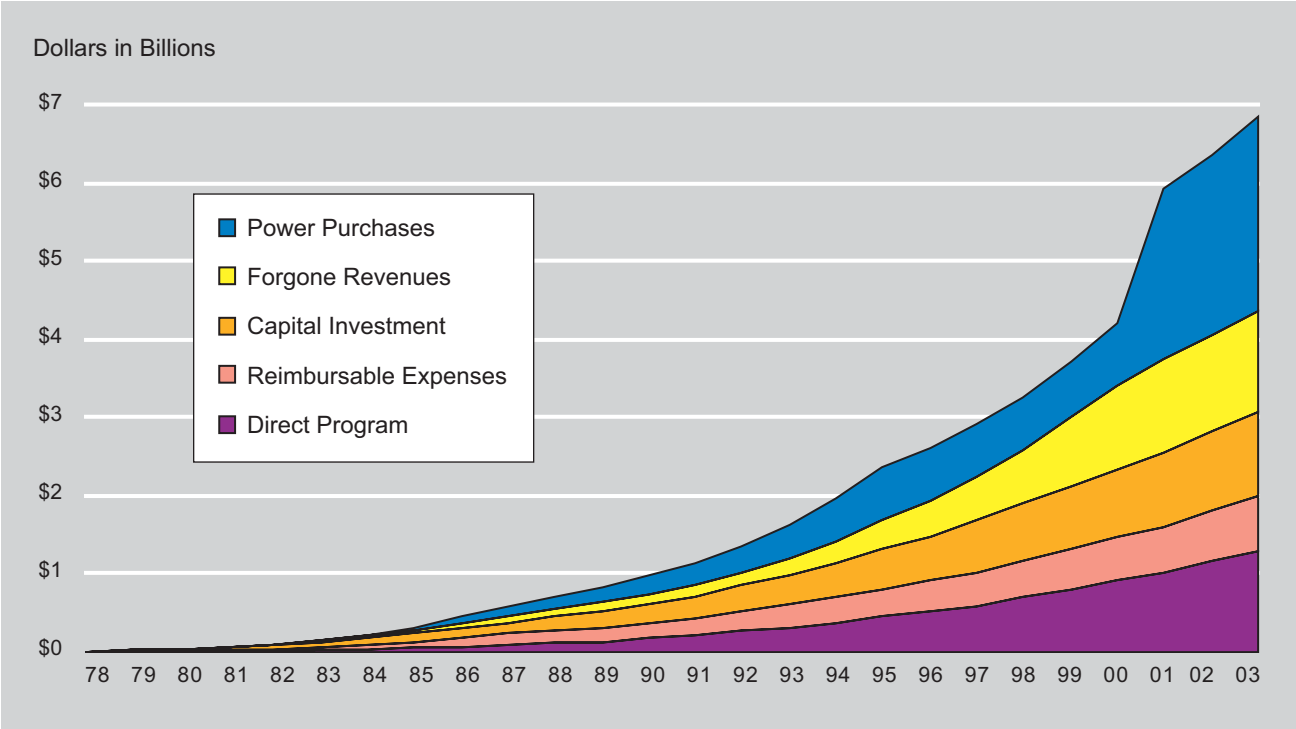


Figure 2: BPA Fish and Wildlife Total Annual Expenditures 1978-2003

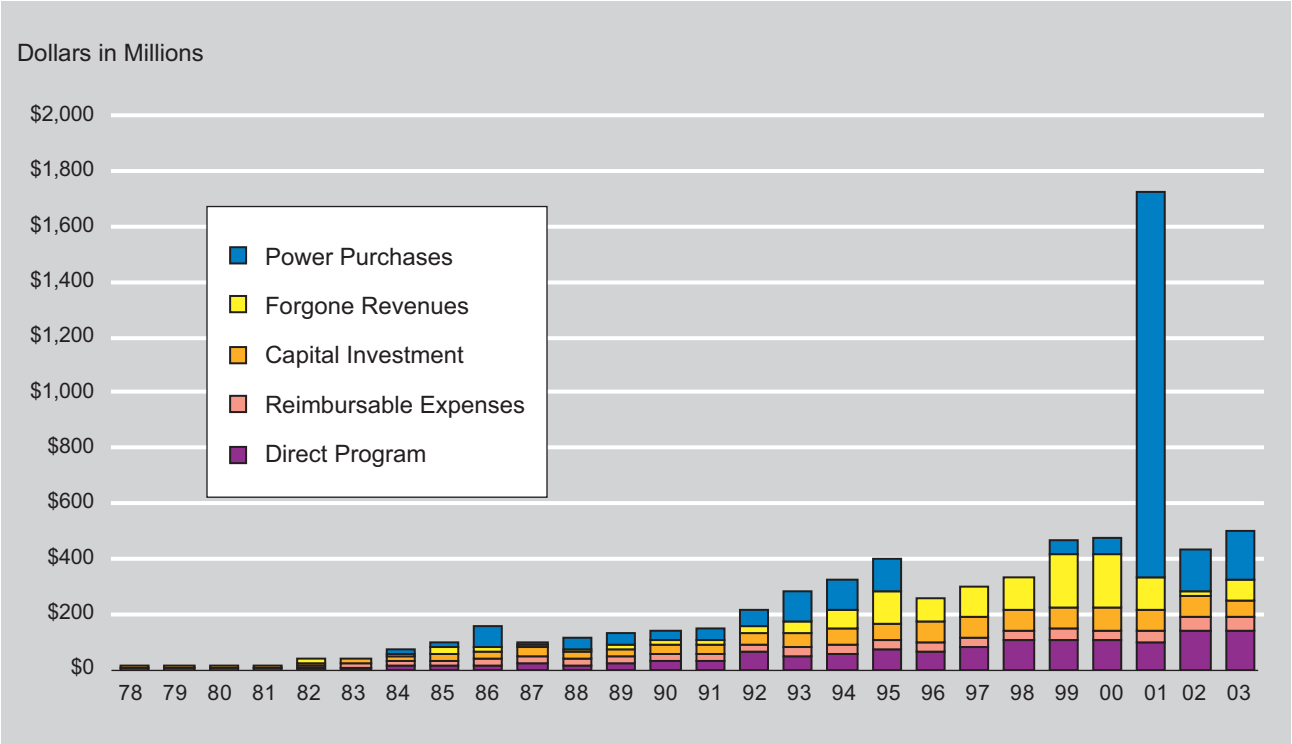


Figure 3: BPA Fish and Wildlife Obligations by Species 1978-2003

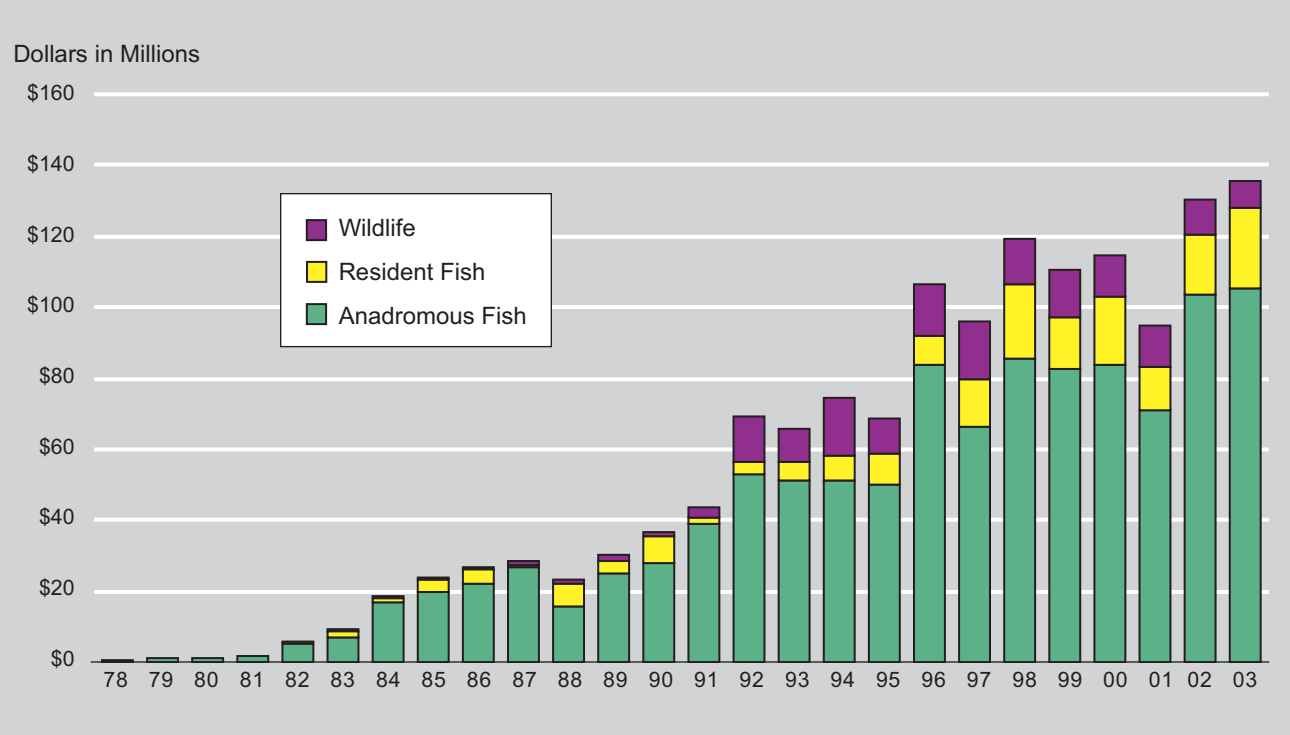


Figure 4: BPA Fish and Wildlife Obligations by General Purpose 2003

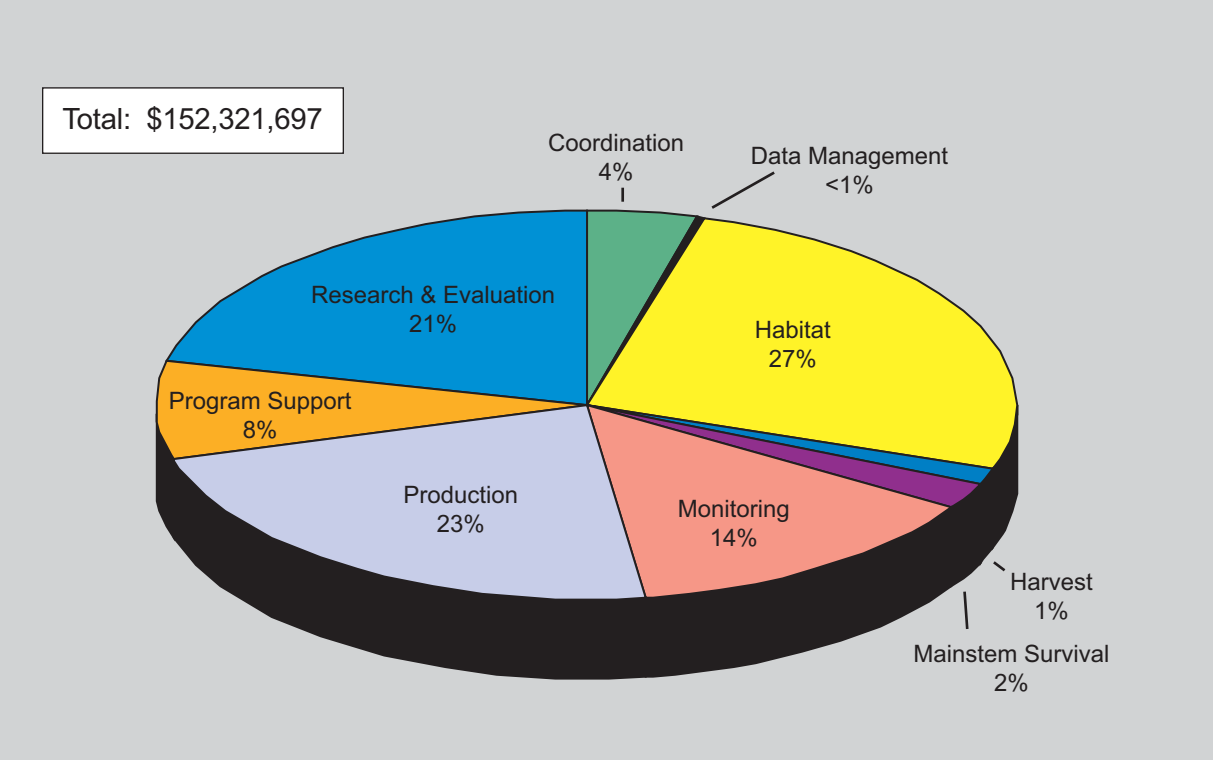


Figure 5: BPA Direct Program Budget, Obligations by Province
1978-2003

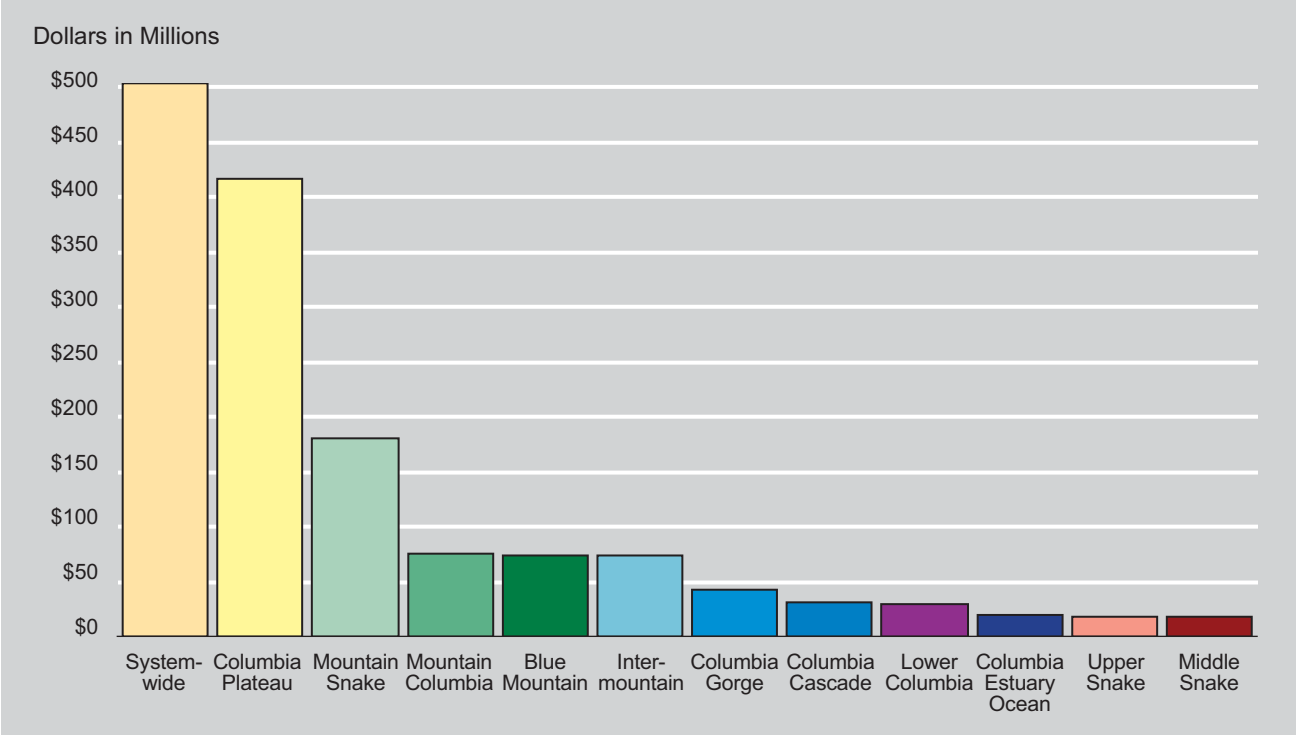
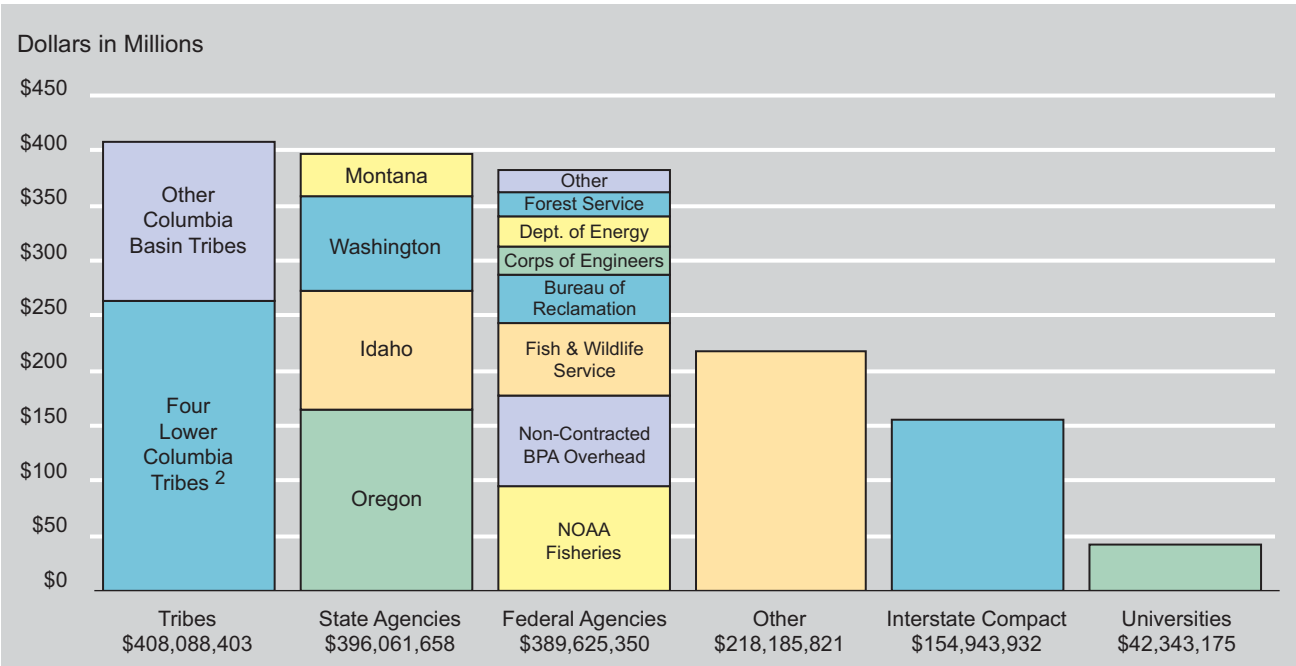


Figure 6: BPA Direct Program Budget, Obligations by Prime Contractor [1]
1978-2003



1 Primary contractor may have subcontracted part or all of contract
2 Includes: Yakama, Warm Springs, Nez Perce, and Umatilla

Figure 7: Total Estimated Salmon and Steelhead Entering the Columbia River and Passing Bonneville Dam, 1938-2002*

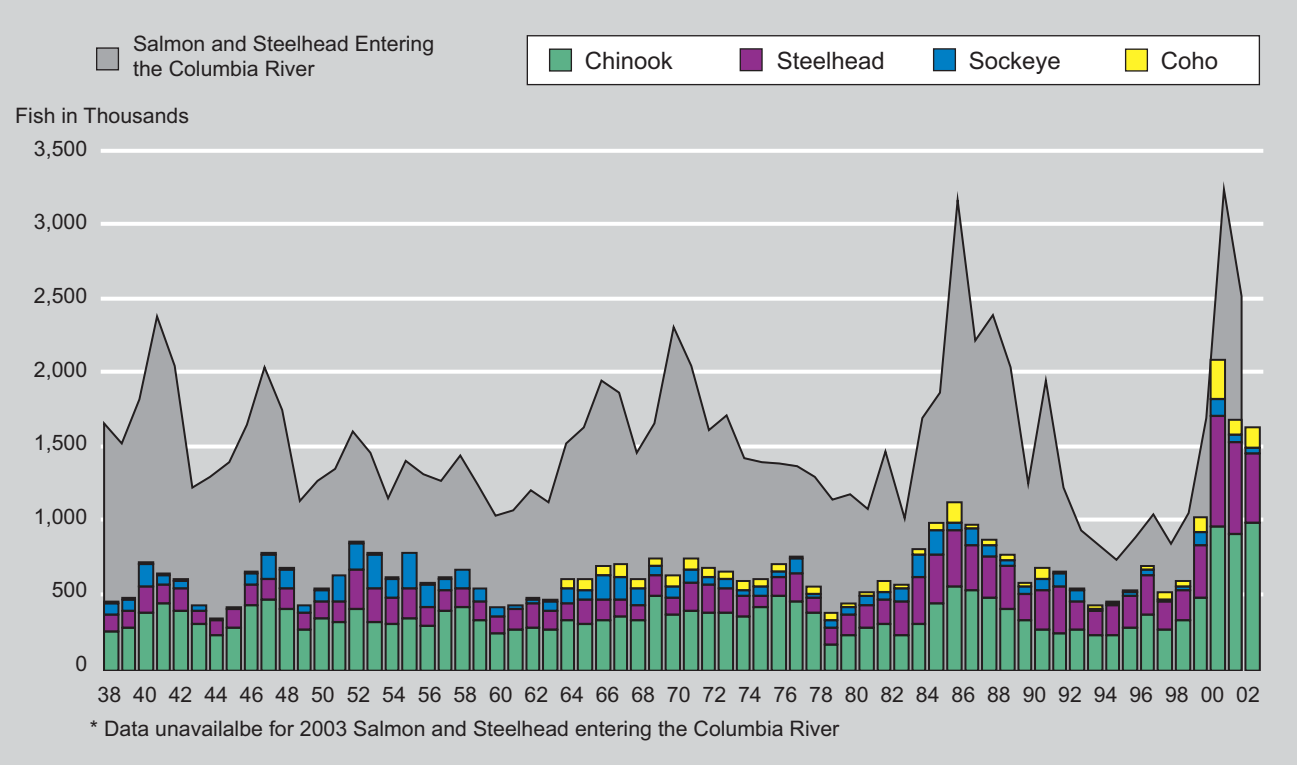
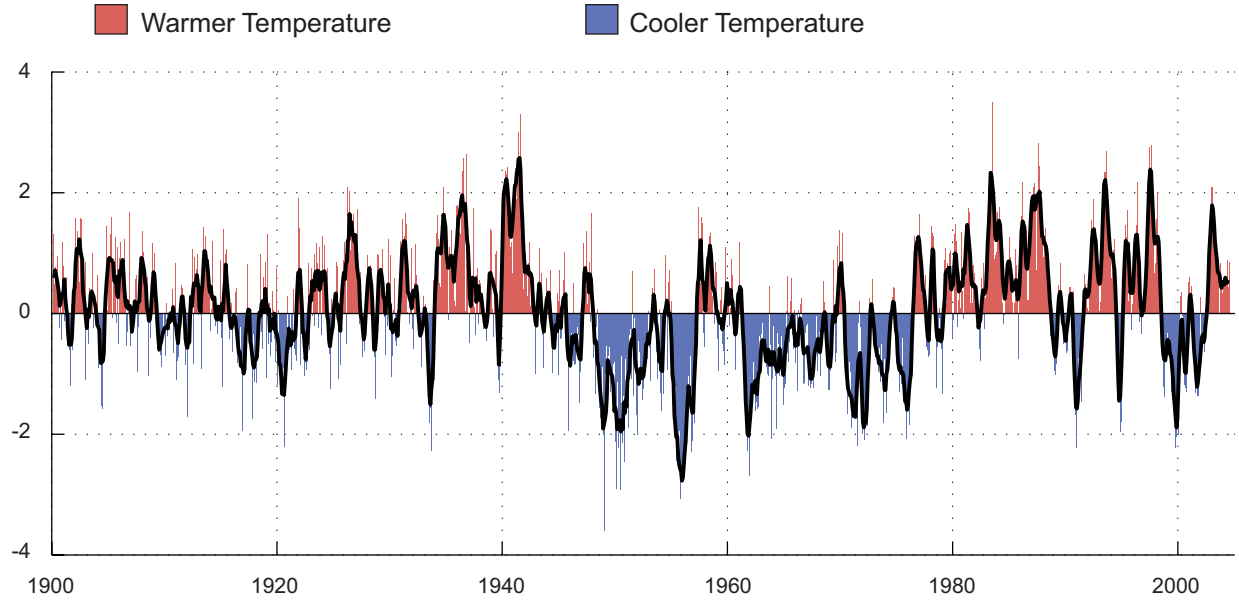


Figure 8: Ocean Temperature Cycles*
January 1900 - August 2004



* This figure, compiled by fisheries students at the University of Washington, shows cycles of warmer and cooler Pacific ocean climate over time. Cool cycles generally are better for ocean survival of Columbia River Basin salmon than warmer cycles.

Figure 9: Spring and Summer Chinook Salmon Passing Bonneville Dam 1977-2003

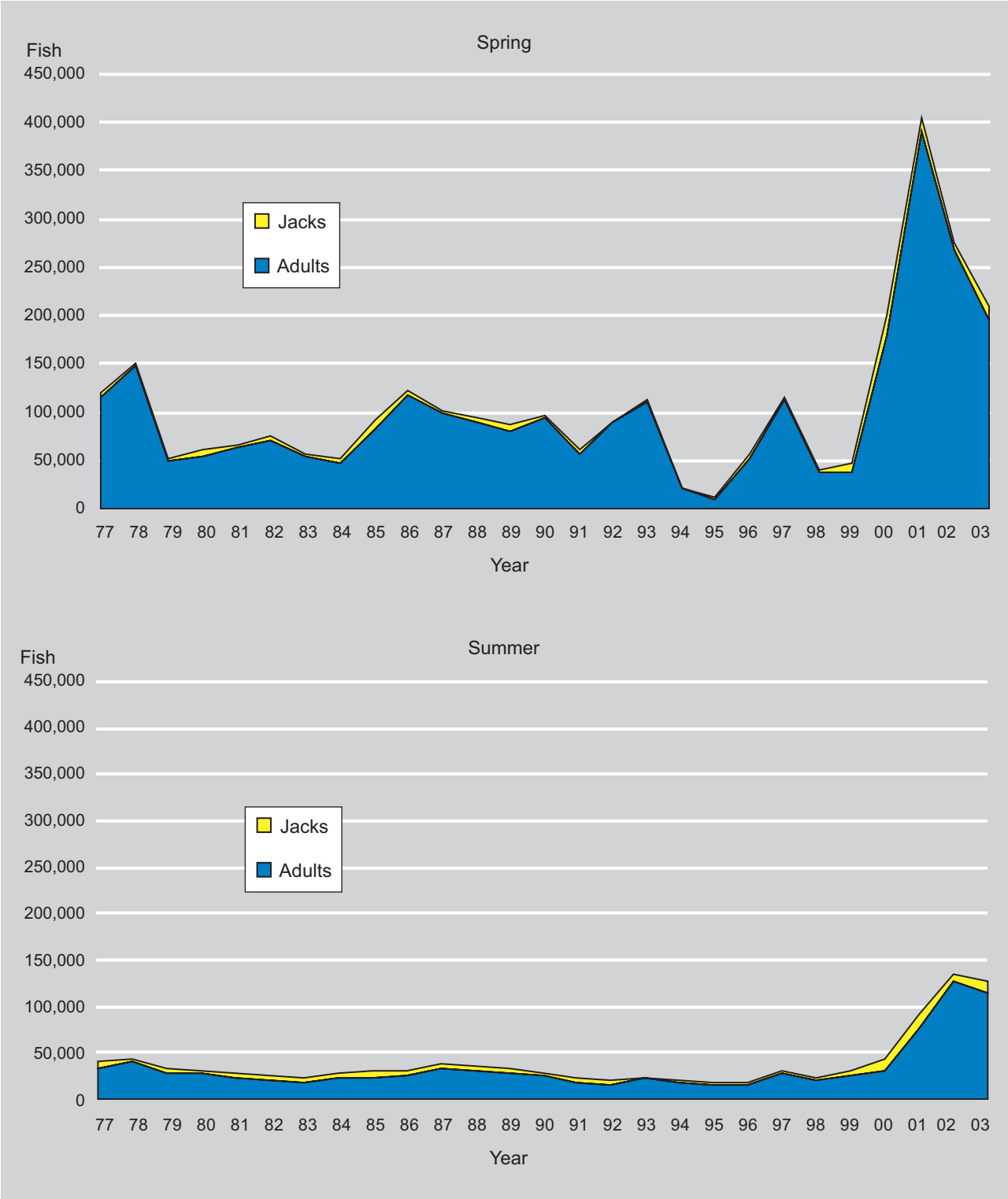
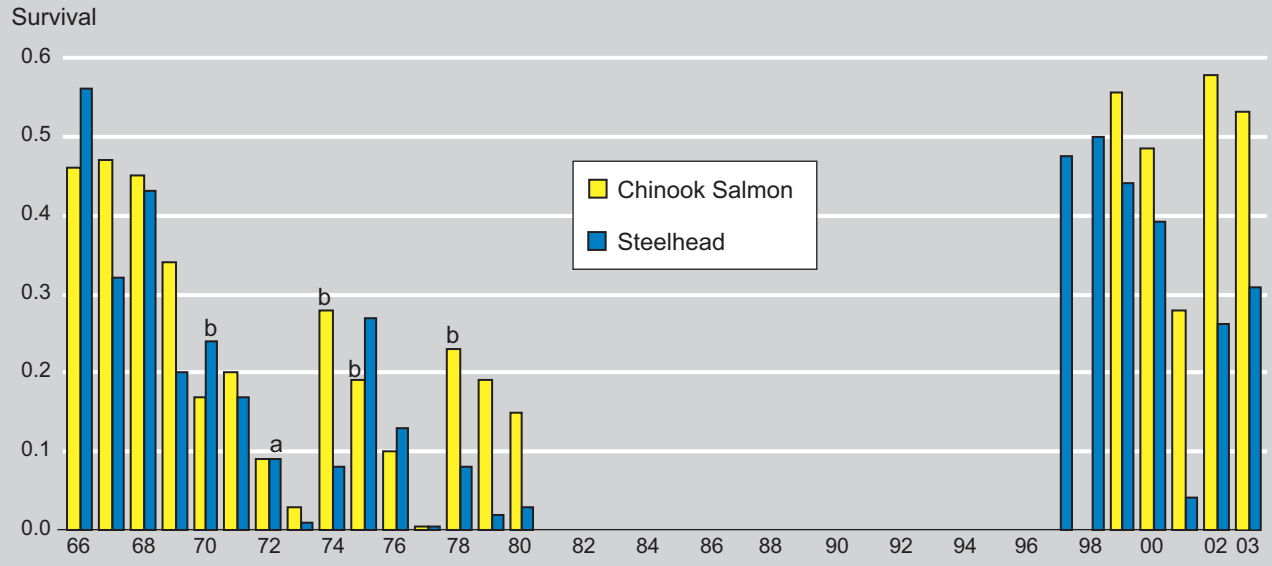


Figure 10: Estimated Inriver Juvenile Survival through the Hydrosystem 1966-1980, 1997-2003*



a Extrapolation based on three dams and reservoirs as survival estimates between Ice Harbor Dam and the Dalles Dam did not change between 1966 and 1970 after completion of John Day Dam in 1968.

b Based on product of two non-rounded numbers.

* Graph shows survival of Snake River fish.

Figure 11: Where Do the Fish Go? Fish Counted at Each Mainstem Dam 2003

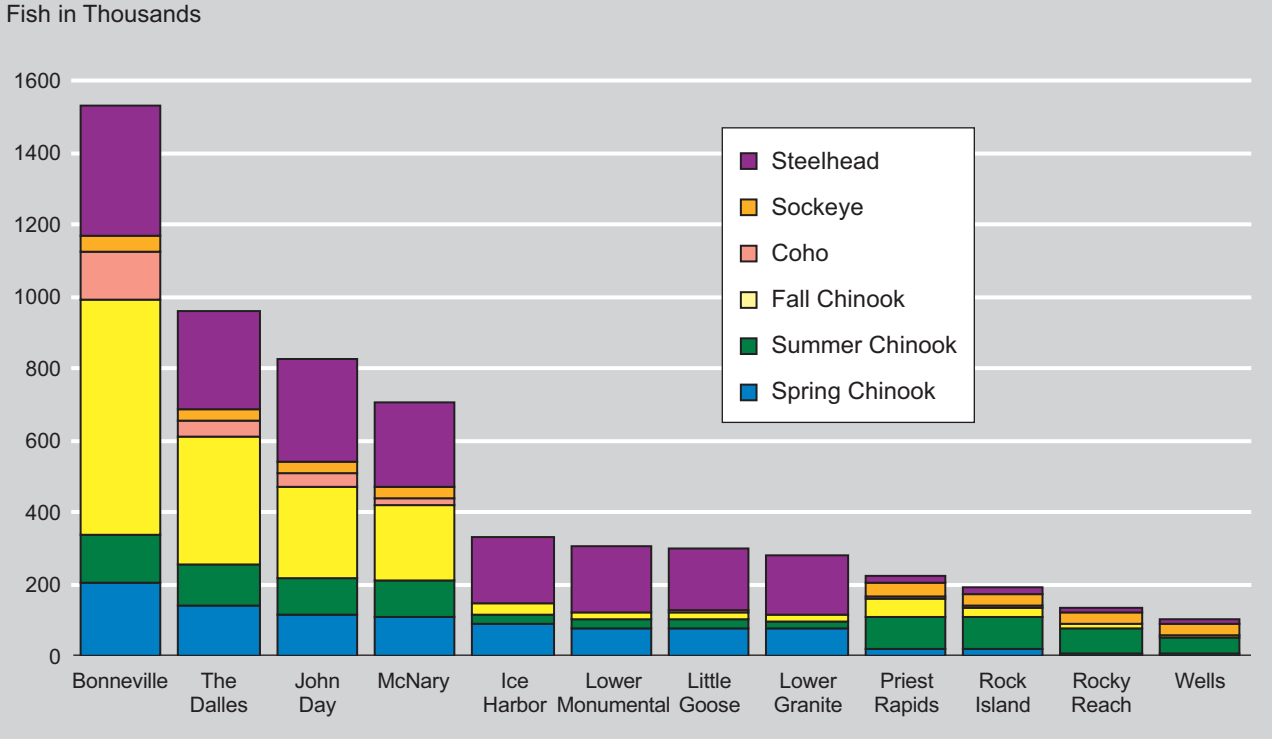


Figure 12: Wild Fish Passing Bonneville Dam 1990-2003

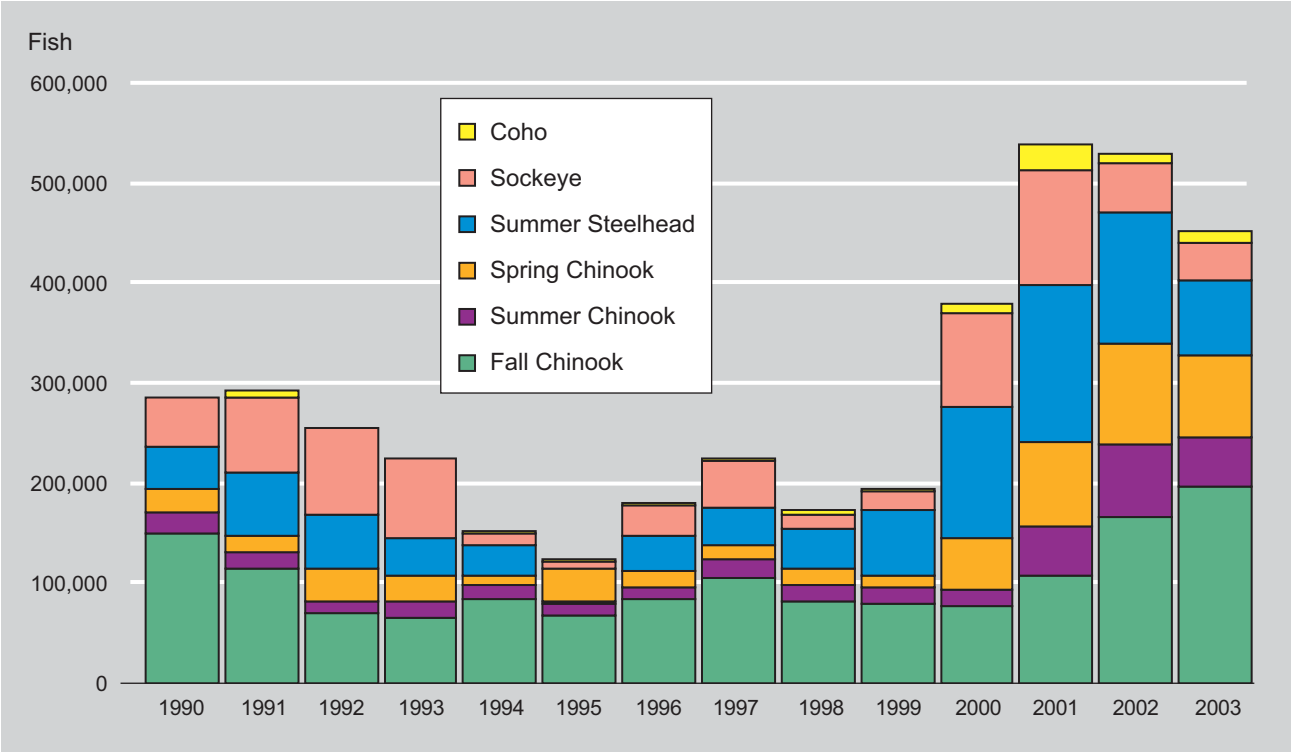


Figure 13: Commercial Landings of Salmon and Steelhead from the Columbia River 1866-2002 (Data unavailable for 2003)

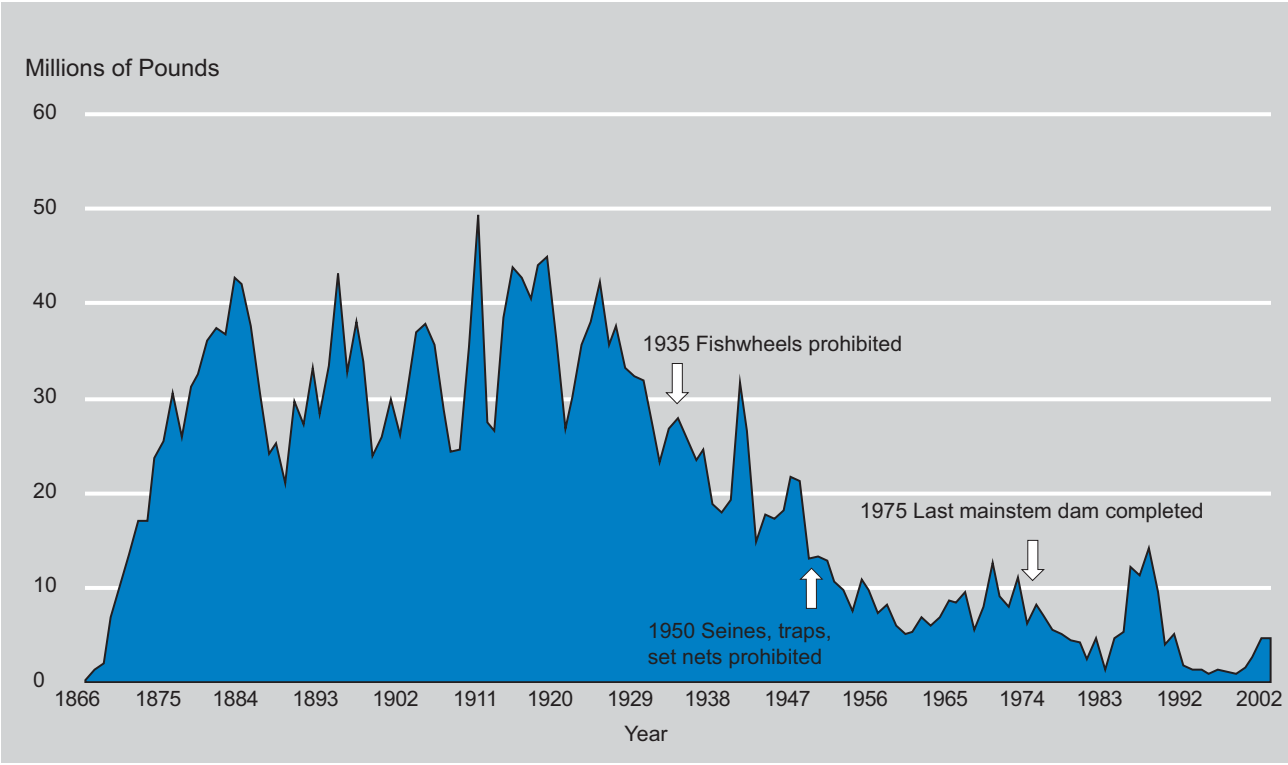


Figure 14: Wildlife Habitat Units: Lost & Acquired

* Note: Acres acquired within the state of Idaho for Dworshak agreement are not measured in habitat units and are not included in these totals.

** The Habitat Units lost and mitigated, by species and by dam, are shown.

Figure 15: Wildlife Habitat Units Lost and Acquired, Species Most Affected

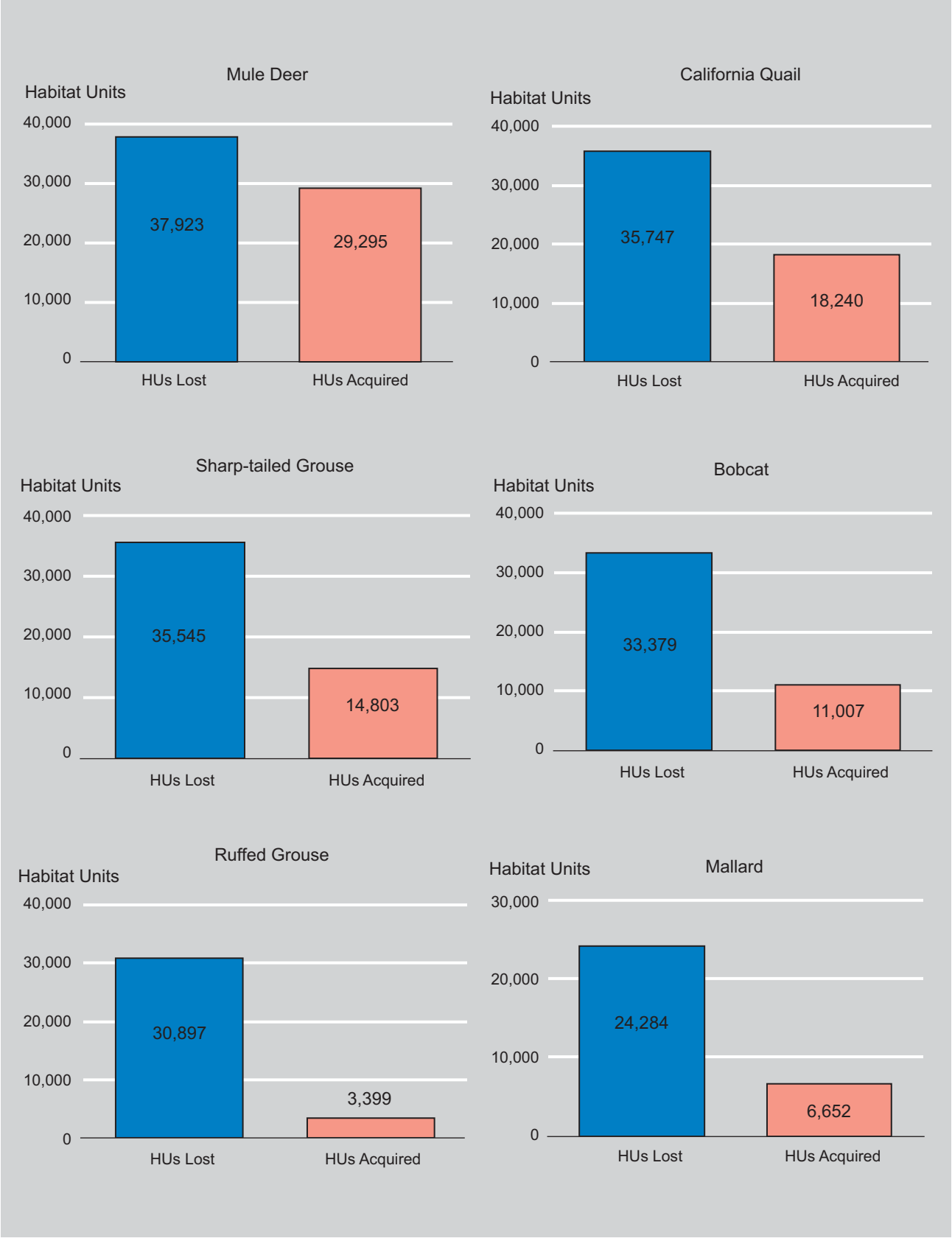


Figure 16: Wildlife Acres Protected and Share of Acquisition Costs by Entity

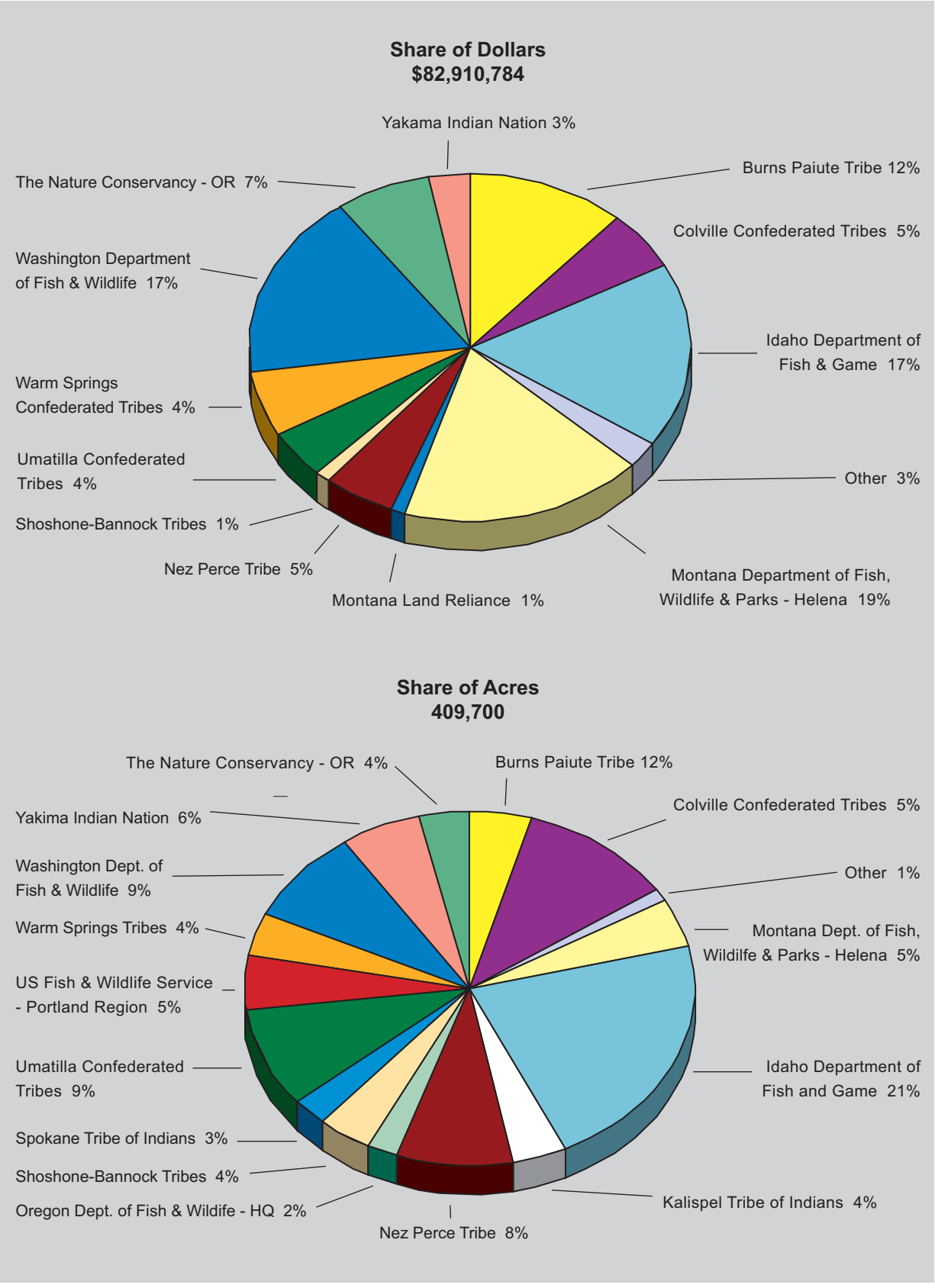
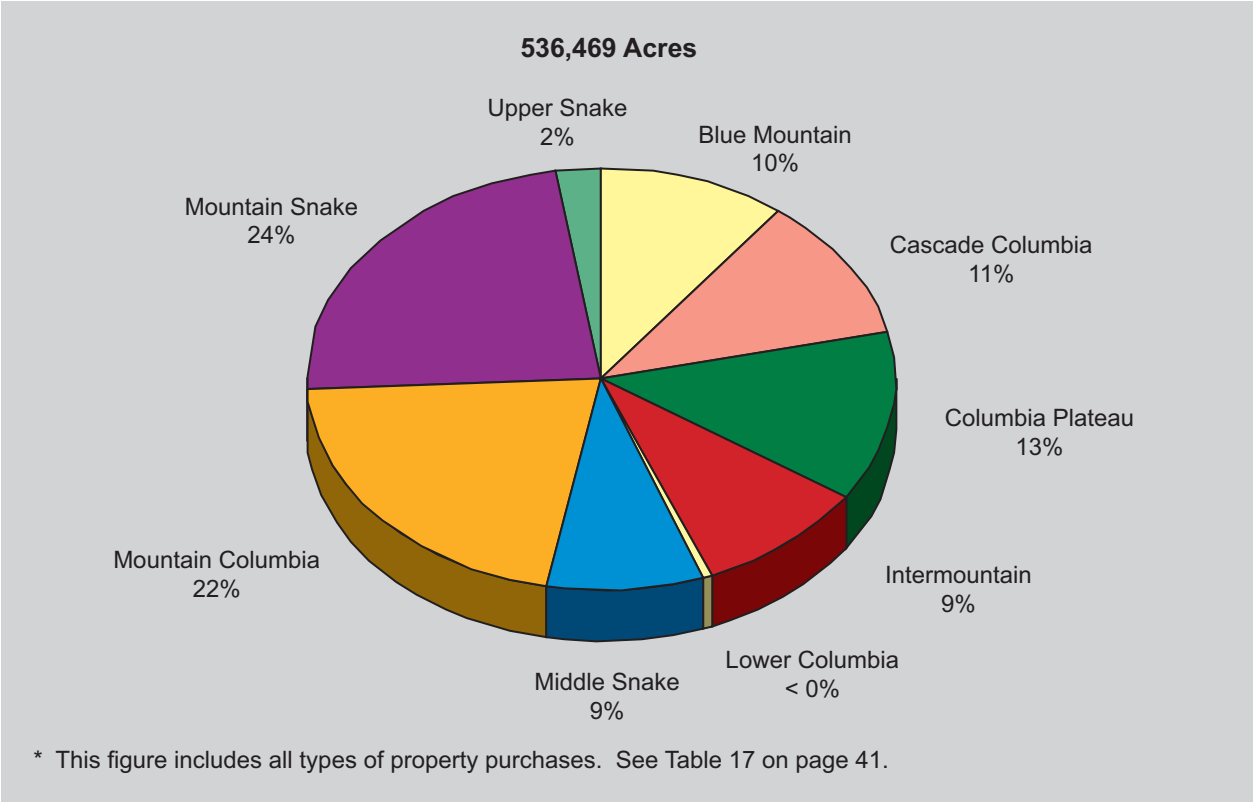


Figure 17: Properties Purchased by BPA for Wildlife Purposes by Province* 1978-2002



* This figure includes all types of property purchases. See Table 17 on page 41.

Table 1 & 2 Cumulative and Total Annual Expenditures

	1978-1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Direct Program	$2.3	$2.3	$4.6	$9.1	$19.6	$15.9	$19.6	$22.2	$18.8	$23.0	$32.8	$33.0	$67.0	$49.6	$55.9	$71.4	$68.5	$82.2	$104.9	$108.2	$108.2	$101.1	$143.2	$140.7	$1,163.4
Action Plan / High Priority																						$2.9	$7.1	$6.5	$16.5
Reimbursable	$15.0	$6.1	$11.5	$14.2	$16.0	$19.9	$23.7	$29.7	$19.0	$23.6	$23.4	$24.3	$28.4	$30.5	$34.9	$36.1	$35.4	$35.9	$36.4	$38.9	$37.6	$42.5	$51.1	$52.6	$634.1
Fixed Expenses 1/	$24.0	$8.8	$12.4	$15.9	$16.6	$19.7	$22.1	$28.5	$31.0	$31.9	$34.3	$38.2	$41.9	$53.6	$61.3	$63.6	$73.0	$76.3	$74.2	$76.1	$77.2	$77.1	$76.6	$56.7	$1,034.3
Subtotal	$41.3	$17.2	$28.5	$39.2	$52.2	$55.5	$65.4	$80.4	$68.8	$78.5	$90.5	$95.5	$137.3	$133.7	$152.1	$171.1	$176.9	$194.4	$215.5	$223.2	$223.0	$223.6	$278.0	$256.5	$2,848.3

1/ Associated with Capital Investments

1996-2001 MOA Period Sub-total $1,256.6

"River Ops"	**1978-1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
Power Purchases	$0.0	$0.0	$0.0	$0.0	$12.0	$17.0	$74.0	$11.0	$40.0	$40.0	$40.0	$40.0	$59.0	$104.0	$111.7	$114.0	$0.0	$0.0	$5.4	$47.6	$64.8	$1,389.6	$147.8	$171.1	$2,317.9
Forgone Revenues	$0.0	$3.0	$14.0	$1.0	$8.0	$27.0	$19.0	$9.0	$10.0	$15.0	$15.0	$15.0	$23.0	$45.0	$62.0	$114.0	$81.7	$107.8	$116.5	$197.8	$193.1	$115.9	$12.6	$79.2	$1,205.4
Subtotal	$0.0	$3.0	$14.0	$1.0	$20.0	$44.0	$93.0	$20.0	$50.0	$55.0	$55.0	$55.0	$82.0	$149.0	$173.7	$228.0	$81.7	$107.8	$121.9	$245.4	$257.9	$1,505.5	$160.4	$250.3	$3,523.3

"River Ops" MOA Period Sub Total $2,320.2

Grand Total	**$41.3**	**$20.2**	**$42.5**	**$40.2**	**$72.2**	**$99.5**	**$158.4**	**$100.4**	**$118.8**	**$133.5**	**$145.5**	**$150.5**	**$219.3**	**$282.7**	**$325.8**	**$399.1**	**$258.6**	**$302.2**	**$337.4**	**$468.6**	**$480.9**	**$1,729.1**	**$438.4**	**$506.8**	**$6,371.6**

MOA Period Total $3,576.8

Dollars are in Millions

Sources: (1978 - 1995) FY 2000 Congressional Budget / page 80

(1996 - 2001) MOA Reporting Template

Table 3 Obligations by Species, 1978-2003

Fiscal Year	Anadromous Fish	Resident Fish	Wildlife	Total
1984	$16,675,925	$1,263,895	$589,066	$18,528,886
1985	$19,945,958	$3,571,308	$553,022	$24,070,288
1986	$22,208,357	$3,779,463	$1,009,667	$26,997,487
1987	$26,560,517	$591,182	$1,149,655	$28,301,354
1988	$15,848,972	$6,389,391	$1,040,601	$23,278,964
1989	$25,225,428	$3,016,827	$2,053,497	$30,295,752
1990	$27,737,779	$7,795,641	$1,058,418	$36,591,838
1991	$38,973,827	$2,028,859	$2,530,970	$43,533,656
1992	$53,119,662	$3,550,209	$12,847,109	$69,516,980
1993	$51,129,495	$5,457,600	$8,936,699	$65,523,794
1994	$51,044,466	$7,072,137	$16,090,951	$74,207,554
1995	$49,894,315	$8,692,253	$10,206,415	$68,792,983
1996	$83,789,352	$7,962,544	$14,815,773	$106,567,669
1997	$66,524,626	$12,944,597	$16,615,431	$96,084,654
1998	$85,533,382	$20,991,620	$12,675,870	$119,200,872
1999	$82,415,426	$14,850,466	$13,443,429	$110,709,321
2000	$83,662,243	$19,598,122	$11,491,168	$114,751,533
2001	$70,785,162	$12,167,802	$12,030,184	$102,837,058*
2002	$103,445,561	$17,184,941	$9,849,955	$143,198,148*
2003	$105,384,294	$22,753,095	$7,686,627	$152,321,697*
Total	**$1,079,904,747**	**$181,661,952**	**$156,674,507**	**$1,418,241,206**

* Totals for 2001-03 include program support and other costs, as indicated below. These costs were not separately reported by Bonneville prior to 2001.

FY	External Program Support [1]	BPA Program Support [2]	Other [3]
2001	$967,123	$5,640,244	$1,246,543
2002	$1,637,533	$11,040,180	$39,978
2003	$4,456,294	$12,041,387	

1 External Program Support includes tasks such as data management that support all programs
2 BPA Program Support includes contracted tasks such as program review and independent analysis, as well as BPA internal overhead such as personnel costs
3 Expenses not otherwise categorized

Source: Bonneville Power Administration

Table 4 Breakdown of Expenditures for Mainstem, Production, Habitat and Harvest - Excluding Action Plan and High Priority

General Purpose	FY 2000	FY 2001	FY 2002
Coordination	$6,824,548	$6,801,963	$6,403,569
Data Management	$29,541	$151,777	$236,896
Habitat	$29,870,934	$41,701,678	$39,481,228
Harvest	$852,032	$1,311,073	$1,957,397
Monitoring	$14,372,273	$18,282,822	$20,930,630
Mainstem Survival	$3,735,274	$3,654,080	$3,639,242
Production	$21,083,822	$35,551,536	$34,939,205
Research and Evaluation	$19,005,275	$24,485,114	$32,672,718
BPA Program Support	$5,640,244	$11,040,180	$12,041,388
Other	$1,423,115	$217,925	$19,424
Total	**$102,837,058**	**$143,198,148**	**$152,321,697**

Source: Bonneville Power Administration

Table 5 Obligations by Province, fiscal year 2003

Province	1978-2003	2002	2003
Systemwide	$503,764,310	$35,810,192	$41,021,491
Columbia Plateau	$416,409,679	$33,101,913	$28,530,634
Mountain Snake	$180,623,816	$19,536,743	$20,023,083
Mountain Columbia	$75,327,251	$4,441,868	$8,040,476
Blue Mountain	$73,771,093	$7,963,366	$9,399,860
Intermountain	$73,069,933	$12,352,769	$12,884,976
Columbia Gorge	$43,191,782	$6,007,220	$6,487,780
Columbia Cascade	$31,745,224	$5,197,172	$3,454,315
Lower Columbia	$30,195,727	$4,713,797	$4,205,860
Columbia Estuary/Ocean	$20,223,769	$512,348	$3,289,408
Upper Snake	$18,477,549	$783,608	$1,064,601
Middle Snake	$17,807,541	$1,696,993	$1,877,824
Total	**$1,484,607,673**	**$132,117,990**	**$140,280,309**
Program Support	$45,102,815	$11,040,180	$12,041,388
Other	$39,978	$39,978	

Source: Bonneville Power Administration

Table 6A Obligations by Prime Contractor - 1978-2003

Contractor Type	Prime Contractor	1979-2003
FEDERAL	NATIONAL MARINE FISHERIES SVC	$95,598,756
	NON-CONTRACTED BPA OVERHEAD	$81,073,070
	FISH & WILDLIFE SERVICE	$67,327,459
	BUREAU OF RECLAMATION	$43,876,998
	CORPS OF ENGINEERS	$25,829,517
	DEPARTMENT OF ENERGY	$25,641,979
	FOREST SERVICE	$23,494,414
	OTHER	$20,047,080
	US GEOLOGICAL SURVEY	$6,736,076
	TOTAL	**$389,625,350**
STATE	OREGON DEPARTMENT OF FISH & WILDLIFE	$160,471,794
	OREGON STATE POLICE - FISH & WILDLIFE	$3,480,952
	OREGON WATER TRUST	1,004,400
	OREGON DEPARTMENT OF ENERGY	$193,707
	OREGON DEPARTMENT OF TRANSPORTATION	$106,422
	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY	149,131
	OREGON DEPARTMENT OF PARKS & RECREATION	$5,000
	Subtotal	**165,411,406**
	IDAHO DEPARTMENT OF FISH & WILDLIFE	100,225,461
	IDAHO SOIL & WATER CONSERVATION COMMISSION	6,136,507
	IDAHO OFFICE OF SPECIES CONSERVATION	$154,140
	Subtotal	**106,516,108**
	WASHINGTON DEPARTMENT OF FISH & WILDLIFE	75,679,777
	WASHINGTON DEPARTMENT OF ECOLOGY	4,985,456
	WASHINGTON WILDLIFE COALITION MEMBERS	$3,445,738
	WASHINGTON STATE CONSERVATION COMMISSION	$694,411
	WASHINGTON DEPARTMENT OF ECOLOGY	$542,633
	WASHINGTON STATE ENERGY OFFICE	$242,857
	WASHINGTON DEPARTMENT OF TRANSPORTATION	$101,700
	WASHINGTON DEPARTMENT OF NATURAL RESOURCES	$5,000
	Subtotal	**$85,697,573**
	MONTANA DEPARTMENT OF FISH & WILDLIFE	$31,067,777
	MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS	$7,368,794
	Subtotal	**$38,436,570**
	TOTAL	**$396,061,658**
TRIBE	NEZ PERCE TRIBE	$99,519,023
	YAKAMA INDIAN NATION	$92,718,908
	UMATILLA CONFEDERATED TRIBES	$43,702,854
	COLVILLE CONFEDERATED TRIBES	$33,987,128
	WARM SPRINGS TRIBES	$27,943,322
	SHOSHONE-BANNOCK TRIBES	$19,115,967
	SPOKANE TRIBE OF INDIANS	$18,971,281
	KOOTENAI TRIBE OF IDAHO	$16,999,125
	KALISPEL TRIBE OF INDIANS	$13,457,196
	COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION	$11,688,832
	COEUR D'ALENE TRIBE OF IDAHO	$10,395,990
	SHOSHONE-PAIUTE TRIBES	$8,207,766
	BURNS PAIUTE TRIBE	$7,142,732
	SALISH AND KOOTENAI TRIBES	$4,213,432
	POINT NO POINT TRIBE	$11,960
	TULALIP TRIBE	$4,988
	KLAMATH TRIBE	$4,512
	CHEHALIS INDIAN TRIBE	$2,082
	SQUAXIN ISLAND TRIBE	$1,304
	TOTAL	**$408,088,403**
INTERSTATE COMPACT	PACIFIC STATES MARINE FISHERIES COMMISSION	$154,943,932
UNIVERSITY	University	$42,343,175
OTHER	Private/Other	$128,455,935
	Local/Semi governmental	$44,955,904
	COLUMBIA BASIN FISH & WILDLIFE FDN	$18,517,212
	Not Specified (Land)	$13,163,259
	Utility	$11,709,653
	NATIONAL FISH & WILDLIFE FOUNDATION	$1,383,858
	TOTAL	**$218,185,821**
	GRAND TOTAL	**$1,609,248,338**

Source: Bonneville Power Administration

Table 6B Expenditures of Direct BPA funds by contractor,* 1996-2003

Contractor	Total
PACIFIC STATES MARINE FISHERIES COMMISSION	$101,821,926
NEZ PERCE TRIBE	$85,482,795
OREGON DEPARTMENT OF FISH & WILDLIFE- HQ	$75,464,126
YAKAMA NATION	$73,352,087
IDAHO DEPARTMENT OF FISH & GAME	$58,563,079
WASHINGTON DEPARTMENT of FISH & WILDLIFE	$49,073,644
NATIONAL MARINE FISHERIES SERVICE - SEATTLE OFFICE	$34,772,746
UMATILLA CONFEDERATED TRIBES	$32,831,784
WARM SPRINGS TRIBES	$25,678,560
COLVILLE CONFEDERATED TRIBES	$20,877,239
COLUMBIA BASIN FISH & WILDLIFE FOUNDATION	$18,055,522
BONNEVILLE POWER ADMINISTRATION - FISH AND WILDLIFE PROGRAM SUPPORT	$16,848,350
NATT MCDOUGALL COMPANY	$15,876,408
US FISH AND WILDLIFE SERVICE - PORTLAND REGION	$15,104,215
NATIONAL MARINE FISHERIES SERVICE - PORTLAND OFFICE	$14,860,289
SPOKANE TRIBE of INDIANS	$13,265,695
BONNEVILLE POWER ADMINISTRATION - TRANSMISSION BUSINESS LINE	$11,860,217
KOOTENAI TRIBE of IDAHO	$11,775,575
IMPERO CONSTRUCTION COMPANY	$10,716,321
UNIVERSITY of WASHINGTON	$10,118,570
NATIONAL BIOLOGICAL SERVICE / USFWS - NATIONAL FISH RESEARCH CENTER - SEATTLE	$9,844,736
FISHPRO, INC.	$9,688,126
US BUREAU OF RECLAMATION - PACIFIC NW REGION (BOISE)	$9,686,763
MONTGOMERY WATSON	$9,549,413
COEUR D'ALENE TRIBE of IDAHO	$9,399,776
NORTHWEST POWER AND CONSERVATION COUNCIL	$9,067,769
KALISPEL TRIBE of INDIANS	$9,067,662
SHOSHONE-BANNOCK TRIBES	$8,658,352
USDE - BATTELLE PACIFIC NORTHWEST LABORATORY - (RICHLAND)	$8,232,547
US ARMY CORPS OF ENGINEERS - PORTLAND DISTRICT	$7,367,824
SHOSHONE-PAIUTE TRIBES	$7,145,479
BURNS PAIUTE TRIBE	$6,727,318
CUSTER SOIL & WATER CONSERVATION DISTRICT	$6,345,398
MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS - HELENA	$5,697,907
CH2M HILL - NORTHWEST INC.	$5,043,703
WASHINGTON DEPT OF ECOLOGY	$4,996,546
COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION	$4,932,208
PACIFIC NORTHWEST ELECTRIC POWER	$4,389,258
MONTANA FISH, WILDLIFE & PARKS	$3,762,155
DEPT OF FISHERIES & OCEANS (CANADIAN)	$3,622,330
DIGITAL ANGEL CORPORATION	$3,553,461
CONCORD CONSTRUCTION, INC	$3,540,383
US DOI FISH & WILDLIFE SERVICE	$3,517,529
UMATILLA ELECTRIC COOP ASSOCIATION	$3,321,609
IDAHO SOIL & WATER CONSERVATION COMMISSION	$3,253,585
IDAHO DEPARTMENT OF FISH & GAME / KALISPEL	$2,861,571
OREGON STATE UNIVERSITY	$2,848,394
SLAYDEN CONSTRUCTION INC	$2,582,316
USFWS - FISHERIES PROGRAM OFFICE	$2,561,689
WESTLAND IRRIGATION DISTRICT	$2,479,891
UNIVERSITY of IDAHO	$2,395,048
US GEOLOGICAL SURVEY	$2,314,513
DESTRON - FEARING	$2,254,524

Contractor	Total
US DOE RICHLAND OPERATIONS OFC	$2,231,902
MWH AMERICAS INC	$2,226,153
CONTRACTOR UNKNOWN TO EMIS	$2,167,074
ESSA TECHNOLOGIES LTD.	$2,156,632
UNDERWOOD CONSERVATION DISTRICT	$2,116,100
NATURE CONSERVANCY - MONTANA	$2,056,330
PACIFIC POWER & LIGHT/UECA	$1,994,000
CLATSOP ECONOMIC DEVELOPMENT COMMITTEE	$1,822,530
CITY OF YAKIMA	$1,793,077
KITTITAS-YAKIMA RES CONS & DEV	$1,666,998
US DOI GEOLOGICAL SURVEY	$1,647,692
U.S. FOREST SERVICE	$1,639,797
ASOTIN COUNTY CONSERVATION DISTRICT	$1,634,666
MONTANA FISH, WILDLIFE & PARKS / CONFEDERATED SALISH-KOOTENAI TRIBES	$1,606,434
USFS - PACIFIC NW RESEARCH STATION	$1,577,145
IDAHO STATE CONSERVATION COMMISSION	$1,495,304
YAKIMA CO-OP	$1,479,863
BIOANALYSTS INC (D. CHAPMAN)	$1,462,464
LEMHI SOIL & WATER CONSERVATION DISTRICT	$1,399,599
CONFEDERATED SALISH-KOOTENAI TRIBES	$1,373,280
OREGON STATE UNIVERSITY / CUMULATIVE RISK INITIATIVE	$1,360,009
COLUMBIA COUNTY SOIL & WATER CONSERVATION DISTRICT	$1,331,566
US BUREAU OF RECLAMATION (WA)	$1,205,799
USGS - BIOLOGICAL RESOURCES DIVISION - COLUMBIA RIVER RESEARCH LAB	$1,204,305
COLUMBIA RIVER INTER-TRIBAL	$1,186,067
WASHINGTON STATE UNIVERSITY	$1,159,755
NEZ PERCE SOIL & WATER CONSERVATION DISTRICT	$1,151,484
WALLOWA COUNTY SOIL & WATER CONSERVATION DISTRICT	$1,136,870
NATIONAL FISH & WILDLIFE FOUNDATION	$1,106,904
PAULSEN ENVIRONTAL RESEARCH	$1,120,624
PORTLAND GENERAL ELECTRIC	$1,081,849
WASCO COUNTY SOIL & WATER CONSERVATION DISTRICT	$1,077,590
HARZA NORTHWEST INC	$1,010,802
US FISH AND WILDLIFE SERVICE - DENVER REGION	$978,033
US FISH AND WILDLIFE SERVICE - AHSAHKA	$937,531
CASCADE PACIFIC RESOURCE	$906,018
UNION COUNTY SOIL & WATER CONSERVATION DISTRICT	$898,371
POMEROY SOIL & WATER WATER CONSERVATION DISTRICT	$894,873
PACIFIC POWER & LIGHT COMPANY	$885,792
OREGON WATER TRUST	$878,078
SANDPOINT TITLE INSURANCE INC	$850,356
USFS - WALLOWA-WHITMAN NATIONAL FOREST - LA GRANDE DISTRICT,	$838,422
USFS - FLATHEAD NATIONAL FOREST	$837,468
MOSS-ADAMS ADVISORY SERVICES	$819,207
INTERMOUNTAIN COMMUNICATIONS	$817,131
LAKE ROOSEVELT DEVELOPMENT ASSOCIATION	$808,204
S. P. CRAMER & ASSOCIATES	$806,021
US DEPARTMENT OF ENERGY - OAK RIDGE NATIONAL LABORATORY	$790,817
US FISH AND WILDLIFE SERVICE - FISH ASST. VANCOUVER	$775,613
S CENTRAL WASHINGTON RESOURCE CONSERVATI	$387,228
KITTITAS COUNTY WATER PURVEYORS	$730,000
JEFFERSON COUNTY SOIL & WATER CONSERVATION DISTRICT	$695,980
WALLA WALLA BASIN WATERSHED COUNCIL	$656,387

Table 6B Expenditures of Direct BPA funds by contractor 1996-2003 (continued)

Contractor	Total
CLEARWATER FOCUS WATERSHED PROGRAM	$641,749
WALLA WALLA COUNTY SOIL AND WATER CONSERVATION DISTRICT	$624,166
IDAHO DEPARTMENT OF FISH & GAME / KOOTENAI	$610,923
US BUREAU OF RECLAMATION - YAKIMA	$580,303
WY'EAST RESOURCE CONSERVATION & DEVELOPMENT COUNCIL	$579,972
LEWIS SOIL & WATER CONSERVATION DISTRICT	$575,320
US SMALL BUSINESS ADMINISTRATION	$573,849
USFS - UMATILLA NATIONAL FOREST	$534,198
EASTERN OREGON STATE COLLEGE	$521,423
MILLER ECOLOGICAL CONSULTANTS	$507,552
US DOI BUREAU OF RECLAMATION	$493,150
WALLA WALLA COUNTY CONSERVATION DISTRICT	$474,928
US GEOLOGICAL SURVEY - BIOLOGICAL RESOURCES DIVISION	$468,198
USFS - G. PINCHOT NAT. FOREST - MT ADAMS RANGER DIST., WIND RIVER DIV.	$444,891
CANADA DEPARTMENT OF FISHERIES & OCEANS	$434,800
TICOR TITLE INSURANCE COMPANY	$430,000
EDUCATIONAL SERVICES DISTRICT #105 (YAKIMA)	$427,427
KINTAMA RESEARCH CORPORATION	$423,899
RESEARCH INTO ACTION	$414,555
HES	$412,682
M-F WATER CONTROL DISTRICT	$400,000
USFS - MT. HOOD NATIONAL FOREST	$391,000
BIOMARK INC.	$384,762
SYNERGY CONSULTING INC	$378,631
WASHINGTON TROUT	$378,082
PER LTD.	$376,374
WASHINGTON WATER TRUST	$142,867
JEFF KUECHLE	$360,691
IRZ CONSULTING LLC	$351,529
RICHARD HINRICHSEN	$344,480
STEPHEN H. SMITH FISHERIES CONSULTING, INC.	$343,710
USFS - INTERMOUNTAIN REGION (4) - OGDEN	$340,057
ALLIANCE TITLE & ESCROW CORP	$336,000
CITY OF SCAPPOOSE	$133,260
DONNA SILVERBERG	$328,212
UNION COUNTY	$314,533
ENVIRONMENTAL SCIENCE ASSOCIATES	$303,102
USFS - MT HOOD NATIONAL FOREST - HOOD RIVER RANGER DISTRICT	$296,082
THE NATURE CONSERVANCY - OR	$295,917
ROCKY MOUNTAIN RESEARCH STATION	$291,370
WASHINGTON STATE CONSERVATION COMMISSION.	$284,479
FIRST AMERICAN TITLE CO	$283,800
KITTITAS COUNTY CONSERVATION DISTRICT	$283,359
NEZ TRIBAL TRIBAL FISHERIES/WATERSHED PROGRAM	$270,293
US DOI NW BIOLOGICAL SCIENCE CENTER	$266,829
FISHER FISHERIES LTD.	$253,199
EASTERN WASHINGTON UNIVERSITY - ARCHAEOLOGY & HISTORY DEPARTMENT	$241,176
SHERMAN SOIL & WATER CONSERVATION DISTRICT	$240,303
DSCONSULTING	$238,197
ESD105	$232,500
COLUMBIA CONSERVATION DISTRICT	$222,352
Contractor	**Total**
MARKS & MARKS	$218,020
RESOURCE CONSERVATION & DEVELOPMENT	$217,584
US FISH AND WILDLIFE SERVICE - (LONGVIEW WA)	$214,203
USFS - PACIFIC NW REGION (6) - PORTLAND	$213,180
NSRI	$206,669
WALLOWA PUBLIC WORKS DEPARTMENT	$206,426
US ARMY CORPS OF ENGINEERS - NORTHWEST DIVISION	$204,998
UNION COUNTY PUBLIC WORKS DEPARTMENT	$203,650
MOBRAND BIOMETRIC, INC.	$201,415
CRATE'S POINT	$200,000
KENNETH STINSON, LATAH SOIL AND WATER CONSERVATION DISTRICT	$200,000
NORTON-ARNOLD & COMPANY	$196,214
COLUMBIA SOIL & WATER CONSERVATION DISTRICT	$196,036
LATAH SOIL & WATER CONSERVATION DIST	$193,274
COLE & WEBER	$188,237
LEMHI IRRIGATION DISTRICT	$182,938
USFWS - CRESTON NATIONAL FISH HATCHERY	$181,088
UNIVERSITY of MONTANA	$180,539
WALLOWA COUNTY	$175,060
US ARMY CORE OF ENGINEERS - WALLA WALLA DIST	$165,938
LOWER COLUMBIA RIVER ESTUARY PARTNERSHIP	$163,280
GOLDEN PACIFIC HOMES	$160,000
UNISYS CORPORATION	$157,254
IDAHO OFFICE OF SPECIES CONSERVATION	$154,140
GILLIAM SOIL AND WATER CONSERVATION DISTRICT	$152,672
KRUGEL & ASSOCIATES	$152,000
WHEELER SOIL AND WATER CONSERVATION DISTRICT	$150,610
OREGON DEPT OF ENVIRONMENTAL QUALITY - BUSINESS OFFICE	$149,131
OXARC	$143,340
USFS - NEZ PERCE NATIONAL FOREST	$142,878
TEASDALE ENVIRONMENTAL	$138,294
MORROW COUNTY SOIL AND WATER CONSERVATION DISTRICT	$137,899
KATHLEEN A CONCANNON	$136,672
JEAN EDWARDS	$135,711
ARCHAEOLOGICAL & HISTORICAL SERVIVE	$127,894
LAKE ROOSEVELT FORUM	$127,058
SHAPIRO & ASSOCIATES INC	$120,983
BC/ MINISTRY ENVIRONMENT LAND AND PARKS	$117,449
MONUMENT SOIL & WATER CONSERVATION DISTRICT	$116,500
ENERGY NEWSDATA INC	$114,600
PACIFIC WATERSHED INSTITUTE	$112,620
ADVANCED TELEMETRY SYSTEMS INC	$104,027
RHI MANAGEMENT RESOURCES	$103,266
FOSTER WHEELER ENVIRONMENTAL CO	$101,955
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	$101,700
JAMES J ANDERSON MD	$100,000
US DEPT OF JUSTICE	$100,000

* Contracts under $100,000 are not listed.

Source: Bonneville Power Administration

Table 7A Salmon and Steelhead passing Bonneville Dam, 1938-2003

These dam counts can not be utilized for year to year comparison of abundance or population size without evaluating and quantifying the effects of facility modifications, dam operations, dam modifications, upstream development, fisheries, hatchery production, counting schedules, counting techniques, between-dam counting discrepancies, counting station modification, fishway modifications, fallback and dam passage efficiencies.

Yearly totals of all fish passing Bonneville Dam 1938-1976

Year	Chinook	Steelhead	Sockeye	Coho
1938	271,799	107,003	75,040	15,185
1939	286,236	121,922	73,382	14,383
1940	391,573	185,161	148,805	11,870
1941	461,443	118,087	65,741	17,911
1942	401,998	151,345	55,464	12,401
1943	313,123	92,131	39,845	2,547
1944	240,763	100,521	15,071	4,207
1945	297,488	120,144	9,501	791
1946	445,743	142,548	74,354	3,897
1947	480,377	135,444	171,139	11,174
1948	419,555	139,062	131,541	4,081
1949	277,697	119,285	51,444	1,004
1950*	357,375	114,087	77,993	10,151
1951*	331,788	140,689	169,428	5,201
1952	420,879	260,990	184,645	7,768
1953	332,479	223,914	235,215	13,018
1954 [1]	320,947	176,260	130,107	4,062
1955 [2]	359,853	198,411	237,748	3,725
1956 [3]	300,917	131,116	156,418	6,127
1957 [4]	403,286	139,183	82,915	4,675
1958 [5]	426,419	131,437	122,389	3,673
1959 [6]	345,028	129,026	86,560	2,695
1960 [7]	256,049	113,676	59,713	3,268
1961 [8]	281,980	139,719	17,111	3,456
1962 [9]	286,625	164,025	28,179	14,788
1963 [10]	278,560	129,418	60,319	12,658
1964 [11]	344,422	117,252	99,856	53,602
1965 [12]	317,957	166,453	55,125	76,032
1966	340,111	143,661	156,661	71,891
1967	366,237	121,872	144,158	96,488
1968	341,154	106,974	108,207	63,488
1969	507,543	140,782	59,636	49,378
1970	384,780	113,510	70,762	80,116
1971	405,702	193,966	87,447	75,989
1972	394,456	185,886	56,323	65,932
1973	398,635	157,823	58,979	54,609
1974	366,759	137,054	43,837	60,955
1975	425,566	85,540	58,212	58,307
1976	507,773	124,177	43,611	53,150

Year	Chinook	Steelhead	Sockeye	Coho
1977	464,865	193,437	99,829	19,408
1978	394,590	104,431	18,436	52,590
1979	176,292	114,010	52,627	45,328
1980	245,518	129,254	58,882	22,052
1981	285,650	159,270	56,037	30,510
1982	322,809	157,640	50,219	73,832
1983	244,476	218,419	100,542	15,178
1984	323,346	315,795	152,540	29,332
1985	454,753	326,194	165,928	55,529
1986	571,189	376,752	58,099	130,786
1987	547,409	300,335	116,956	27,628
1988	494,028	279,277	79,721	39,617
1989	416,170	287,802	41,884	39,243
1990	340,798	183,011	49,581	24,764
1991	274,644	274,535	76,482	65,508
1992	256,271	314,963	84,993	18,151
1993	277,657	188,377	80,182	11,732
1994	243,450	161,978	12,678	22,795
1995	240,017	202,478	8,771	12,034
1996	296,635	205,213	30,252	18,747
1997	383,133	258,385	47,008	27,267
1998	280,944	185,094	13,218	49,920
1999	343,176	206,488	17,875	45,152
2000	491,928	351,493	93,398	97,127
2001	970,774	748,011	114,946	266,307
2002	925,452	624,248	49,610	95,289
2003	996,660	478,644	39,291	133,874

Source: 1938 - 1976: Annual Fish Passage Reports - Corps of Engineers
1977 - 2003: Corps of Engineers, Fish Passage Center

* Fish counting discontinued for annual winter maintenance on November 29, 1950.

1 Fish counting initiated Feb. 28, 1954 and discontinued Nov. 27, 1954
2 Fish counting initiated Feb. 28, 1955 and discontinued Nov. 29, 1955
3 Fish counting initiated March 1, 1996 and discontinued Dec. 1, 1956
4 Fish counting initiated March 1, 1957 and discontinued Nov. 30, 1957
5 Fish counting initiated March 2, 1958 and discontinued Nov. 30, 1958
6 Fish counting initiated March 1, 1959 and discontinued Nov. 28 1959
7 Fish counting initiated March 1, 1960 and discontinued Nov. 30, 1960
8 Fish counting initiated March 1, 1961 and discontinued Nov. 30, 1961
9 Fish counting initiated March 1, 1962 and discontinued Nov. 30, 1962
10 Fish counting initiated March 1, 1963 and discontinued Nov. 30, 1963
11 Fish counting initiated March 1, 1964 and discontinued Nov. 28, 1964
12 Fish counting initiated March 28, 1965 and discontinued Nov. 30 1965

Table 7B Minimum Numbers (in Thousands) of Salmon and Steelhead, Including Jacks, Entering the Columbia River Basin, 1938-2002*

Year	Chinook Spr.1/	Chinook Sum.	Chinook Fall	Sockeye	Coho 2/	Chum 3/	Steelhead Winter 4/	Steelhead Summer	Total
1938	118.4	122.7	582.2	168.0	271.9	157.0	—	249.6	1,669.8
1939	155.5	191.8	550.3	124.8	184.2	96.3	—	232.0	1,534.9
1940	97.6	112.7	742.9	196.0	164.4	102.8	—	422.8	1,839.2
1941	129.0	106.5	1,175.7	173.6	131.5	340.1	—	336.8	2,393.2
1942	87.9	94.8	979.0	94.5	83.8	425.5	—	297.2	2,062.7
1943	133.8	57.0	600.9	73.4	80.9	78.7	—	216.0	1,240.7
1944	78.4	67.1	709.8	24.6	174.2	22.6	—	232.3	1,309.0
1945	118.8	52.6	711.7	10.9	204.6	48.3	—	268.4	1,415.3
1946	199.3	72.0	831.9	101.1	121.5	72.7	—	268.0	1,666.5
1947	251.8	86.3	903.6	335.3	176.2	40.7	—	261.8	2,055.7
1948	173.3	86.9	899.2	143.2	134.5	85.6	—	240.1	1,762.8
1949	178.3	57.8	550.5	52.6	100.7	44.7	—	162.5	1,147.1
1950	146.1	69.3	588.6	112.6	125.9	58.9	—	179.0	1,280.4
1951	259.0	116.4	385.6	203.7	112.4	46.1	—	244.5	1,367.7
1952	319.8	114.5	323.0	318.9	126.3	28.9	—	383.1	1,614.5
1953	342.4	95.0	257.3	260.0	61.3	22.9	76.8	361.3	1,477.0
1954	237.4	114.8	231.9	180.0	37.4	28.5	49.8	289.5	1,169.3
1955	317.1	147.6	281.5	245.0	64.3	10.7	56.0	298.8	1,421.0
1956	297.9	195.2	312.7	202.0	64.4	4.7	51.2	200.7	1,328.8
1957	307.8	207.0	276.6	147.8	55.1	4.2	54.8	229.6	1,282.9
1958	268.5	187.5	393.2	313.3	24.2	8.3	48.4	211.2	1,454.6
1959	198.2	169.8	296.0	270.7	21.2	5.5	61.0	231.6	1,254.0
1960	175.2	142.6	246.1	179.1	47.7	3.0	56.5	199.8	1,050.0
1961	203.8	129.2	252.3	60.2	112.4	3.1	94.4	227.9	1,083.3
1962	255.4	108.0	290.6	42.9	184.7	5.7	78.7	251.7	1,217.7
1963	219.0	100.0	265.1	79.9	161.9	3.0	79.4	228.8	1,137.1
1964	247.2	97.0	372.2	104.9	453.9	3.2	79.9	178.6	1,536.9
1965	241.9	82.1	399.2	55.2	519.0	1.5	120.3	227.3	1,646.5
1966	236.1	74.8	347.8	174.8	785.9	3.1	133.1	208.6	1,964.2
1967	240.5	100.7	385.0	180.2	694.2	2.1	111.5	167.3	1,881.5
1968	199.5	89.4	346.3	134.8	423.9	0.6	122.5	161.2	1,478.2
1969	295.0	106.2	471.0	75.8	463.4	1.1	66.8	191.2	1,670.5
1970	252.7	72.9	532.2	95.4	1,079.0	1.2	134.5	157.0	2,324.9
1971	266.9	89.5	488.6	150.5	648.7	1.1	169.2	248.5	2,063.0
1972	353.3	77.5	338.3	123.3	362.6	2.4	113.0	257.8	1,628.2
1973	326.1	48.9	562.1	61.3	422.8	1.8	90.9	217.0	1,730.9
1974	224.1	34.0	357.1	43.8	534.0	1.2	77.7	168.9	1,440.8
1975	176.1	44.4	525.9	58.2	437.7	0.8	62.0	105.4	1,410.5
1976	165.5	42.1	563.7	43.7	384.1	1.5	55.4	147.8	1,403.8
1977	239.6	41.4	449.3	99.8	199.0	0.8	112.1	238.5	1,380.5
1978	241.8	43.6	395.6	18.4	382.7	1.9	77.1	154.5	1,315.6
1979	126.2	34.5	356.2	52.6	330.7	0.3	114.1	146.3	1,160.9
1980	143.1	31.2	356.9	58.9	343.0	0.5	80.6	177.4	1,191.6
1981	164.6	27.1	349.1	56.0	208.0	1.5	67.0	217.7	1,091.0
1982	195.9	26.7	438.3	50.2	518.6	2.9	46.0	207.9	1,486.5
1983	159.8	23.7	298.9	100.5	143.4	0.6	67.7	240.2	1,034.8
1984	170.7	28.7	413.7	161.6	446.9	2.3	94.4	388.4	1,706.7
1985	179.0	30.3	548.0	200.4	435.3	1.3	77.3	405.3	1,876.9
1986	224.2	31.4	730.1	59.9	1,574.1	3.0	85.0	474.2	3,181.9
1987	241.8	38.3	956.8	145.3	388.7	2.5	91.7	364.3	2,229.4
1988	250.4	36.7	869.1	99.6	726.6	4.8	59.3	362.8	2,409.3
1989	231.9	33.1	592.5	47.4	752.4	2.0	68.0	327.8	2,055.1
1990	257.9	28.1	369.4	49.6	262.1	2.9	44.7	247.4	1,262.1
1991	201.8	22.1	332.4	76.5	957.1	1.3	63.2	311.0	1,965.4
1992	199.0	19.2	263.4	85.0	237.0	4.9	55.9	372.1	1,236.5
1993	206.2	23.6	235.7	84.2	118.2	4.5	36.4	242.8	951.6
1994	83.0	19.5	295.4	12.7	178.2	1.2	52.2	212.1	854.3
1995	64.9	16.7	300.1	9.2	88.9	1.5	20.1	247.1	748.5
1996	100.3	17.5	353.8	30.3	129.7	3.3	26.5	244.0	905.4
1997	161.2	29.6	352.8	46.9	154.5	1.7	15.3	292.5	1,054.5
1998	94.1	23.7	295.0	13.2	193.6	2.0	23.6	216.6	861.8
1999	112.1	29.9	338.1	17.9	305.0	2.4	23.3	235.8	1,064.5
2000	274.0	43.9	325.3	93.7	624.3	2.5	(30.4)	(316.9)	1,711.0
2001	525.7	89.3	658.7	116.5	1127.3	5.1	(40.1)	(689.4)	3,252.1
2002	440.8	135.2	789.3	49.6	551.9	9.4	NA	(553.1)	2,529.3

1/ Counting began at Bonneville Dam on May 7, 1938. Estimates for tributary runs below Bonneville Dam are not included for 1938-45.

2/ Commercial catch and dam counts only, 1938-59.

3/ Commercial catch numbers only, 1938-49.

4/ Abundance index.

( ) indicates estimate.

* Data is unavailable for 2003.

Source: Fish Passage Center

Table 9 Spring and Summer Chinook Passing Bonneville Dam, 1977-2003

Year	Spring Chinook Adults	Spring Chinook Jacks	Summer Chinook Adults	Summer Chinook Jacks
1977	115,551	3,957	34,083	6,940
1978	147,680	2,183	39,730	4,593
1979	48,638	2,824	27,742	6,475
1980	53,100	7,887	26,952	4,113
1981	62,827	2,182	22,363	4,566
1982	70,011	6,033	20,129	6,485
1983	54,898	1,940	18,046	5,412
1984	46,870	4,272	22,321	6,127
1985	83,113	7,851	23,898	5,455
1986	118,371	4,963	26,300	4,820
1987	98,573	3,234	33,033	4,674
1988	90,532	4,214	31,315	5,209
1989	81,267	5,992	28,786	4,185
1990	94,014	2,090	24,983	3,038
1991	57,346	3,889	18,897	3,056
1992	88,425	2,157	15,063	4,182
1993	110,820	1,352	22,045	1,571
1994	20,169	397	17,631	1,900
1995	10,194	2,375	15,030	2,030
1996	51,493	4,687	16,034	1,960
1997	114,000	963	27,939	1,926
1998	38,342	775	21,433	2,678
1999	38,669	8,691	26,169	4,022
2000	178,302	21,259	30,598	13,386
2001	391,367	14,172	76,156	14,723
2002	268,813	6,477	127,436	7,952
2003	195,671	14,258	114,808	13,358

Adult Passage (ladder) count data from the Army Corps of Engineers.
Source: Fish Passage Center

Table 10 Estimated Inriver Juvenile Survival through the Hydrosystem, 1966-1980, 1997-2004

Year	Chinook Salmon	Steelhead
1966	0.46	0.56
1967	0.47	0.32
1968	0.45	0.43
1969	0.34	0.20
1970	0.17	0.24
1971	0.20	0.17
1972	0.09	0.09a
1973	0.03	0.01
1974	0.28b	0.08
1975	0.19b	0.27
1976	0.10	0.13
1977	0.01	0.01
1978	0.23b	0.08
1979	0.19	0.02
1980	0.15	0.03
1997		0.47
1998		0.50
1999	0.56	0.44
2000	0.49	0.39

Year	Mid-Columbia	Snake	Mid-Columbia	Snake
2001	NA	0.28	NA	0.04
2002	0.75	0.58	NA	0.26
2003	0.77	0.53	0.7	0.31
2004	0.62	0.40	0.5	na

There is a gap in this information between 1981 and 1997. Prior to 1993, survival studies based on observations of freeze brands on juvenile fish were considered unreliable, and further studies were put off until PIT tag data became available that year. Between 1993 and 1997, PIT tag detectors were installed only at Snake River dams, and so systemwide survivals for those years were mathematical expansions of the Snake River observations. Beginning in 1997, with additional PIT tag detection equipment available, systemwide survival observations were possible and the mathematical expansions no longer were used.

a Extrapolation based on three dam and reservoirs as survival estimates between Ice Harbor Dam and The Dalles Dam did not change between 1966 and 1970 after completion of John Day Dam in 1968.

b Based on product of two non-rounded numbers

Source: NOAA Fisheries

Table 11 Where do the Fish Go? Fish Counted at Each Mainstem Dam, 2001-2003

Dam	Spring Chinook 2002	Spring Chinook 2003	Summer Chinook 2002	Summer Chinook 2003	Fall Chinook 2002	Fall Chinook 2003	Coho 2002	Coho 2003	Sockeye 2002	Sockeye 2003	Steelhead 2002	Steelhead 2003
Bonneville	275,290	206,268	135,388	128,166	512,488	658,064	92,960	133,870	49,610	39,291	478,907	361,412
The Dalles	185,046	142,729	118,812	111,931	279,252	353,405	12,785	45,374	40,554	34,176	387,920	273,172
John Day	142,290	111,642	110,969	105,615	194,472	249,810	9,259	38,577	41,915	35,417	391,084	286,176
McNary	133,229	106,673	116,755	104,948	167,037	208,982	3,176	19,830	39,177	32,037	286,451	230,418
Ice Harbor	87,033	86,190	29,044	25,343	21,536	31,664	232	1,431	60	37	203,929	186,474
Lower Granite	77,157	78,904	24,112	20,559	17,816	20,213	369	1,265	51	11	208,303	180,672
Lower Monumental	77,841	77,947	25,429	22,307	21,376	22,851	148	1,104	45	14	212,194	176,541
Little Goose	79,047	76,096	23,097	17,877	17,061	20,918	121	864	38	23	198,817	166,046
Priest Rapids	34,279	18,792	97,781	86,837	28,338	54,804	1,447	5,216	47,882	36,551	15,806	17,652
Rock Island	24,844	17,634	90,041	88,401	14,839	26,132	1,592	5,869	44,319	34,779	15,196	17,509
Rocky Reach	10,160	4,666	75,911	69,362	11,918	13,980	425	993	12,372	30,355	11,718	13,641
Wells	7,626	4,702	63,007	46,391	6,099	8,253	135	168	10,587	28,977	9,246	9,963

Source: Fish Passage Center,

Table 12 Wild Fish at Bonneville Dam, 1990-2003

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Spring Chinook	**22,326**	**15,941**	**33,748**	**26,947**	**8,757**	**4,034**	**16,389**	**14,694**	**16,285**	**11,853**	**51,765**	**83,283**	**102,716**	**NA**
Snake River Wild Spring Chinook	5,761	5,220	15,926	7,678	1,976	1,790	3,895	4,748	9,611	1,365	5,730	27,247	59,143	NA
Upper Columbia Wild Spring Chinook	5,471	2,547	4,769	5,084	1,381	253	330	1,124	423	672	1,612	11,250	6,158	2,575
Summer Chinook @Bonn	**21,323**	**16,876**	**9,726**	**16,423**	**12,521**	**10,717**	**11,763**	**17,700**	**15,371**	**17,102**	**15,525**	**49,976**	**72,230**	**48,189**
Snake River Wild Summer Chinook @Bonn	4,352	3,546	530	4,140	245	495	2,705	5,526	4,159	1,999	885	12,547	4,421	1,374
Priest Rapids Dam count summ chin	15,576	14,811	8,523	16,377	14,859	12,162	10,995	13,107	13,387	20,898	22,306	53,170	96,326	83,004
Upper Columbia Wild Summer Chinook @PR	14,018	13,330	7,671	12,283	11,144	9,122	8,246	9,830	10,040	15,674	16,730	39,878	72,245	49,802
Upper Columbia Wild Summer Chinook @Bonn	16,971	13,330	9,196	12,283	12,276	10,222	9,058	12,174	11,212	15,103	14,640	37,429	67,809	46,814
Snake River Wild Spring/Summer Chinook @Bonn														61,363
Fall Chinook @Bonn	**150,334**	**114,335**	**71,403**	**65,219**	**85,449**	**68,259**	**84,640**	**106,504**	**83,183**	**79,147**	**77,574**	**107,785**	**166,096**	**197,118**
Snake River Wild Fall Chinook @Bonn	569	1,899	1,412	1,490	1,054	1,205	1,849	1,929	835	2,539	1,833	5,000	5,000	5,522
Hanford Reach	56,204	50,773	41,255	30,555	48,295	38,381	37,548	37,685	29,682	26,898	35,319	44,567	68,541	95,390
Deschutes River	2,224	3,532	2,776	8,239	5,801	7,588	8,763	20,687	10,925	6,527	3,981	11,177	12,252	19,612
Wind, Klick, BWS/Yakima	4,960	4,230	5,090	4,291	7,114	4,129	7,569	10,556	12,510	16,067	10,651	13,965	27,608	20,143
Umatilla	0	203	181	100	785	697	175	65	96	279	70	621	2,782	0
Hanford Reach @Bonn	142,581	104,471	61,944	51,099	70,695	54,640	66,284	73,267	58,817	53,735	61,039	77,022	118,454	151,841
Summer Steelhead	**41,700**	**63,500**	**54,900**	**35,800**	**30,500**	**30,800**	**34,800**	**37,200**	**39,800**	**65,600**	**132,300**	**157,300**	**129,300**	
Sockeye	**49,581**	**76,481**	**84,992**	**80,178**	**12,678**	**8,773**	**30,255**	**46,927**	**13,218**	**17,877**	**93,391**	**114,933**	**49,610**	**37,457**
Coho @Bonn dam (assuming 10% wild)	**1,160**	**5,890**	**1,780**	**1,060**	**2,030**	**1,040**	**1,570**	**2,420**	**4,630**	**4,070**	**8,580**	**25,950**	**8,780**	**12,576**

Sockeye are assumed to be 100 percent wild.
Spring, summer, and fall chinook numbers were estimated based on a multitude of assumptions.
Coho were assumed to be 10 percent wild.

Source: Washington Department of Fish and Wildlife

Table 13 Commercial Landings of Salmon and Steelhead from the Columbia River, Non-Indian and Treaty Indian combined, 1866-2002*

Millions of Pounds — Zone 1 - 6

1866	0.2720	**1879**	32.6400	**1892**	33.1390	**1905**	37.8001	**1918**	44.1254	**1931**	27.0318	**1944**	17.6432	**1957**	7.3229	**1970**	12.5828	**1983**	1.2495	**1996**	1.3349
1867	1.2240	**1880**	36.0400	**1893**	28.2796	**1906**	35.6531	**1919**	44.9345	**1932**	23.3302	**1945**	17.3686	**1958**	8.1144	**1971**	9.0041	**1984**	4.7313	**1997**	1.1596
1868	1.9040	**1881**	37.4000	**1894**	33.3268	**1907**	28.7206	**1920**	36.3115	**1933**	26.8468	**1946**	18.0781	**1959**	6.0212	**1972**	7.8827	**1985**	5.3825	**1998**	0.9012
1869	6.8000	**1882**	36.8084	**1895**	43.1593	**1908**	24.3409	**1921**	26.7125	**1934**	27.9019	**1947**	21.6640	**1960**	5.1539	**1973**	11.1252	**1986**	12.2769	**1999**	1.6181
1870	10.2000	**1883**	42.7992	**1896**	32.7554	**1909**	24.5353	**1922**	30.1527	**1935**	25.7560	**1948**	21.2466	**1961**	5.3304	**1974**	6.2666	**1987**	11.3547	**2000**	2.7605
1871	13.6000	**1884**	42.1600	**1897**	38.0250	**1910**	35.3304	**1923**	35.6673	**1936**	23.5286	**1949**	13.0507	**1962**	6.8824	**1975**	8.2431	**1988**	14.1987	**2001**	4.5920
1872	17.0000	**1885**	37.6584	**1898**	33.9502	**1911**	49.4800	**1924**	38.1671	**1937**	24.6735	**1950**	13.2843	**1963**	5.8842	**1976**	7.0193	**1989**	9.4118	**2002**	4.7512
1873	17.0000	**1886**	30.4980	**1899**	24.0036	**1912**	27.5302	**1925**	42.3334	**1938**	18.8339	**1951**	12.9132	**1964**	6.9606	**1977**	5.4335	**1990**	3.9369		
1874	23.8000	**1887**	24.2080	**1900**	25.7990	**1913**	26.5562	**1926**	35.5667	**1939**	17.9112	**1952**	10.7243	**1965**	8.5838	**1978**	5.0410	**1991**	5.0364		
1875	25.5000	**1888**	25.3284	**1901**	29.8324	**1914**	38.5013	**1927**	37.6884	**1940**	19.3201	**1953**	9.7178	**1966**	8.4225	**1979**	4.3933	**1992**	1.7282		
1876	30.6000	**1889**	21.0722	**1902**	26.2000	**1915**	43.8387	**1928**	33.1271	**1941**	31.6027	**1954**	7.6303	**1967**	9.4424	**1980**	4.2635	**1993**	1.4127		
1877	25.8400	**1890**	29.6326	**1903**	30.4887	**1916**	42.7463	**1929**	32.3213	**1942**	26.5462	**1955**	10.8267	**1968**	5.5862	**1981**	2.3291	**1994**	1.2203		
1878	31.2800	**1891**	27.1288	**1904**	36.8639	**1917**	40.4480	**1930**	31.9234	**1943**	14.7533	**1956**	9.7863	**1969**	8.0427	**1982**	4.7556	**1995**	0.8985		

* Data is unavailable for 2003.

Source: Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife

Table 14A Wildlife Accounting by Species and Dam

Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Albeni Falls	Bald Eagle (breeding)	4508	301	4207	6.68%
Albeni Falls	Bald Eagle (wintering)	4365	314	4051	7.19%
Albeni Falls	Black-capped Chickadee	2286	117	2169	5.12%
Albeni Falls	Canada Goose	4699	1161	3538	24.71%
Albeni Falls	Mallard	5985	227	5758	3.79%
Albeni Falls	Muskrat	1756	82	1674	4.67%
Albeni Falls	Redhead Duck	3379	0	3379	0.00%
Albeni Falls	White-tailed Deer	1680	30	1650	1.79%
Albeni Falls	Yellow Warbler	0	59	-59	0.00%
Albeni Falls	**All Species**	**28658**	**2291**	**26367**	**7.99%**
Anderson Ranch	Black-capped Chickadee	890	0	890	0.00%
Anderson Ranch	Blue Grouse	1980	0	1980	0.00%
Anderson Ranch	Common Snipe	0	889	-889	0.00%
Anderson Ranch	Mallard	1048	81	967	7.73%
Anderson Ranch	Mink	1732	0	1732	0.00%
Anderson Ranch	Mule Deer	2689	0	2689	0.00%
Anderson Ranch	Peregrine Falcon	0	0	0	0.00%
Anderson Ranch	Ruffed Grouse	919	0	919	0.00%
Anderson Ranch	Western Meadowlark	0	74	-74	0.00%
Anderson Ranch	Yellow Warbler	361	3	358	0.83%
Anderson Ranch	**All Species**	**9619**	**1047**	**8572**	**10.88%**
Big Cliff	Bald Eagle	0	0	0	0.00%
Big Cliff	Beaver	50	0	50	0.00%
Big Cliff	Black-tailed Deer	81	0	81	0.00%
Big Cliff	Common Merganser	11	0	11	0.00%
Big Cliff	Osprey	0	0	0	0.00%
Big Cliff	Pileated Woodpecker	71	0	71	0.00%
Big Cliff	River Otter	38	0	38	0.00%
Big Cliff	Roosevelt Elk	81	0	81	0.00%
Big Cliff	Ruffed Grouse	81	0	81	0.00%
Big Cliff	**All Species**	**413**	**0**	**413**	**0.00%**
Black Canyon	Black-capped Chickadee	0	0	0	0.00%
Black Canyon	Canada Goose	214	0	214	0.00%
Black Canyon	Mallard	270	0	270	0.00%
Black Canyon	Mink	652	1	651	0.15%
Black Canyon	Mule Deer	242	53	189	21.90%
Black Canyon	Ring-necked Pheasant	260	0	260	0.00%
Black Canyon	Sharp-tailed Grouse	532	0	532	0.00%
Black Canyon	Yellow Warbler	0	3	-3	0.00%
Black Canyon	**All Species**	**2170**	**57**	**2113**	**2.63%**
Bonneville OR	Black-capped Chickadee	511	189	322	36.99%
Bonneville OR	Canada Goose	1222	0	1222	0.00%
Bonneville OR	Great Blue Heron	2150	388	1762	18.05%
Bonneville OR	Lesser Scaup	0	0	0	0.00%
Bonneville OR	Mink	811	0	811	0.00%
Bonneville OR	Spotted Sandpiper	1383	2	1381	0.14%
Bonneville OR	Yellow Warbler	82	11	71	13.41%
Bonneville OR	**All Species**	**6159**	**590**	**5569**	**9.58%**
Bonneville WA	Black-capped Chickadee	511	429	82	83.95%
Bonneville WA	Canada Goose	1222	1112	110	91.00%
Bonneville WA	Great Blue Heron	2150	607	1543	28.23%
Bonneville WA	Lesser Scaup	0	0	0	0.00%
Bonneville WA	Mink	811	1687	-876	208.01%
Bonneville WA	Spotted Sandpiper	1383	0	1383	0.00%
Bonneville WA	Yellow Warbler	82	40	42	48.78%
Bonneville WA	**All Species**	**6159**	**3875**	**2284**	**62.92%**
Chief Joseph	Bobcat	401	132	269	32.92%
Chief Joseph	Canada Goose	213	10	203	4.69%
Chief Joseph	Lesser Scaup	0	0	0	0.00%
Chief Joseph	Lewis Woodpecker	286	141	145	49.30%
Chief Joseph	Mink	920	137	783	14.89%
Chief Joseph	Mule Deer	1992	409	1583	20.53%
Chief Joseph	Ring-necked Pheasant	239	0	239	0.00%
Chief Joseph	Sage Grouse	1179	554	625	46.99%
Chief Joseph	Sharp-tailed Grouse	2290	14	2276	0.61%
Chief Joseph	Spotted Sandpiper	1255	10	1245	0.80%
Chief Joseph	Yellow Warbler	58	26	32	44.83%
Chief Joseph	**All Species**	**8833**	**1433**	**7400**	**16.22%**
Cougar	American Dipper	285	0	285	0.00%
Cougar	Bald Eagle	0	0	0	0.00%
Cougar	Beaver	189	182	7	96.30%
Cougar	Black Bear	1856	0	1856	0.00%
Cougar	Black-tailed Deer	1192	0	1192	0.00%
Cougar	Cougar	1472	0	1472	0.00%
Cougar	Harlequin duck	282	0	282	0.00%
Cougar	Osprey	0	0	0	0.00%
Cougar	Pileated Woodpecker	1938	0	1938	0.00%
Cougar	River Otter	189	0	189	0.00%
Cougar	Roosevelt Elk	1484	0	1484	0.00%
Cougar	Ruffed Grouse	293	0	293	0.00%
Cougar	Spotted Owl	1774	0	1774	0.00%
Cougar	Waterfowl	0	0	0	0.00%
Cougar	Yellow Warbler	170	25	145	14.71%
Cougar	**All Species**	**11124**	**207**	**10917**	**1.86%**
Detroit	Bald Eagle	0	0	0	0.00%
Detroit	Beaver	715	0	715	0.00%
Detroit	Black-tailed Deer	3061	0	3061	0.00%
Detroit	Common Merganser	0	0	0	0.00%
Detroit	Osprey	0	0	0	0.00%
Detroit	Pileated Woodpecker	1156	0	1156	0.00%
Detroit	River Otter	882	0	882	0.00%
Detroit	Roosevelt Elk	2210	0	2210	0.00%
Detroit	Ruffed Grouse	3028	0	3028	0.00%
Detroit	Spotted Owl	246	0	246	0.00%
Detroit	**All Species**	**11298**	**0**	**11298**	**0.00%**

Table 14A Wildlife Accounting by Species and Dam (continued)

Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Dexter	American Dipper	119	0	119	0.00%
Dexter	Bald Eagle	0	0	0	0.00%
Dexter	Beaver	832	0	832	0.00%
Dexter	Black-tailed Deer	1078	0	1078	0.00%
Dexter	California quail	664	0	664	0.00%
Dexter	Greater Scaup	0	0	0	0.00%
Dexter	Mink	832	0	832	0.00%
Dexter	Osprey	0	0	0	0.00%
Dexter	Red Fox	508	0	508	0.00%
Dexter	Ring-necked Pheasant	332	0	332	0.00%
Dexter	Ruffed Grouse	701	0	701	0.00%
Dexter	Western Gray Squirrel	284	0	284	0.00%
Dexter	Wood Duck	644	0	644	0.00%
Dexter	Yellow Warbler	654	0	654	0.00%
Dexter	**All Species**	**6648**	**0**	**6648**	**0.00%**
Foster	Bald Eagle	0	0	0	0.00%
Foster	Beaver	245	0	245	0.00%
Foster	Black-tailed Deer	890	0	890	0.00%
Foster	Osprey	0	0	0	0.00%
Foster	Ring-necked Pheasant	385	0	385	0.00%
Foster	River Otter	340	0	340	0.00%
Foster	Roosevelt Elk	652	0	652	0.00%
Foster	Ruffed Grouse	853	0	853	0.00%
Foster	Wood Duck	179	0	179	0.00%
Foster	**All Species**	**3544**	**0**	**3544**	**0.00%**
Grand Coulee	Black-capped Chickadee	0	2	-2	0.00%
Grand Coulee	Blue Grouse	0	954	-954	0.00%
Grand Coulee	Bobcat	0	8	-8	0.00%
Grand Coulee	Canada Goose (nesting)	74	0	74	0.00%
Grand Coulee	Downy Woodpecker	0	1495	-1495	0.00%
Grand Coulee	Great Blue Heron	0	4500	-4500	0.00%
Grand Coulee	Mallard	0	2	-2	0.00%
Grand Coulee	Mink	0	24	-24	0.00%
Grand Coulee	Mourning Dove	9316	1001	8315	10.74%
Grand Coulee	Mule Deer	27133	17172	9961	63.29%
Grand Coulee	Pigmy Rabbit	0	1246	-1246	0.00%
Grand Coulee	Riparian Forest	1632	200	1432	12.25%
Grand Coulee	Riparian Shrub	27	0	27	0.00%
Grand Coulee	Ruffed Grouse	16502	2908	13594	17.62%
Grand Coulee	Sage Grouse	2746	7432	-4686	270.65%
Grand Coulee	Sharp-tailed Grouse	32723	14789	17934	45.19%
Grand Coulee	Western Meadowlark	0	286	-286	0.00%
Grand Coulee	White-tailed Deer	21632	9064	12568	41.90%
Grand Coulee	Yellow Warbler	0	129	-129	0.00%
Grand Coulee	**All Species**	**111785**	**61212**	**50573**	**54.76%**
Green Peter	Bald Eagle	0	0	0	0.00%
Green Peter	Band-tailed Pigeon	3487	0	3487	0.00%
Green Peter	Beaver	381	0	381	0.00%
Green Peter	Black-tailed Deer	3997	0	3997	0.00%
Green Peter	Common Merganser	21	0	21	0.00%
Green Peter	Osprey	0	0	0	0.00%
Green Peter	Pileated Woodpecker	710	0	710	0.00%
Green Peter	River Otter	575	0	575	0.00%
Green Peter	Roosevelt Elk	3997	0	3997	0.00%
Green Peter	Ruffed Grouse	3264	0	3264	0.00%
Green Peter	**All Species**	**16432**	**0**	**16432**	**0.00%**
Hills Creek	American Dipper	200	0	200	0.00%
Hills Creek	Bald Eagle	0	0	0	0.00%
Hills Creek	Beaver	326	955	-629	292.94%
Hills Creek	Black Bear	2958	66	2892	2.23%
Hills Creek	Black-tailed Deer	2912	259	2653	8.89%
Hills Creek	Cougar	2381	110	2271	4.62%
Hills Creek	Harlequin duck	269	0	269	0.00%
Hills Creek	Osprey	0	0	0	0.00%
Hills Creek	Pileated Woodpecker	3201	0	3201	0.00%
Hills Creek	River Otter	384	0	384	0.00%
Hills Creek	Roosevelt Elk	3203	106	3097	3.31%
Hills Creek	Ruffed Grouse	468	0	468	0.00%
Hills Creek	Spotted Owl	2977	0	2977	0.00%
Hills Creek	Waterfowl	0	0	0	0.00%
Hills Creek	Yellow Warbler	210	0	210	0.00%
Hills Creek	**All Species**	**19489**	**1496**	**17993**	**7.68%**
John Day OR	Black-capped Chickadee	435	0	435	0.00%
John Day OR	California quail	3162	0	3162	0.00%
John Day OR	Canada Goose	4005	0	4005	0.00%
John Day OR	Great Blue Heron	1593	0	1593	0.00%
John Day OR	Lesser Scaup	0	0	0	0.00%
John Day OR	Mallard	3700	0	3700	0.00%
John Day OR	Mink	719	7	712	0.97%
John Day OR	Mule Deer	0	5966	-5966	0.00%
John Day OR	Spotted Sandpiper	1593	0	1593	0.00%
John Day OR	Western Meadowlark	2530	8070	-5540	318.97%
John Day OR	Yellow Warbler	543	14	529	2.58%
John Day OR	**All Species**	**18280**	**14057**	**4223**	**76.90%**
John Day WA	Black-capped Chickadee	435	677	-242	155.63%
John Day WA	California quail	3162	4581	-1419	144.88%
John Day WA	Canada Goose	4005	2742	1263	68.46%
John Day WA	Great Blue Heron	1593	1691	-98	106.15%
John Day WA	Lesser Scaup	0	0	0	0.00%
John Day WA	Mallard	3700	3083	617	83.32%
John Day WA	Mink	719	1430	-711	198.89%
John Day WA	Spotted Sandpiper	1593	0	1593	0.00%
John Day WA	Western Meadowlark	2530	1927	603	76.17%
John Day WA	Yellow Warbler	543	667	-124	122.84%
John Day WA	**All Species**	**18280**	**16798**	**1482**	**91.89%**
Lookout Point	American Dipper	350	0	350	0.00%
Lookout Point	Bald Eagle	0	0	0	0.00%
Lookout Point	Beaver	1739	0	1739	0.00%
Lookout Point	Black-tailed Deer	4043	0	4043	0.00%
Lookout Point	California quail	1937	0	1937	0.00%

Table 14A Wildlife Accounting by Species and Dam (continued)

Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Lookout Point	Common Merganser	95	0	95	0.00%
Lookout Point	Mink	1586	0	1586	0.00%
Lookout Point	Osprey	0	0	0	0.00%
Lookout Point	Pileated Woodpecker	1614	0	1614	0.00%
Lookout Point	Red Fox	2082	0	2082	0.00%
Lookout Point	Ring-necked Pheasant	1654	0	1654	0.00%
Lookout Point	Roosevelt Elk	3668	0	3668	0.00%
Lookout Point	Ruffed Grouse	2457	0	2457	0.00%
Lookout Point	Spotted Owl	714	0	714	0.00%
Lookout Point	Western Gray Squirrel	1070	0	1070	0.00%
Lookout Point	Wood Duck	1124	0	1124	0.00%
Lookout Point	Yellow Warbler	1321	0	1321	0.00%
Lookout Point	**All Species**	**25454**	**0**	**25454**	**0.00%**
Lower Snake	Black-capped Chickadee	0	1014	-1014	0.00%
Lower Snake	California quail	20508	1936	18572	9.44%
Lower Snake	Canada Goose	2040	7	2033	0.34%
Lower Snake	Downy Woodpecker	365	238	127	65.21%
Lower Snake	Mallard (nesting)	0	365	-365	0.00%
Lower Snake	Mink	0	48	-48	0.00%
Lower Snake	Mule Deer	0	1456	-1456	0.00%
Lower Snake	Ring-necked Pheasant	2647	49	2598	1.85%
Lower Snake	Sage Grouse	0	45	-45	0.00%
Lower Snake	Song Sparrow	288	1060	-772	368.06%
Lower Snake	Western Meadowlark	0	2207	-2207	0.00%
Lower Snake	Yellow Warbler	927	436	491	47.03%
Lower Snake	**All Species**	**26775**	**8861**	**17914**	**33.09%**
McNary OR	Black-capped Chickadee	0	1202	-1202	0.00%
McNary OR	Blue Grouse	0	408	-408	0.00%
McNary OR	California quail	1263	1448	-185	114.65%
McNary OR	Canada Goose	697	0	697	0.00%
McNary OR	Downy Woodpecker	75	845	-770	1126.67%
McNary OR	Great Blue Heron	0	39	-39	0.00%
McNary OR	Mallard (nesting)	1392	93	1299	6.68%
McNary OR	Mallard (wintering)	0	0	0	0.00%
McNary OR	Mink	250	145	105	58.00%
McNary OR	Spotted Sandpiper	273	20	253	7.33%
McNary OR	Western Meadowlark	694	1981	-1287	285.45%
McNary OR	Yellow Warbler	66	284	-218	430.30%
McNary OR	**All Species**	**4710**	**6465**	**-1755**	**137.26%**
McNary WA	Black-capped Chickadee	0	3178	-3178	0.00%
McNary WA	Blue Grouse	0	137	-137	0.00%
McNary WA	California quail	5051	10275	-5224	203.43%
McNary WA	Canada Goose	2787	2323	464	83.35%
McNary WA	Downy Woodpecker	301	1757	-1456	583.72%
McNary WA	Great Blue Heron	0	117	-117	0.00%
McNary WA	Mallard (nesting)	5567	1803	3764	32.39%
McNary WA	Mallard (wintering)	0	0	0	0.00%
McNary WA	Mink	1000	925	75	92.50%
McNary WA	Spotted Sandpiper	1090	0	1090	0.00%
McNary WA	Western Meadowlark	2775	1130	1645	40.72%
McNary WA	Yellow Warbler	263	396	-133	150.57%
McNary WA	**All Species**	**18834**	**22041**	**-3207**	**117.03%**
Minidoka	Bald Eagle (wintering)	0	89	-89	0.00%
Minidoka	Mallard	0	0	0	0.00%
Minidoka	Marsh Wren	0	0	0	0.00%
Minidoka	Mule Deer	3413	1632	1781	47.82%
Minidoka	Redhead Duck	0	0	0	0.00%
Minidoka	River Otter	2993	0	2993	0.00%
Minidoka	Sage Grouse	3755	0	3755	0.00%
Minidoka	Western Grebe	0	0	0	0.00%
Minidoka	Yellow Warbler	342	0	342	0.00%
Minidoka	**All Species**	**10503**	**1721**	**8782**	**16.39%**
Palisades	Bald Eagle (breeding)	5941	3329	2612	56.03%
Palisades	Bald Eagle (wintering)	18565	6974	11591	37.57%
Palisades	Black-capped Chickadee	1358	480	878	35.35%
Palisades	Canada Goose	805	388	417	48.20%
Palisades	Mallard	2622	998	1624	38.06%
Palisades	Mink	2276	653	1623	28.69%
Palisades	Mule Deer	2454	2607	-153	106.23%
Palisades	Peregrine Falcon	0	0	0	0.00%
Palisades	Ruffed Grouse	2331	491	1840	21.06%
Palisades	Yellow Warbler	718	160	558	22.28%
Palisades	**All Species**	**37070**	**16080**	**20990**	**43.38%**
The Dalles OR	Black-capped Chickadee	91	0	91	0.00%
The Dalles OR	Canada Goose	220	0	220	0.00%
The Dalles OR	Great Blue Heron	213	0	213	0.00%
The Dalles OR	Lesser Scaup	0	0	0	0.00%
The Dalles OR	Mink	165	0	165	0.00%
The Dalles OR	Spotted Sandpiper	267	0	267	0.00%
The Dalles OR	Western Meadowlark	124	0	124	0.00%
The Dalles OR	Yellow Warbler	85	0	85	0.00%
The Dalles OR	**All Species**	**1165**	**0**	**1165**	**0.00%**
The Dalles WA	Black-capped Chickadee	91	272	-181	298.90%
The Dalles WA	Canada Goose	220	734	-514	333.64%
The Dalles WA	Great Blue Heron	213	111	102	52.11%
The Dalles WA	Lesser Scaup	0	0	0	0.00%
The Dalles WA	Mink	165	410	-245	248.48%
The Dalles WA	Spotted Sandpiper	267	158	109	59.18%
The Dalles WA	Western Meadowlark	124	58	66	46.77%
The Dalles WA	Yellow Warbler	85	156	-71	183.53%
The Dalles WA	**All Species**	**1165**	**1899**	**-734**	**163.00%**
Total		**404567**	**160130**	**244437**	

Source: Bonneville Power Administration

Table 14B Wildlife Habitat Units Lost, Acquired and Estimated, by Dam Group

Dam Group	Dam	HUs Lost	Total HUs Acquired & Estimated*	Percent Completed
Lower Columbia	Bonneville	12318	12251	99.5%
Lower Columbia	John Day	36560	30855	84.4%
Lower Columbia	McNary	23544	29234	124.2%
Lower Columbia	The Dalles	2330	1899	81.5%
		74752	**74239**	**99.3%**
Lower Snake	Four Lower Snake Dams	26775	8861	33.1%
Upper Columbia	Albeni Falls	28658	4188	14.6%
Upper Columbia	Chief Joseph	8833	1433	16.2%
Upper Columbia	Grand Coulee	111785	61553	55.1%
		149276	**67174**	**45.0%**
Upper Snake	Anderson Ranch	9619	1047	10.9%
Upper Snake	Black Canyon	2170	57	2.6%
Upper Snake	Minidoka	10503	1833	17.5%
Upper Snake	Palisades	37070	16080	43.4%
		59362	**19017**	**32.0%**
Willamette	Big Cliff	413	32	7.7%
Willamette	Cougar	11124	307	2.8%
Willamette	Detroit	11298	58	0.5%
Willamette	Dexter	6648	150	2.3%
Willamette	Foster	3544	96	2.7%
Willamette	Green Peter	16432	0	0.0%
Willamette	Hills Creek	19489	1496	7.7%
Willamette	Lookout Point	25454	0	0.0%
		94402	**2139**	**2.3%**
	Grand Total	**404567**	**171430**	**42.4%**

* Estimated HUs are those not yet credited by Bonneville against losses.

Source: Bonneville Power Administration

Table 14C Wildlife Habitat Units Lost, Gained*, Acquired, Estimated**, and Total by Dam or Area

Dam	HUs Lost	HUs Gained*	HUs Acquired	HUs Estimated**	Total Acquired & Estimated** HUs
Albeni Falls	28,658	171	2,306	1,882	4,188
Anderson Ranch	9,619	0	1,047	0	1,047
Big Cliff	413	40	0	32	32
Black Canyon	2,170	76	57	0	57
Bonneville OR	6,159	1,335	590	0	590
Bonneville WA	6,159	1,335	3,875	7,786	11,661
Chief Joseph	8,833	1,440	1,433	0	1,433
Cougar	11,124	1,637	207	100	307
Detroit	11,298	3,233	0	58	58
Dexter	6,648	1,214	0	150	150
Foster	3,544	926	0	96	96
Grand Coulee	111,785	0	61,212	341	61,553
Green Peter	16,432	4,742	0	0	0
Hills Creek	19,489	853	1,496	0	1,496
John Day OR	18,280	7,199	14,057	0	14,057
John Day WA	18,280	7,199	16,798	0	16,798
Lookout Point	25,454	2,636	0	0	0
Lower Snake	26,775	0	8,861	0	8,861
McNary OR	4,710	2,749	6,465	0	6,465
McNary WA	18,834	10,995	22,041	728	22,769
Minidoka	10,503	5,129	1,721	112	1,833
Palisades	37,070	0	16,080	0	16,080
The Dalles OR	1,165	289	0	0	0
The Dalles WA	1,165	289	1,899	0	1,899
Total	404,567	53,487	160,145	11,285	171,430

* Gained HUs are those that resulted from inundation and created habitat for some species.
** Estimated HUs are those not yet credited by Bonneville against losses.

Source: Bonneville Power Administration

Table 14D BPA Expenditures for Individual Wildlife Tracts

WL Site	Tract	Acres Protected	Purchase Cost	Purchase Type	WL Site	Tract	Acres Protected	Purchase Cost	Purchase Type
Albeni Falls Wildlife Mitigation	Strong Property	255	$850,000	Fee Title	McCoy Lake Watershed	Harris Property	180	$194,940	Fee Title
Blue Creek Winter Range	Abrahamson Property (A 322)	78	$42,237	Fee Title	McCoy Lake Watershed	Kenworthy Property	40	$60,000	Fee Title
Blue Creek Winter Range	Blue Creek Land Swap	701	$812,000	Exchange	McCoy Lake Watershed	McCrea Property (A 401 A)	35	$19,530	Fee Title
Boise River WMA	Krueger	166	$332,500	Fee Title	McCoy Lake Watershed	People Living God Prop.	440	$498,000	Fee Title
Boundary Creek WMA	Boundary Creek	1,405	$672,885	Fee Title	Muddy Cr / Marys River	Muddy Cr / Marys River	222	$387,500	Fee Title
Burlington Bottoms	Burlington Bottoms	417	$700,000	Fee Title	Pend Oreille Wetlands (Kalispel)	Pend Oreille Wetlands I	436	$427,185	Fee Title
Canby Landing	Canby Property	23	$250,000	Fee Title	Pend Oreille Wetlands (Kalispel)	Pend Oreille Wetlands II	164	$199,500	Fee Title
Col R Estuary Islands	Crimms Island	427	$430,000	Fee Title	Perkins Lake	Perkins Lake Tract	98	$200,000	Fee Title
Deer Parks WMU	Allen	81	$283,800	none/unknown	Pine Creek	Pine Creek	24,304	$3,200,000	Fee Title
Deer Parks WMU	BeaverDick (Kinghorn 1)	310	$465,000	Fee Title	Precious Lands WMA	Precious Lands	15,325	$4,250,524	Fee Title
Deer Parks WMU	Boyle Ranch	2,556	$5,200,000	Fee Title	Rainwater Ranch	Rainwater Ranch	8,678	$4,085,550	Fee Title
Deer Parks WMU	Horkley	128	$336,000	none/unknown	Rudeen	Rudeen	2,450	$1,700,000	Fee Title
Deer Parks WMU	Menan (Kinghorn 2)	140	$220,350	Fee Title	Sage Flat WA	Sage Flat	8,380	$1,526,057	Mix
Denny Jones	Denny Jones Ranch	6,385	$1,700,000	Fee Title	Scotch Creek WA	Chesaw	4,290	$9,000	Fee Title
Fox Creek	Kieffer Property	40	$64,000	Fee Title	Scotch Creek WA	Scotch Creek	7,300	$295,291	Fee Title
Fox Creek	Smith Property	160	$320,000	Fee Title	Scotch Creek WA	Tunk	320	$158,665	Fee Title
Goose Haven Lake	Bader	648	$800,324	none/unknown	Soda Hills WHMA	Soda Hills	2,563	$1,282,000	Fee Title
Hellsgate	Berg	6,300	$2,000,000	Fee Title	Sorenson	Sorenson	42	$172,955	Fee Title
Hellsgate	Bill Kuenhe	4,814	$2,275,000	Fee Title	Steigerwald Lake NWR	Bliss	9	$110,000	Fee Title
Hellsgate	Colville Allotments	80	$21,746	Fee Title	Steigerwald Lake NWR	Burlington Northern	27	$139,000	Fee Title
Hellsgate	Covington	129	$68,000	Fee Title	Steigerwald Lake NWR	James	90	$594,000	Fee Title
Hellsgate	Friedlander	60	$47,116	Fee Title	Steigerwald Lake NWR	Straub	191	$872,852	Fee Title
Hellsgate	Graves	2,700	$657,403	Fee Title	Swanson Lakes	Nelson	792	$191,889	Exchange
Hellsgate	Henry Kuehne	4,860	$3,000,000	Fee Title	Swanson Lakes	Swanson Lakes	14,939	$3,071,856	Fee Title
Hellsgate	Hinman	770	$139,608	Fee Title	Tacoma/Trimble WMA	Lower Trimble Creek	450	$506,000	Fee Title
Hellsgate	Nespelem Bend	517	$95,000	Fee Title	Tacoma/Trimble WMA	Tacoma Creek	437	$535,000	Fee Title
Hellsgate	Redford Canyon	221	$175,000	Fee Title	Tacoma/Trimble WMA	Upper Trimble Creek	303	$304,500	Fee Title
Hellsgate	Sand Hills	1,394	$575,000	Fee Title	Tex Creek WMA	Quarter Circle	2,135	$260,000	Fee Title
Iskuulpa	Iskuulpa	5,937	$2,260,625	Fee Title	The Pend Oreille WMA	Albeni Cove	70	$126,208	Fee Title
Kruse Pine Creek Easement	Pine Creek (Kruse)	800	$310,000	Easement	The Pend Oreille WMA	Carter Island	96	$288,000	Fee Title
Ladd Marsh	Ladd Marsh	940	$265,000	Mix	The Pend Oreille WMA	Cocolalla Lake	98	$290,500	Fee Title
Little Pend Oreille NWR	Kaniksu Addition	716	$313,000	Mix	The Pend Oreille WMA	Denton Slough	17	$44,000	Fee Title
Little Pend Oreille NWR	Weir	200	$275,707	Fee Title	The Pend Oreille WMA	Derr Creek (Henderson Ranch)	240	$511,000	Fee Title
Logan Valley	Logan Valley	1,700	$2,000,000	Fee Title	The Pend Oreille WMA	Pack River (McMahon)	30	$42,500	Fee Title
Lower Yakima Wetlands	Buena	92	$102,200	Lease	The Pend Oreille WMA	Rapid Lightning (Ginter)	110	$219,900	Fee Title
Lower Yakima Wetlands	Knight Property	80	$79,000	Easement	The Pend Oreille WMA	Trout Creek (Hunter Ranch)	216	$875,500	Fee Title
Lower Yakima Wetlands	Lateral A	417	$830,000	Easement	The Pend Oreille WMA	Westmond Lake	65	$118,000	Fee Title
Lower Yakima Wetlands	Lower Satus	1,791	$393,000	Mix	Thurston	Thurston	54	$121,275	Easement
Lower Yakima Wetlands	Mosebar	733	$167,725	Mix	Trout Creek Peninsula	Wheeler Peninsula Tract	112	$155,000	Fee Title
Lower Yakima Wetlands	North Satus	1,110	$331,150	Mix	Tualatin River NWR	Oleson Tract 1	132	$577,908	Mix
Lower Yakima Wetlands	Old Goldendale	193	$89,250	Easement	Tualatin River NWR	Oleson Tract 2	100	$859,210	Mix
Lower Yakima Wetlands	S Barkes Rd.	81	$91,000	Lease	Vancouver Lowlands	Vancouver Lowlands (Shillapoo)	612	$1,740,657	Fee Title
Lower Yakima Wetlands	Satus	4,474	$975,750	Mix	Wanaket	Wanaket (Conforth Ranch)	2,817	$1,042,976	Fee Title
Lower Yakima Wetlands	South Campbell	280	$229,875	Lease	Wellpinit Mtn WA	Wynecoop (A 67B)	80	$83,000	Fee Title
Lower Yakima Wetlands	Toppenish	1,600	$809,925	Mix	Whitney	Whitney	54	$121,680	Easement
Lower Yakima Wetlands	Wanity	361	$120,000	Mix	Willow Creek	Willow Creek	329	$1,058,000	Easement
Lower Yakima Wetlands	Wapato	770	$395,750	Easement	Windy Bay	Ramsey	147	$300,000	none/unknown
Lower Yakima Wetlands	West Satus	160	$147,175	Lease	Winterfeld Easement	Winterfeld	422	$225,000	Easement
McCoy Lake Watershed	Etue Property	74	$148,720	Fee Title	Zumwalt Prairie	Camp Creek Ranch	27,000+	$1,959,500	Easement

Source: Bonneville Power Administration

Table 15 Wildlife Habitat Units Lost and Acquired, Species Most Affected

Wildlife Species	HUs Lost	HUs Acquired	HUs Net	Percent Completed
Mule Deer	37,923	29,295	8,628	77.25%
California quail	35,747	18,240	17,507	51.03%
Sharp-tailed Grouse	35,545	14,803	20,742	41.65%
Bald Eagle	33,379	11,007	22,372	32.98%
Ruffed Grouse	30,897	3,399	27,498	11.00%
Mallard	24,284	6,652	17,632	27.39%
White-tailed Deer	23,312	9,094	14,218	39.01%
Canada Goose	22,423	8,477	13,946	37.80%
Black-tailed Deer	17,254	259	16,995	1.50%
Roosevelt Elk	15,295	106	15,189	0.69%
Mink	12,638	5,467	7,171	43.26%
Mourning Dove	9,316	1,001	8,315	10.74%
Spotted Sandpiper	9,104	190	8,914	2.09%
Western Meadowlark	8,777	15,373	-6,596	175.15%
Pileated Woodpecker	8,690	0	8,690	0.00%
Great Blue Heron	7,912	7,453	459	94.20%
Sage Grouse	7,680	8,031	-351	104.57%
Black-capped Chickadee	6,608	7,560	-952	114.41%
Yellow Warbler	6,510	2,409	4,101	37.00%
Spotted Owl	5,711	0	5,711	0.00%
Ring-necked Pheasant	5,517	49	5,468	0.89%
River Otter	5,401	0	5,401	0.00%
Black Bear	4,814	66	4,748	1.37%
Beaver	4,477	1,137	3,340	25.40%
Cougar	3,853	110	3,743	2.85%
Band-tailed Pigeon	3,487	0	3,487	0.00%
Redhead Duck	3,379	0	3,379	0.00%
Red Fox	2,590	0	2,590	0.00%
Blue Grouse	1,980	1,499	481	75.71%
Wood Duck	1,947	0	1,947	0.00%
Muskrat	1,756	82	1,674	4.67%
Riparian Forest	1,632	200	1,432	12.25%
Western Gray Squirrel	1,354	0	1,354	0.00%
American Dipper	954	0	954	0.00%
Downy Woodpecker	741	4,335	-3,594	585.02%
Harlequin duck	551	0	551	0.00%
Bobcat	401	140	261	34.91%
Lewis Woodpecker	286	141	145	49.30%
Common Merganser	127	0	127	0.00%
Song Sparrow	108	1,060	-952	981.48%
Riparian Shrub	27	0	27	-
Common Snipe	0	889	-889	-
Greater Scaup	0	0	0	-
Lesser Scaup	0	0	0	-
Marsh Wren	0	0	0	-
Osprey	0	0	0	-
Peregrine Falcon	0	0	0	-
Pigmy Rabbit	0	1,246	-1,246	-
Waterfowl	0	0	0	-
Western Grebe	0	0	0	-
Total	**404,567**	**159,770**	**244,617**	**39.49%**

* HUs acquisitiions exceed losses for these species. Therefore, negative numbers represent excess habitat units.

Source: Bonneville Power Administration

Table 16A BPA wildlife acres protected by agency

Agency Name	Acres Protected
Montana Department of Fish, Wildlife and Parks - Helena	70,386.00
Washington Department of Fish & Wildlife	69,540.00
Idaho Department of Fish & Game	68,934.00
Burns Paiute Tribe	46,462.00
Confederated Tribes of the Warm Springs Indian Rerservation	24,304.00
Colville Confederated Tribes	21,845.00
Nez Perce Tribe	20,198.00
Confederated Tribes of the Umatilla Indian Reservation	17,432.00
Yakama Indian Nation	12,142.00
Montana Land Reliance	5,041.00
Shoshone-Bannock Tribes	5,013.00
USFS - Flathead National Forest	2,383.00
Kalispel Tribe of Indians	2,225.00
Spokane Tribe of Indians	1,828.00
Oregon Department of Fish & Wildlife- Hq	1,752.00
US Fish and Wildlife Service - Portland Region	1,892.00
The Nature Conservancy - OR	27,329.00
Kootenai Tribe of Idaho	210.00
The Nature Conservancy - MT	107.00
US Fish and Wildlife Service - Denver Region	80.00
Flathead Land Trust	60.00
Total	**399,163.00**

Source: Bonneville Power Administration

Table 16B BPA wildlife acquisition costs by agencies

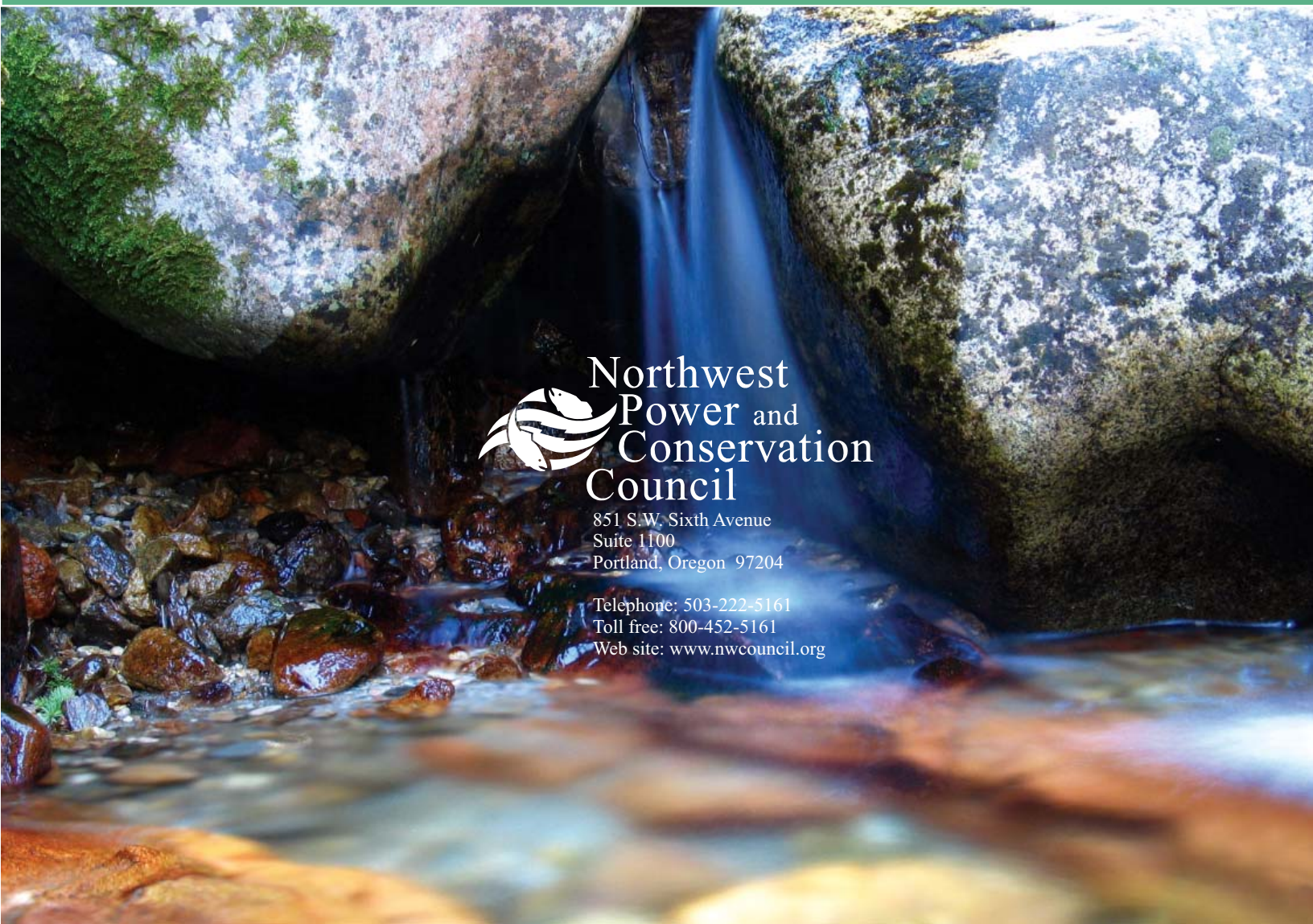
Agency Name	Cost
Idaho Department of Fish & Game	17,844,110
Colville Confederated Tribes	9,053,873
Confederated Tribes of the Umatilla Indian Reservation	7,389,151
Washington Department of Fish & Wildlife	6,993,415
Nez Perce Tribe	6,721,939
Yakama Indian Nation	4,761,800
US Fish and Wildlife Service - Portland Region	4,171,677
Montana Department of Fish, Wildlife and Parks - Helena	3,728,583
Burns Paiute Tribe	3,700,000
Confederated Tribes of the Warm Springs Indian Rerservation	3,200,000
Shoshone-Bannock Tribes	2,982,000
Kalispel Tribe of Indians	3,322,185
Spokane Tribe of Indians	2,242,427
Oregon Department of Fish & Wildlife- Hq	2,018,410
The Nature Conservancy - OR	3,017,500
USFS - Flathead National Forest	416,000
Kootenai Tribe of Idaho	355,000
Montana Land Reliance	100,059
US Fish and Wildlife Service - Denver Region	5,000
Flathead Land Trust	3,598
The Nature Conservancy - MT	2,200
Total	**82,028,927**

Source: Bonneville Power Administration

Table 17 Properties Purchased by BPA for wildlife purposes, 1978-2003

Province	Subbasin	Site	Acres Protected	Purchase Type
Blue Mountain	Grande Ronde	Ladd Marsh	940	Mix
	Grande Ronde	Precious Lands WMA	15,325	Fee Title
	Grande Ronde	Rainwater Ranch	8,678	Fee Title
	Grande Ronde	Wanaket	2,817	Fee Title
	Grande Ronde	Zumwalt Prairie/Camp Crk Ranch	27,000	Easement
Columbia Estuary	Columbia Estuary	Crim's Island	427	Fee Title
Cascade Columbia	Columbia Upper Middle/Okanogan	Sage Flat WA	8,380	Mix
	Okanogan	Columbia Basin Wetlands	100	Fee Title
	Okanogan	Scotch Creek WA	11,910	Fee Title
	Okanogan	Sunnyside	1,280	Lease
	Okanogan	Wenas WA	30,053	Lease
Columbia Plateau	Columbia Lower Middle	Columbia Basin Wetlands	100	Fee Title
	Columbia Lower Middle	Wanaket	2,817	Fee Title
	Crab	Swanson Lakes	792	Exchange
	Crab	Swanson Lakes	14,999	Fee Title
	John Day	Pine Creek	24,304	Fee Title
	Umatilla	Iskuulpa	5,937	Fee Title
	Walla Walla	Rainwater Ranch	8,678	Fee Title
	Yakima	Lower Yakima Wetlands	1,460	Easement
	Yakima	Lower Yakima Wetlands	613	Lease
	Yakima	Lower Yakima Wetlands	10,069	Mix
	Yakima	Lower Yakima Wetlands	0	none/unknown
Intermountain	Coeur D'Alene/Pend Oreille	The Pend Oreille WMA	942	Fee Title
	Columbia Upper/San Poil	Hellsgate	21,845	Fee Title
	Columbia Upper	Hellsgate	0	Enhancement
	Columbia Upper	Lake Roosevelt Peregrine Falcon	0	Enhancement
	Pend Oreille	Carey Creek	117	Fee Title
	Pend Oreille	Little Pend Oreille NWR	200	Fee Title
	Pend Oreille	Little Pend Oreille NWR	716	Mix
	Pend Oreille	Pend Oreille Wetlands (Kalispel)	600	Fee Title
	Pend Oreille	Perkins Lake	98	Fee Title
	Pend Oreille	Priest River	63	Fee Title
	Pend Oreille	Tacoma/Trimble WMA	1,190	Fee Title
	Pend Oreille	Trout Creek Peninsula	112	Fee Title
	Pend Oreille	Strong Property	255	Fee Title
	San Poil	Hellsgate	0	Enhancement
	Spokane	Blue Creek Winter Range	701	Exchange
	Spokane	Blue Creek Winter Range	78	Fee Title
	Spokane	Fox Creek	200	Fee Title
	Spokane	McCoy Lake Watershed	769	Fee Title
	Spokane	Wellpinit Mtn WA	80	Fee Title
Lower Columbia	Columbia Lower	Steigerwald Lake NWR	317	Fee Title
	Columbia Lower	Vancouver Lowlands	612	Fee Title
	Sandy	Sandy River Delta	0	Enhancement
Lower Columbia	Willamette	Burlington Bottoms	417	Fee Title
	Willamette	Canby Landing	23	Fee Title
	Willamette	Muddy Cr / Marys River	222	Fee Title
	Willamette	Sorenson	42	Fee Title
	Willamette	South Pasture	0	none/unknown
	Willamette	Thurston	54	Easement
	Willamette	Tualatin River NWR	232	Mix
	Willamette	Whitney	54	Easement
	Willamette	Willow Creek	329	Easement
Middle Snake	Malheur	Denny Jones	6,385	Fee Title
	Malheur	Denny Jones	38,377	Lease
	Malheur	Logan Valley	1,700	Fee Title
Mountain Columbia	Clark Fork	The Pend Oreille WMA	942	Fee Title
	Flathead	Hungry Horse Mitigation	37,595	Easement
	Flathead	Hungry Horse Mitigation	1,289	Exchange
	Flathead	Hungry Horse Mitigation	113	Fee Title
	Flathead	Hungry Horse Mitigation	1,094	Mix
	Flathead	Hungry Horse Mitigation	0	Enhancement only
	Flathead	Hungry Horse Mitigation	0	none/unknown
	Flathead	Hungry Horse Mitigation	4,514	Partnerships
	Flathead/Kootenai	Libby Dam Mitigation	33,217	Easement
	Flathead	Libby Dam Mitigation	235	Exchange
	Flathead	Libby Dam Mitigation	0	Enhancement only
	Flathead	Libby Dam Mitigation	0	none/unknown
	Kootenai	Boundary Creek WMA	1,405	Fee Title
	Kootenai	Libby Dam Mitigation	235	Exchange
	Kootenai	Libby Dam Mitigation	0	Enhancement only
	Kootenai	Libby Dam Mitigation	0	none/unknown
Mountain Snake	Clearwater	Buck Creek Old Growth	67	Fee Title
	Clearwater/Salmon	Dworshak Mitigation (Craig Mtn)	59,991	Fee Title
	Salmon	Dworshak Tribal	4,873	Fee Title
Upper Snake	Snake Upper	Big Cottonwood WMA	0	Enhancement only
	Snake Upper	Boise River WMA	166	Fee Title
	Snake Upper	Camas Prairie	1,364	Fee Title
	Snake Upper	Deer Parks WMU	3,006	Fee Title
	Snake Upper	Deer Parks WMU	209	none/unknown
	Snake Upper	Kruse Pine Creek Easement	800	Easement
	Snake Upper	Rudeen	2,450	Fee Title
	Snake Upper	Soda Hills WHMA	2,563	Fee Title
	Snake Upper	Tex Creek WMA	2,135	Fee Title
	Snake Upper	Winterfeld Easement	422	Easement
Grand Total			**586,844**	

Source: Bonneville Power Administration



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