

# Third 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 - 2002



Council Document 2004-3  
February 2004



# Executive Summary

In Fiscal Year 2002, the Bonneville Power Administration spent a total of \$412.3 million including \$160.4 million in hydropower operations, on Columbia River Basin fish and wildlife. This brings the grand total of Bonneville's fish and wildlife expenditures, 1978-2002, to \$6,181,500,000.

These expenditures, which were provided to the Council by Bonneville and are detailed in Appendix A of this report, include:

- \$1.15 billion (\$137.1 million in 2002) for the Council's direct program.
- \$10 million (\$7.1 million in 2002) in one-time expenditures for "high priority" and "action plan" projects. 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. 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.
- \$634 million (\$51.1 million in 2002) 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.

- \$1.01 billion in fixed expenses (interest, amortization and depreciation) for bonds issued by Bonneville to the US Treasury, and for Corps and Reclamation appropriations that BPA repays to Treasury, to pay for both capital offsite mitigation in the region and for capital investments at the dams.
- \$2.27 billion (\$147.8 million in 2002) for power purchases to meet load requirements in response to required river operations that reduce hydropower generation.
- \$1.1 billion (\$12.6 million in 2002) in forgone revenue, the calculated value of hydropower that could not be sold because of required river operations to assist fish passage and improve fish survival, such as water spills at the 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.

All of the expenditure data in this report was provided by Bonneville and was not independently verified by the Council. Questions about the data should be directed to Bonneville.

This is the Council's third annual report. It provides an update of expenditures through Fiscal Year 2002 and also includes information on salmon and steelhead in the Columbia River Basin. For the last several years, adult fish returns have continued to be especially strong, well above recent 10-year averages.

## 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 hydropower. 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. The Council has amended its program periodically since 1982, when the first program was adopted. The current program was adopted in October 2000 and amended in July 2003 with a description of mainstem river conditions and tests of dam operations intended to protect all fish and wildlife that utilize mainstem rivers as habitat.

## 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, construction projects to improve habitat and fish passage, hatchery development and operation, and 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.

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.

Anadromous fish, primarily salmon and steelhead, once spawned as far inland as the headwaters of the Columbia River in British Columbia and Shoshone Falls in south central Idaho,

but their historic range was reduced by hydroelectric dams that did not include fish passage facilities. Today, the mainstem Columbia River is blocked by Chief Joseph Dam, the Snake River is blocked by Hells Canyon Dam and the North Fork Clearwater River is blocked by Dworshak Dam. The Council's fish and wildlife program directs numerous projects to improve spawning and rearing habitat for anadromous fish, both in the mainstem rivers and in tributaries. Between 1978 and 2002, Bonneville's spending on anadromous fish totaled \$1.04 billion (\$109.4 million in 2002).

The number of adult anadromous fish returning from the ocean to spawn in the Columbia River Basin was well above 10-year averages in 2001 and 2002.



There is no apparent single cause for the improved runs, but juvenile survival of these runs must have been high and ocean conditions must have been favorable. As shown in Figure 8, the North Pacific Ocean is entering a cool-water cycle, and that is good news for Columbia basin salmon and steelhead. Cool water tends to improve food production for salmon and steelhead. Observations at Columbia and Snake dams suggest that the percentage of naturally spawning fish, as compared to fish that were spawned in hatcheries, appears to be increasing among the adult runs, and that is another piece of good news. We report information on Columbia River salmon and steelhead runs in Figures 7 through 13.

Resident fish, which exist throughout the basin, also were affected by hydropower dams. The dams altered river

flows, inundated spawning and rearing areas and blocked natural migration patterns. Through the Council's program, resident fish are produced to compensate for losses of salmon and steelhead in areas permanently blocked by hydropower dams, and also to mitigate for impacts to native resident species. This is accomplished through the construction and operation of fish hatcheries, such as the trout and kokanee hatcheries in Lake Roosevelt behind Grand Coulee Dam, as well as habitat improvements to benefit native fish populations. These improvements provide important and valuable tribal subsistence and public recreational fisheries.

An effort also is being made to conserve the endangered white sturgeon in the Kootenai River in Idaho, in conjunction with fish and power agencies in British Columbia where sturgeon

spend a portion of their lives. This is one example of a project that addresses a transboundary species whose habitat crosses the border with British Columbia. We anticipate more transboundary projects will be funded or co-funded through the Council's program in the future as we continue to increase our collaboration with entities and people in British Columbia through planning activities in northwestern Montana and northern Idaho and Washington.

The Council finds that mitigation in areas blocked to salmon and steelhead by the development and operation of the hydropower system is appropriate, and flexibility in the approach utilized for mitigation is necessary. The Council's resident fish substitution policy calls for restoring native and resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic ranges where original habitat conditions exist and where habitats can be feasibly restored. The policy also calls for taking actions to reintroduce anadromous fish into areas blocked by dams, such as above Chief Joseph and Grand Coulee dams, where feasible, and for administering and increasing opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species. This includes intensive fisheries within closed or isolated systems and recreational fisheries such as those in northeastern Washington and northwestern Montana.

As shown in Table 3 of Appendix A, between 1978 and 2002 Bonneville's

spending for resident fish totaled \$164,830,174 (\$16,802,480 in 2002).

Wildlife also were affected by the development of the Columbia River Basin hydropower system. In some areas, important floodplain and riparian habitats were inundated; in other places, fluctuating water levels caused by dam operations continually flood and expose the shoreline, creating barren vegetation zones that reduce foraging areas and expose wildlife to increased predation. Other activities related to the construction and operation of the hydropower system also affected wildlife, such as road construction, draining and filling of wetlands, stream channelization and ongoing dam operations.

Through the Council's program, wildlife losses attributable to construction of the dams were identified. Losses attributable to dam operations remain to be quantified. Mitigation for the losses is measured in terms of "habitat units" in order to account for habitat quantity (acres) as well as quality. When property is acquired for wildlife mitigation purposes, it is evaluated for its suitability to provide food, shelter and reproductive conditions for various species. This suitability is expressed in habitat units. Habitat units are calculated by multiplying a measure of habitat quality for a selected species by the area of available habitat.

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 can result when inundation of reservoirs creates new habitat for certain species, are estimated separately from losses. Bonneville estimates the development of the hydrosystem caused a total loss of 404,567 habitat units for all affected species. From this total, Bonneville subtracts habitat unit gains of 53,487 for a net loss of 351,080.

Habitat unit losses and acquisitions are presented in Figures 14A-D, 15, 16A and B and Figure 17, and corresponding tables in Appendix A. Bonneville reports that through Fiscal Year 2002, 160,145 habitat units were acquired through acquisitions of habitat or habitat-protection agreements. An additional 11,285 habitat units have been estimated for the property acquired but not yet credited to losses for specific species. Bonneville's wildlife spending from 1978 through 2002 totals \$149,642,366 (\$10.4 million in Fiscal Year 2002).

The Council and Bonneville are continuing to discuss how to accurately credit acquired habitat units against identified losses. In 2003, the Council and Bonneville began developing a long-term financial plan for wildlife. This discussion raised several issues that have yet to be resolved regarding crediting acquired habitat units against

identified losses. Wildlife habitat purchases can be expensive, and in the past Bonneville has used 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 policy for capitalizing wildlife habitat purchases is under discussion as part of the long-term financial plan.

### **Project Reviews and Subbasin Planning**

Through an annual process 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,<sup>1</sup> the Independent Scientific Review Panel<sup>2</sup> and the general public and then recommends projects to Bonneville for funding.

In 2003, the Council transitioned from an annual cycle for project review and recommendation to a three-year cycle and also worked with state and federal fish and wildlife agencies, Indian tribes and watershed-based citizen organizations to develop comprehensive plans for the tributary

subbasins of the Columbia River.<sup>3</sup> Future project solicitations, review and recommendations will be based on these plans, which the Council anticipates completing and amending into the fish and wildlife program by 2005.

### **Two ways of reporting costs**

Bonneville reports its fish and wildlife expenditures in two formats: 1) obligations: money that is committed to a particular purpose in a particular year, and 2) accruals: invoices received in a given year. Thus, an amount obligated in one year may be spent in installments over several years. For the figures in this report, Bonneville provided obligations for some expenses and accruals for others. Figures 1 and 2, total spending 1978-2002, and the corresponding table in Appendix A are reported as accruals. All of the other figures and tables are reported as obligations.

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- <sup>1</sup> 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.
  - <sup>2</sup> 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.
  - <sup>3</sup> Subbasin plans are being developed for the purpose of identifying fish and wildlife mitigation needs and directing project solicitation, review and implementation.





# Fiscal Year 2002

In general, 2002 was a much better year for salmon and for Bonneville than 2001, when the energy crisis and the drought combined to create a financial crisis for Bonneville and poor environmental conditions for fish and wildlife. As the result of extremely low rainfall and runoff in the Columbia River Basin from the fall of 2000 through the spring of 2001, hydropower generation was reduced by about 4,000 megawatts. Extremely high power prices made matters worse as Bonneville's estimated value of power purchases and forgone revenues to offset the power that was not generated due to fish operations at Columbia and Snake river dams rose dramatically. Even though these operations were significantly reduced in 2001, because of high prices they still totaled \$1.4 billion. In 2002,

when runoff and demand for power were close to normal, Bonneville's power purchases and forgone revenues totaled \$160.4 million.

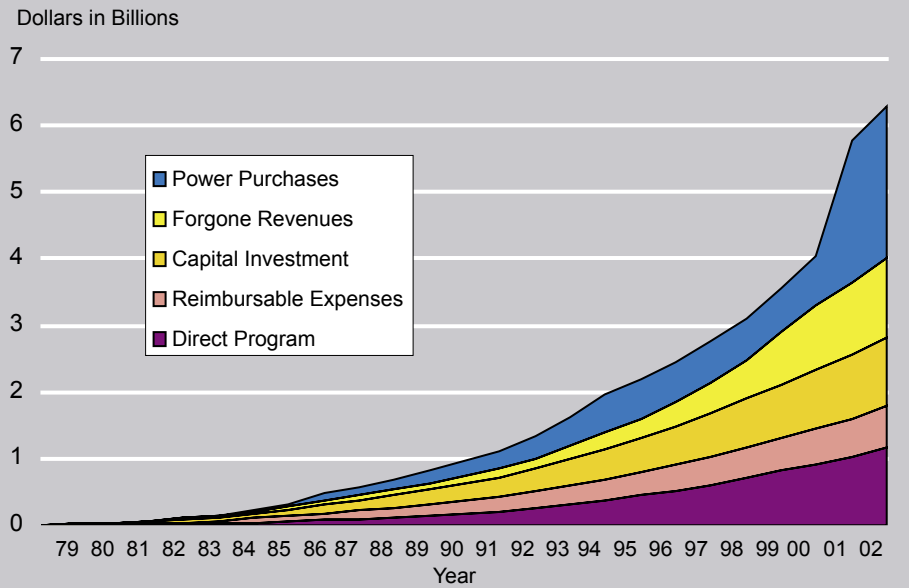
However, the energy crisis left Bonneville mired in a financial crisis, primarily as the result of the extraordinary power purchase costs in 2000 and 2001 and lower-than-expected surplus power sales in 2001. Bonneville raised its rates three times in response.

The financial crisis affected Bonneville's fish and wildlife expenditures to implement the Council's program. In December 2002, Administrator Steve Wright announced he would cap fish and wildlife spending in Fiscal Year 2003 at \$139 million in direct expenditures

and \$36 million in borrowing. This was problematic for the Council because Bonneville earlier committed to a higher annual level of expenditures for the current five-year rate period — \$150 million in direct expenditures and \$36 million in borrowing. Further complicating the matter, Bonneville carried over some \$40 million in spending obligations from the previous rate case period.

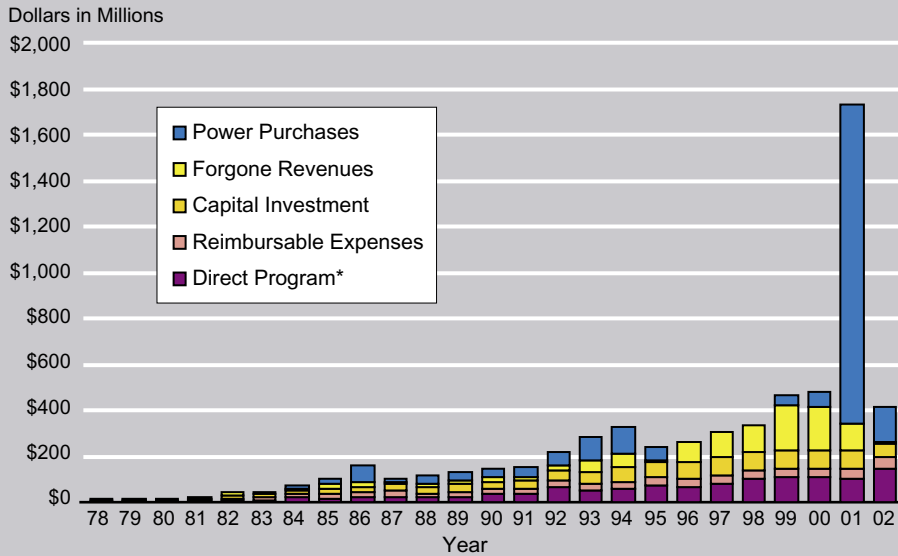


**FIGURE 1**  
BPA Fish and Wildlife  
Cumulative Expenditures  
1978-2002



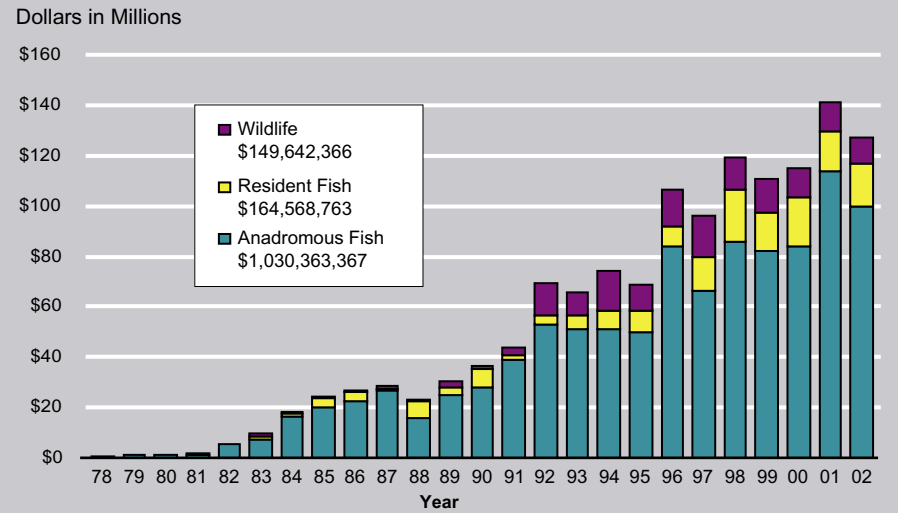
\* Action Plan and High Priority Data is included under Direct Program costs. See details in Table 1 on page 21

**FIGURE 2**  
**BPA Fish and Wildlife**  
**Total Annual Expenditures**  
**1978-2002**

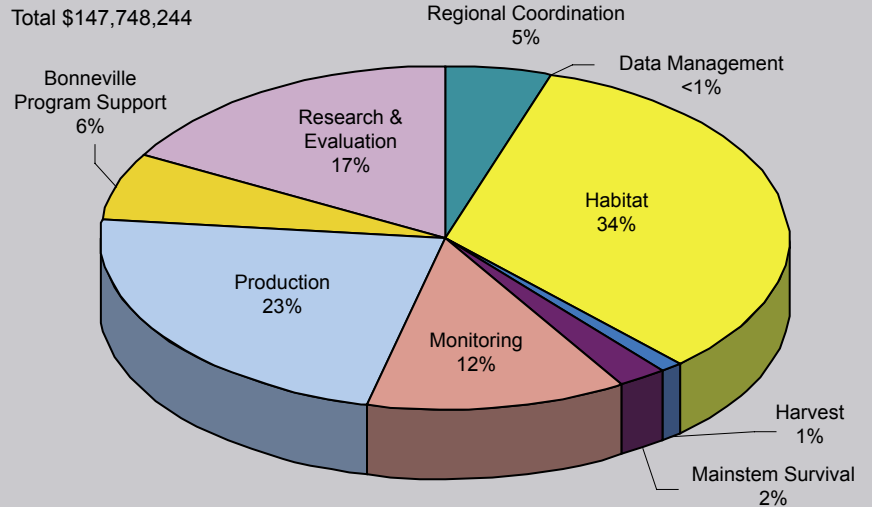


\* Action Plan and High Priority Data is included under Direct Program costs. See details in Table 1 on page 21

**FIGURE 3**  
**BPA Direct Program Budget**  
**Obligations by Species**  
**1978-2002**



**FIGURE 4**  
**BPA Direct Program Budget**  
**Obligations by General Purpose**  
**2002**



# Total Expenditures, 1978 - 2002

In Fiscal Year 2002, Bonneville spent a total of \$412.2 million on Columbia River Basin fish and wildlife recovery, compared to \$1.72 billion in 2001 and \$560 million in 2000. Bonneville's program budget includes five categories of expenditures, which are detailed on page 7. These include 1) the direct program, 2) reimbursable expenses, 3) fixed expenses, 4) power purchases that are necessitated by fish operations at the dams, and 5) forgone revenues that result from fish operations at the dams.

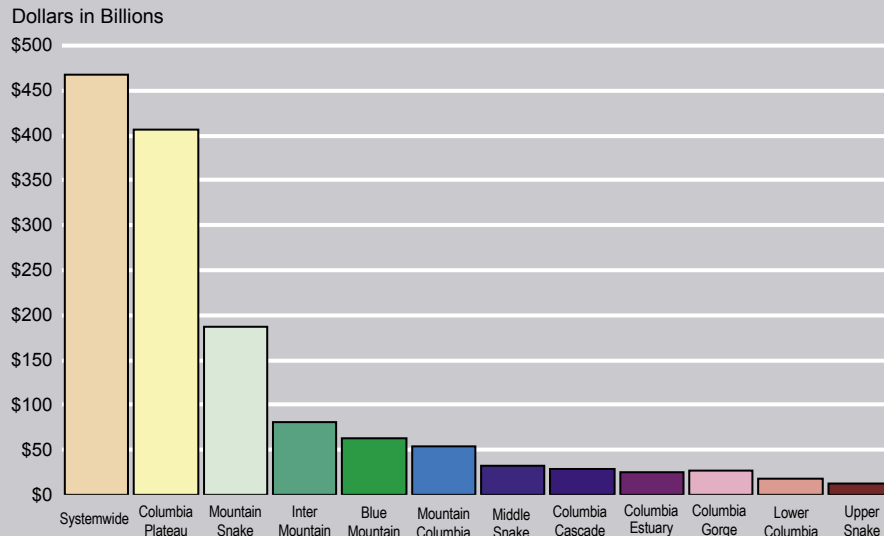
The 2002 expenditures bring the grand total since 1978 to \$6,426,000,000. Here is the breakdown:

- \$1,157,300,000 for the Council's direct program (\$137 million in 2002, plus \$7.1 million for high-priority projects designed to assist threatened and endangered species affected by the drought and subsequent river and dam operations in 2001). The direct program includes on-the-ground efforts such as habitat improvements, habitat purchases, research, hatcheries, construction and installation of fish diversion screens on irrigation withdrawals. Many of the projects that implement the program also address actions required under

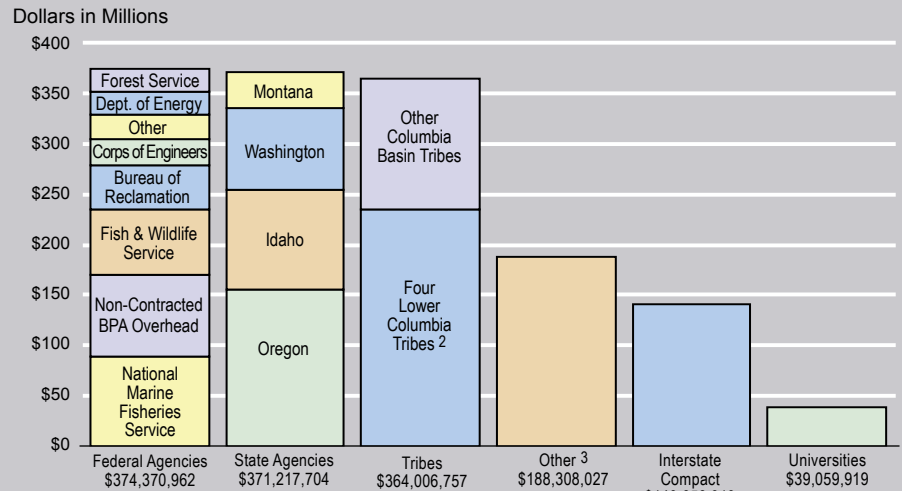
the Endangered Species Act to protect threatened and endangered populations of salmon, steelhead, Kootenai River white sturgeon and bull trout. The Council has been working to integrate these federal mitigation efforts with those in the fish and wildlife program in order to avoid duplication of effort and increase the cost-effectiveness of the overall fish and wildlife recovery effort in the Columbia River Basin. Information on the direct program, including details of projects that implement the program, is available at the Council's website, [www.nwcouncil.org](http://www.nwcouncil.org).

- \$634,000,000 in reimbursable costs (\$51.1 million in 2002). These expenditures reimburse the U.S. Treasury for the power share of other federal agency efforts, including those of the U.S. Army Corps of Engineers, Bureau of Reclamation, and U.S. Fish and Wildlife Service for research, operation and maintenance costs related to fish and wildlife facilities.
- \$1,014,000,000 in fixed expenses (\$56.6 million in 2002). These expenditures primarily are for debt service on federal bonds issued by Bonneville to pay for capital investments at the dams.

**FIGURE 5**  
BPA Direct Program Budget Obligations by Province 1978-2002



**FIGURE 6**  
BPA Direct Program Budget Obligations by Prime Contractor 1 1978-2002



1 Primary contractor may have subcontracted part or all of contract  
 2 Includes: Yakama, Warm Springs, Nez Perce, and Umatilla  
 3 These are identified in Appendix A, Figures 6A & 6B, pages 23 and 24

- \$2,317,900,000 in power purchases (\$147.8 million in 2002). These are purchases Bonneville must make in order to meet load requirements in response to required river operations that reduce hydropower generation. The river operations, detailed in the biological opinions on hydropower operations, require certain flows, spills and other operations at dams, such as lowered forebay elevations, when fish are migrating to the ocean, primarily in the spring and early summer, but also in the late summer. These requirements reduce the generating capability of the power system by about 1,000 megawatts.
- \$1,292,000,000 in forgone revenue (\$12.6 million in 2002). This is the calculated value of hydropower that was generated and consequently could not be sold because of required river operations to improve fish survival, such as water spills at dams.

# Components of the Fish and Wildlife Budget in 2002

## Elements of the direct program

In 2002, Bonneville's direct-program obligations totaled \$147 million. Habitat projects accounted for \$48.8 million or 33.2 percent of the total; fish production accounted for \$34.2 million or 23.3 percent; mainstem Columbia and Snake river habitat expenditures totaled \$3.4 million or 2.3 percent<sup>4</sup>; and fish harvest programs accounted for \$1.6 million, or less than 1 percent. Bonneville also reported direct program expenditures of \$25 million for research and evaluation or 17 percent of the total; \$17.9 million or 12.2 percent for monitoring; \$7.3 million or 4.9 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 \$9.9 million or 6.7 percent for Bonneville's internal program support.

In terms of species, Bonneville's direct program obligations in 2002 included \$109.3 million for anadromous fish, \$16.8 million for resident fish and \$10.4 million for wildlife. These total \$136.6 million, which is \$1.4 million less than the total obligations. The difference is in Bonneville's internal expenditures for program and project support that

supported all three areas. Given these allocations, expenditures for anadromous fish accounted for 80 percent of the total, resident fish expenditures accounted for 12 percent and wildlife expenditures accounted for 8 percent.

## “High priority” and “action plan” projects

In 2001 and 2002 Bonneville provided funding for “high priority” and “action plan” projects to 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 responded to specific direction in the Council's 2000 revision of its Columbia River Basin Fish and Wildlife Program. In November 2000, following the October completion of the revision, the Council requested recommendations<sup>5</sup> for projects that could proceed in advance of subbasin planning to bring immediate benefits to species listed for protection under the Endangered Species Act. In March 2001, the Council recommended to Bonneville 17 projects totaling \$19 million

in funding.<sup>6</sup> In May, Bonneville agreed to fund some of the projects totaling \$14.7 million,<sup>7</sup> later reduced to \$9.7 million by deferring some of the projects for later consideration during the Council's normal fish and wildlife project review process. Bonneville obligated \$3.5 million of the high-priority project funding in 2001 and \$6.2 million in 2002.

In May 2001, Bonneville opened a solicitation<sup>8</sup> for “action plan” projects for

one-time, emergency funding that would bring immediate benefit to anadromous fish — ESA-listed as well as unlisted species — directly affected by emergency hydropower operations. Bonneville had declared a power emergency in early 2001 and, in the spring and early summer, sharply reduced the amount of water spilled over dams during the salmon and steelhead migration period in order to keep water in reservoirs for power generation.



- 4 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.
- 5 Letter of November 13, 2000, from Stephen Crow, executive director of the Council, and Sarah McNary, director of Bonneville's fish and wildlife division, to potential project sponsors.
- 6 Letter of March 26, 2001, from Frank L. Cassidy, Jr., Council Chair, to Stephen J. Wright, Bonneville Administrator.
- 7 Letter of May 8, 2001, from Robert Austin, Deputy Director of Bonneville's Fish and Wildlife Division, to Bob Lohn, director of the Council's Fish and Wildlife Division.
- 8 Letter of May 10, 2001, to potential project sponsors from Alexandra B. Smith, Bonneville's vice president for environment, fish and wildlife, and Paul Norman, Bonneville's senior vice president, Power Business Line.

Bonneville asked that the action-plan projects be designed to increase tributary flows, improve tributary spawning and rearing habitat, screen water diversions in tributaries or relocate or plant fish in tributaries. In June, the Council recommended projects totaling \$24.2 million<sup>9</sup>; Bonneville agreed to fund some of these for a total of \$9.6 million,<sup>10</sup> later reduced to \$7.4 million. Bonneville obligated \$4.06 million to these projects in 2001 (all for salmon and steelhead except for \$261,411 for a resident fish project) and \$3.4 million in 2002. None of the projects targeted wildlife. Because the projects responded directly to power system operations, the projects were funded through Bonneville's Power Business Line. Other fish and wildlife projects are funded through a separate budget for the fish and wildlife program.

Bonneville intended these projects as short-term actions that would occur in 2001 to help fish affected by the power system emergency. However, while Bonneville committed to a budget in 2001, it was 2002 before contracts were written with project sponsors and the work was under way.

### Power purchases and forgone revenue

#### Power purchases

To determine how much of its power purchases to attribute to lost hydropower that results from fish operations at the dams, Bonneville performs two annual calculations of its total power purchases

— one that includes the Biological Opinion requirements for river 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 2002, Bonneville assigned power purchases totaling \$147.8 million to its fish and wildlife budget.

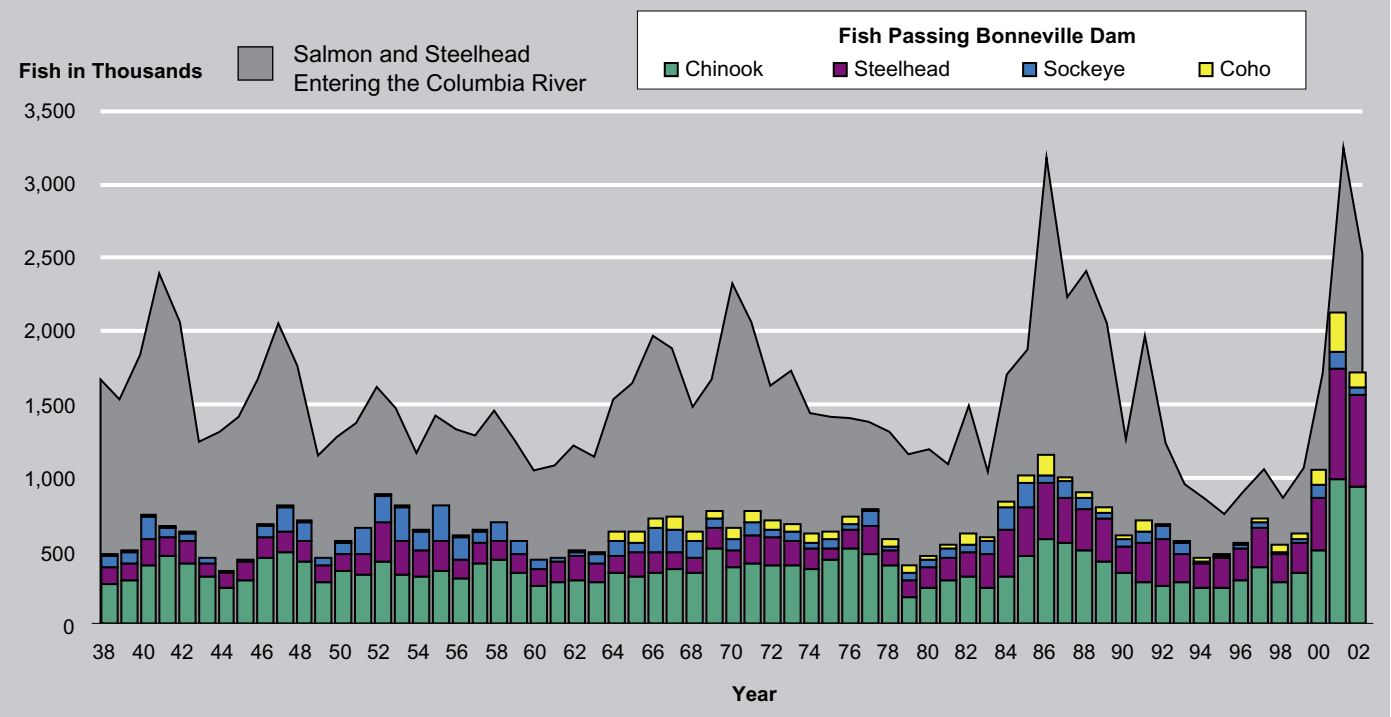
#### Forgone revenue

The biological opinions and the Council's fish and wildlife program include

dam operations that take water away from turbines, such as spilling water to assist juvenile fish migration. These operations result in lost income for Bonneville. The budget term for this lost income is forgone revenue. To determine forgone revenue, Bonneville calculates the net value of the hydropower revenues gained and lost as a result of fish operations. Bonneville charges forgone revenue against its fish and wildlife budget as an expense. For 2002, Bonneville calculated a forgone revenue of \$12.6 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.

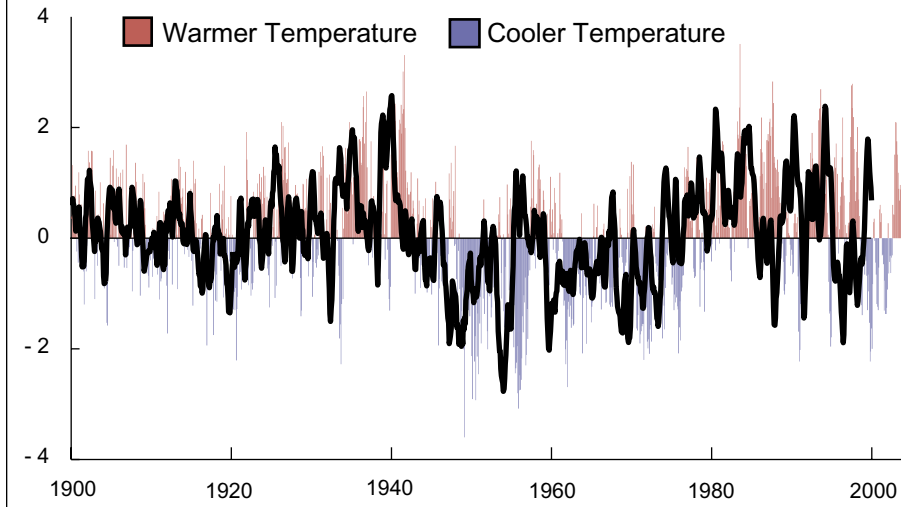
**FIGURE 7**  
**Salmon and Steelhead Entering the Columbia River and Passing Bonneville Dam**  
**1938-2002**



<sup>9</sup> Letter of June 29, 2001, from Bob Lohn to Sarah McNary.

<sup>10</sup> Letter of July 12, 2001, from Robert Austin to Bob Lohn.

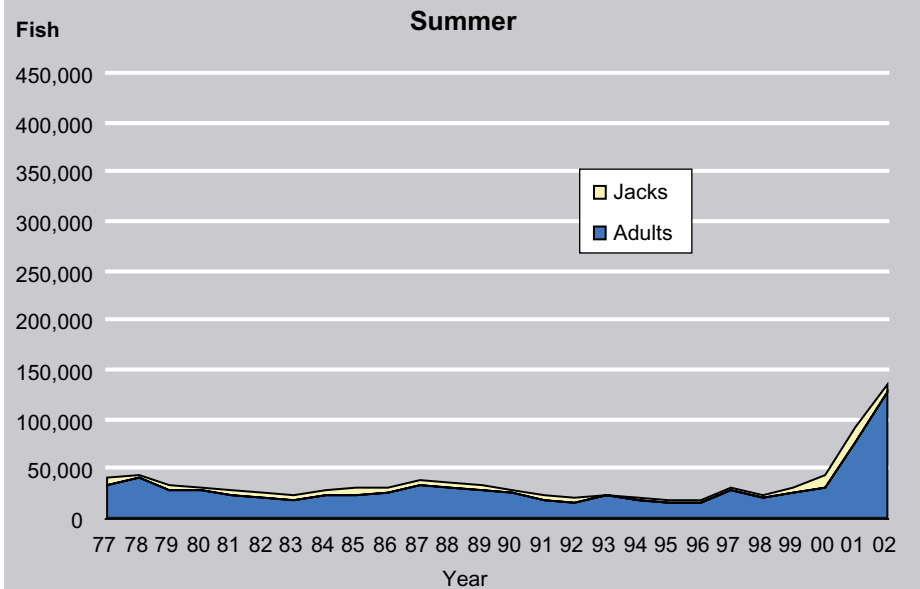
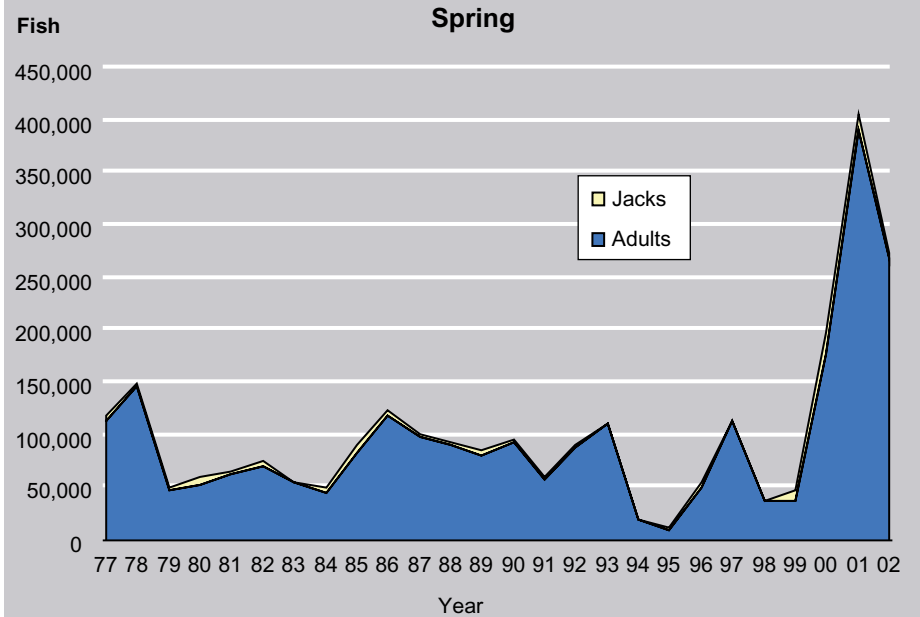
**FIGURE 8**  
**Ocean Cycle Temperature Cycles**  
 January 1900 - September 2003



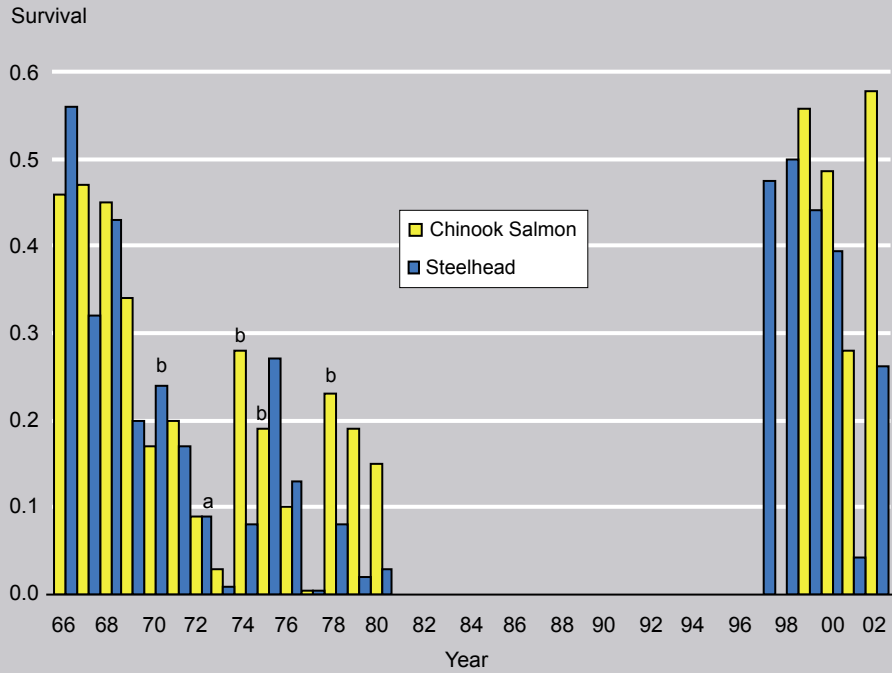
In the Northwest Power Act, Congress directed Bonneville to make expenditures for fish and wildlife protection, mitigation and enhancement for both power and non-power purposes, on a reimbursement basis. The Act also states that electricity consumers shall pay only for measures that mitigate the impacts of hydropower. In order to clearly identify the responsibility of consumers, the Act directs Bonneville to allocate its expenditures among the various purposes of the dams based on existing accounting procedures of the federal power system. As a practice, Bonneville pays 100 percent of the costs and then takes a credit against its annual debt-service payment to the U.S. Treasury for the 22.3 percent of authorized purposes of the dams that are not related to hydropower — navigation, recreation, flood control, and so on (prior to Fiscal Year 2001, the amount was 27

percent but was recalculated due to a change in the allocation of purposes at Grand Coulee Dam). In 2002, Bonneville calculated a total credit of \$66.4 million.

**FIGURE 9**  
**Spring and Summer Chinook Passing Bonneville Dam**  
 1977-2002

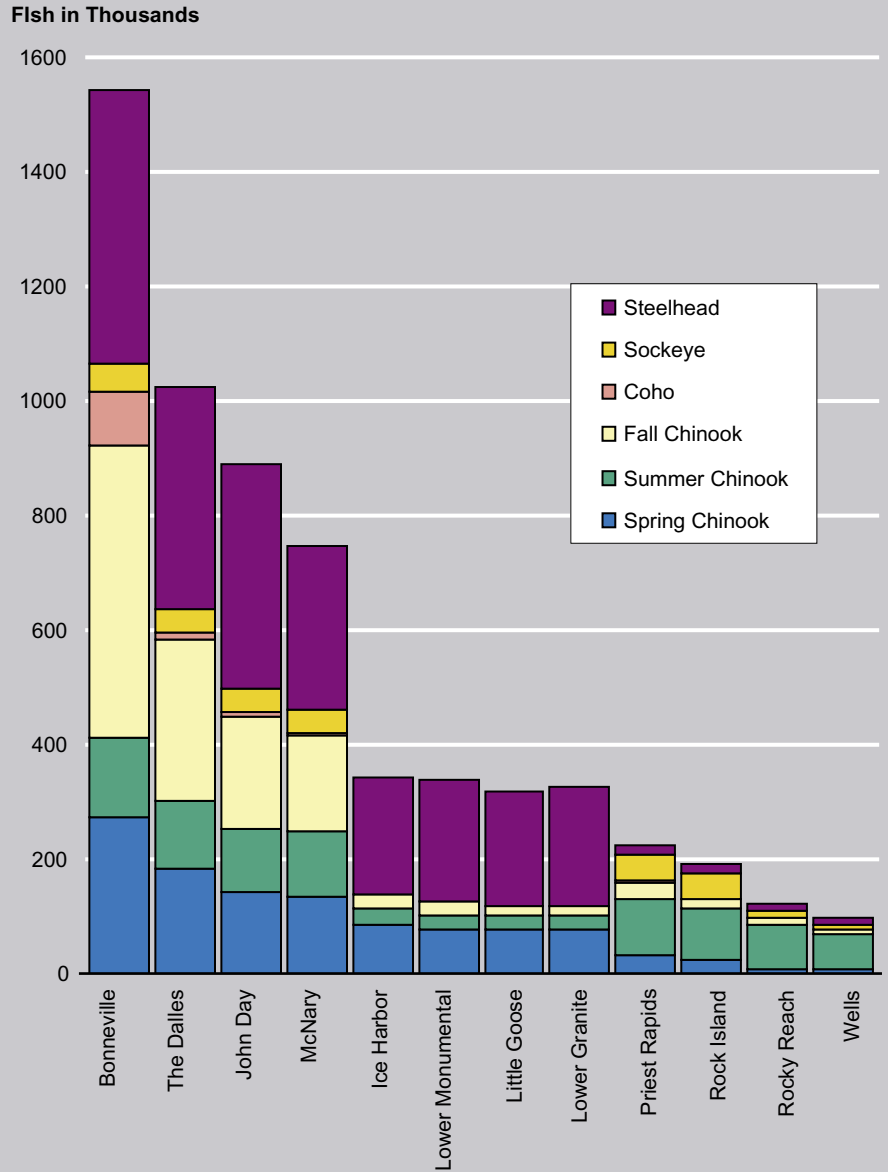


**FIGURE 10**  
**Estimated Inriver Juvenile Survival through the**  
**Hydrosystem\***  
 1966-1980, 1997-2002



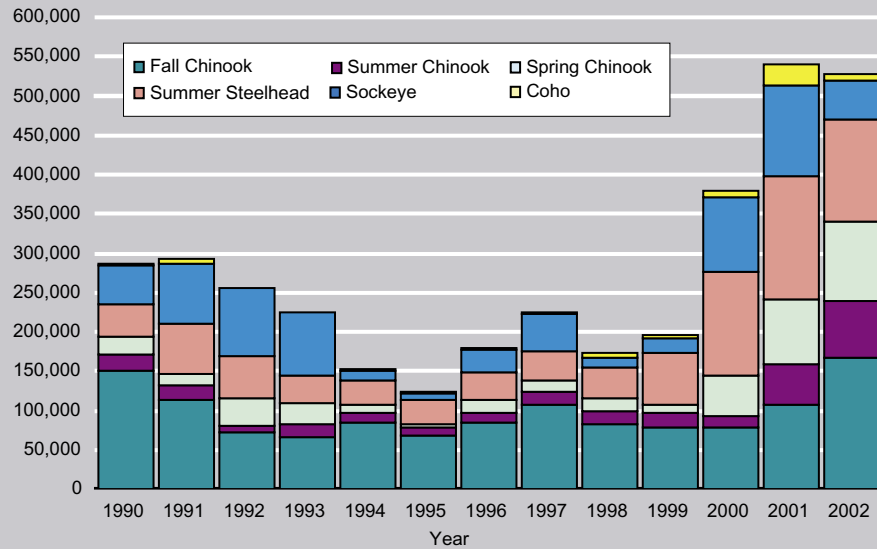
a Extrapolation based on three dam and reservoirs as survival estimates between Ice Harbor Dam and The Dalles Dam did not change between 1966 and 1970 after completion of John Day in 1968.  
 b Based on product of two non-rounded numbers

**FIGURE 11**  
**Where do the fish go?**  
**Fish counted at each mainstem dam.**  
 2002





**FIGURE 12**  
**Wild Fish Passing Bonneville Dam**  
**1990-2002**

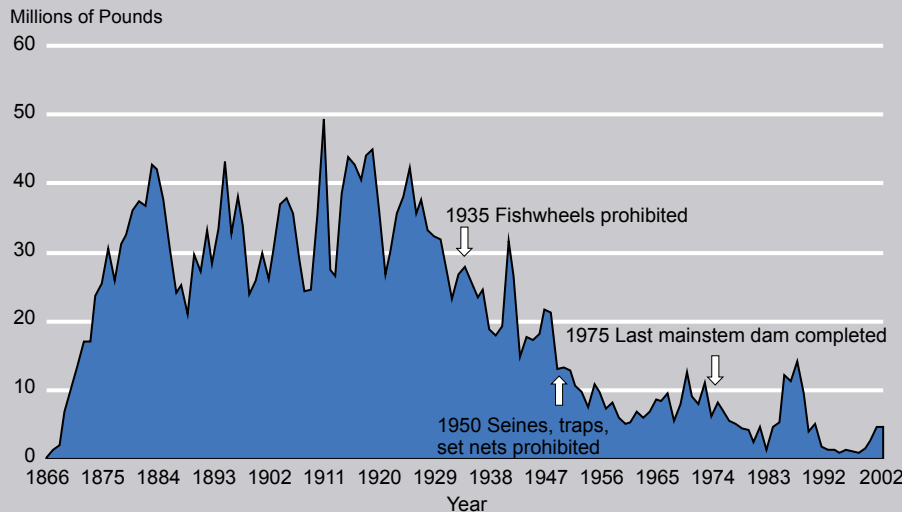


**Endangered Species Act Status of Columbia River Basin Fish Populations\***

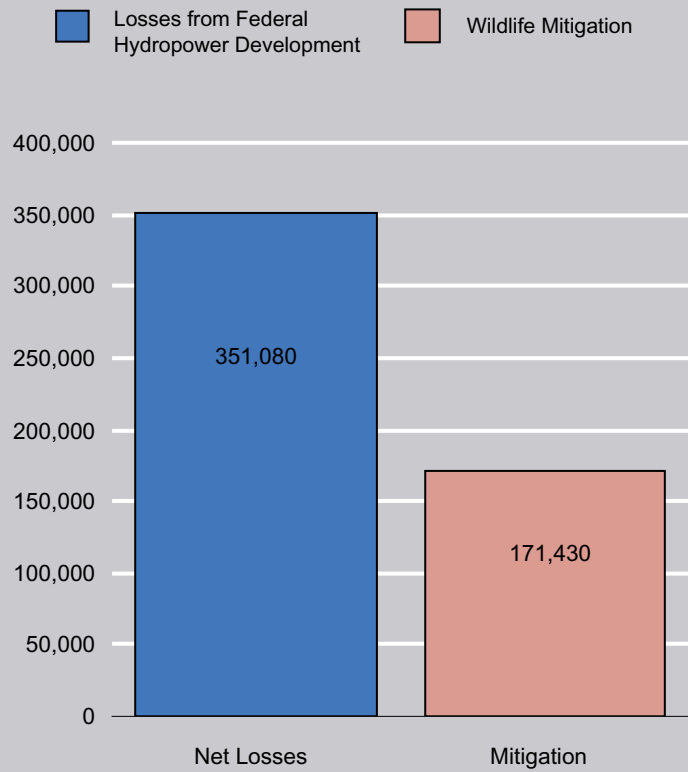
Species	Status	Date listed
Sockeye, Snake River	Endangered	1991
Chinook, Snake River Fall-run	Threatened	1992
Chinook, Snake River Spring/Summer-run	Threatened	1992
White Sturgeon, Kootenai River	Endangered	1994
Steelhead, Upper Columbia	Endangered	1997
Steelhead, Snake River Basin	Threatened	1997
Steelhead, 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

\* The federal hydrosystem action agencies, which include the Corps of Engineers, Bonneville Power Administration and Bureau of Reclamation, developed performance indicators for the listed salmon and steelhead populations. See Appendix B.

**FIGURE 13**  
**Commercial Landings of Salmon and Steelhead from the Columbia River**  
**1866-2002**

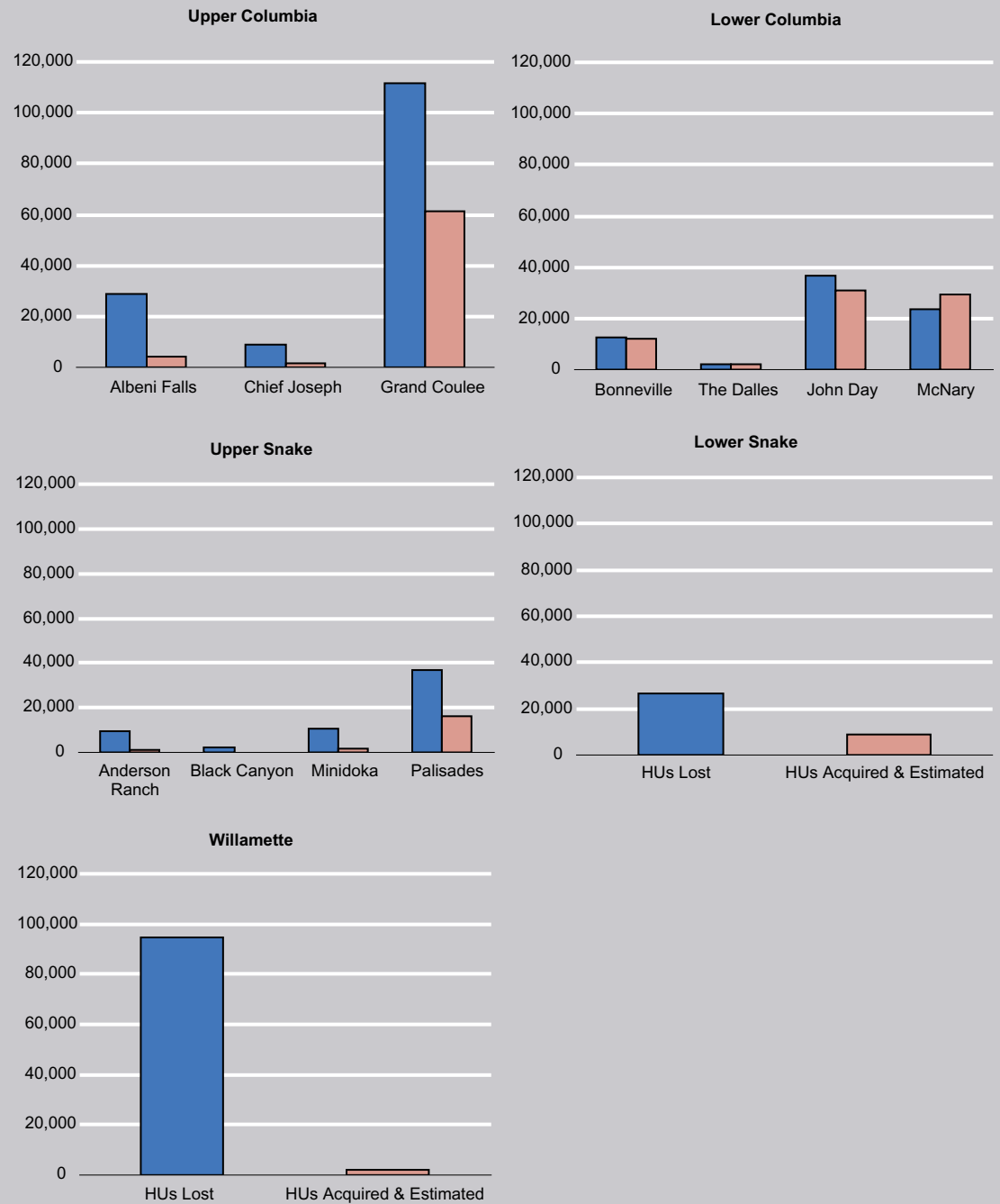


**FIGURE 14  
Wildlife Habitat Units: Lost & Acquired**

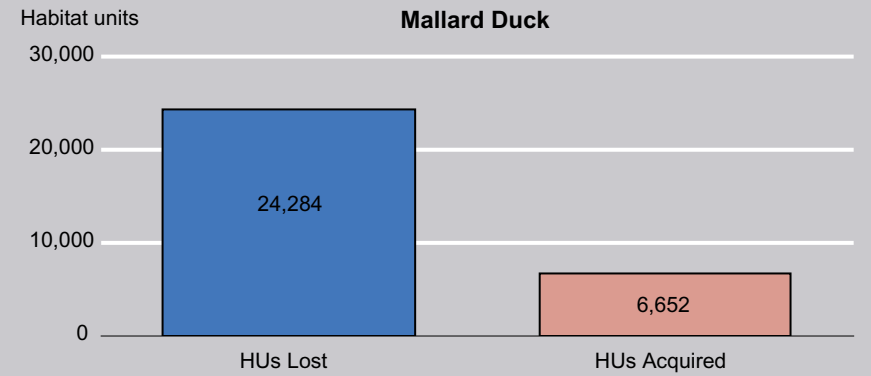
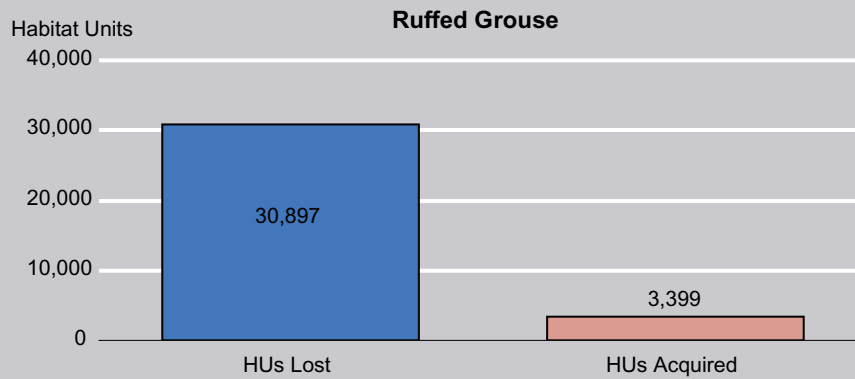
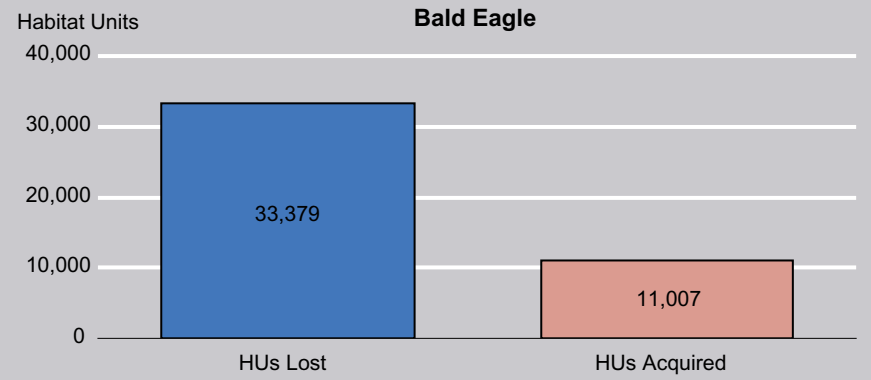
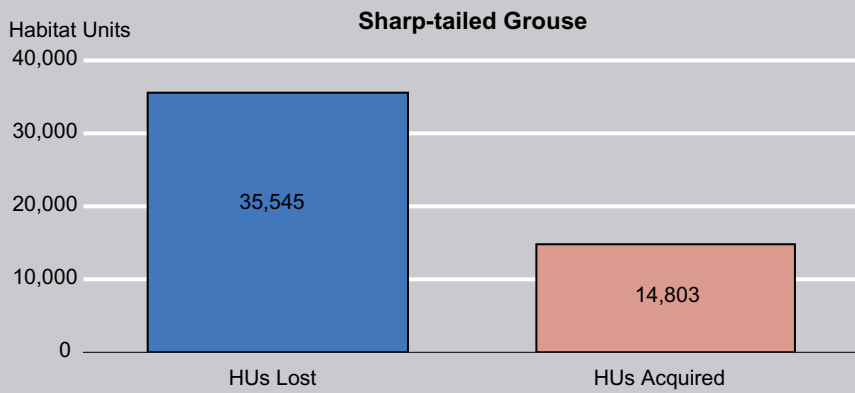
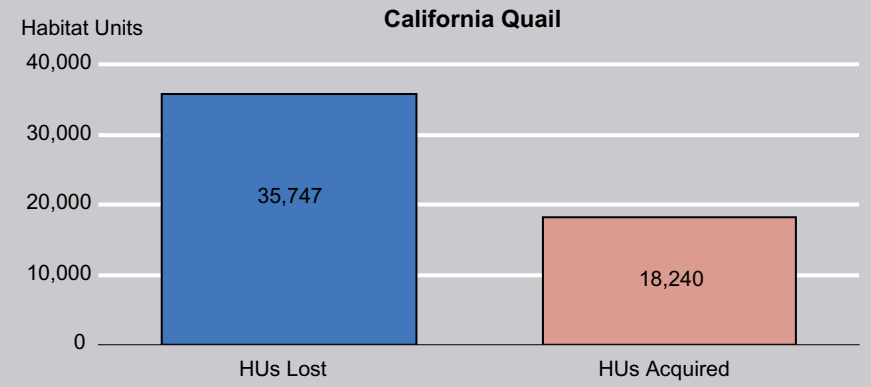
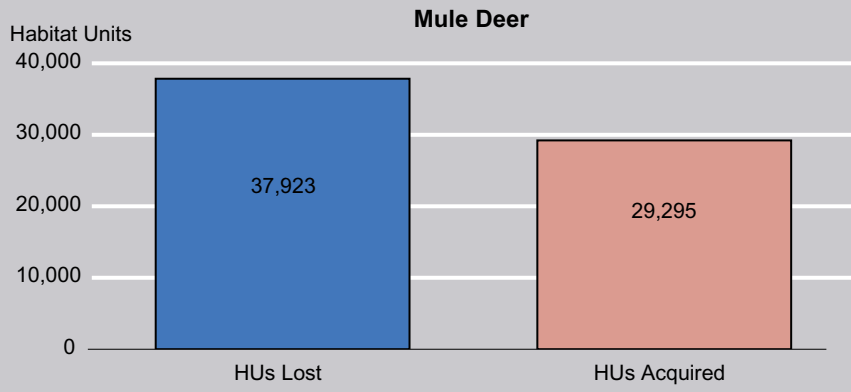


\* Note: Acres acquired within the state of Idaho for the Dworshak agreement are not measured in habitat units and are not included in these totals.

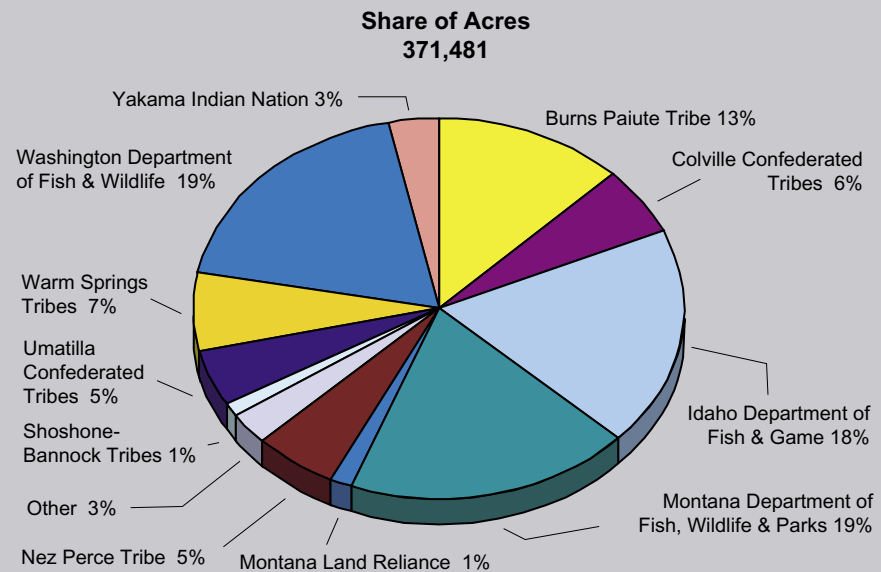
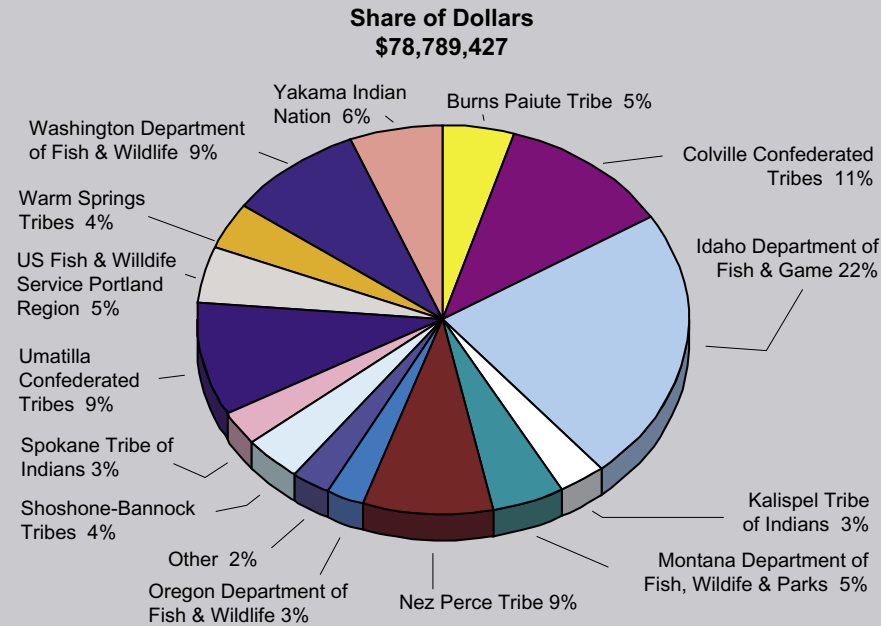
\*\* The Habitat Units lost and mitigated, by species and by dam, are shown in Table 14C, page 34.



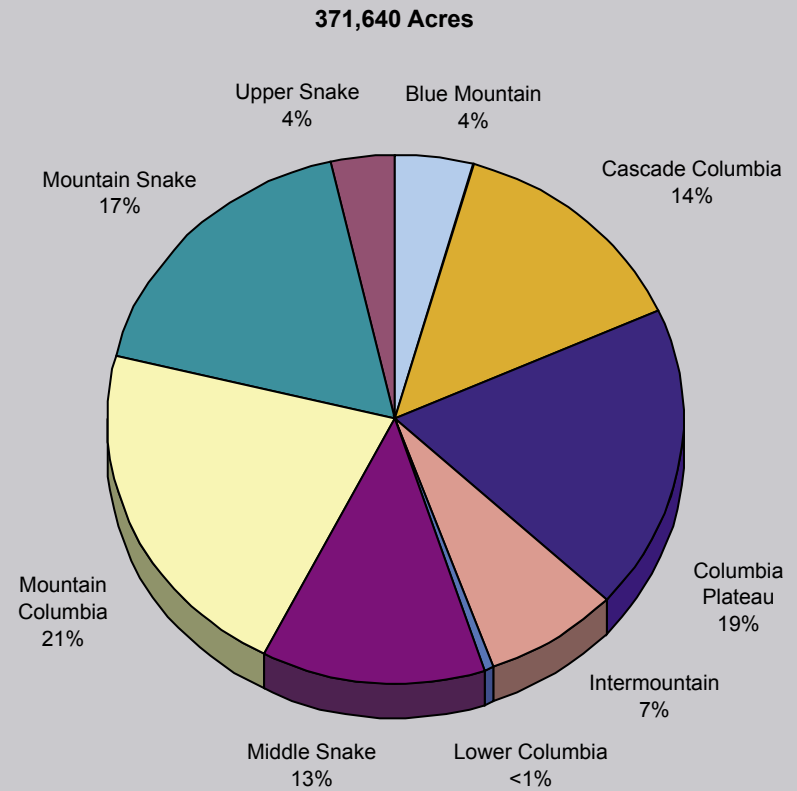
**FIGURE 15**  
**Wildlife Habitat Units Lost and Acquired, Most Affected Species**



**FIGURE 16**  
**BPA Wildlife Acres Protected by Agency**  
**1978-2002**



**FIGURE 17**  
**Properties Purchased by BPA for Wildlife Purposes by Province\***  
**1978-2002**



\* This figure includes all types of property purchases. See Table 17, page 38.

# Data Management Needs Improving

Data management problems at Bonneville regarding fish and wildlife continue to be a major distraction. The Council has requested timely financial data from Bonneville to support its work in prioritizing projects and recommending funding. Due to poor record keeping and open-ended contracts, Bonneville has had considerable difficulty accounting for past expenditures and even more problems when it attempted to forecast future expenditures.

On a positive note, the responses to data requests for this report have improved considerably. Before releasing

the first report in January 2001, the Council worked with Bonneville for more than 18 months to compile data on fish and wildlife expenditures. We were hindered by the confusing state of data storage and availability in the basin. There was universal support among those we contacted at Bonneville, the fish and wildlife agencies and others to improve data collection and management. Accounting changes at Bonneville made it equally difficult to compile the second annual report, which we issued in November 2002 after another 18 months of work. The work was slow because of the difficulty and complexity of the accounting change-

over. This resulted in changes to some of the data reporting categories that we used in the inaugural report, but the result is improved access to data. For the current report, Bonneville provided updates of our figures from the last report in less than a month.

We expect that data management will continue to improve basinwide. In May 2000, following a review of fish and wildlife information management, the Council's Independent Scientific Review Panel reported that no organization was taking responsibility for comprehensive design of data collection.<sup>11</sup> The Panel recommended development of a coordinated, collaborative information system.

The Council and NOAA Fisheries responded with an effort to assess information management and develop recommendations for improving it. Perhaps the most difficult challenge in improving information management is that many types of information currently are collected by multiple agencies. The Council and NOAA Fisheries retained a consulting firm to analyze the disparate state of fish and wildlife information management in the Columbia River Basin. This analysis found strong interest in improving management, availability and integration of all information pertaining to hydrologic information, data about the abundance

of fish and wildlife, regulations, water quality, fish hatcheries, land uses, fish passage at dams and scientific research. It also found that much of this information cannot be easily shared among agencies and the public because it is collected with different standards, compiled in different formats and stored in different places.

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.



<sup>11</sup> "Review of Databases Funded Through the Columbia River Basin Fish and Wildlife Program," May 11, 2000, Council Document ISRP-2000-3.



# Appendix A: Data Tables

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	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	\$137.1	\$1,157.3
Action Plan / High Priority																						\$2.9	\$7.1	\$10.0
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	\$42.4	\$51.1	\$634.0
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	\$73.1	\$76.3	\$74.1	\$76.1	\$77.2	\$77.1	\$56.6	\$1,014.3
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	\$177.0	\$194.4	\$215.4	\$223.2	\$223.0	\$223.5	\$251.9	\$2,815.6
1/ Associated with Capital Investments																								"252" MOA Period Sub Total\$1,256.5
"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	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	\$63.5	\$0.0	\$0.0	\$5.4	\$47.6	\$64.8	\$1,389.6	\$147.8	\$2,267.4
Foregone 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	\$7.1	\$81.7	\$107.8	\$116.5	\$197.8	\$193.1	\$115.9	\$12.6	\$1,098.5
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	\$70.6	\$81.7	\$107.8	\$121.9	\$245.4	\$257.9	\$1,505.5	\$160.4	\$3,365.9
																								"River Ops" MOA Period Sub Total\$2,320.2
<b>Grand Total</b>	<b>\$41.3</b>	<b>\$20.2</b>	<b>\$42.5</b>	<b>\$40.2</b>	<b>\$72.2</b>	<b>\$99.5</b>	<b>\$158.4</b>	<b>\$100.4</b>	<b>\$118.8</b>	<b>\$133.5</b>	<b>\$145.5</b>	<b>\$150.5</b>	<b>\$219.3</b>	<b>\$282.7</b>	<b>\$325.8</b>	<b>\$241.7</b>	<b>\$258.7</b>	<b>\$302.2</b>	<b>\$337.3</b>	<b>\$468.6</b>	<b>\$480.9</b>	<b>\$1,729.0</b>	<b>\$412.3</b>	<b>\$6,181.5</b>
																								MOA Period Total\$ 3,576.7

Dollars are in Millions

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

(1996 - 2001) MOA Reporting Template

**Table 3 Obligations by Species, 1978-2002**

FY	Anadromous Fish	Resident Fish	Wildlife	Total
1978	\$400,000	\$0	\$0	\$400,000
1979	\$979,628	\$0	\$0	\$979,628
1980	\$1,232,775	\$0	\$0	\$1,232,775
1981	\$1,512,801	\$251,000	\$0	\$1,763,801
1982	\$5,349,333	\$335,930	\$0	\$5,685,263
1983	\$7,222,161	\$1,441,440	\$789,026	\$9,452,627
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	\$120,988,561	\$16,443,210	\$11,278,635	\$148,710,406
2002	\$109,380,027	\$16,802,480	\$10,466,964	\$136,649,471
	<b>\$1,047,355,016</b>	<b>\$164,830,174</b>	<b>\$149,642,366</b>	<b>\$1,361,827,556</b>
		Contracted Coordination*		\$42,176,941
		Non-contracted BPA Overhead**		\$73,794,205
				<b>\$115,971,146</b>

\* Contracted coordination includes contracts to assist Bonneville's fish and wildlife staff with tasks such as program review and independent analyses.

\*\* Non-contracted BPA overhead includes internal costs such as personnel.

Source: Bonneville Power Administration

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

General Purpose	Specific Purpose	FY 2000	FY 2001	FY 2002
Regional Coordination		\$5,777,201	\$7,519,397	\$7,254,933
Data Management		\$97,500	\$260,045	\$170,500
Habitat				
	Tributary Passage	\$6,965,939	\$16,498,528	\$9,797,364
	Restoration & Enhancement	\$15,833,953	\$18,918,020	\$25,113,994
	Acquisition	\$11,089,033	\$16,781,621	\$13,884,400
Harvest		\$1,281,630	\$1,317,141	\$1,596,917
Mainstem Survival		\$2,622,404	\$3,231,386	\$3,463,672
Monitoring		\$16,903,171	\$19,803,253	\$17,893,734
Production				
	Supplementation	\$16,702,413	\$17,649,877	\$17,903,998
	Restoration & Enhancement	\$849,712	-	-
	Production	\$7,324,614	\$19,111,407	\$9,760,768
	Captive Propagation	\$5,731,229	\$5,410,180	\$6,545,057
Bonneville Program Support		\$5,729,438	\$7,417,069	\$9,263,935
Research & Evaluation		\$18,369,483	\$22,956,382	\$25,098,972
<b>Total</b>		<b>\$115,277,720</b>	<b>\$156,874,306</b>	<b>\$147,748,244</b>

Source: Bonneville Power Administration

**Table 5 Obligations by Province FY 2002**

Province	1978-2002	2001	2002
Systemwide	\$467,556,625	\$36,541,954	\$35,561,950
Columbia Plateau	\$407,083,516	\$35,358,458	\$39,895,130
Mountain Snake	\$186,404,611	\$33,529,896	\$21,503,833
Mountain Columbia	\$70,060,234	\$4,296,763	\$6,535,470
Intermountain	\$64,043,421	\$10,847,052	\$10,679,137
Blue Mountain	\$62,499,983	\$7,966,792	\$5,717,321
Columbia Gorge	\$40,299,958	\$6,040,342	\$5,914,627
Columbia Cascade	\$29,666,974	\$5,074,061	\$3,947,873
Lower Columbia	\$22,537,153	\$1,905,367	\$3,061,533
Columbia Estuary/Ocean	\$21,082,852	\$4,160,554	\$3,966,693
Middle Snake	\$16,173,558	\$3,236,314	\$1,434,918
Upper Snake	\$15,949,172	\$499,684	\$669,774
<b>Total</b>	<b>\$1,403,358,057</b>	<b>\$149,457,237</b>	<b>\$138,888,259</b>
Program Support	\$16,381,004	\$7,417,069	\$8,963,935

Source: Bonneville Power Administration



Table 6A Obligations by Prime Contractor - 1978-2002

Contractor Type	Prime Contractor	1979-2002	Contractor Type	Prime Contractor	1979-2002
FEDERAL	NATIONAL MARINE FISHERIES SERVICE	\$89,659,867	TRIBE	NEZ PERCE TRIBE	\$86,836,819
	NON-CONTRACTED BPA OVERHEAD	\$81,003,853		YAKAMA INDIAN NATION	\$84,036,223
	FISH AND WILDLIFE SERVICE	\$63,809,930		UMATILLA CONFEDERATED TRIBES	\$38,242,690
	BUREAU OF RECLAMATION	\$43,383,848		COLVILLE CONFEDERATED TRIBES	\$30,810,457
	CORPS OF ENGINEERS	\$25,829,517		WARM SPRINGS TRIBES	\$25,233,343
	DEPARTMENT OF ENERGY	\$23,288,004		SHOSHONE-BANNOCK TRIBES	\$18,117,604
	FOREST SERVICE	\$22,599,594		SPOKANE TRIBE OF INDIANS	\$17,272,703
	OTHER	\$19,707,965		KOOTENAI TRIBE OF IDAHO	\$14,172,279
	US GEOLOGICAL SURVEY	\$5,088,384		KALISPEL TRIBE OF INDIANS	\$11,789,551
	<b>TOTAL</b>	<b>\$374,370,962</b>		COLUMBIA RIVER INTERTRIBAL FISH COMMISSION	\$10,502,765
STATE	OREGON DEPARTMENT OF FISH & WILDLIFE	\$150,501,051	COEUR D'ALENE TRIBE OF IDAHO	\$8,852,386	
	OREGON STATE POLICE - FISH AND WILDLIFE	\$3,480,952	SHOSHONE-PAIUTE TRIBES	\$7,619,561	
	OREGON WATER TRUST	\$699,983	BURNS PAIUTE TRIBE	\$6,495,456	
	OREGON DEPARTMENT OF ENERGY	\$193,707	SALISH-KOOTENAI TRIBES	\$4,000,074	
	OREGON DEPARTMENT OF TRANSPORTATION	\$106,422	POINT NO POINT TRIBE	\$11,960	
	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY	\$50,334	TULALIP TRIBE	\$4,988	
	OREGON DEPARTMENT OF PARKS & RECREATION	\$5,000	KLAMATH TRIBE	\$4,512	
	<b>Subtotal</b>	<b>\$155,037,449</b>	CHEHALIS INDIAN TRIBE	\$2,082	
	IDAHO DEPARTMENT OF FISH & GAME	\$93,227,632	SQUAXIN ISLAND TRIBE	\$1,304	
	IDAHO SOIL & WATER CONSERVATION COMMISSION	\$5,643,223	<b>TOTAL</b>	<b>\$364,006,757</b>	
	IDAHO STATE OFFICE OF SPECIES CONSERVATION	\$154,140	INTERSTATE COMPACT	PSMFC	\$140,656,919
	<b>Subtotal</b>	<b>\$99,024,995</b>	UNIVERSITY	University	\$39,059,919
	WASHINGTON DEPARTMENT OF FISH & WILDLIFE	\$71,047,987	OTHER	Private/Other	\$112,290,961
	WASHINGTON DEPARTMENT OF ECOLOGY	\$4,514,971		Local/Semi governmental	\$38,048,499
	WASHINGTON WILDLIFE COALITION MEMBERS	\$3,445,738		COLUMBIA BASIN FISH & WILDLIFE FOUNDATION	\$16,238,277
	WASHINGTON STATE CONSERVATION COMMISSION	\$694,411		Not Specified (Land)	\$11,257,473
	WASHINGTON DEPARTMENT OF ECOLOGY	\$542,633		Utility	\$10,195,863
	WASHINGTON STATE ENERGY OFFICE	\$242,857		National Fish and Wildlife Foundation	\$276,954
	WASHINGTON DEPARTMENT OF TRANSPORTATION	\$101,700		<b>TOTAL</b>	<b>\$188,308,027</b>
	WASHINGTON DEPARTMENT OF NATURAL RESOURCES	\$5,000		<b>GRAND TOTAL</b>	<b>\$1,297,903,450</b>
<b>Subtotal</b>	<b>\$80,595,297</b>				
MONTANA DEPARTMENT OF FISH & WILDLIFE	\$31,067,533				
MONTANA FISH, WILDLIFE & PARK	\$5,492,430				
<b>Subtotal</b>	<b>\$36,559,963</b>				
<b>TOTAL</b>	<b>\$371,217,704</b>				

Source: Bonneville Power Administration

Table 6B Expenditures of Direct BPA funds by contractor 1996-2002

Contractor	Total	Contractor	Total
PACIFIC STATES MARINE FISHERIES COMMISSION	\$87,534,913	ESSA TECHNOLOGIES LTD.	\$2,027,236
NEZ PERCE TRIBE	\$72,809,279	PACIFIC POWER & LIGHT/UECA	\$1,994,000
YAKAMA NATION	\$65,418,723	UNDERWOOD CONSERVATION DISTRICT	\$1,982,431
OREGON DEPARTMENT OF FISH & WILDLIFE- HQ	\$64,861,740	UNIVERSITY of IDAHO	\$1,940,918
IDAHO DEPARTMENT OF FISH & GAME	\$51,787,385	MONTANA FISH, WILDLIFE & PARKS	\$1,885,791
WASHINGTON DEPARTMENT OF FISH & WILDLIFE	\$45,464,370	KITTITAS-YAKIMA RES CONS & DEV	\$1,666,998
NATIONAL MARINE FISHERIES SERVICE - SEATTLE OFFICE	\$28,833,857	MONTANA FISH, WILDLIFE & PARKS / CONFEDERATED SALISH-KOOTENAI TRIBES	\$1,606,434
UMATILLA CONFEDERATED TRIBES	\$27,371,620	USFS - PACIFIC NW RESEARCH STATION	\$1,577,145
WARM SPRINGS TRIBES	\$23,169,136	IDAHO STATE CONSERVATION COMMISSION	\$1,495,304
COLVILLE CONFEDERATED TRIBES	\$17,712,171	YAKIMA CO-OP	\$1,479,863
BONNEVILLE POWER ADMINISTRATION - FISH AND WILDLIFE PROGRAM SUPPORT	\$16,848,350	CLATSOP ECONOMIC DEVELOPMENT COMMITTEE	\$1,453,575
NATT MCDUGALL COMPANY	\$15,876,408	DIGITAL ANGEL CORPORATION	\$1,374,590
COLUMBIA BASIN FISH & WILDLIFE FOUNDATION	\$15,776,587	OREGON STATE UNIVERSITY / CUMULATIVE RISK INITIATIVE	\$1,360,009
USFWS - PORTLAND REGION	\$15,104,215	COLUMBIA COUNTY SOIL & WATER CONSERVATION DISTRICT	\$1,331,566
NATIONAL MARINE FISHERIES SERVICE - PORTLAND OFFICE	\$14,860,289	ASOTIN COUNTY CONSERVATION DISTRICT	\$1,285,356
BONNEVILLE POWER ADMINISTRATION - TRANSMISSION BUSINESS LINE	\$11,860,217	US BUREAU OF RECLAMATION - WASHINGTON	\$1,205,799
SPOKANE TRIBE of INDIANS	\$11,567,117	USGS - BIOLOGICAL RESOURCES DIVISION - COLUMBIA RIVER RESEARCH LAB	\$1,204,305
IMPERO CONSTRUCTION COMPANY	\$10,716,321	CONFEDERATED SALISH-KOOTENAI TRIBES	\$1,159,922
NAT. BIO. SERVICE / USFWS - NATIONAL FISH RESEARCH CENTER - SEATTLE	\$9,844,736	CITY OF YAKIMA	\$1,149,000
US BUREAU OF RECLAMATION - PACIFIC NW REGION (BOISE)	\$9,686,763	BIOANALYSTS INC (D. CHAPMAN)	\$1,114,749
MONTGOMERY WATSON	\$9,549,413	WALLOWA COUNTY SOIL & WATER CONSERVATION DISTRICT	\$1,055,691
FISHPRO, INC.	\$9,320,021	HARZA NORTHWEST INC	\$1,010,802
NORTHWEST POWER PLANNING COUNCIL	\$9,067,769	USFWS - DENVER REGION	\$978,033
KOOTENAI TRIBE OF IDAHO	\$8,948,729	PORTLAND GENERAL ELECTRIC	\$939,058
UNIVERSITY of WASHINGTON	\$8,597,603	USFWS - AHSAHKA	\$937,531
USDE - BATTELLE PACIFIC NORTHWEST LABORATORY - (RICHLAND)	\$8,232,547	PAULSEN ENVIRONMENTAL RESEARCH	\$918,119
COEUR D'ALENE TRIBE of IDAHO	\$7,856,172	USDA - FOREST SERVICE	\$888,891
SHOSHONE-BANNOCK TRIBES	\$7,659,989	WASHINGTON STATE UNIVERSITY	\$846,226
KALISPEL TRIBE of INDIANS	\$7,400,017	USFS - WALLOWA-WHITMAN NATIONAL FOREST - LAGRANDE DISTRICT,	\$838,422
US ARMY CORPS OF ENGINEERS - PORTLAND DISTRICT	\$7,367,824	USFS - FLATHEAD NATIONAL FOREST	\$837,468
SHOSHONE-PAIUTE TRIBES	\$6,557,274	WASCO COUNTY SOIL & WATER CONSERVATION DISTRICT	\$834,747
BURNS PAIUTE TRIBE	\$6,080,042	POMEROY SOIL & WATER WATER CONSERVATION DISTRICT	\$832,855
CUSTER SOIL & WATER CONSERVATION DISTRICT	\$5,699,587	MOSS-ADAMS ADVISORY SERVICES	\$819,207
MONTANA DEPARTMENT OF FISH & WILDLIFE - HELENA	\$5,697,907	UNION COUNTY SOIL & WATER CONSERVATION DISTRICT	\$809,225
WASHINGTON DEPARTMENT OF ECOLOGY	\$5,057,604	S. P. CRAMER & ASSOCIATES	\$786,962
CH2M HILL - NORTHWEST INC.	\$5,005,786	CASCADE PACIFIC RESOURCE	\$786,635
COLUMBIA RIVER INTERTRIBAL FISH COMMISSION	\$4,984,725	USFWS - FISH ASST. VANCOUVER	\$775,613
LEWIS SOIL & WATER CONSERVATION DISTRICT	\$4,598,520	PACIFIC POWER & LIGHT COMPANY	\$730,253
DEPT OF FISHERIES & OCEANS (CANADIAN)	\$3,622,330	NEZ PERCE SOIL & WATER CONSERVATION DISTRICT	\$730,052
CONCORD CONSTRUCTION, INC	\$3,540,383	KITTITAS COUNTY WATER PURVEYORS	\$730,000
IDAHO DEPARTMENT OF FISH & GAME / KALISPEL	\$2,861,571	LAKE ROOSEVELT DEVELOPMENT ASSOCIATION	\$696,650
IDAHO SOIL & WATER CONSERVATION COMMISSION	\$2,760,301	USDE - OAK RIDGE NATIONAL LABORATORY	\$668,744
SLAYDEN CONSTRUCTION INC	\$2,582,316	INTERMOUNTAIN COMMUNICATIONS	\$644,360
USFWS - FISHERIES PROGRAM OFFICE	\$2,561,689	CLEARWATER FOCUS WATERSHED PROGRAM	\$641,749
USGS	\$2,314,513	WALLA WALLA COUNTY SOIL AND WATER CONSERVATION DISTRICT	\$624,166
DESTRON - FEARING	\$2,254,524	IDAHO DEPARTMENT OF FISH & GAME / KOOTENAI	\$610,923
CONTRACTOR UNKNOWN TO EMIS	\$2,167,074	OREGON WATER TRUST	\$589,613
UMATILLA ELECTRIC COOP ASSOCIATION	\$2,106,150	US BUREAU OF RECLAMATION - YAKIMA	\$580,303
OREGON STATE UNIVERSITY	\$2,089,679	JEFFERSON COUNTY SOIL & WATER CONSERVATION DISTRICT	\$579,558
WESTLAND IRRIGATION DISTRICT	\$2,073,792	US SMALL BUSINESS ADMINISTRATION	\$573,849

Table 6B (continued)

Contractor	Total	Contractor	Total
USFS - UMATILLA NATIONAL FOREST	\$534,198	USFWS - CRESTON NATIONAL FISH HATCHERY	\$181,088
WALLA WALLA BASIN WATERSHED COUNCIL	\$478,000	UNIVERSITY of MONTANA	\$180,539
USGS - BIOLOGICAL RESOURCES DIVISION	\$468,198	US ARMY CORPS OF ENGINEERS - WALLA WALLA DIST	\$165,938
USFS - G. PINCHOT NAT. FOREST - MT ADAMS RANGER DIST., WIND RIVER DIV.	\$444,891	GOLDEN PACIFIC HOMES	\$160,000
EDUCATIONAL SERVICES DISTRICT #105 (YAKIMA)	\$427,427	WALLOWA COUNTY	\$158,500
KINTAMA RESEARCH CORPORATION	\$423,899	IDAHO STATE OFFICE OF SPECIES CONSERVATION	\$154,140
RESEARCH INTO ACTION	\$414,555	SHERMAN SOIL & WATER CONSERVATION DISTRICT	\$153,877
M-F WATER CONTROL DISTRICT	\$400,000	KRUGEL & ASSOCIATES	\$152,000
USFS - MT. HOOD NATIONAL FOREST	\$391,000	LOWER COLUMBIA RIVER ESTUARY PARTNERSHIP	\$150,000
PER LTD.	\$376,374	OXARC	\$143,340
MILLER ECOLOGICAL CONSULTANTS	\$369,515	USFS - NEZ PERCE NATIONAL FOREST	\$142,878
JEFF KUECHLE	\$360,691	FISHER FISHERIES LTD.	\$136,781
EASTERN OREGON STATE COLLEGE	\$355,062	JEAN EDWARDS	\$135,711
WASHINGTON TROUT	\$350,122	KATHLEEN A CONCANNON	\$135,160
RICHARD HINRICHSEN	\$344,480	NSRI	\$133,000
USFS - INTERMOUNTAIN REGION (4) - OGDEN	\$340,057	ARCHAEOLOGICAL & HISTORICAL SERVICE	\$127,894
SYNERGY CONSULTING INC	\$330,117	TEASDALE ENVIRONMENTAL	\$126,325
DONNA SILVERBERG	\$328,212	BC/ MINISTRY ENVIRONMENT LAND AND PARKS	\$117,449
WY'EAAT RESOURCE CONSERVATION & DEVELOPMENT COUNCIL	\$314,510	MONUMENT SOIL & WATER CONSERVATION DISTRICT	\$116,500
STEPHEN H. SMITH FISHERIES CONSULTING, INC.	\$307,990	ENERGY NEWSDATA INC	\$114,600
USFS - MT HOOD NATIONAL FOREST - HOOD RIVER RANGER DISTRICT	\$296,082	PACIFIC WATERSHED INSTITUTE	\$104,200
NATURE CONSERVANCY - OREGON	\$295,917	FOSTER WHEELER ENVIRONMENTAL CO	\$101,955
ROCKY MOUNTAIN RESEARCH STATION	\$291,370	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	\$101,700
WASHINGTON STATE CONSERVATION COMMISSION	\$284,479	JAMES J ANDERSON MD	\$100,000
KITTITAS COUNTY CONSERVATION DISTRICT	\$283,359	US DEPT OF JUSTICE	\$100,000
BIOMARK INC.	\$278,353	AG-WEST SUPPLY	\$99,823
NATIONAL FISH & WILDLIFE FOUNDATION	\$276,954	ASOTIN COUNTY LANDFILL	\$97,725
NEZ PERCE TRIBAL FISHERIES/WATERSHED PROGRAM	\$270,293	WATERSHED PROFESSIONALS INC.	\$94,600
HES	\$264,658	ADVANCED TELEMETRY SYSTEMS INC	\$90,765
IRZ CONSULTING LLC	\$258,260	GORDON, THOMAS, ETC., P.L.L.C.	\$89,097
UNION COUNTY	\$249,028	HI-TECH INDUSTRIAL COATINGS	\$86,368
WALLA WALLA COUNTY CONSERVATION DISTRICT	\$242,711	LAKE ROOSEVELT FORUM	\$84,050
DS CONSULTING	\$238,197	USFS - WALLOWA-WHITMAN NATIONAL FOREST	\$82,650
WASHINGTON WATER TRUST	\$235,524	USFS - WALLOWA-WHITMAN NATIONAL FOREST - WALLOWA VALLEY DISTRICT	\$82,219
ESD 105	\$232,500	AL WRIGHT CONSULTING	\$80,000
EASTERN WASHINGTON UNIVERSITY - ARCHAEOLOGY & HISTORY DEPARTMENT	\$225,719	GILLIAM SOIL AND WATER CONSERVATION DISTRICT	\$75,086
RESOURCE CONSERVATION & DEVELOPMENT	\$217,584	MORROW COUNTY SOIL AND WATER CONSERVATION DISTRICT	\$75,086
USFWS - (LONGVIEW WA)	\$214,203	WHEELER SOIL AND WATER CONSERVATION DISTRICT	\$75,086
USFS - PACIFIC NW REGION (6) - PORTLAND	\$213,180	ALLFLEX	\$75,000
WALLOWA PUBLIC WORKS DEPARTMENT	\$206,426	UMATILLA COUNTY	\$72,000
US ARMY CORPS OF ENGINEERS - NORTHWESTERN DIVISION	\$204,998	USFS - PACIFIC NW RESEARCH STATION	\$64,997
UNION COUNTY PUBLIC WORKS DEPARTMENT	\$203,650	METRO REGIONAL PARKS AND GREENSPACES	\$64,100
CITY OF SCAPPOOSE	\$200,119	OREGON DEPARTMENT OF ENERGY	\$62,316
CRATE'S POINT	\$200,000	NATIONAL PARK SERVICE - COULEE DAM NATIONAL REC. AREA	\$62,000
KENNETH STINSON, LATAH SOIL AND WATER CONSERVATION DISTRICT	\$200,000	NORTH FORK JOHN DAY WATERSHED COUNCIL	\$58,600
COLUMBIA SOIL & WATER CONSERVATION DISTRICT	\$196,036	LANE COUNTY ORGANIZATION OF GOVERNMENTS	\$55,000
MOBRAND BIOMETRIC, INC.	\$193,132	NEWSDATA CORP	\$55,000
COLE & WEBER	\$188,237	PUGET SOUND ENERGY	\$54,369
LEMHI IRRIGATION DISTRICT	\$182,938	OREGON DEPARTMENT of TRANSPORTATION - LA GRANDE	\$51,500
NORTON-ARNOLD & COMPANY	\$182,176	OREGON DEPT OF ENVIRONMENTAL QUALITY - BUSINESS OFFICE	\$50,334

Table 6B (continued)

<b>Contractor</b>	<b>Total</b>	<b>Contractor</b>	<b>Total</b>
CHRISTOPHER BOEHME	\$50,240	H&L PLUMBING & HEATING	\$5,422
HERKE ROCK & CONSTRUCTION	\$48,000	ECOLOGIC UNLIMITED	\$5,040
JD WHITE CO INC THE	\$46,996	OREGON STATE DEPARTMENT OF PARKS & RECREATION	\$5,000
WALLOWA VALLEY GOLF ASSOC	\$46,200	SUSTAINABLE FISHERIES FOUNDATION	\$5,000
OREGON DEPARTMENT of TRANSPORTATION - SALEM	\$46,000	DR. LYLE CALVIN	\$4,250
RANDY'S BLUE DOT EXCAVATION INC	\$45,947	WORKMAN AND SONS INC	\$4,120
MAGIC VALLEY INTER INC	\$44,811	HERITAGE RESEARCH ASSOCIATES	\$3,954
ONSET COMPUTER CORP	\$42,135	MERIDIAN INSTRUMENT CO INC	\$3,912
USDA - NATURAL RESOURCES CONSERVATION SERVICE	\$40,880	TRACY CAMP	\$3,328
USFS - UMATILLA NATIONAL FOREST - WALLA WALLA DISTRICT	\$40,435	SUE FOSTER	\$3,084
STRATEGIC EFFECTIVENESS GROUP	\$37,731	IDAHO SALMON & STEELHEAD	\$3,000
INTER-FLUVE INC	\$35,849	DR STEPHEN W KRESS	\$2,467
HIDDEN VALLEY GUEST RANCH	\$35,634	ARGENTEA INTERNATIONAL	\$2,330
USDI - FORT SIMCOE JOB CORPS CIVILIAN CONSERVATION CENTER	\$31,608	CENTRAL COMMUNICATIONS	\$2,000
SPT	\$26,631	US WEST COM SERVICES INC	\$1,886
MIKE WATTERS EXCAVATION	\$25,800	BUSINESS EDUCATION COMPACT	\$1,500
FORESTRY SUPPLIERS	\$25,681	MARC M SPATT CONSULTING HYDRO	\$1,047
JUDITH L. WOODWARD	\$24,005	AYRES ASSOCIATES	\$1,000
GEOMAX	\$23,730	MARY ANNE BISHOP	\$1,000
NATURE CONSERVANCY - MONTANA	\$21,500	PACIFIC BIOLOGICAL STATION (CANADIAN)	\$1,000
APPLIED POWER CORPORATION	\$21,364	WEST CONSULTANTS INC	\$1,000
UNION COUNTY COMMISSIONERS OFFICE	\$20,400	PAT E VIVIAN	\$874
WEYERHAEUSER COMPANY	\$18,633	R.S. ANDERSON & ANDERSON, INC.	\$800
MAGIC VALLEY HELI-ARC & MFG	\$18,609	WEAVER ASSOCIATES	\$700
INTERNATIONAL INSTITUTE OF LEARNING	\$17,625	BOB TONSETH	\$650
MAD RIVER DECOYS	\$17,500	THE BRICK KICKER	\$550
KUECHLE EDIT SERVICES	\$17,146	DR. DAVID WELCH	\$500
BOISE CASCADE CORPORATION	\$16,000	WESTERN / ALLWASTE	\$304
RICK FRANKLIN CORP	\$15,400		
US WEST COM FED SERVICES	\$13,273		
JUDITH H MONTGOMERY	\$12,944		
LUANNA GROW CONSULTING	\$12,500		
GREGORY'S PUMP SERVICE	\$11,411		
GLOBAL SHELTERS	\$10,890		
CITY OF UNION	\$10,500		
OREGON TROUT INC	\$10,453		
MURREMAID MUSIC BOXES	\$10,424		
CHEMICAL WASTE MANAGEMENT, INC.	\$10,422		
EAST LANE SOIL & WATER CONSERVATION DISTRICT	\$10,000		
IDFG/SBT	\$10,000		
ENVIRONMENTAL SERVICES NW INC	\$9,207		
HYDROLAB CORP	\$8,735		
DAVID EVANS & ASSOCIATES INC	\$7,800		
WASHINGTON DEPARTMENT OF NATURAL RESOURCES	\$7,500		
MUNTERS CORP	\$7,330		
AQUATECNICS INC	\$7,090		
NRCS	\$6,965		
OS SYSTEMS INC	\$5,804		
CITY OF MILTON-FREEWATER	\$5,500		

Source: Bonneville Power Administration

**Table 7A Salmon and Steelhead passing Bonneville Dam, 1938-2002**

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	Year	Chinook	Steelhead	Sockeye	Coho
1938	271,799	107,003	75,040	15,185	1976	507,773	124,177	43,611	53,150
1939	286,236	121,922	73,382	14,383	1977	464,865	193,437	99,829	19,408
1940	391,573	185,161	148,805	11,870	1978	394,590	104,431	18,436	52,590
1941	461,443	118,087	65,741	17,911	1979	176,292	114,010	52,627	45,328
1942	401,998	151,345	55,464	12,401	1980	245,518	129,254	58,882	22,052
1943	313,123	92,131	39,845	2,547	1981	285,650	159,270	56,037	30,510
1944	240,763	100,521	15,071	4,207	1982	322,809	157,640	50,219	73,832
1945	297,488	120,144	9,501	791	1983	244,476	218,419	100,542	15,178
1946	445,743	142,548	74,354	3,897	1984	323,346	315,795	152,540	29,332
1947	480,377	135,444	171,139	11,174	1985	454,753	326,194	165,928	55,529
1948	419,555	139,062	131,541	4,081	1986	571,189	376,752	58,099	130,786
1949	277,697	119,285	51,444	1,004	1987	547,409	300,335	116,956	27,628
1950*	357,375	114,087	77,993	10,151	1988	494,028	279,277	79,721	39,617
1951*	331,788	140,689	169,428	5,201	1989	416,170	287,802	41,884	39,243
1952	420,879	260,990	184,645	7,768	1990	340,798	183,011	49,581	24,764
1953	332,479	223,914	235,215	13,018	1991	274,644	274,535	76,482	65,508
1954 <sup>1</sup>	320,947	176,260	130,107	4,062	1992	256,271	314,963	84,993	18,151
1955 <sup>2</sup>	359,853	198,411	237,748	3,725	1993	277,657	188,377	80,182	11,732
1956 <sup>3</sup>	300,917	131,116	156,418	6,127	1994	243,450	161,978	12,678	22,795
1957 <sup>4</sup>	403,286	139,183	82,915	4,675	1995	240,017	202,478	8,771	12,034
1958 <sup>5</sup>	426,419	131,437	122,389	3,673	1996	296,635	205,213	30,252	18,747
1959 <sup>6</sup>	345,028	129,026	86,560	2,695	1997	383,133	258,385	47,008	27,267
1960 <sup>7</sup>	256,049	113,676	59,713	3,268	1998	280,944	185,094	13,218	49,920
1961 <sup>8</sup>	281,980	139,719	17,111	3,456	1999	343,176	206,488	17,875	45,152
1962 <sup>9</sup>	286,625	164,025	28,179	14,788	2000	491,928	351,493	93,398	97,127
1963 <sup>10</sup>	278,560	129,418	60,319	12,658	2001	970,774	748,011	114,946	266,307
1964 <sup>11</sup>	344,422	117,252	99,856	53,602	2002	925,452	624,248	49,610	95,289
1965 <sup>12</sup>	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					

\* 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, 1956 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

Source: 1938 - 1976: Annual Fish Passage Reports - Corps of Engineers  
1977 - 2002: Corps of Engineers, Fish Passage Center

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

Year	Chinook			Sockeye	Coho 2/	Chum 3/	Steelhead		Total	Year	Chinook			Sockeye	Coho 2/	Chum 3/	Steelhead		Total
	Spr.1/	Sum.	Fall				Winter 4/	Summer			Spr.1/	Sum.	Fall				Winter 4/	Summer	
1938	118.4	122.7	582.2	168.0	271.9	157.0	—	249.6	1,669.8	1982	195.9	26.7	438.3	50.2	518.6	2.9	46.0	207.9	1,486.5
1939	155.5	191.8	550.3	124.8	184.2	96.3	—	232.0	1,534.9	1983	159.8	23.7	298.9	100.5	143.4	0.6	67.7	240.2	1,034.8
1940	97.6	112.7	742.9	196.0	164.4	102.8	—	422.8	1,839.2	1984	170.7	28.7	413.7	161.6	446.9	2.3	94.4	388.4	1,706.7
1941	129.0	106.5	1,175.7	173.6	131.5	340.1	—	336.8	2,393.2	1985	179.0	30.3	548.0	200.4	435.3	1.3	77.3	405.3	1,876.9
1942	87.9	94.8	979.0	94.5	83.8	425.5	—	297.2	2,062.7	1986	224.2	31.4	730.1	59.9	1,574.1	3.0	85.0	474.2	3,181.9
1943	133.8	57.0	600.9	73.4	80.9	78.7	—	216.0	1,240.7	1987	241.8	38.3	956.8	145.3	388.7	2.5	91.7	364.3	2,229.4
1944	78.4	67.1	709.8	24.6	174.2	22.6	—	232.3	1,309.0	1988	250.4	36.7	869.1	99.6	726.6	4.8	59.3	362.8	2,409.3
1945	118.8	52.6	711.7	10.9	204.6	48.3	—	268.4	1,415.3	1989	231.9	33.1	592.5	47.4	752.4	2.0	68.0	327.8	2,055.1
1946	199.3	72.0	831.9	101.1	121.5	72.7	—	268.0	1,666.5	1990	257.9	28.1	369.4	49.6	262.1	2.9	44.7	247.4	1,262.1
1947	251.8	86.3	903.6	335.3	176.2	40.7	—	261.8	2,055.7	1991	201.8	22.1	332.4	76.5	957.1	1.3	63.2	311.0	1,965.4
1948	173.3	86.9	899.2	143.2	134.5	85.6	—	240.1	1,762.8	1992	199.0	19.2	263.4	85.0	237.0	4.9	55.9	372.1	1,236.5
1949	178.3	57.8	550.5	52.6	100.7	44.7	—	162.5	1,147.1	1993	206.2	23.6	235.7	84.2	118.2	4.5	36.4	242.8	951.6
1950	146.1	69.3	588.6	112.6	125.9	58.9	—	179.0	1,280.4	1994	83.0	19.5	295.4	12.7	178.2	1.2	52.2	212.1	854.3
1951	259.0	116.4	385.6	203.7	112.4	46.1	—	244.5	1,367.7	1995	64.9	16.7	300.1	9.2	88.9	1.5	20.1	247.1	748.5
1952	319.8	114.5	323.0	318.9	126.3	28.9	—	383.1	1,614.5	1996	100.3	17.5	353.8	30.3	129.7	3.3	26.5	244.0	905.4
1953	342.4	95.0	257.3	260.0	61.3	22.9	76.8	361.3	1,477.0	1997	161.2	29.6	352.8	46.9	154.5	1.7	15.3	292.5	1,054.5
1954	237.4	114.8	231.9	180.0	37.4	28.5	49.8	289.5	1,169.3	1998	94.1	23.7	295.0	13.2	193.6	2.0	23.6	216.6	861.8
1955	317.1	147.6	281.5	245.0	64.3	10.7	56.0	298.8	1,421.0	1999	112.1	29.9	338.1	17.9	305.0	2.4	23.3	235.8	1,064.5
1956	297.9	195.2	312.7	202.0	64.4	4.7	51.2	200.7	1,328.8	2000	274.0	43.9	325.3	93.7	624.3	2.5	(30.4)	(316.9)	1,711.0
1957	307.8	207.0	276.6	147.8	55.1	4.2	54.8	229.6	1,282.9	2001	525.7	89.3	658.7	116.5	1127.3	5.1	(40.1)	(689.4)	3,252.1
1958	268.5	187.5	393.2	313.3	24.2	8.3	48.4	211.2	1,454.6	2002	440.8	135.2	789.3	49.6	551.9	9.4	NA	(553.1)	2,529.3
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										

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.

Source: Fish Passage Center

Table 9 Spring and Summer Chinook Passing Bonneville Dam, 1977-2002

Year	Spring Chinook		Summer Chinook	
	Adults	Jacks	Adults	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

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

Table 10 Estimated Inriver Juvenile Survival through the Hydrosystem, 1966-1980, 1997-2002

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	0.24b
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
2001	0.28	0.04
2002	0.58	0.26
2003	0.53	0.31

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: National Marine Fisheries Service

Table 11 Where do the Fish Go? Fish Counted at Each Mainstem Dam, 2001-2002

Dam	Spring Chinook		Summer Chinook		Fall Chinook		Coho		Sockeye		Steelhead	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
Bonneville	405,539	275,290	90,879	135,388	472,736	512,488	264,468	92,960	114,934	49,610	631,206	478,907
The Dalles	313,865	185,046	82,388	118,812	233,081	279,252	64,557	12,785	102,562	40,554	503,327	387,920
John Day	270,385	142,290	74,235	110,969	166,367	194,472	51,181	9,259	107,869	41,915	483,409	391,084
McNary	265,372	133,229	77,514	116,755	146,898	167,037	24,730	3,176	97,188	39,177	398,784	286,451
Ice Harbor	174,199	87,033	17,667	29,044	23,686	21,536	1,360	232	38	60	255,720	203,929
Lower Monumental	182,571	77,841	20,899	25,429	21,809	21,376	957	148	32	45	252,907	212,194
Little Goose	177,813	79,047	18,732	23,097	17,825	17,061	540	121	72	38	232,669	198,817
Lower Granite	175,093	77,157	17,539	24,112	17,328	17,816	678	369	36	51	231,906	208,303
Priest Rapids	51,366	34,279	56,377	97,781	30,345	28,338	9,122	1,447	111,320	47,882	29,473	15,806
Rock Island	41,546	24,844	61,930	90,041	17,791	14,839	8,243	1,592	104,847	44,319	28,286	15,196
Rocky Reach	16,438	10,160	44,722	75,911	12,561	11,918	1,125	425	66,222	12,372	21,708	11,718
Wells	10,881	7,626	38,126	63,007	9,096	6,099	300	135	74,490	10,587	18,053	9,246

Source: Fish Passage Center, Page 10 of the report Weekly Report #02-31: <http://www.fpc.org/weekrpt/wr2002/WR-02-31.pdf>.

Table 12 Wild Fish at Bonneville Dam, 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Spring Chinook</b>	<b>22,326</b>	<b>15,941</b>	<b>33,748</b>	<b>26,947</b>	<b>8,757</b>	<b>4,034</b>	<b>16,389</b>	<b>14,694</b>	<b>16,285</b>	<b>11,853</b>	<b>51,765</b>	<b>83,283</b>	<b>102,716</b>
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
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
<b>Summer Chinook @Bonn</b>	<b>21,323</b>	<b>16,876</b>	<b>9,726</b>	<b>16,423</b>	<b>12,521</b>	<b>10,717</b>	<b>11,763</b>	<b>17,700</b>	<b>15,371</b>	<b>17,102</b>	<b>15,525</b>	<b>49,976</b>	<b>72,230</b>
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
Priest Rapids Dam count Summer Chinook	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
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
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
<b>Fall Chinook @Bonn</b>	<b>150,334</b>	<b>114,335</b>	<b>71,403</b>	<b>65,219</b>	<b>85,449</b>	<b>68,259</b>	<b>84,640</b>	<b>106,504</b>	<b>83,183</b>	<b>79,147</b>	<b>77,574</b>	<b>107,785</b>	<b>166,096</b>
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
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
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
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
Wind, Klick, BWS	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
Umatilla	0	203	181	100	785	697	175	65	96	279	70	621	2,782
<b>Summer Steelhead</b>	<b>41,700</b>	<b>63,500</b>	<b>54,900</b>	<b>35,800</b>	<b>30,500</b>	<b>30,800</b>	<b>34,800</b>	<b>37,200</b>	<b>39,800</b>	<b>65,600</b>	<b>132,300</b>	<b>157,300</b>	<b>129,300</b>
<b>Sockeye</b>	<b>49,581</b>	<b>76,481</b>	<b>84,992</b>	<b>80,178</b>	<b>12,678</b>	<b>8,773</b>	<b>30,255</b>	<b>46,927</b>	<b>13,218</b>	<b>17,877</b>	<b>93,391</b>	<b>114,933</b>	<b>49,610</b>
<b>Coho @Bonn dam (assuming 10% wild)</b>	<b>1,160</b>	<b>5,890</b>	<b>1,780</b>	<b>1,060</b>	<b>2,030</b>	<b>1,040</b>	<b>1,570</b>	<b>2,420</b>	<b>4,630</b>	<b>4,070</b>	<b>8,580</b>	<b>25,950</b>	<b>8,780</b>

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, 1866-2002  
(Non-Indian and Treaty Indian combined)

Millions of Pounds

Zone 1 - 6

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

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	Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Albeni Falls	Bald Eagle (breeding)	4,508	301	4,207	6.68%	Bonneville WA	Black-capped Chickadee	511	429	82	83.95%
Albeni Falls	Bald Eagle (wintering)	4,365	314	4,051	7.19%	Bonneville WA	Canada Goose	1,222	1,112	110	91.00%
Albeni Falls	Black-capped Chickadee	2,286	117	2,169	5.12%	Bonneville WA	Great Blue Heron	2,150	607	1,543	28.23%
Albeni Falls	Canada Goose	4,699	1,161	3,538	24.71%	Bonneville WA	Lesser Scaup	0	0	0	0.00%
Albeni Falls	Mallard	5,985	227	5,758	3.79%	Bonneville WA	Mink	811	1,687	-876	208.01%
Albeni Falls	Muskrat	1,756	82	1,674	4.67%	Bonneville WA	Spotted Sandpiper	1,383	0	1,383	0.00%
Albeni Falls	Redhead Duck	3,379	0	3,379	0.00%	Bonneville WA	Yellow Warbler	82	40	42	48.78%
Albeni Falls	White-tailed Deer	1,680	30	1,650	1.79%	<b>Bonneville WA</b>	<b>All Species</b>	<b>6,159</b>	<b>3,875</b>	<b>2,284</b>	<b>62.92%</b>
Albeni Falls	Yellow Warbler	0	59	-59	0.00%	Chief Joseph	Bobcat	401	132	269	32.92%
<b>Albeni Falls</b>	<b>All Species</b>	<b>28,658</b>	<b>2,291</b>	<b>26,367</b>	<b>7.99%</b>	Chief Joseph	Canada Goose	213	10	203	4.69%
Anderson Ranch	Black-capped Chickadee	890	0	890	0.00%	Chief Joseph	Lesser Scaup	0	0	0	0.00%
Anderson Ranch	Blue Grouse	1,980	0	1,980	0.00%	Chief Joseph	Lewis Woodpecker	286	141	145	49.30%
Anderson Ranch	Common Snipe	0	889	-889	0.00%	Chief Joseph	Mink	920	137	783	14.89%
Anderson Ranch	Mallard	1,048	81	967	7.73%	Chief Joseph	Mule Deer	1,992	409	1,583	20.53%
Anderson Ranch	Mink	1,732	0	1,732	0.00%	Chief Joseph	Ring-necked Pheasant	239	0	239	0.00%
Anderson Ranch	Mule Deer	2,689	0	2,689	0.00%	Chief Joseph	Sage Grouse	1,179	554	625	46.99%
Anderson Ranch	Peregrine Falcon	0	0	0	0.00%	Chief Joseph	Sharp-tailed Grouse	2,290	14	2,276	0.61%
Anderson Ranch	Ruffed Grouse	919	0	919	0.00%	Chief Joseph	Spotted Sandpiper	1,255	10	1,245	0.80%
Anderson Ranch	Western Meadowlark	0	74	-74	0.00%	Chief Joseph	Yellow Warbler	58	26	32	44.83%
Anderson Ranch	Yellow Warbler	361	3	358	0.83%	<b>Chief Joseph</b>	<b>All Species</b>	<b>8,833</b>	<b>1,433</b>	<b>7,400</b>	<b>16.22%</b>
<b>Anderson Ranch</b>	<b>All Species</b>	<b>9,619</b>	<b>1,047</b>	<b>8,572</b>	<b>10.88%</b>	Cougar	American Dipper	285	0	285	0.00%
Big Cliff	Bald Eagle	0	0	0	0.00%	Cougar	Bald Eagle	0	0	0	0.00%
Big Cliff	Beaver	50	0	50	0.00%	Cougar	Beaver	189	182	7	96.30%
Big Cliff	Black-tailed Deer	81	0	81	0.00%	Cougar	Black Bear	1,856	0	1,856	0.00%
Big Cliff	Common Merganser	11	0	11	0.00%	Cougar	Black-tailed Deer	1,192	0	1,192	0.00%
Big Cliff	Osprey	0	0	0	0.00%	Cougar	Cougar	1,472	0	1,472	0.00%
Big Cliff	Pileated Woodpecker	71	0	71	0.00%	Cougar	Harlequin duck	282	0	282	0.00%
Big Cliff	River Otter	38	0	38	0.00%	Cougar	Osprey	0	0	0	0.00%
Big Cliff	Roosevelt Elk	81	0	81	0.00%	Cougar	Pileated Woodpecker	1,938	0	1,938	0.00%
Big Cliff	Ruffed Grouse	81	0	81	0.00%	Cougar	River Otter	189	0	189	0.00%
<b>Big Cliff</b>	<b>All Species</b>	<b>413</b>	<b>0</b>	<b>413</b>	<b>0.00%</b>	Cougar	Roosevelt Elk	1,484	0	1,484	0.00%
Black Canyon	Black-capped Chickadee	0	0	0	0.00%	Cougar	Ruffed Grouse	293	0	293	0.00%
Black Canyon	Canada Goose	214	0	214	0.00%	Cougar	Spotted Owl	1,774	0	1,774	0.00%
Black Canyon	Mallard	270	0	270	0.00%	Cougar	Waterfowl	0	0	0	0.00%
Black Canyon	Mink	652	1	651	0.15%	Cougar	Yellow Warbler	170	25	145	14.71%
Black Canyon	Mule Deer	242	53	189	21.90%	<b>Cougar</b>	<b>All Species</b>	<b>11,124</b>	<b>207</b>	<b>10,917</b>	<b>1.86%</b>
Black Canyon	Ring-necked Pheasant	260	0	260	0.00%	Detroit	Bald Eagle	0	0	0	0.00%
Black Canyon	Sharp-tailed Grouse	532	0	532	0.00%	Detroit	Beaver	715	0	715	0.00%
Black Canyon	Yellow Warbler	0	3	-3	0.00%	Detroit	Black-tailed Deer	3,061	0	3,061	0.00%
<b>Black Canyon</b>	<b>All Species</b>	<b>2,170</b>	<b>57</b>	<b>2,113</b>	<b>2.63%</b>	Detroit	Common Merganser	0	0	0	0.00%
Bonneville OR	Black-capped Chickadee	511	189	322	36.99%	Detroit	Osprey	0	0	0	0.00%
Bonneville OR	Canada Goose	1,222	0	1,222	0.00%	Detroit	Pileated Woodpecker	1,156	0	1,156	0.00%
Bonneville OR	Great Blue Heron	2,150	388	1,762	18.05%	Detroit	River Otter	882	0	882	0.00%
Bonneville OR	Lesser Scaup	0	0	0	0.00%	Detroit	Roosevelt Elk	2,210	0	2,210	0.00%
Bonneville OR	Mink	811	0	811	0.00%	Detroit	Ruffed Grouse	3,028	0	3,028	0.00%
Bonneville OR	Spotted Sandpiper	1,383	2	1,381	0.14%	Detroit	Spotted Owl	246	0	246	0.00%
Bonneville OR	Yellow Warbler	82	11	71	13.41%	<b>Detroit</b>	<b>All Species</b>	<b>11,298</b>	<b>0</b>	<b>11,298</b>	<b>0.00%</b>
<b>Bonneville OR</b>	<b>All Species</b>	<b>6,159</b>	<b>590</b>	<b>5,569</b>	<b>9.58%</b>						

Table 14A Wildlife Accounting by Species and Dam

Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed	Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Dexter	American Dipper	119	0	119	0.00%	Green Peter	Osprey	0	0	0	0.00%
Dexter	Bald Eagle	0	0	0	0.00%	Green Peter	Pileated Woodpecker	710	0	710	0.00%
Dexter	Beaver	832	0	832	0.00%	Green Peter	River Otter	575	0	575	0.00%
Dexter	Black-tailed Deer	1,078	0	1,078	0.00%	Green Peter	Roosevelt Elk	3,997	0	3,997	0.00%
Dexter	California quail	664	0	664	0.00%	Green Peter	Ruffed Grouse	3,264	0	3,264	0.00%
Dexter	Greater Scaup	0	0	0	0.00%	<b>Green Peter</b>	<b>All Species</b>	<b>16,432</b>	<b>0</b>	<b>16,432</b>	<b>0.00%</b>
Dexter	Mink	832	0	832	0.00%	Hills Creek	American Dipper	200	0	200	0.00%
Dexter	Osprey	0	0	0	0.00%	Hills Creek	Bald Eagle	0	0	0	0.00%
Dexter	Red Fox	508	0	508	0.00%	Hills Creek	Beaver	326	955	-629	292.94%
Dexter	Ring-necked Pheasant	332	0	332	0.00%	Hills Creek	Black Bear	2,958	66	2,892	2.23%
Dexter	Ruffed Grouse	701	0	701	0.00%	Hills Creek	Black-tailed Deer	2,912	259	2,653	8.89%
Dexter	Western Gray Squirrel	284	0	284	0.00%	Hills Creek	Cougar	2,381	110	2,271	4.62%
Dexter	Wood Duck	644	0	644	0.00%	Hills Creek	Harlequin duck	269	0	269	0.00%
Dexter	Yellow Warbler	654	0	654	0.00%	Hills Creek	Osprey	0	0	0	0.00%
<b>Dexter</b>	<b>All Species</b>	<b>6,648</b>	<b>0</b>	<b>6,648</b>	<b>0.00%</b>	Hills Creek	Pileated Woodpecker	3,201	0	3,201	0.00%
Foster	Bald Eagle	0	0	0	0.00%	Hills Creek	River Otter	384	0	384	0.00%
Foster	Beaver	245	0	245	0.00%	Hills Creek	Roosevelt Elk	3,203	106	3,097	3.31%
Foster	Black-tailed Deer	890	0	890	0.00%	Hills Creek	Ruffed Grouse	468	0	468	0.00%
Foster	Osprey	0	0	0	0.00%	Hills Creek	Spotted Owl	2,977	0	2,977	0.00%
Foster	Ring-necked Pheasant	385	0	385	0.00%	Hills Creek	Waterfowl	0	0	0	0.00%
Foster	River Otter	340	0	340	0.00%	Hills Creek	Yellow Warbler	210	0	210	0.00%
Foster	Roosevelt Elk	652	0	652	0.00%	<b>Hills Creek</b>	<b>All Species</b>	<b>19,489</b>	<b>1,496</b>	<b>17,993</b>	<b>7.68%</b>
Foster	Ruffed Grouse	853	0	853	0.00%	John Day OR	Black-capped Chickadee	435	0	435	0.00%
Foster	Wood Duck	179	0	179	0.00%	John Day OR	California quail	3,162	0	3,162	0.00%
<b>Foster</b>	<b>All Species</b>	<b>3,544</b>	<b>0</b>	<b>3,544</b>	<b>0.00%</b>	John Day OR	Canada Goose	4,005	0	4,005	0.00%
Grand Coulee	Black-capped Chickadee	0	2	-2	0.00%	John Day OR	Great Blue Heron	1,593	0	1,593	0.00%
Grand Coulee	Blue Grouse	0	954	-954	0.00%	John Day OR	Lesser Scaup	0	0	0	0.00%
Grand Coulee	Bobcat	0	8	-8	0.00%	John Day OR	Mallard	3,700	0	3,700	0.00%
Grand Coulee	Canada Goose (nesting)	74	0	74	0.00%	John Day OR	Mink	719	7	712	0.97%
Grand Coulee	Downy Woodpecker	0	1,495	-1,495	0.00%	John Day OR	Mule Deer	0	5,966	-5,966	0.00%
Grand Coulee	Great Blue Heron	0	4,500	-4,500	0.00%	John Day OR	Spotted Sandpiper	1,593	0	1,593	0.00%
Grand Coulee	Mallard	0	2	-2	0.00%	John Day OR	Western Meadowlark	2,530	8,070	-5,540	318.97%
Grand Coulee	Mink	0	24	-24	0.00%	John Day OR	Yellow Warbler	543	14	529	2.58%
Grand Coulee	Mourning Dove	9,316	1,001	8,315	10.74%	<b>John Day OR</b>	<b>All Species</b>	<b>18,280</b>	<b>14,057</b>	<b>4,223</b>	<b>76.90%</b>
Grand Coulee	Mule Deer	27,133	17,172	9,961	63.29%	John Day WA	Black-capped Chickadee	435	677	-242	155.63%
Grand Coulee	Pigmy Rabbit	0	1,246	-1,246	0.00%	John Day WA	California quail	3,162	4,581	-1,419	144.88%
Grand Coulee	Riparian Forest	1,632	200	1,432	12.25%	John Day WA	Canada Goose	4,005	2,742	1,263	68.46%
Grand Coulee	Riparian Shrub	27	0	27	0.00%	John Day WA	Great Blue Heron	1,593	1,691	-98	106.15%
Grand Coulee	Ruffed Grouse	16,502	2,908	13,594	17.62%	John Day WA	Lesser Scaup	0	0	0	#DIV/0!
Grand Coulee	Sage Grouse	2,746	7,432	-4,686	270.65%	John Day WA	Mallard	3,700	3,083	617	83.32%
Grand Coulee	Sharp-tailed Grouse	32,723	14,789	17,934	45.19%	John Day WA	Mink	719	1,430	-711	198.89%
Grand Coulee	Western Meadowlark	0	286	-286	0.00%	John Day WA	Spotted Sandpiper	1,593	0	1,593	0.00%
Grand Coulee	White-tailed Deer	21,632	9,064	12,568	41.90%	John Day WA	Western Meadowlark	2,530	1,927	603	76.17%
Grand Coulee	Yellow Warbler	0	129	-129	0.00%	John Day WA	Yellow Warbler	543	667	-124	122.84%
<b>Grand Coulee</b>	<b>All Species</b>	<b>111,785</b>	<b>61,212</b>	<b>50,573</b>	<b>54.76%</b>	<b>John Day WA</b>	<b>All Species</b>	<b>18,280</b>	<b>16,798</b>	<b>1,482</b>	<b>91.89%</b>
Green Peter	Bald Eagle	0	0	0	0.00%	Lookout Point	American Dipper	350	0	350	0.00%
Green Peter	Band-tailed Pigeon	3,487	0	3,487	0.00%	Lookout Point	Bald Eagle	0	0	0	0.00%
Green Peter	Beaver	381	0	381	0.00%	Lookout Point	Beaver	1,739	0	1,739	0.00%
Green Peter	Black-tailed Deer	3,997	0	3,997	0.00%	Lookout Point	Black-tailed Deer	4,043	0	4,043	0.00%
Green Peter	Common Merganser	21	0	21	0.00%	Lookout Point	California quail	1,937	0	1,937	0.00%
						Lookout Point	Common Merganser	95	0	95	0.00%

Table 14A Wildlife Accounting by Species and Dam

Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed	Dam	Wildlife Species	HUs Lost	HUs Acquired	HUs Remaining	Percent Completed
Lookout Point	Mink	1,586	0	1,586	0.00%	McNary WA	Western Meadowlark	2,775	1,130	1,645	40.72%
Lookout Point	Osprey	0	0	0	0.00%	McNary WA	Yellow Warbler	263	396	-133	150.57%
Lookout Point	Pileated Woodpecker	1,614	0	1,614	0.00%	<b>McNary WA</b>	<b>All Species</b>	<b>18,834</b>	<b>22,041</b>	<b>-3,207</b>	<b>117.03%</b>
Lookout Point	Red Fox	2,082	0	2,082	0.00%	Minidoka	Bald Eagle (wintering)	0	89	-89	0.00%
Lookout Point	Ring-necked Pheasant	1,654	0	1,654	0.00%	Minidoka	Mallard	0	0	0	0.00%
Lookout Point	Roosevelt Elk	3,668	0	3,668	0.00%	Minidoka	Marsh Wren	0	0	0	0.00%
Lookout Point	Ruffed Grouse	2,457	0	2,457	0.00%	Minidoka	Mule Deer	3,413	1,632	1,781	47.82%
Lookout Point	Spotted Owl	714	0	714	0.00%	Minidoka	Redhead Duck	0	0	0	0.00%
Lookout Point	Western Gray Squirrel	1,070	0	1,070	0.00%	Minidoka	River Otter	2,993	0	2,993	0.00%
Lookout Point	Wood Duck	1,124	0	1,124	0.00%	Minidoka	Sage Grouse	3,755	0	3,755	0.00%
Lookout Point	Yellow Warbler	1,321	0	1,321	0.00%	Minidoka	Western Grebe	0	0	0	0.00%
<b>Lookout Point</b>	<b>All Species</b>	<b>25,454</b>	<b>0</b>	<b>25,454</b>	<b>0.00%</b>	Minidoka	Yellow Warbler	342	0	342	0.00%
Lower Snake	Black-capped Chickadee	0	1,014	-1,014	0.00%	<b>Minidoka</b>	<b>All Species</b>	<b>10,503</b>	<b>1,721</b>	<b>8,782</b>	<b>16.39%</b>
Lower Snake	California quail	20,508	1,936	18,572	9.44%	Palisades	Bald Eagle (breeding)	5,941	3,329	2,612	56.03%
Lower Snake	Canada Goose	2,040	7	2,033	0.34%	Palisades	Bald Eagle (wintering)	18,565	6,974	11,591	37.57%
Lower Snake	Downy Woodpecker	365	238	127	65.21%	Palisades	Black-capped Chickadee	1,358	480	878	35.35%
Lower Snake	Mallard (nesting)	0	365	-365	0.00%	Palisades	Canada Goose	805	388	417	48.20%
Lower Snake	Mink	0	48	-48	0.00%	Palisades	Mallard	2,622	998	1,624	38.06%
Lower Snake	Mule Deer	0	1,456	-1,456	0.00%	Palisades	Mink	2,276	653	1,623	28.69%
Lower Snake	Ring-necked Pheasant	2,647	49	2,598	1.85%	Palisades	Mule Deer	2,454	2,607	-153	106.23%
Lower Snake	Sage Grouse	0	45	-45	0.00%	Palisades	Peregrine Falcon	0	0	0	0.00%
Lower Snake	Song Sparrow	288	1,060	-772	368.06%	Palisades	Ruffed Grouse	2,331	491	1,840	21.06%
Lower Snake	Western Meadowlark	0	2,207	-2,207	0.00%	Palisades	Yellow Warbler	718	160	558	22.28%
Lower Snake	Yellow Warbler	927	436	491	47.03%	<b>Palisades</b>	<b>All Species</b>	<b>37,070</b>	<b>16,080</b>	<b>20,990</b>	<b>43.38%</b>
<b>Lower Snake</b>	<b>All Species</b>	<b>26,775</b>	<b>8,861</b>	<b>17,914</b>	<b>33.09%</b>	The Dalles OR	Black-capped Chickadee	91	0	91	0.00%
McNary OR	Black-capped Chickadee	0	1,202	-1,202	0.00%	The Dalles OR	Canada Goose	220	0	220	0.00%
McNary OR	Blue Grouse	0	408	-408	0.00%	The Dalles OR	Great Blue Heron	213	0	213	0.00%
McNary OR	California quail	1,263	1,448	-185	114.65%	The Dalles OR	Lesser Scaup	0	0	0	0.00%
McNary OR	Canada Goose	697	0	697	0.00%	The Dalles OR	Mink	165	0	165	0.00%
McNary OR	Downy Woodpecker	75	845	-770	1126.67%	The Dalles OR	Spotted Sandpiper	267	0	267	0.00%
McNary OR	Great Blue Heron	0	39	-39	0.00%	The Dalles OR	Western Meadowlark	124	0	124	0.00%
McNary OR	Mallard (nesting)	1,392	93	1,299	6.68%	The Dalles OR	Yellow Warbler	85	0	85	0.00%
McNary OR	Mallard (wintering)	0	0	0	0.00%	<b>The Dalles OR</b>	<b>All Species</b>	<b>1,165</b>	<b>0</b>	<b>1,165</b>	<b>0.00%</b>
McNary OR	Mink	250	145	105	58.00%	The Dalles WA	Black-capped Chickadee	91	272	-181	298.90%
McNary OR	Spotted Sandpiper	273	20	253	7.33%	The Dalles WA	Canada Goose	220	734	-514	333.64%
McNary OR	Western Meadowlark	694	1,981	-1,287	285.45%	The Dalles WA	Great Blue Heron	213	111	102	52.11%
McNary OR	Yellow Warbler	66	284	-218	430.30%	The Dalles WA	Lesser Scaup	0	0	0	0.00%
<b>McNary OR</b>	<b>All Species</b>	<b>4,710</b>	<b>6,465</b>	<b>-1,755</b>	<b>137.26%</b>	The Dalles WA	Mink	165	410	-245	248.48%
McNary WA	Black-capped Chickadee	0	3,178	-3,178	0.00%	The Dalles WA	Spotted Sandpiper	267	158	109	59.18%
McNary WA	Blue Grouse	0	137	-137	0.00%	The Dalles WA	Western Meadowlark	124	58	66	46.77%
McNary WA	California quail	5,051	10,275	-5,224	203.43%	The Dalles WA	Yellow Warbler	85	156	-71	183.53%
McNary WA	Canada Goose	2,787	2,323	464	83.35%	<b>The Dalles WA</b>	<b>All Species</b>	<b>1,165</b>	<b>1,899</b>	<b>-734</b>	<b>163.00%</b>
McNary WA	Downy Woodpecker	301	1,757	-1,456	583.72%	<b>Total</b>		<b>404,567</b>	<b>160,130</b>	<b>244,437</b>	
McNary WA	Great Blue Heron	0	117	-117	0.00%						
McNary WA	Mallard (nesting)	5,567	1,803	3,764	32.39%						
McNary WA	Mallard (wintering)	0	0	0	0.00%						
McNary WA	Mink	1,000	925	75	92.50%						
McNary WA	Spotted Sandpiper	1,090	0	1,090	0.00%						

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%
		<b>74752</b>	<b>74239</b>	<b>99.3%</b>
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%
		<b>149276</b>	<b>67174</b>	<b>45.0%</b>
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%
		<b>59362</b>	<b>19017</b>	<b>32.0%</b>
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%
		<b>94402</b>	<b>2139</b>	<b>2.3%</b>
<b>Grand Total</b>		<b>404567</b>	<b>171430</b>	<b>42.4%</b>

\* 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
<b>Total</b>	<b>404,567</b>	<b>53,487</b>	<b>160,145</b>	<b>11,285</b>	<b>171,430</b>

\* 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
Blue Creek Winter Range	Abrahamson Property (A 322)	78.00	\$42,237.00	Fee Title	McCoy Lake Watershed	Kenworthy Property	40.00	\$60,000.00	Fee Title
Blue Creek Winter Range	Blue Creek Land Swap	701.00	\$812,000.00	Exchange	McCoy Lake Watershed	McCrea Property (A 401 A)	35.00	\$19,530.00	Fee Title
Boise River WMA	Krueger	166.00	\$332,500.00	Fee Title	McCoy Lake Watershed	People Living God Prop.	440.00	\$498,000.00	Fee Title
Boundary Creek WMA	Boundary Creek	1,405.00	\$672,885.00	Fee Title	Muddy Cr / Marys River	Muddy Cr / Marys River	222.00	\$387,500.00	Fee Title
Burlington Bottoms	Burlington Bottoms	417.00	\$700,000.00	Fee Title	Pend Oreille Wetlands (Kalispel)	Pend Oreille Wetlands I	436.00	\$427,185.00	Fee Title
Canby Landing	Canby Property	23.00	\$250,000.00	Fee Title	Pend Oreille Wetlands (Kalispel)	Pend Oreille Wetlands II	164.00	\$199,500.00	Fee Title
Deer Parks WMU	Allen	81.00	\$283,800.00	none/unknown	Perkins Lake	Perkins Lake Tract	98.00	\$200,000.00	Fee Title
Deer Parks WMU	BeaverDick (Kinghorn 1)	310.00	\$465,000.00	Fee Title	Pine Creek	Pine Creek	24,304.00	\$3,200,000.00	Fee Title
Deer Parks WMU	Boyle Ranch	2,556.00	\$5,200,000.00	Fee Title	Precious Lands WMA	Precious Lands	15,325.00	\$4,250,524.00	Fee Title
Deer Parks WMU	Horkley	128.00	\$336,000.00	none/unknown	Rainwater Ranch	Rainwater Ranch	8,678.00	\$4,085,550.00	Fee Title
Deer Parks WMU	Menan (Kinghorn 2)	140.00	\$220,350.00	Fee Title	Rudeen	Rudeen	2,450.00	\$1,700,000.00	Fee Title
Denny Jones	Denny Jones Ranch	6,385.00	\$1,700,000.00	Fee Title	Sage Flat WA	Sage Flat	8,380.00	\$1,526,057.00	Mix
Fox Creek	Kieffer Property	40.00	\$64,000.00	Fee Title	Scotch Creek WA	Chesaw	4,290.00	\$9,000.00	Fee Title
Fox Creek	Smith Property	160.00	\$320,000.00	Fee Title	Scotch Creek WA	Scotch Creek	7,300.00	\$295,291.00	Fee Title
Goose Haven Lake	Bader	648.00	\$800,324.00	none/unknown	Scotch Creek WA	Tunk	320.00	\$158,665.00	Fee Title
Hellsgate	Berg	6,300.00	\$2,000,000.00	Fee Title	Soda Hills WHMA	Soda Hills	2,563.00	\$1,282,000.00	Fee Title
Hellsgate	Bill Kuenhe	4,814.00	\$2,275,000.00	Fee Title	Sorenson	Sorenson	42.00	\$172,955.00	Fee Title
Hellsgate	Colville Allotments	80.00	\$21,746.00	Fee Title	Steigerwald Lake NWR	Bliss	9.00	\$110,000.00	Fee Title
Hellsgate	Covington	129.00	\$68,000.00	Fee Title	Steigerwald Lake NWR	Burlington Northern	27.00	\$139,000.00	Fee Title
Hellsgate	Friedlander	60.00	\$47,116.00	Fee Title	Steigerwald Lake NWR	James	90.00	\$594,000.00	Fee Title
Hellsgate	Graves	2,700.00	\$657,403.00	Fee Title	Steigerwald Lake NWR	Straub	191.00	\$872,852.00	Fee Title
Hellsgate	Henry Kuehne	4,860.00	\$3,000,000.00	Fee Title	Swanson Lakes	Nelson	792.00	\$191,889.00	Exchange
Hellsgate	Hinman	770.00	\$139,608.00	Fee Title	Swanson Lakes	Swanson Lakes	14,939.00	\$3,071,856.00	Fee Title
Hellsgate	Nespelem Bend	517.00	\$95,000.00	Fee Title	Tacoma/Trimble WMA	Lower Trimble Creek	450.00	\$506,000.00	Fee Title
Hellsgate	Redford Canyon	221.00	\$175,000.00	Fee Title	Tacoma/Trimble WMA	Tacoma Creek	437.00	\$535,000.00	Fee Title
Hellsgate	Sand Hills	1,394.00	\$575,000.00	Fee Title	Tacoma/Trimble WMA	Upper Trimble Creek	303.00	\$304,500.00	Fee Title
Iskuulpa	Iskuulpa	5,937.00	\$2,260,625.00	Fee Title	Tex Creek WMA	Quarter Circle	2,135.00	\$260,000.00	Fee Title
Kruse Pine Creek Easement	Pine Creek (Kruse)	800.00	\$310,000.00	Easement	The Pend Oreille WMA	Albeni Cove	70.00	\$126,208.00	Fee Title
Ladd Marsh	Ladd Marsh	940.00	\$265,000.00	Mix	The Pend Oreille WMA	Carter Island	96.00	\$288,000.00	Fee Title
Little Pend Oreille NWR	Kaniksu Addition	716.00	\$313,000.00	Mix	The Pend Oreille WMA	Cocolalla Lake	98.00	\$290,500.00	Fee Title
Little Pend Oreille NWR	Weir	200.00	\$275,707.00	Fee Title	The Pend Oreille WMA	Denton Slough	17.00	\$44,000.00	Fee Title
Logan Valley	Logan Valley	1,700.00	\$2,000,000.00	Fee Title	The Pend Oreille WMA	Derr Creek (Henderson Ranch)	240.00	\$511,000.00	Fee Title
Lower Yakima Wetlands	Buena	92.00	\$102,200.00	Lease	The Pend Oreille WMA	Pack River (McMahon)	30.00	\$42,500.00	Fee Title
Lower Yakima Wetlands	Knight Property	80.00	\$79,000.00	Easement	The Pend Oreille WMA	Rapid Lightning (Ginter)	110.00	\$219,900.00	Fee Title
Lower Yakima Wetlands	Lateral A	417.00	\$830,000.00	Easement	The Pend Oreille WMA	Trout Creek (Hunter Ranch)	216.00	\$875,500.00	Fee Title
Lower Yakima Wetlands	Lower Satus	1,791.00	\$393,000.00	Mix	The Pend Oreille WMA	Westmond Lake	65.00	\$118,000.00	Fee Title
Lower Yakima Wetlands	Mosebar	733.00	\$167,725.00	Mix	Thurston	Thurston	54.00	\$121,275.00	Easement
Lower Yakima Wetlands	North Satus	1,110.00	\$331,150.00	Mix	Trout Creek Peninsula	Wheeler Peninsula Tract	112.00	\$155,000.00	Fee Title
Lower Yakima Wetlands	Old Goldendale	193.00	\$89,250.00	Easement	Tualatin River NWR	Oleson Tract 1	132.00	\$577,908.00	Mix
Lower Yakima Wetlands	S Barkes Rd.	81.00	\$91,000.00	Lease	Tualatin River NWR	Oleson Tract 2	100.00	\$859,210.00	Mix
Lower Yakima Wetlands	Satus	4,474.00	\$975,750.00	Mix	Vancouver Lowlands	Vancouver Lowlands (Shillapoo)	612.00	\$1,740,657.00	Fee Title
Lower Yakima Wetlands	South Campbell	280.00	\$229,875.00	Lease	Wanaket	Wanaket (Conforth Ranch)	2,817.00	\$1,042,976.00	Fee Title
Lower Yakima Wetlands	Toppenish	1,600.00	\$809,925.00	Mix	Wellpinit Mtn WA	Wynecoop (A 67B)	80.00	\$83,000.00	Fee Title
Lower Yakima Wetlands	Wanity	361.00	\$120,000.00	Mix	Whitney	Whitney	54.00	\$121,680.00	Easement
Lower Yakima Wetlands	Wapato	770.00	\$395,750.00	Easement	Willow Creek	Willow Creek	329.00	\$1,058,000.00	Easement
Lower Yakima Wetlands	West Satus	160.00	\$147,175.00	Lease	Windy Bay	Ramsey	147.00	\$300,000.00	none/unknown
McCoy Lake Watershed	Etue Property	74.00	\$148,720.00	Fee Title	Winterfeld Easement	Winterfeld	422.00	\$225,000.00	Easement
McCoy Lake Watershed	Harris Property	180.00	\$194,940.00	Fee Title					

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	Wildlife Species	HUs Lost	HUs Acquired	HUs Net	Percent Completed
Mule Deer	37,923	29,295	8,628	77.2%	Redhead Duck	3,379	0	3,379	0.0%
California Quail	35,747	18,240	17,507	51.0%	Red Fox	2,590	0	2,590	0.0%
Sharp-tailed Grouse	35,545	14,803	20,742	41.6%	Blue Grouse	1,980	1,499	481	75.7%
Bald Eagle	33,379	11,007	22,372	33.0%	Wood Duck	1,947	0	1,947	0.0%
Ruffed Grouse	30,897	3,399	27,498	11.0%	Muskrat	1,756	82	1,674	4.7%
Mallard	24,284	6,652	17,632	27.4%	Riparian Forest habitat	1,632	200	1,432	12.3%
White-tailed Deer	23,312	9,094	14,218	39.0%	Western Gray Squirrel	1,354	0	1,354	0.0%
Canada Goose	22,423	8,477	13,946	37.8%	American Dipper	954	0	954	0.0%
Black-tailed Deer	17,254	259	16,995	1.5%	Downy Woodpecker	741	4,335	-3,594*	585.0%
Roosevelt Elk	15,295	106	15,189	0.7%	Harlequin duck	551	0	551	0.0%
Mink	12,638	5,467	7,171	43.3%	Bobcat	401	140	261	34.9%
Mourning Dove	9,316	1,001	8,315	10.7%	Song Sparrow	288	1,060	-772*	368.1%
Spotted Sandpiper	9,104	190	8,914	2.1%	Lewis Woodpecker	286	141	145	49.3%
Western Meadowlark	8,777	15,733	-6,956*	179.3%	Common Merganser	127	0	127	0.0%
Pileated Woodpecker	8,690	0	8,690	0.0%	Riparian Shrub habitat	27	0	27	0.0%
Great Blue Heron	7,912	7,453	459	94.2%	Common Snipe	0	889	-889*	-
Sage Grouse	7,680	8,031	-351*	104.6%	Greater Scaup	0	0	0	-
Black-capped Chickadee	6,608	7,560	-952*	114.4%	Lesser Scaup	0	0	0	-
Yellow Warbler	6,510	2,409	4,101	37.0%	Marsh Wren	0	0	0	-
Spotted Owl	5,711	0	5,711	0.0%	Osprey	0	0	0	-
Ring-necked Pheasant	5,517	49	5,468	0.9%	Peregrine Falcon	0	0	0	-
River Otter	5,401	0	5,401	0.0%	Pigmy Rabbit	0	1,246	-1,246*	-
Black Bear	4,814	66	4,748	1.4%	Waterfowl	0	0	0	-
Beaver	4,477	1,137	3,340	25.4%	Western Grebe	0	0	0	-
Cougar	3,853	110	3,743	2.9%	<b>TOTALS</b>	<b>404,387</b>	<b>159,770</b>	<b>244,617</b>	<b>39.51%</b>
Band-tailed Pigeon	3,487	0	3,487	0.0%					

\* HUs acquisitions 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	70,386
Washington Department of Fish & Wildlife	69,540
Idaho Department of Fish & Game	68,934
Burns Paiute Tribe	46,462
Confederated Tribes of the Warm Springs Indian Rerservation	24,304
Colville Confederated Tribes	21,845
Nez Perce Tribe	20,198
Confederated Tribes of the Umatilla Indian Reservation	17,432
Yakama Indian Nation	12,142
Montana Land Reliance	5,041
Shoshone-Bannock Tribes	5,013
USFS - Flathead National Forest	2,383
Kalispel Tribe of Indians	1,970
Spokane Tribe of Indians	1,828
Oregon Department of Fish & Wildlife	1,752
US Fish and Wildlife Service - Portland Region	1,465
The Nature Conservancy - OR	329
Kootenai Tribe of Idaho	210
The Nature Conservancy - MT	107
US Fish and Wildlife Service - Denver Region	80
Flathead Land Trust	60
<b>Total</b>	<b>371,481</b>

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	\$3,741,677
Montana Department of Fish, Wildlife and Parks	\$3,728,583
Burns Paiute Tribe	\$3,700,000
Confederated Tribes of the Warm Springs Indian Reservation	\$3,200,000
Shoshone-Bannock Tribes	\$2,982,000
Kalispel Tribe of Indians	\$2,472,185
Spokane Tribe of Indians	\$2,242,427
Oregon Department of Fish & Wildlife	\$2,018,410
The Nature Conservancy - OR	\$1,058,000
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
<b>Total</b>	<b>\$78,789,427</b>

Source: Bonneville Power Administration

Table 17 Properties Purchased by BPA for wildlife purposes, 1978-2002

Province	Subbasin	Site	Acres Protected	Purchase Type	Province	Subbasin	Site	Acres Protected	Purchase Type
Blue Mountain	Grande Ronde	Ladd Marsh	940	Mix	Lower Columbia	Willamette	Muddy Cr / Marys River	222	Fee Title
Blue Mountain	Grande Ronde	Precious Lands WMA	15,325	Fee Title	Willamette	Willamette	Sorenson	42	Fee Title
Cascade Columbia	Columbia Upper Middle	Sage Flat WA	8,380	Mix	Willamette	Willamette	South Pasture	0	none/unknown
	Okanogan	Columbia Basin Wetlands	100	Fee Title	Willamette	Willamette	Thurston	54	Easement
	Okanogan	Scotch Creek WA	11,910	Fee Title	Willamette	Willamette	Tualatin River NWR	232	Mix
	Okanogan	Sunnyside	1,280	Lease	Willamette	Willamette	Whitney	54	Easement
	Okanogan	Wenas WA	30,053	Lease	Willamette	Willamette	Willow Creek	329	Easement
Columbia Plateau	Columbia Lower Middle	Wanaket	2,817	Fee Title	Middle Snake	Malheur	Denny Jones	6,385	Fee Title
	Crab	Swanson Lakes	792	Exchange	Malheur	Malheur	Denny Jones	38,377	Lease
	Crab	Swanson Lakes	14,999	Fee Title	Malheur	Malheur	Logan Valley	1,700	Fee Title
	John Day	Pine Creek	24,304	Fee Title	Mountain Columbia	Flathead	Hungry Horse Mitigation	0	Enhancement only
	Umatilla	Iskuulpa	5,937	Fee Title		Flathead	Hungry Horse Mitigation	0	none/unknown
	Walla Walla	Rainwater Ranch	8,678	Fee Title		Flathead	Hungry Horse Mitigation	113	Fee Title
	Yakima	Lower Yakima Wetlands	0	none/unknown		Flathead	Hungry Horse Mitigation	1,094	Mix
	Yakima	Lower Yakima Wetlands	613	Lease		Flathead	Hungry Horse Mitigation	1,289	Exchange
	Yakima	Lower Yakima Wetlands	1,460	Easement		Flathead	Hungry Horse Mitigation	4,514	Partnerships
	Yakima	Lower Yakima Wetlands	10,069	Mix		Flathead	Hungry Horse Mitigation	37,595	Easement
				Flathead		Libby Dam Mitigation	0	Enhancement only	
				Flathead		Libby Dam Mitigation	0	none/unknown	
				Kootenai		Boundary Creek WMA	1,405	Fee Title	
Intermountain	Columbia Upper	Hellsgate	0	Enhancement only	Kootenai	Libby Dam Mitigation	0	Enhancement only	
	Columbia Upper	Hellsgate	21,845	Fee Title	Kootenai	Libby Dam Mitigation	0	none/unknown	
	Columbia Upper	Lake Roosevelt Peregrine Falcon	0	Enhancement only	Kootenai	Libby Dam Mitigation	0	Enhancement only	
	Pend Oreille	Carey Creek	117	Fee Title	Kootenai	Libby Dam Mitigation	0	none/unknown	
	Pend Oreille	Little Pend Oreille NWR	200	Fee Title	Kootenai	Libby Dam Mitigation	235	Exchange	
	Pend Oreille	Little Pend Oreille NWR	716	Mix	Kootenai	Libby Dam Mitigation	33,217	Easement	
	Pend Oreille	Pend Oreille Wetlands (Kalispel)	600	Fee Title	Mountain Snake	Clearwater	Buck Creek Old Growth	67	Fee Title
	Pend Oreille	Perkins Lake	98	Fee Title		Clearwater	Dworshak Mitigation (Craig Mtn)	59,991	Fee Title
	Pend Oreille	Priest River	63	Fee Title		Salmon	Dworshak Tribal	4,873	Fee Title
	Pend Oreille	Tacoma/Trimble WMA	1,190	Fee Title	Upper Snake	Snake Upper	Big Cottonwood WMA	0	Enhancement only
	Pend Oreille	The Pend Oreille WMA	942	Fee Title		Snake Upper	Boise River WMA	166	Fee Title
	Pend Oreille	Trout Creek Peninsula	112	Fee Title		Snake Upper	Camas Prairie	1,364	Fee Title
	San Poil	Hellsgate	0	Enhancement only		Snake Upper	Deer Parks WMU	209	none/unknown
	Spokane	Blue Creek Winter Range	78	Fee Title		Snake Upper	Deer Parks WMU	3,006	Fee Title
	Spokane	Blue Creek Winter Range	701	Exchange		Snake Upper	Kruse Pine Creek Easement	800	Easement
	Spokane	Fox Creek	200	Fee Title		Snake Upper	Rudeen	2,450	Fee Title
	Spokane	McCoy Lake Watershed	769	Fee Title		Snake Upper	Soda Hills WHMA	2,563	Fee Title
Spokane	Wellpinit Mtn WA	80	Fee Title	Snake Upper	Tex Creek MA	2,135	Fee Title		
Lower Columbia	Columbia Lower	Steigerwald Lake NWR	317	Fee Title	Snake Upper	Winterfeld Easement	422	Easement	
	Columbia Lower	Vancouver Lowlands	612	Fee Title	<b>Grand Total</b>		<b>371,640</b>		
	Sandy	Sandy River Delta	0	Enhancement only					
	Willamette	Burlington Bottoms	417	Fee Title					
	Willamette	Canby Landing	23	Fee Title					

Source: Bonneville Power Administration



**Table 18 Action Plan/High Priority Figures**

	<b>2001</b>	<b>2002</b>
Obligated	\$4,066,359	\$3,414,028
	<u>\$3,532,775</u>	<u>\$6,239,898</u>
Total (Obligations)	\$7,599,134	\$9,653,926
Total (Accrual)	<u>\$2,900,000</u>	<u>\$7,100,000</u>
Difference(unspent)	\$4,699,134	\$2,553,926

Source: Bonneville Power Administration

**Table 19 Action Plan/High Priority Obligations by Province**

<b>Province</b>	<b>Action Plan</b>		<b>High Priority</b>	
	<b>2001</b>	<b>2002</b>	<b>2001</b>	<b>2002</b>
Systemwide	-	-	-	276,954
Columbia Plateau	229,699	2,545,049	2,858,658	4,619,573
Mountain Snake	3,510,467	-	154,140	509,135
Intermountain	261,411	-	-	-
Blue Mountain	-	11,550	-	-
Mountain Columbia	-	-	-	-
Middle Snake	-	-	-	-
Columbia Cascade	-	842,429	-	-
Columbia Estuary/Ocean	-	-	-	-
Columbia Gorge	64,782	15,000	-	-
Lower Columbia	-	-	519,977	834,236
Upper Snake	-	-	-	-
<b>Totals</b>	<b>4,066,359</b>	<b>3,414,028</b>	<b>3,532,775</b>	<b>6,239,898</b>
<b>Grand Total</b>				<b>17,253,060</b>

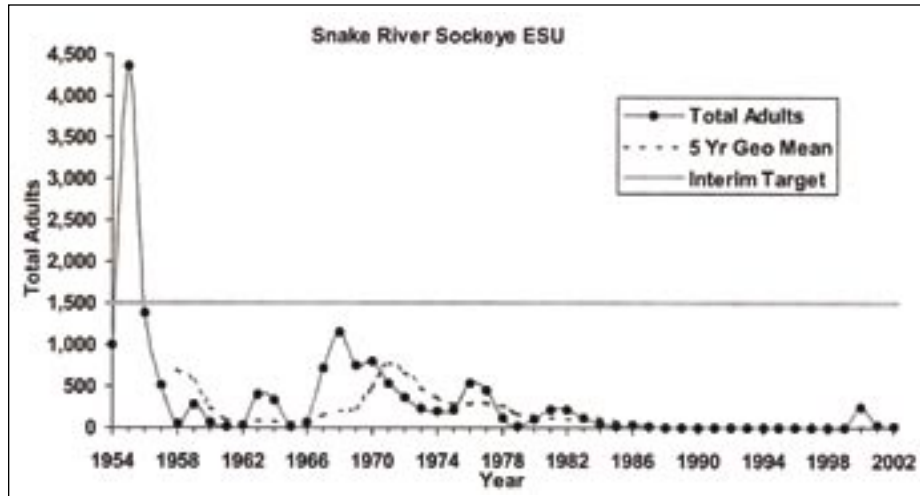
Note: Bonneville had \$17.25 million in obligations for the two programs for 2001 and 2002 and accrued \$10.0 million in the same two years.

Source: Bonneville Power Administration

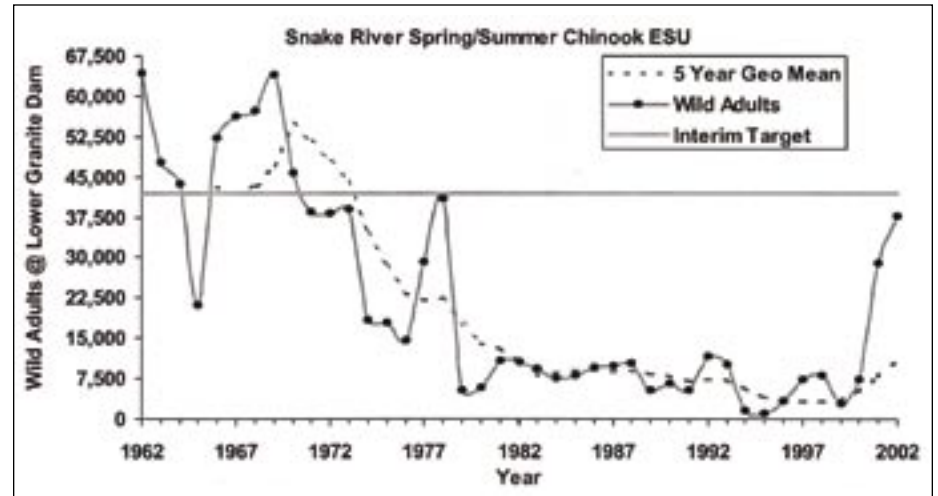


# Appendix B: ESA Status of Columbia River Basin Fish Populations

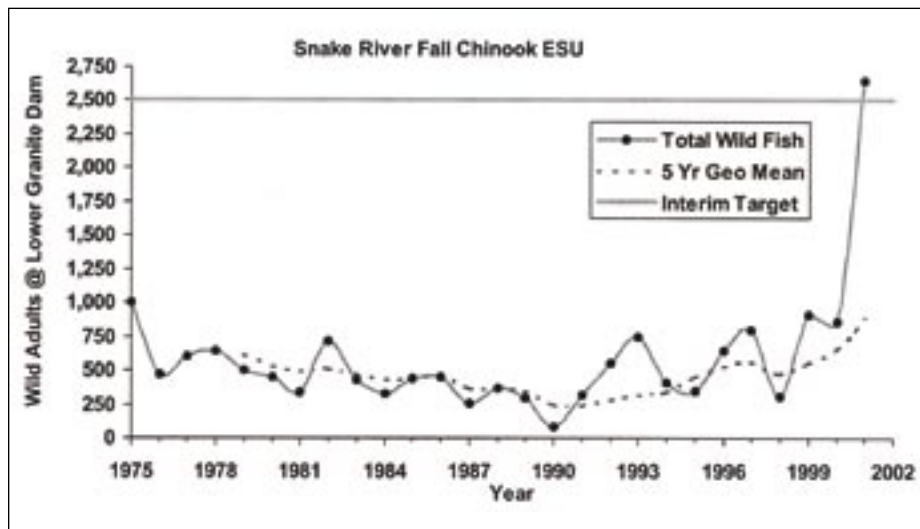
In September 2003, the U.S. Army Corps of Engineers, Bonneville Power Administration and Bureau of Reclamation issued a document entitled "Endangered Species Act 2003 Check-In Report for the Federal Columbia River Power System." The report was required by the NOAA Fisheries 2000 Biological Opinion on hydropower operations. Pages 6-5 to 6-11 of the report include charts that show population-level performance indicators for the Evolutionarily Significant Units of salmon and steelhead in the Columbia River Basin that are listed for protection under the Endangered Species Act. The figures are reproduced below.



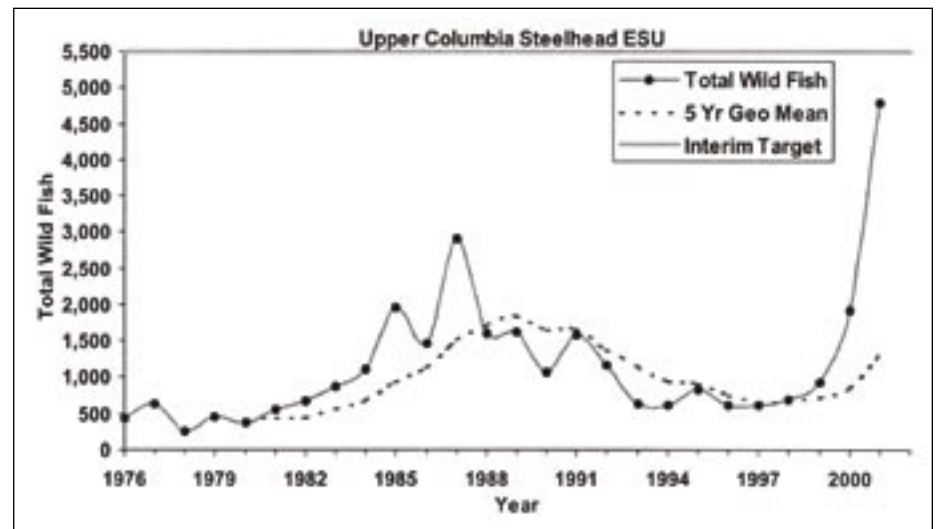
Run sizes and geometric mean of run sizes of Snake River sockeye over time.



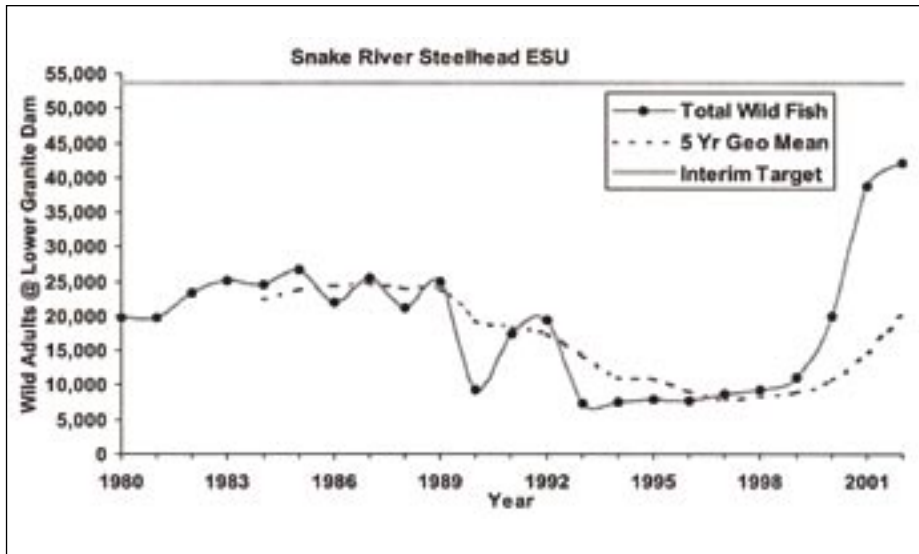
Run sizes and geometric mean of run sizes of Snake River spring/summer Chinook over time.



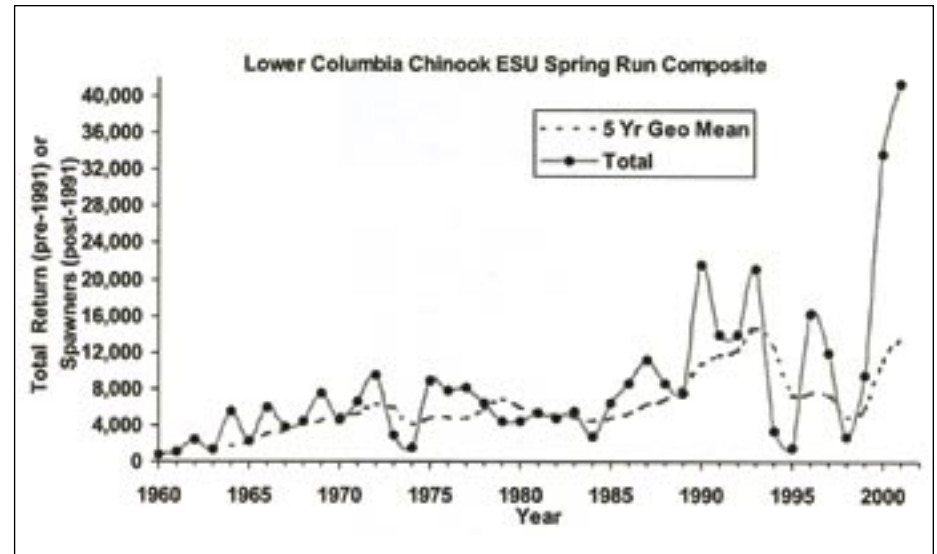
Run sizes and geometric mean of run sizes of Snake River fall Chinook over time.



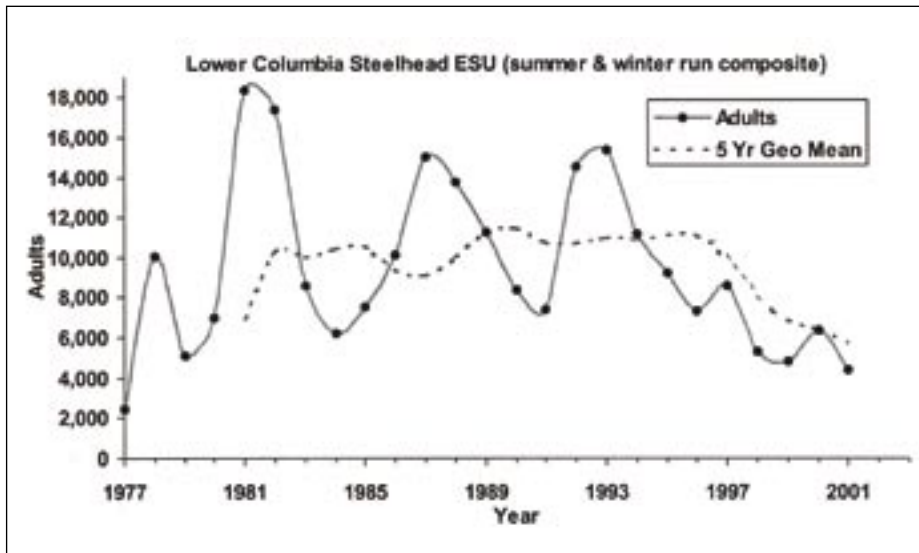
Run sizes and geometric mean of run sizes of upper Columbia steelhead over time.



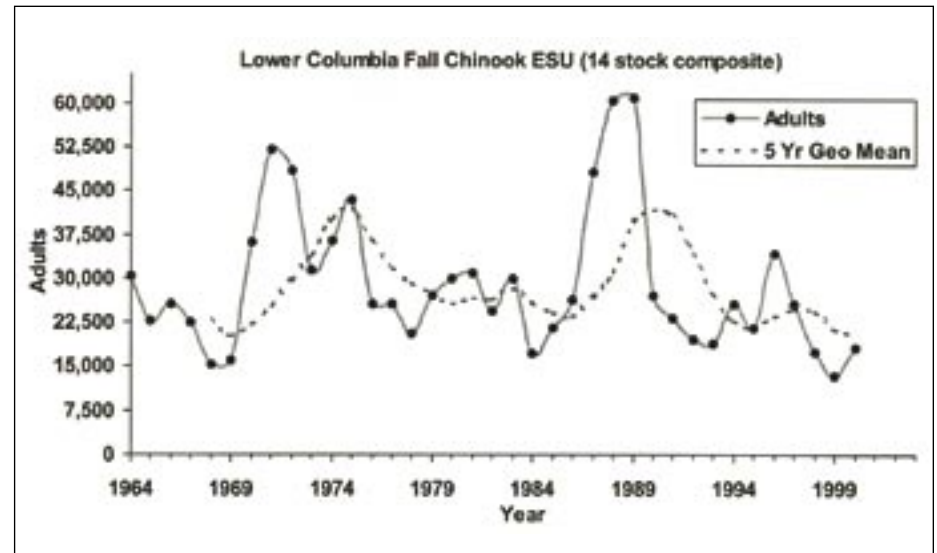
Run sizes and geometric mean of run sizes of Snake River steelhead over time.



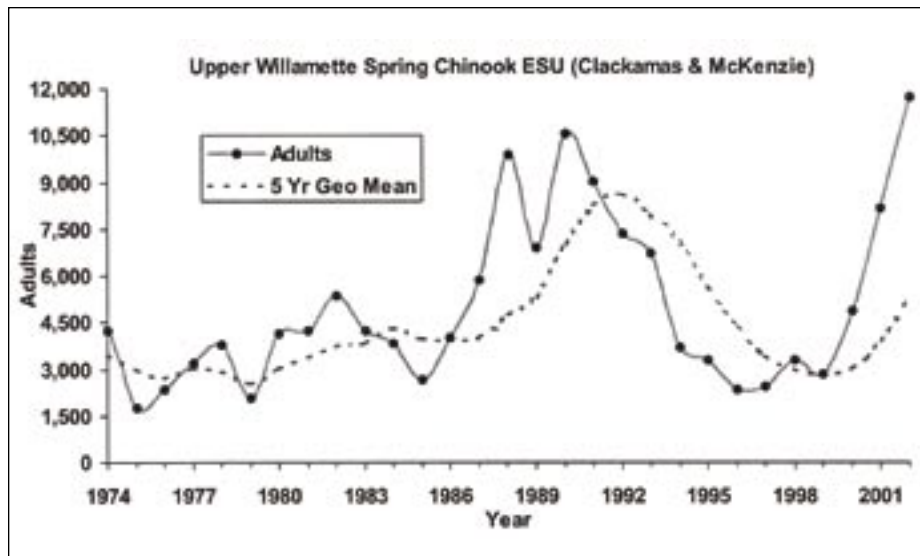
Run sizes and geometric mean of run sizes of lower Columbia spring Chinook over time.



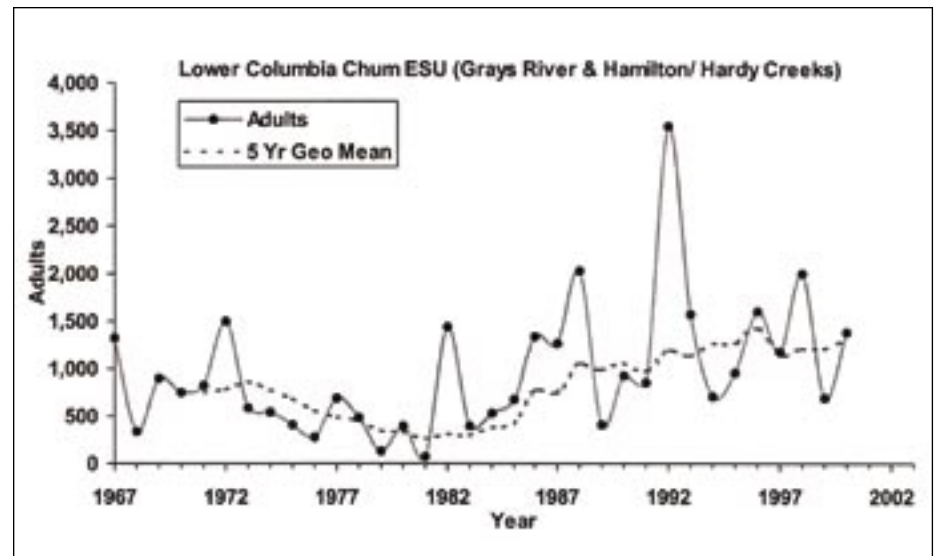
Run sizes and geometric mean of run sizes of lower Columbia steelhead (summer and winter) over time.



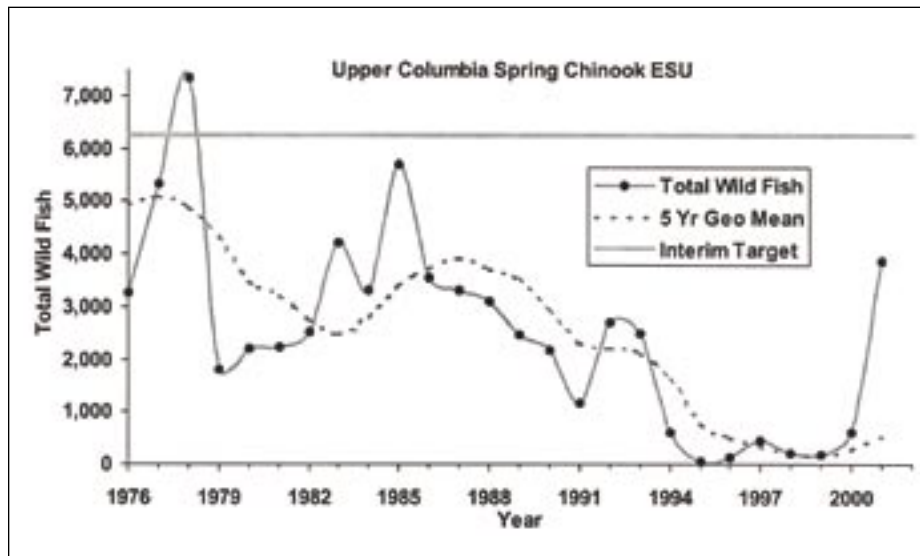
Run sizes and geometric mean run sizes of lower Columbia fall Chinook over time.



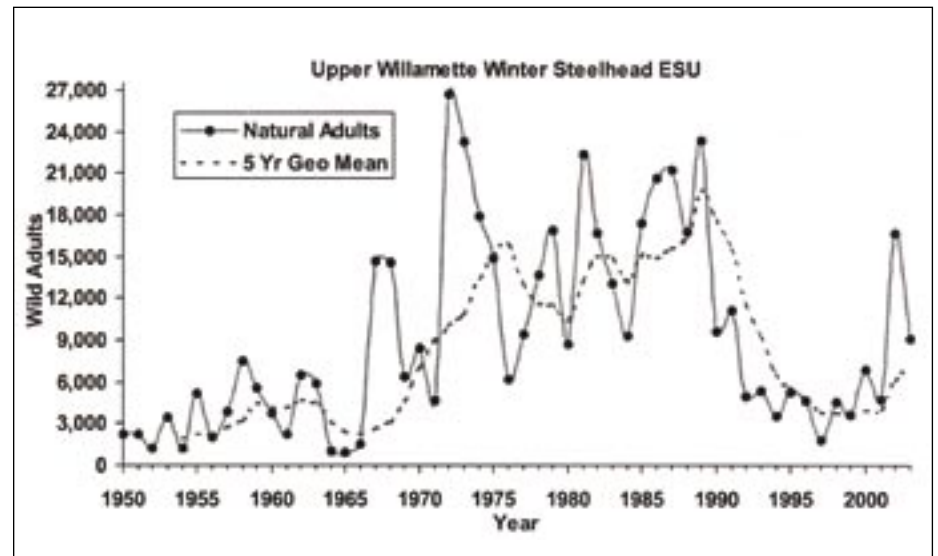
Run sizes and geometric mean of run sizes of upper Willamette spring Chinook over time.



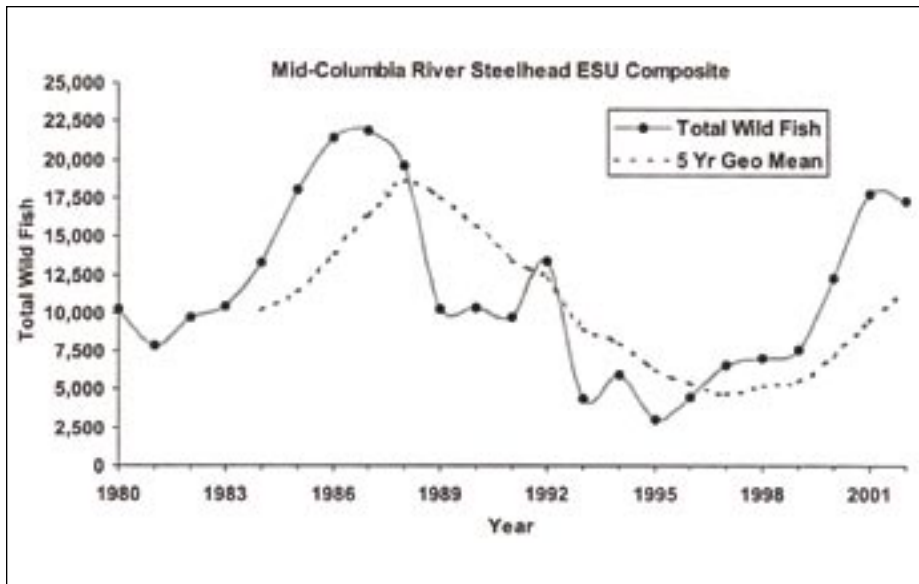
Run sizes and geometric mean of run sizes of lower Columbia chum over time.



Run sizes and geometric mean of run sizes of upper Columbia spring Chinook over time.



Run sizes and geometric mean of run sizes of upper Willamette winter steelhead over time.



Run sizes and geometric mean of run sizes of mid-Columbia River steelhead over time.





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