Endangered Species Act

2003 Progress Report for the Federal Columbia River Power System

US Army Corps of Engineers
Bureau of Reclamation
Bonneville Power Administration

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I. Introduction

A. Purpose and Scope

The Bonneville Power Administration (BPA), Corps of Engineers (Corps), and Bureau of Reclamation (Reclamation) – collectively, the Action Agencies – continue to implement fish protection actions recommended under NOAA Fisheries'[1] 2000 Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp). These actions are consistent with the BiOp's Reasonable and Prudent Alternative (RPA) and are intended to avoid further jeopardy to, and aid recovery of, threatened and endangered salmon and steelhead populations in the Columbia River basin.

As called for in the BiOp, the Action Agencies prepare annual progress reports for NOAA Fisheries review. The annual progress reports are to document:

- Compliance by the Action Agencies with the measures and schedules described in the BiOp and in 1- and 5-year implementation plans.
- Progress toward meeting the interim and long-term performance standards for hydrosystem improvements and offsite mitigation established pursuant to this BiOp and any failure to meet such standards.
- Projected progress toward full achievement of performance standards through future actions, or through future benefits of ongoing actions, and the risks that such progress will not be achieved.
- Lessons learned, new information, and related adjustments made in actions, standards, or monitoring and evaluation.
- Current adult returns and population trends.

2000 BiOp undergoing revisions per court ruling

In the summer of 2003, the 2000 BiOp was invalidated in Federal District Court in *National Wildlife Federation vs. National Marine Fisheries Service*. The court found NOAA Fisheries improperly relied on actions that had not undergone ESA consultation or were otherwise not "reasonably certain to occur." The court remanded the 2000 BiOp to NOAA Fisheries for revisions. In the meantime, the court left the 2000 BiOp in place, including ongoing implementation and reporting by the Action Agencies.

This *2003 Progress Report* was prepared to meet the Action Agencies' reporting requirements under the existing 2000 BiOp, not the directives of the court for revision of that BiOp.

This *2003 Progress Report* supplements the information provided in the Action Agencies' *2003 Check-in Report* issued in September 2003. The *2003 Check-in Report* provided a 3-year cumulative assessment of progress made to implement the BiOp. Although most of the FY 2003 BiOp implementation progress was included in the *2003 Check-In Report*, some FY 2003 progress information was unavailable at the time of its release. This document reports the FY 2003 fish survival and habitat information that was unavailable for the *2003 Check-in Report*.

B. Summary of Overall 2003 Accomplishments

In 2003, the Action Agencies implemented hundreds of actions to benefit endangered salmon, steelhead, bull trout, and sturgeon in the Columbia River basin. While this report focuses on the information not included in the *2003 Check-in Report*, a summary of important actions occurring in FY 2003 are provided here to convey the overall scope and progress of the Action Agencies fish recovery efforts. See the Appendix for a complete list of projects.

[1] NOAA Fisheries is now the official name for the former National Marine Fisheries Service, or NMFS.

- **Dam improvements.** Construction continued in 2003 on the corner collector, an emergency auxiliary water supply (completed), and a prototype vertical barrier screen at Bonneville Dam second powerhouse. Two north shore fish pumps were refurbished at John Day Dam and modifications to the adult entrance channel dewatering were completed at The Dalles Dam. At Ice Harbor Dam, modifications to the north shore auxiliary water supply diffuser system were completed and new fish pumps were installed. New fish pump equipment was installed for the Lower Granite emergency auxiliary water supply.
- **Water management.** The Action Agencies operated federal reservoirs to augment natural stream flows for migrating fish and released water from project reservoirs to meet BiOp flow objectives to the fullest extent possible. Spill was provided to improve juvenile migration survival.
- **Fish transportation.** The juvenile fish transportation programs continued to assist juvenile salmon and steelhead migrating downstream past federal dams in the lower Snake and Columbia rivers. More than 17 million juveniles were transported in 2003.
- **Habitat improvements.** In 2003, the Action Agencies funded and implemented new actions to improve watershed health, water quality, and water quantity. In the tributaries, BPA helped secure over 100 cubic feet per second (cfs) of instream flow improvements, remove fish passage barriers to open more than 200 miles of stream, and protect or enhance over 300 river miles and 40,000 acres of fish habitat. Reclamation initiated programs to address flow, passage and diversion screening problems in the North Fork John Day and Little Salmon subbasins. Reclamation also continued its tributary habitat improvement programs in the Lemhi, Methow, Upper and Middle Fork John Day, Wenatchee, Upper Salmon, and Entiat subbasins. In the estuary, 451 acres of habitat was acquired at Crims Island to protect tidal emergent marsh, swamp, slough and riparian forest habitat to benefit fish. Also, predator control treatments were continued with the Caspian tern management and northern pikeminnow rewards programs.
- **Hatchery reforms.** Progress toward developing new hatchery and genetic management plans (HGMPs) continued. Phase 1 plans were drafted for all 169 hatchery programs in FY 2003. Four new salmon/steelhead reproductive success studies and two new hatchery effectiveness studies were selected for funding in 2004. The effectiveness studies covered the relative reproductive success of hatchery-origin, natural-origin, and kelt steelhead, and development of a tool to evaluate the risks and benefits of potential hatchery reform actions.
- **Safety-net programs**. Work continued on a report analyzing the extinction risk of 77 populations of fish. BPA continued to fund ongoing artificial propagation programs that function as safety-nets for populations of Snake River sockeye, spring/summer and fall Chinook, and mid- and lower Columbia steelhead.
- **Fish marking.** The Action Agencies continued to fund hatchery fish marking and work continued on a comprehensive marking plan.
- **Wild fish harvest reduction.** The Action Agencies continued to test alternative fishing gear to reduce the incidental catch of endangered steelhead and salmon. They also supported the Columbia River Terminal Fisheries Project to protect wild Chinook and coho salmon in Youngs Bay and other lower Columbia River sites below Bonneville Dam.
- **Regional research, monitoring and evaluation (RM&E) plan.** The Action Agencies, working with NOAA Fisheries and others, developed a comprehensive RM&E plan and submitted it for independent scientific review. Major new and ongoing studies included research and monitoring of juvenile and adult hydrosystem survival, hatchery management changes, habitat status, effectiveness of off-site mitigation actions, and critical uncertainties identified in the BiOp.

II. FY 2003 Adult Fish Returns and Juvenile Fish Survival

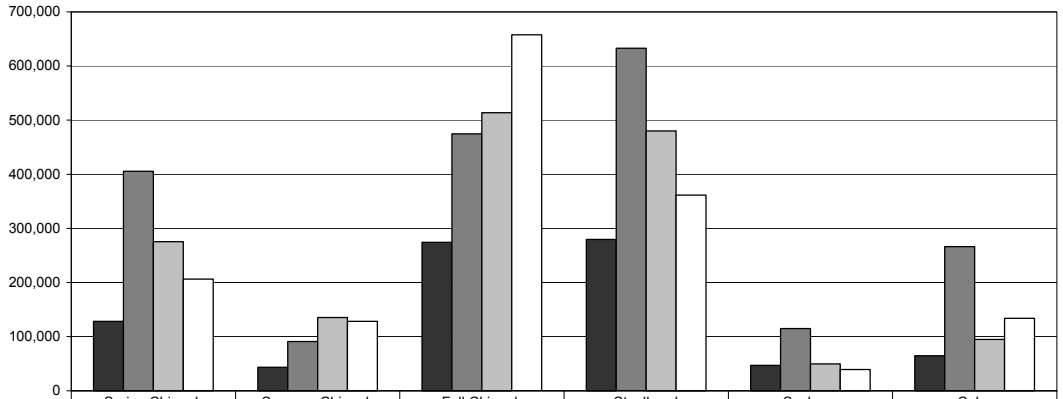
A. Adult Fish Returns

In each year since 2000, adult fish returns to Bonneville, Lower Granite, and Priest Rapids dams have exceeded the 1991 – 2000 10-year average. Adult returns in 2003 are generally less than the record returns of 2001 and 2002. However, they remain substantially higher than the current 10-year average (1993 – 2002). Sockeye salmon are the only exception, with 2003 returns about 85% of the current 10-year average.

Bonneville Adult Returns

Adult returns at Bonneville Dam for 2001, 2002, and 2003 are shown in Figure 1. The relatively large recent adult returns have allowed for increased sport and commercial fisheries, including the first summer Chinook commercial fishery since 1965.

Figure 1. Adult fish passage at Bonneville Dam in 2001 - 2003 compared to the prior 10-year average.

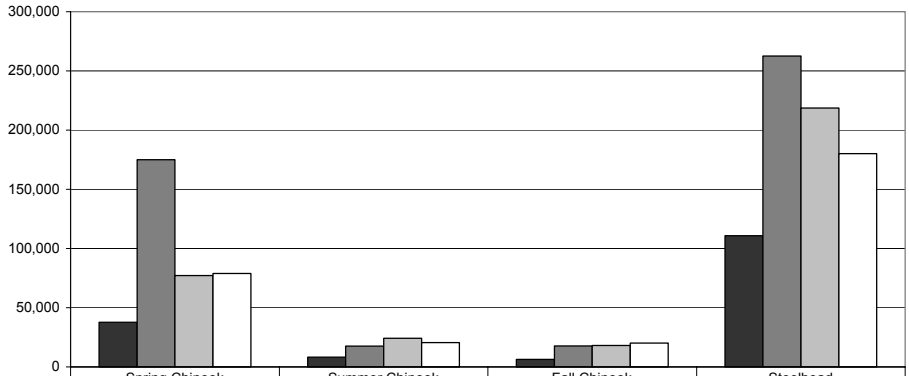


	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye	Coho
10-Year Average	128,331	43,282	274,049	279,655	46,793	64,589
2001	405,539	90,879	474,701	633,073	114,934	266,314
2002	275,290	135,388	513,907	480,309	49,610	94,901
2003	206,268	128,166	657,797	361,412	39,291	133,870

Lower Granite Adult Returns

Adult returns at Lower Granite Dam, shown in Figure 2, were similar to those seen in 2002. Because of the relatively small returns of coho and sockeye salmon, they are not shown in Figure 2. The 10-year averages for coho and sockeye salmon are 277 and 44 respectively. Returns in 2003 were 1265 for coho and 11 for sockeye salmon.

Figure 2. Adult fish passage at Lower Granite Dam in 2001 - 2003 compared to the prior 10-year average.

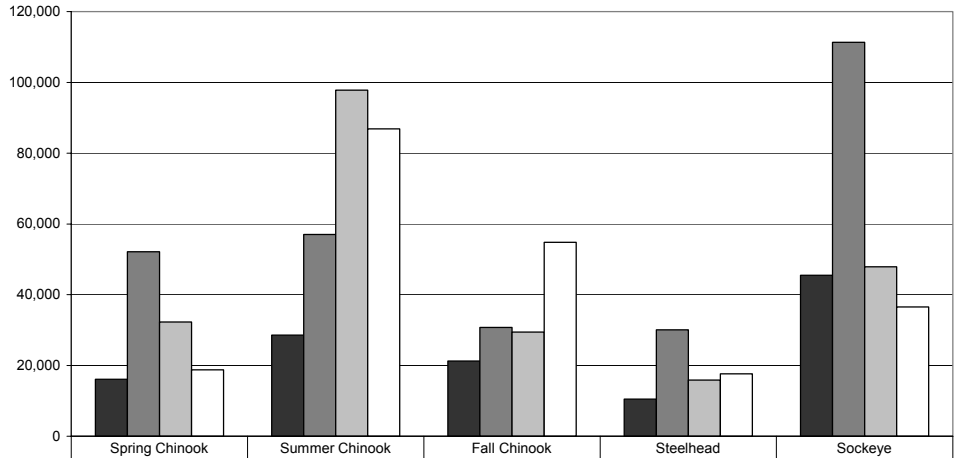


	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead
10-Year Average	37,776	8,299	6,312	110,798
2001	175,093	17,539	17,749	262,568
2002	77,114	24,112	18,078	218,718
2003	78,904	20,559	20,213	180,072

Priest Rapids Adult Returns

Adult returns at Priest Rapids Dam, excluding coho, are shown in Figure 3. Except for sockeye salmon, the 2003 adult returns at Priest Rapids Dam exceeded the 1993 – 2002 average. The 1993 – 2002 average return for coho was 1325, with 5216 returning in 2003.

Figure 3. Adult fish passage at Priest Rapids Dam in 2001 - 2003 compared to the prior 10-year average.



	Spring Chinook	Summer Chinook	Fall Chinook	Steelhead	Sockeye
10-Year Average	16,111	28,545	21,241	10,531	45,532
2001	52,120	57,052	30,757	30,090	111,326
2002	32,279	97,784	29,447	15,895	47,883
2003	18,792	86,837	54,804	17,652	36,551

B. Juvenile Fish Survival

Juvenile survival estimates for 2003 are shown in Table 1. Updated information from what was presented in the *2003 Check-in Report* was obtained from the NOAA Fisheries' "effects" technical paper, however, 2003 information is still unavailable for Snake River fall Chinook and upper Columbia River steelhead. Estimated D values are also shown for Snake River spring/summer Chinook and steelhead.

Table 1. Estimated 2003 juvenile fish survival (%) for listed salmon/steelhead ESUs

Population	In-river Survival[2]	BiOp In-river Performance Standard[3]	% Transported[4]	D Value[5]
Snake River spring/summer Chinook	52.8	49.6	56	0.553
Snake River steelhead	28.8	51.6	74[6]	0.582
Snake River fall Chinook	Not available	14.3	90-95	Not available
Upper Columbia River spring Chinook	23.3	66.4	Negligible	Not available
Upper Columbia River steelhead	Not available	67.7	Negligible	Not available

[2] Data from Effects of the Federal Columbia River Power System on Salmonid Populations, NOAA Fisheries, May 6, 2004, Final Draft. The SR spring/summer Chinook and steelhead data are for combined hatchery and wild fish.
[3] From Table 9.2-3 of the 2000 FCRPS BiOp.
[4] Data from memorandum from John Ferguson to Brian Brown, September 12, 2003.
[5] D represents the ratio of smolt-to-adult survival of transported fish relative to that of in-river migrants. The D values represent the geometric means for values from 1994-2000. From Effects of the Federal Columbia River Power System on Salmonid Populations, NOAA Fisheries, May 6, 2004, Final Draft.

C. Water Conditions

As called for in the BiOp, the Action Agencies operated federal reservoirs to augment natural stream flows for migrating fish in 2003. To the fullest extent possible, the Action Agencies released water from project reservoirs to meet BiOp flow objectives. The reservoirs were operated in accordance with BiOp measures as modified through the in-season coordination of the NOAA Fisheries Regional Forum Technical Management Team. Average spring flows exceeded objectives at Lower Granite, Priest Rapids and McNary. However, below normal natural runoff[6] in 2003 did not allow summer flow objectives to be realized at Lower Granite and McNary dams (summer flow objectives are not established for Priest Rapids Dam). The average 2003 spring and summer flows and their corresponding BiOp objectives are shown in Figure 4.

BiOp specified levels of spring and summer spill to improve juvenile fish passage and survival occurred at all Columbia and Snake river dams except McNary (due to spill gate outage) and Ice Harbor (due to regionally coordinated research to determine causes of low spill survival).

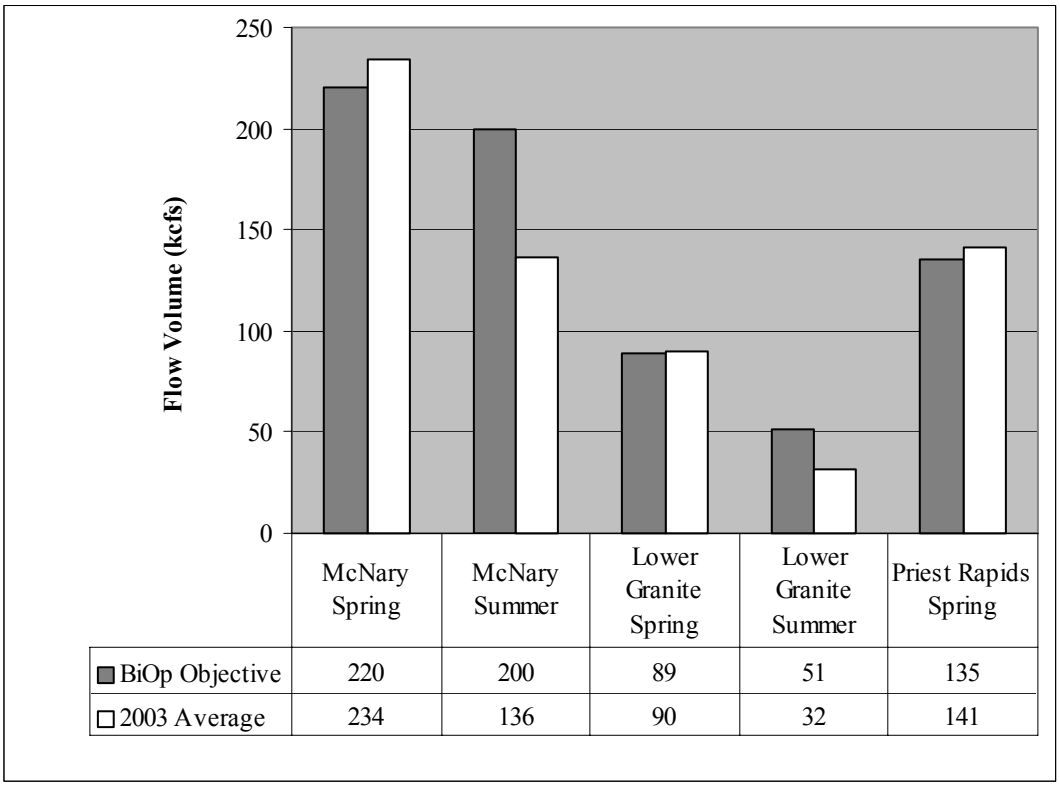


Figure 4 BiOp flow objectives and 2003 average flows

[6] Normal January to July runoff volume at The Dalles Dam is 107 million-acre feet (MAF). Runoff was 87.7 MAF in 2003, 104 MAF in 2002, and 58 MAF in 2001.

III. Tributary Habitat Update

As noted in the *2003 Check-in Report*, the Action Agencies developed an interim prioritization selection framework for habitat actions based on biological needs of the most threatened evolutionarily significant units (ESUs), the priority subbasins for these ESUs, and the expected near-term and long-term biological benefits of actions. Reclamation considered this structure to guide habitat action and project funding decisions until approved subbasin plans provide more direction on specific habitat improvement needs. Projects selected for BPA funding under the Council's Fish and Wildlife Program were not selected based on this prioritization framework. However, projects were reviewed by NOAA Fisheries staff and rated for BiOp consistency, which factored into the project selection and decisions. Until subbasin plans are completed and approved, BPA seeks to use a project selection process that is consistent with the prioritization framework and complements Reclamations actions in the priority subbasins.

Priority ESUs, shown in Table 2, were determined based on the estimated population growth rates, or lambda, identified in the BiOp. Any changes in lambda from those identified in the BiOp did not affect ESU priorities for FY 2003.

Table 2. Jeopardized ESUs Ranked by BiOp Lambda Values and their Priority Subbasins

ESU	Estimated Lambda (BiOp)	Rank[7]	Priority Subbasins[8]
Upper Columbia River steelhead	0.83-0.69	1	Methow, Entiat, Wenatchee
Snake River steelhead	0.83-0.72	2	Upper Salmon, Lemhi, Little Salmon
Mid-Columbia River steelhead	0.84-0.72	3	Upper John Day, Middle Fork John Day, North Fork John Day
Upper Columbia River spring Chinook	0.85-0.84	4	Methow, Entiat, Wenatchee
Snake River spring/summer Chinook	0.91-0.82	5	Upper Salmon, Lemhi, Little Salmon
Snake River fall Chinook	0.92-0.87	6	none
Columbia River chum salmon	1.04	7	Estuary and Lower Mainstem
Snake River sockeye	Not available	Not ranked	Upper Salmon

Table 2 also shows the priority tributary subbasins for the ranked ESUs as identified in the BiOp. The BiOp contemplated that NOAA Fisheries would further identify priority subbasins for the Action Agencies and others, and we understand that this is on-going as part of the BiOp remand process. The Action Agencies, and particularly BPA, will work to integrate these priority subbasins into the Council's Fish and Wildlife Program.

Finally, the Action Agencies prioritized projects that would provide near-term survival improvements, including actions to prevent mortality. Actions that provide longer-term survival improvements were a

[7] Rankings based on BiOp lambda value for 20 percent efficiency of spawning by hatchery-origin fish.

[8] Each of the priority subbasins corresponds to a 4th Field Hydrologic Unit Code (HUC). The geographic boundaries for these priority subbasins are based on hydrologic boundaries determined by NOAA Fisheries, and thus tend to be smaller and form a subset of a larger Council subbasin in Idaho and Oregon. For instance, the Lemhi, Little Salmon, and upper Salmon are all Action 149 priority subbasins in Idaho but their boundaries are all within the larger Salmon subbasin delineated by the Council. In Oregon, the middle Fork John Day, North Fork John Day, and upper John Day are three separate Action 149 priority subbasins but their boundaries fall within the larger John Day subbasin delineated by the Council. In Washington, however, the boundaries for the Entiat, Methow, and Wenatchee are the same as the boundaries for the Council subbasins with the same names. In this document, priority subbasins refer to the applicable hydrologic subbasin name or HUC, while the non-priority subbasins refer to Council subbasins.

lower priority, but were pursued to meet quantifiable goals. Working in concert with the Federal Caucus' Federal Habitat Team, the Action Agencies developed programmatic level metrics to track habitat improvements. The Action Agencies plan to report progress using these metrics in future annual progress reports, with a goal to enable combining these metrics with those reported by other federal, state, and local entities.

A. FY 2003 Actions for Ranked ESUs

Table 3 reports the cumulative number of tributary actions implemented by the Action Agencies in 2003 for jeopardized ESUs. Tables 4 through 9 report the FY 2003 tributary habitat actions and are presented in order by the ranked ESUs. Reclamation's actions include planning and design services in the priority subbasins, and are differentiated as ongoing and completed. Planning and design actions, once completed, deliver physical or biological improvements to the targeted ESUs.

BPA actions for targeted ESUs may occur outside the priority subbasins, and are reported as implemented. These actions were actually constructed or installed in FY 2003. Actions that were installed in earlier years are not included here, though they are expected to continue benefiting the targeted ESUs.

Some of the ESUs use the same subbasins for spawning and rearing. Habitat improvements for one ESU will also usually improve survival for the other ESUs in that subbasin. Therefore, the same actions may be reported under multiple ESUs.

Table 3. FY 2003 Total actions for all Jeopardized ESUs

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	20	15	45
Screen diversions (RPA action 149)	11	6	67
Lease or purchase in-stream flows (RPA actions 149 & 151)	0	2	89
Install gauges	Not reported (n/r)[9]	n/r	23
Long-Term Survival Improvement Actions			
Protection or enhancement of riparian habitat (conservation easements, leases, land acquisitions, and establish riparian buffers)	Not applicable (N/A)	N/A	137

Actions to benefit **Upper Columbia River steelhead** are shown in Table 4. This ESU is listed as endangered and is ranked most in need of survival improvements. Upper Columbia River steelhead use the Methow, Entiat, and Wenatchee priority subbasins. The ESU also uses the Okanogan River subbasin and some small tributaries to the mainstem Columbia River.

Table 4. FY 2003 Upper Columbia River Steelhead Actions

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	15	3	10
Screen diversions (RPA action 149)	8	0	0
Lease or purchase in-stream flows (RPA actions 149 & 151)	0	0	4

[9] Reclamation has installed many gauges, but that information is not reported here. This information should be included in future progress reports.

Actions for the **Snake River steelhead** ESU are shown in Table 5. Although this ESU has a lambda range the same as that of upper Columbia steelhead (0.83), Snake River steelhead were ranked second because they are listed as threatened rather than endangered. In addition to the priority subbasins for this ESU (Lemhi, Upper Salmon, and Little Salmon), other subbasins within the known range include the Salmon River, Clearwater River and its tributaries, Grande Ronde River drainage basin, Imnaha River, and Tucannon River.

Table 5. FY 2003 Snake River Steelhead Actions

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	5	12	21
Screen diversions (RPA action 149)	3	6	32
Lease or purchase in-stream flows (RPA actions 149 & 151)	0	1	8
Install gauges	n/r	n/r	22
Long-Term Survival Improvement Actions			
Protection or enhancement of riparian habitat (conservation easements, leases, land acquisitions, and establish riparian buffers)	N/A	N/A	54

Actions for **Mid-Columbia River steelhead** are shown in Table 6. This ESU is ranked third and is found in the upper John Day, middle Fork John Day, and North Fork John Day priority subbasins, as well as the Umatilla River, lower Deschutes River and its tributaries, the Walla Walla River, Touchet River, Yakima River and its tributaries, and Klickitat River.

Table 6. FY 2003 Mid Columbia River Steelhead Actions

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	1	0	14
Screen diversions (RPA action 149)	1	0	35
Lease or purchase in-stream flows (RPA actions 149 & 151)	1	1	77
Long-Term Survival Improvement Actions			
Protection or enhancement of riparian habitat (conservation easements, leases, land acquisitions, and establish riparian buffers)	N/A	N/A	83

Table 7 shows actions implemented to benefit the fourth ranked **Upper Columbia River spring Chinook**. The priority subbasins for this ESU are the Methow River, Entiat River, and Wenatchee River. Actions taken for Upper Columbia steelhead provide similar benefits to Upper Columbia spring Chinook because their ranges are virtually identical.

Table 7. FY 2003 Upper Columbia River Spring Chinook Actions

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	1	0	10
Screen diversions (RPA action 149)	1	0	0
Lease or purchase in-stream flows (RPA actions 149 & 151)	1	1	4

Actions to benefit the fifth ranked **Snake River spring/summer Chinook** are reported in Table 8. The priority subbasins for this ESU are the Lemhi, Upper Salmon, and Little Salmon, the same as the Snake

River steelhead. Because the range of this ESU overlaps the Snake River steelhead range, the implemented actions benefit both ESUs.

Table 8. FY 2003 Snake River Spring/Summer Chinook Actions

Near-Term Survival Improvement Actions	Planning and Design		Implemented
	Ongoing	Completed	
Barrier removal (RPA action 149)	5	12	2
Screen diversions (RPA action 149)	3	6	32
Lease or purchase in-stream flows (RPA actions 149 & 151)	0	1	8
Install gauges	n/r	n/r	22
Long-Term Survival Improvement Actions			
Protection or enhancement of riparian habitat (conservation easements, leases, land acquisitions, and establish riparian buffers)	N/A	N/A	54

Snake River fall Chinook, shown in Table 9, are ranked sixth but their critical habitat does not include any of the priority subbasins. This ESU spawns in the larger rivers and does not use most tributaries. Non-priority subbasins within the range of the ESU include the lower Clearwater, Hells Canyon, Imnaha River, lower Grande Ronde River, lower Salmon River, and lower Snake River including lower portions of certain tributaries.

Table 9. FY 2003 Snake River fall Chinook Actions

Near-Term Survival Improvement Actions	Implemented
Barrier removal (RPA action 149)	1
Screen diversions (RPA action 149)	20
Lease or purchase in-stream flows (RPA actions 149 & 151)	3
Install gauges	20
Long-Term Survival Improvement Actions	
Protection or enhancement of riparian habitat (conservation easements, leases, and land acquisitions, establish riparian buffers)	20

Snake River sockeye salmon are not ranked because lambda has not been established due to the very small surviving population. Their critical habitat includes the ESU's spawning lakes in the upper Salmon priority subbasin. Near- and long-term actions that improve habitat in the migration corridor of the upper Salmon subbasin also benefit Snake River sockeye salmon.

B. FY 2003 Actions in the Estuary and Mainstem Subbasins for the Aggregated Ranked ESUs

The Action Agencies completed the action plan for the estuary called for under RPA 158 (*Action Plan for the Federal Columbia River Power System Biological Opinion in the Lower Columbia River Estuary)* and the plan addressing habitat needs called for in RPA 159 (*An Ecosystem-Based Approach to Restoration Projects in the Columbia River Estuary with Emphasis on Salmonid Habitats)* in the fall 2003. The RM&E Plan for the Columbia River estuary and plume was completed, and reviewed by the Independent Scientific Review Panel (ISRP), in the fall of 2003.

Columbia River chum salmon, listed as threatened, are ranked seventh with a lambda of 1.04. Chum salmon use the mainstem Columbia River below Bonneville Dam, lower reaches of certain lower Columbia River tributaries (spawning and rearing), and the estuary. The Columbia River estuary is also used by juvenile migrants in other ESUs for holding and staging areas. Near and long-term survival

improvement actions implemented in the estuary benefit chum salmon as well as the upriver ESUs. Table 11 shows the actions implemented in the estuary and lower Columbia River mainstem in FY 2003 that benefit chum and other ESUs.

Table 11. Columbia River Actions - Lower Mainstem and Estuary Subbasins

Near-Term Survival Improvement Projects	Projects
Predator treatments	• Caspian Tern management at Rice Island and East Sand Island • Northern pikeminnow project (60% of catch is below Bonneville Dam)
Long-Term Survival Improvement Projects	
Conservation easements or land acquisition to protect riparian habitat from degradation	• Crims Island, acquired 451 acres
Planning Efforts for Future Projects	• Planning efforts continued for the following projects: Crims Island restoration, southwest Washington streams, Julia Butler Hansen National Wildlife Refuge.
RM&E	• Conducted effectiveness monitoring of the Chinook River estuary for future restoration actions. • Conducted studies for survival and growth of juvenile salmonids in the Columbia River plume • Conducted studies of historic habitat opportunities and food-web linkages of juvenile salmon in the Columbia River estuary and their implications for managing river flows and restoring estuarine habitat

IV. Conclusion

As stated in the *2003 Check-in Report*, the Action Agencies believe that implementation of the NOAA Fisheries BiOp remains generally on track. Adult returns for seven of eight ESUs continue their encouraging upward trends (compared to the current 10-year average), hundreds of actions continue to be implemented to benefit jeopardized ESUs, and survival improvement are expected to accrue and continue in future years. The Action Agencies will continue to update and adjust hydrosystem, habitat, hatchery and harvest actions based on progress and results.