



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE  
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March 12, 2008

MEMORANDUM FOR: James W. Balsiger, Ph.D.  
Acting Assistant Administrator for Fisheries

FROM: D. Robert Lohn  
Regional Administrator

SUBJECT: Authorizing the States of Oregon, Washington and Idaho to  
Lethally Remove California Sea Lions at Bonneville Dam under  
Section 120 of the Marine Mammal Protection Act (MMPA) –  
DECISION MEMORANDUM

I request your concurrence with my determination that certain individually identifiable California sea lions below Bonneville Dam are having a significant negative impact on salmon and steelhead (salmonids) listed under the Endangered Species Act (ESA), and partially approve the application from the States of Oregon, Washington, and Idaho (States) to lethally remove these sea lions pursuant to MMPA section 120. Upon your concurrence, the Office of Protected Resources will: (1) sign the attached letters authorizing state officials to lethally remove individually identifiable predatory sea lions under the conditions described below and in the letters; and (2) file for publication with the Office of Federal Register the attached *Federal Register* notice informing the public of this decision and providing the rationale. This package has been reviewed by General Counsel for Fisheries.

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## ***I. Overview***

The MMPA prohibits the take of marine mammals, with certain exceptions and exemptions. One exception is contained in section 120, which gives the National Marine Fisheries Service (NMFS) authority to allow states to lethally remove individually identifiable pinnipeds that are having a significant negative impact on the decline or recovery of at-risk salmonids. The States applied under this provision for authority to lethally remove California sea lions at Bonneville Dam on the Columbia River between Oregon and Washington. NMFS determined that the States' application warranted review and convened a task force to consider the application and recommend whether to approve it, as required by section 120. The majority of task force members recommended authorizing lethal removal, presenting two options, each with different levels of support from task force members. One member recommended denying the States' application. Relying on the task force recommendations and other information, the Northwest Region developed a proposal to authorize lethal removal, and analyzed that proposal along with a range of reasonable alternatives in an environmental assessment (EA). This memorandum describes the background of the States' request, the Northwest Region's recommended partial approval of the request, and details how the proposed action addresses the requirements of the MMPA.

## ***II. Statutory Background***

### **A. MMPA Section 120**

Section 120 of the MMPA establishes a process for states to apply to NMFS for authority to lethally remove "individually identifiable pinnipeds which are having a significant negative impact on the decline or recovery" of at-risk salmonids. At-risk salmonids are those that have been listed under the ESA as threatened or endangered, those that are approaching listed status, or those migrating through the Ballard Locks in Washington. The application must include a means of identifying the individual pinniped or pinnipeds, a detailed description of the problem interaction, and the expected benefits of removal. If NMFS concludes that the application presents sufficient information to warrant further action, NMFS is to convene a pinniped-fishery interaction task force, and the task force is required to recommend to NMFS whether to approve or deny the proposed intentional lethal taking of the pinniped or pinnipeds. The MMPA also requires NMFS and the task force to consider four factors when evaluating whether an application should be approved or denied. These include:

1. Populations trends and feeding habits of the pinnipeds; location, timing and manner of the interaction; and number of individual pinnipeds involved
2. Past non-lethal deterrence efforts and whether the applicant has demonstrated that no feasible and prudent alternatives exist and that the applicant has taken all reasonable non-lethal steps without success
3. Extent to which the pinnipeds are causing undue injury or impact, or imbalance with, other species in the ecosystem, including fish populations
4. Extent to which the pinnipeds are exhibiting behavior that presents an ongoing threat to public safety

Section 120 also prohibits NMFS from authorizing the lethal removal of pinnipeds listed under the ESA or designated under the MMPA as depleted or strategic.

## **B. The National Environmental Policy Act (NEPA)**

NEPA requires federal agencies to evaluate the environmental consequences of their actions. Depending on the action and whether the impacts to the environment would be significant, federal agencies may prepare an EA or Environmental Impact Statement. In announcing our intention to convene a pinniped-fishery interaction task force, we advised the public that we would conduct necessary analyses under NEPA. Prior to convening the first task force, the Northwest Region formed a workgroup comprised of NMFS employees to conduct internal scoping under NEPA. Based upon the information contained in the States' application, the workgroup recommended preparing an EA to evaluate the environmental impacts associated with any future decision to lethally remove sea lions at Bonneville Dam. After receiving and reviewing the task force recommendations, the workgroup developed a proposed action and a range of reasonable alternatives, and evaluated the environmental impacts in a draft EA.

The EA was made available for public comment for a 30-day period. We received over 3,500 comments, including 16 substantive comments. After considering public comments and completing the final EA, I concluded the proposed action would not have a significant impact on the human environment and signed a finding of no significant impact (FONSI). The EA and FONSI are attached as Appendix A and the concurrence of the NOAA NEPA Coordinator as Appendix B.

## **C. The Endangered Species Act (ESA)**

Pursuant to section 7(a)(2) of the ESA, federal agencies are required to consult on any actions they authorize, fund or carry out to ensure the action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The proposed action may affect salmonids and Steller sea lions listed as threatened or endangered under the ESA. You have delegated authority to the regions to carry out NMFS' ESA consultation responsibilities. Consequently, the Northwest Region has completed a formal consultation on the effects of the proposed action on listed species and signed a biological opinion finding that the proposed action will not jeopardize the continued existence of any listed species or adversely modify its critical habitat.

## ***III. Pinniped Predation at Bonneville Dam***

California sea lions hunt for and eat migrating adult salmonids as the fish move through the tailrace below Bonneville Dam and pass into one of eight fishway entrances that lead to fish ladders located on the Oregon and Washington sides of the Columbia River. Five ESA-listed salmon and steelhead species<sup>1</sup> are affected – upper Columbia River spring Chinook, Snake River spring/summer Chinook, Snake River steelhead, mid-Columbia steelhead, and lower Columbia steelhead. Upper Columbia spring Chinook are listed as endangered species while the rest are listed as threatened species.

Until 2001, few seals and sea lions were observed feeding in the area immediately downstream of Bonneville Dam. In 2001, the U.S. Army Corps of Engineers (Corps), which operates

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<sup>1</sup>The ESA defines a "species" to include any distinct population segment (DPS) of any species of vertebrate fish or wildlife. For Pacific salmon, NMFS considers an evolutionarily significant unit, or ESU, a "species" under the ESA. For Pacific steelhead, NMFS has delineated DPSs for consideration as "species" under the ESA.

Bonneville Dam, began to monitor marine mammal predation on ESA listed salmonids in the tailrace of the dam. Corps monitors have tracked numbers of sea lions (including how many are new versus repeat visitors), the number of days individual sea lions are present in the area, and the numbers of salmonids consumed (Table 1). From 2002 to 2003 the numbers of California sea lions observed below the dam rose from 30 to 106 animals. The number of California sea lions has decreased slightly each year through 2007, when the total number of animals tallied was 69. These numbers represent the minimum number of California sea lions present because only those sea lions that could be identified with a high degree of confidence were included in the totals. In addition, observations are recorded only from observation stations at the dam and observations do not occur at all hours. The observation areas are large and poor weather conditions (e.g., wind, rain), murky and turbulent water, and heavy debris can make it difficult to spot an animal, which might only surface for a few seconds.

The Corps' data also indicate that the average observed residence time of California sea lions has increased from 5 days in 2002 to 20 days in 2007, the maximum daily number of pinnipeds has increased from 14 in 2002 to 54 in 2007, and the pinnipeds are arriving earlier and staying longer than in past years. As Table 1 reflects, Steller sea lions and harbor seals are also present, though in much smaller numbers.

**TABLE 1 SUMMARY OF ANNUAL PINNIPED ABUNDANCE AND DURATION AT THE BONNEVILLE DAM TAILRACE – 2002-2007**

	2002	2003	2004	2005	2006	2007
<b>Min. total number of individual pinnipeds</b>	31	111	105	85	85	80
<b>California sea lion</b>	30	106	101	80	72	69
<b>Steller sea lion</b>	0	3	2	4	10	9
<b>Harbor seal</b>	1	2	2	1	3	2
<b>Maximum daily number of pinnipeds</b>	14	32	37	43	46	54
<b>Maximum number of days individual California sea lion was present</b>	16	25	33	39	73	70
<b>Average number of days California sea lions were present</b>	5.3	6.5	7.6	7.5	19.9	20.3
<b>Date of first California sea lion sighting</b>	3/20	3/14	2/22	2/20	2/9	1/8
<b>Date of last California sea lion sighting</b>	5/17	5/27	5/26	6/10	6/5	5/26
<b>Total days California sea lions were present</b>	59	71	95	96	106	123

Source: Stansell 2008

Table 2 shows the salmon predation actually observed by the Corps monitors. For the years 2005 through 2007, the predation rate averaged 3.6 percent. Of the salmon consumed by pinnipeds, over 99 percent were consumed by California sea lions. As with observations of sea lion numbers, and for the same reasons, actual predation is almost certainly higher than the observed numbers. Results of the Corps' monitoring are discussed further below under "Findings and Considerations to Support NMFS' Decision."

**TABLE 2 – OBSERVATIONS OF SALMON PREDATION BELOW BONNEVILLE DAM**

	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Observed Minimum Salmonid Predation (fish taken) by Pinnipeds</b>	1,010	2,329	3,533	2,920+	3,023	3,859
<b>Total Salmonid Passage</b>	284,733	217,185	186,804	82,006	105,063	88,474
<b>Pinniped Predation of Salmonids as a Percentage of Salmonid Run Size (%)</b>	0.4	1.1	1.9	3.4+	2.8	4.2

The Corps, NMFS, and the States of Oregon and Washington have since 2005 tested a variety of non-lethal methods to deter California sea lions from preying on salmonids in the area below Bonneville Dam. Methods have included physical barriers and acoustic devices to keep sea lions out of fishways, vessel chasing, underwater firecrackers, aerial pyrotechnics, and rubber bullets. The available evidence indicates that the non-lethal deterrence measures used to date have reduced pinniped presence in the fishways and may be discouraging some new animals from becoming established in the area, but have not reduced total pinniped predation on salmonids in the area below the dam. This issue is discussed more fully below under “Findings and Considerations to Support NMFS’ Decision.”

#### ***IV. States’ Application***

On December 5, 2006, the States asked NMFS to authorize intentional lethal removal of California sea lions in the Columbia River. The States’ application referred to the Corps’ data on pinniped predation immediately below Bonneville Dam, and to additional data suggesting that pinnipeds are feeding on salmonids throughout the Columbia River, particularly in the area from Bonneville Dam to navigation marker 85, approximately 6 miles downstream from the dam. The States asked for authority to lethally remove California sea lions found between navigation marker 85 and the dam. The States expected mortality in the first year of removal would be less than 1 percent of the potential biological removal level (PBR) of California sea lions; at the time of the application, the PBR level was 8,333 animals out of an estimated population of 237,000. Any lethal removal would be preceded by a period of non-lethal harassment, followed by an evaluation. Animals observed in the zone between marker 85 and the dam could later be removed wherever found. The States also highlighted past efforts to non-lethally deter pinnipeds below the dam and concluded such efforts had proven unsuccessful. The States’ application described the expected benefit of pinniped removal to be a reduction in a recent, unnatural, and significant source of mortality of the affected salmonids. This benefit would be part of an ongoing comprehensive fish recovery strategy, in which substantial actions are being taken in several areas to improve the survival of at-risk Columbia River salmon and steelhead runs. The States asked NMFS to initiate the MMPA section 120 process by establishing a task force to examine the problem and make recommendations to NMFS.

## ***V. Pinniped-Fishery Interaction Task Force***

NMFS determined that the States' application provided sufficient evidence to warrant establishing a pinniped-fishery interaction task force. On January 30, 2007, NMFS announced receipt of the States' application and solicited public comments. The task force convened in September 2007 and, after considering the States' application, public comments on the application, and other information, delivered its recommendation to NMFS on November 5, 2007. Task force meetings were open to the public.

Of the 18 task force members, all recommended that non-lethal deterrence activities continue, and 17 recommended that NMFS authorize lethal removal. Two options for lethal removal were presented:

*Lethal Option 1* (“preferred” by 10 of the 18 Task Force members; “acceptable” to 17 of 18 members; “unacceptable” to 1 member)

- Remove not more than 1 percent of the PBR of California sea lions (CSL) per year (about 85 animals).
- Lethal take occurs for 3 years and continues after that only if the rolling 3-year average of predation exceeds 1 percent.
- Establish a CSL exclusion zone (CSLEZ) from Bonneville Dam downstream approximately 1.5 miles.
- Animals that can be lethally removed, and the location where they can be removed, include:
  - CSL with distinguishing features may be taken anywhere above navigation marker 85 if observed catching a salmon in the CSLEZ in 2008 or later.
  - CSL listed in an appendix to the task force report may be taken anywhere above navigation marker 85, if seen in the CSLEZ in 2008 or later.
  - CSL occupying a fish ladder or coming within 50 feet of a fish ladder can be killed on the spot.
  - CSL seen eating a salmon in the CSLEZ can be killed on the spot.
  - CSL with distinguishing features observed on 7 days above navigation marker 85 and observed taking a salmon in that area can be taken anywhere above navigation marker 85.
  - CSL with distinguishing features observed taking 30 salmon or observed over 3 years above navigation marker 85 can be taken wherever found, except in a rookery.
  - If the predicted run size of spring Chinook is 82,000 or less, any sea lion in the CSLEZ can be killed on the spot.

*Lethal Option 2* (“preferred” by 7 task force members; “acceptable” to 15 members; “unacceptable” to 3 members)

- Reduce CSL presence to zero within 5 miles of Bonneville Dam and reduce predation to 0.5 percent in the observation area below Bonneville Dam
- Lethal removal of up to 2 percent of the PBR (170 animals)
- Establish a CSLEZ from Bonneville Dam downstream approximately 1.5 miles
- Immediate lethal take of any CSL within the zone

One member of the task force submitted a minority opinion opposing the States' application for lethal removal of pinnipeds at Bonneville Dam. The minority opinion was included as an Appendix in the final task force report.

#### ***VI. NMFS' Decision: Partial Approval of States' Application***

The Northwest Region developed a proposal in response to the States' request for lethal removal authority after considering the States' application, public comments, comments from the Marine Mammal Commission, and task force recommendations, including the minority opinion. We also considered the requirements of the ESA and MMPA. We analyzed the proposed action in the draft EA and made the analysis available for a 30-day public comment period. After considering public comments, we slightly modified the proposed action and the analysis, and found that the proposed action would not have a significant impact on the human environment (FONSI, Appendix A). We also considered all of the sources previously mentioned in recommending that the proposed action meets the requirements of the MMPA. The following discussion describes our proposal to partially approve the States' request for authority to lethally remove California sea lions at Bonneville Dam. The final EA includes a discussion of questions raised in public comments and our responses.

NMFS would, through a letter of authorization, allow the States to lethally remove a certain number of pre-determined California sea lions at Bonneville Dam. As part of the lethal removal activities, the States would continue non-lethal deterrence efforts, as carried out in 2006 and 2007. The non-lethal deterrence efforts are described in detail in the attached EA. Lethal removal would be authorized under the following conditions and as described in more detail in the attached EA:

- 1) Individually identifiable predatory California sea lions meeting the criteria in subparagraphs a) and b) may be lethally removed. Individual sea lions currently known to meet these criteria are listed in an attachment to the letter of authorization. Additional animals may be added to the list if the States present sufficient evidence that they meet these criteria and NMFS agrees in writing.
  - a) Animals would be considered individually identifiable if they display natural or applied features that allow them to be individually distinguished from other California sea lions.
  - b) Animals would be considered predatory if they 1) have been observed eating salmonids in the observation area below Bonneville Dam between January 1 and May 31 of any year, 2) have been observed in the observation area below Bonneville Dam on a total of any 5 days (consecutive days, days within a single season, or days over multiple years) between January 1 and May 31 of any year, and 3) are sighted in the observation area below Bonneville Dam after they have been subjected to active non-lethal deterrence.
- 2) The number of animals that may be killed annually (i.e., removed) is limited to 1 percent of PBR or the number necessary to achieve an observed average percent predation rate of

1 percent of the adult salmonids tallied by fish counters over 3 years at Bonneville Dam, whichever is lower. PBR for California sea lions is currently 8,511 animals.

- 3) The authorization would require the States, among other things, to establish an animal care committee; hold trapped animals for a period of time to determine if captive facilities are willing to take them; shoot free-ranging animals using methods designed to ensure public safety, ensure a clean kill, and reduce the chances of accidentally shooting a Steller sea lion; and recover and appropriately dispose of killed animals.
- 4) The authorization would be valid for 5 years and could be renewed, as appropriate.

The Northwest Region estimates the States are likely to kill about 30 sea lions each year, based on the numbers of animals expected to be caught in floating traps at the dam, hauled out on the dam structures, or present in the water in a manner that allows them to be identified and shot. In response to comments on the draft EA, the final EA estimates the potential impacts of the authorization on California sea lions using the full number allowed to be removed (85) but estimates the impacts on other resources (including benefits to salmon) based on the more likely removal of 30 sea lions.

## ***VII. Findings and Considerations to Support NMFS' Decision***

This section describes the rationale for authorizing the lethal removal of individually identifiable predatory California sea lions and describes the consideration of section 120(d) factors. The discussion that follows is informed by: 1) public comments on the notice accepting the States' application; 2) the task force recommendations; 3) the Marine Mammal Commission's comments on the task force recommendations and draft EA; 4) past experience with pinniped predation at Ballard Locks in Washington State; 5) public comments on the draft EA; and 6) Section 120(b)(1)'s legislative history, particularly ambiguous Congressional intent concerning the meaning of "individually identifiable pinnipeds" and "significant negative impact." A more detailed review of most of the following information, including citations, is contained in the EA.

### **A. Section 120(b)(1) – Individually Identifiable Pinnipeds Which are Having a Significant Negative Impact**

In considering a state's request to lethally remove pinnipeds, NMFS is required, pursuant to section 120(b)(1), to make a determination that individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of at-risk salmonid fishery stocks. The discussion that follows addresses NMFS' application of this standard to the facts at Bonneville Dam.

#### ***Significant Negative Impact***

Section 120 provides for the lethal removal of "individually identifiable pinnipeds which are having a significant negative impact on the decline or recovery" of at-risk salmonids. In its comments on the task force report, the Marine Mammal Commission recommended a two-part test in which we would first determine whether pinnipeds collectively are having a significant negative impact on listed salmonids and next determine which pinnipeds are significant contributors to that impact and therefore may be authorized for removal. The application of this two-step test is reasonable in light of the statute's ambiguity and the specific facts and

circumstances surrounding the proposal to lethally remove pinnipeds at Bonneville Dam. The subordinate clause “which are having a significant negative impact” modifies the plural noun “pinnipeds,” supporting the proposition that our inquiry is whether pinnipeds (plural) are having the described impact, not whether a specific individual is having the described impact. With that interpretation, once there is a finding that pinnipeds are having a significant negative impact, the task becomes one of identifying which of the individual pinnipeds are contributing to the impact (discussed below).

In their application the States contend that pinniped predation at Bonneville Dam is significant for two reasons. First, “it is a new, growing, and unmanageable source of mortality, while other sources of in-river mortality are actively managed and are stable or decreasing (e.g., through harvest reductions, fish passage and habitat improvements, and hatchery reform).” Second, “the hydromodification of the river has altered the natural predator-prey relationship to artificially favor predatory California sea lions.” The States’ section 120 application specifies that they do not contend “that California sea lion predation is more significant than other sources of mortality to Columbia River ESA-listed salmonids, but simply that it is significant, and that it must be dealt with as are other sources of mortality.”

The task force also considered whether pinniped predation at Bonneville Dam was having a significant negative impact. The task force was unable to agree on quantitative criteria to assist NMFS in defining “significant negative impact,” but 17 of the 18 members did agree on a set of factors for NMFS to consider:

- Whether pinnipeds are present at the same time that ESA listed salmonids are migrating
- Whether data indicate that predation has increased beyond historic levels
- Whether the problem is likely to persist over time if the impact remains unchecked
- Whether the mortality resulting from pinniped predation is comparable to other forms of in-river mortality that are currently being managed

The task force outlined additional considerations for taking action:

- There is a comprehensive salmon recovery framework in place that includes multiple actions, monitoring, and evaluation.
- California sea lion predation should be addressed and its impacts evaluated in the context of other limiting factors (i.e., not on their own).
- Non-lethal hazing has been ineffective at reducing predation.
- The proposed level of lethal removal will have no long term negative impact on California sea lion populations.
- California sea lion abundance is within the range of OSP and at or near carrying capacity.
- The problem is related to/resulting from human caused factors.

Applying these factors and considerations, all but one member of the task force concluded that California sea lions are having a significant negative impact on the decline or recovery of Columbia Basin threatened and endangered salmonids. The dissenting member maintained that the level of pinniped predation at Bonneville Dam is not significant when considered in the context of other sources of mortality such as hydropower operations and harvest.

We agree with the states and the majority of the task force members that collectively California sea lions at Bonneville Dam are having a significant negative impact on ESA listed salmon and steelhead species, based on information in the record and in particular on the following factors:

- The predation is measurable, growing, and could continue to increase if not addressed;
- The level of adult salmonid mortality is sufficiently large to have a measurable effect on the numbers of listed adult salmonids contributing to the productivity of the affected ESUs/DPSs; and
- The mortality rate for listed salmonids is comparable to mortality rates from other sources that have led to corrective action under the ESA.

Table 2 shows the observed predation of salmon, primarily by California sea lions, from 2002 through 2007. Even though sea lion numbers peaked in 2003 and were steadily lower in each subsequent year (Table 1), numbers of observed predations increased. The numbers of salmonids consumed also increased from 2006 to 2007 even though the salmonid run size was smaller. Salmonid consumption by pinnipeds more than tripled from 2002 to 2007.

The actual number of salmonids consumed is certainly larger than the numbers actually observed, since not all sea lions are observed nor are all predation events. As part of our evaluation in the attached EA, we calculated the potential consumption of salmonids based on the average number of California sea lions actually observed (86) and their bioenergetic needs. The calculation shows that 86 California sea lions at the dam can consume up to 17,458 salmonids annually. Of these, up to 6,003 salmonids would be listed spring Chinook and up to 611 would be listed steelhead. Using the observed minimum rate of predation averaged over 2005-2007, and the estimated maximum potential predation rate, yields predation rates ranging from 3.6 percent to 12.6 percent for listed spring Chinook and 3.6 percent to 22.1 percent for listed steelhead.

In addition to salmonids actually observed being consumed or estimated as being consumed, observations of adult salmonids in the Bonneville Dam fishways reveal a large proportion of salmonids are being injured by pinnipeds. The proportion of salmonids with pinniped scarring rose from 11 percent in 1999 to 37 percent in 2005. It is unknown how many of these injuries occurred at Bonneville Dam, or how many salmonids die from their injuries before spawning. These data nevertheless reveal a high rate of interaction between adult salmonids and pinnipeds generally.

Available information suggests that pinniped predation could continue to increase at Bonneville Dam if not checked. The numbers of salmonids consumed increased almost fourfold from 2002 to 2007, in spite of non-lethal deterrence efforts. While these efforts may have slowed the rate of increase, an increase nevertheless occurred. The experience at Ballard Locks in Washington suggests that where human caused conditions cause adult salmonids to congregate and delay, California sea lions can effectively consume a majority of the salmonids present. While the area at Bonneville is larger than the area at Ballard Locks, the observed increase in predation over recent years suggests that predation can continue to increase in spite of non-lethal deterrence efforts.

Both the observed and estimated mortality rates described above represent levels of mortality that can have a significant effect on the survival and recovery of the listed stocks. In preparing its biological opinion on the federal Columbia River power system, NMFS estimated the current survival rates for each of the listed salmonid ESUs/DPSs, and the survival improvements required to achieve a low likelihood of extinction. For Snake River spring/summer Chinook, needed survival improvements for different populations within the ESU range from no improvement to a fivefold improvement. Survival impacts on the order of those observed can measurably affect the survival improvements needed for many of these populations.

The estimated mortality rates for listed salmonids from pinnipeds at Bonneville Dam are comparable to mortality rates from other sources that have led to corrective action under the ESA. Because the listed salmonids are subject to mortality from a variety of sources, NMFS has imposed reductions on all sources of mortality under section 7(a)(2) of the ESA, allocating those reductions based on, among other considerations, the action's contribution to the historic decline of the species, the current magnitude of the mortality, the impact to other values (particularly the exercise of Indian treaty rights), and the feasibility of achieving the reduction. As an example, although harvest rates on Snake River and upper Columbia River spring Chinook were already restricted prior to ESA listing (from historical highs in excess of 40 percent to an average of 8 percent prior to listing), NMFS nevertheless required a harvest schedule that ensured harvest rates would remain low when the run size was depressed. At the time of listing harvest rates were limited to 4.1 percent for non-treaty fisheries and 7 percent for tribal fisheries. Following listing, through a sequence of ESA section 7 consultations, harvest impacts in non-treaty fisheries were reduced to a range of 1 to 3 percent depending on run size. Tribal fisheries continued to be subject to a 7 percent limit largely in an effort to accommodate, to the degree possible, the tribes' treaty right to fish. In 2001, the parties to *U.S. v. Oregon* developed a more comprehensive abundance based harvest rate schedule that restricted fisheries further when the runs were particularly depressed, and allowed modest increases in harvest when run size was substantially higher.

That harvest rate schedule is still in place and allows harvest to vary between 5.5 and 17 percent. Since 2001 when this harvest rate schedule was first implemented, the harvest rate has averaged 10.3 percent, reflecting the higher abundance observed particularly in the first part of this decade. Abundance has generally been lower since 2005, and accordingly harvest has been reduced to just over 8 percent over the last three years. In contrast to a managed harvest regime, which can reduce mortality in response to decreased run sizes, pinniped predation has the potential to increase even when run sizes are depressed, magnifying the impact. This was the case from 2006 to 2007, when observed pinniped predation increased from 3,023 salmonids to 3,859, even as the run size decreased from 105,063 to 88,474.

Another example is the survival improvements sought from the federal Columbia River power system. In its draft biological opinion on operation of the hydropower system, NMFS included as a reasonable and prudent alternative a program to reduce northern pikeminnow predation on Snake River spring/summer Chinook sufficient to increase survival by a relative 1 percentage point and bird predation by 2 percentage points. The overall proportional survival improvement of 8 percent that NMFS is seeking from the hydropower system is made up of myriad actions that contribute fractions to the overall percentage. No single one of these mortality reductions

will by itself recover listed salmonids. Rather, as with other actions, NMFS' approach is to seek reductions in all sources of mortality, with the goal of reducing overall mortality to the point that the species can survive and recover. In the draft biological opinion on the FCRPS, NMFS concludes that the accumulation of proposed mortality reductions will measurably improve the chances of survival and recovery of all five of the ESUs/DPSs considered here.

The Region recommends that NMFS place a cap on the number of California sea lions that may be lethally removed – either 1 percent of PBR or the number required to reduce the observed predation rate to 1 percent of the salmonid run at Bonneville Dam, whichever is lower. This recommendation is not equivalent to a finding that a 1 percent predation rate represents a quantitative level of salmonid predation that is “significant” under section 120, and that less than 1 percent would no longer be significant. Rather, it is an independent limit on the numbers of sea lions that can be lethally removed to address the predation problem and is intended to balance the policy value of protecting all pinnipeds, as expressed in the MMPA, against the policy value of recovering threatened and endangered species, as expressed in the ESA. Similarly, limiting the numbers of California sea lions that may be removed to 1 percent of PBR, as requested by the States, is intended to emphasize that the removal authority is for a small fraction of animals that can safely be taken from the population.

The limited authorization we recommend giving the States will not eliminate pinniped predation in the lower Columbia River or at Bonneville Dam, but that is not a requirement of section 120 or of prudent wildlife management. The authorization to the States to remove a limited number of predatory California sea lions under carefully controlled circumstances will create an additional tool in our efforts to control a significant source of mortality for threatened and endangered Columbia River salmonids.

#### *Individually Identifiable Pinnipeds Which are Having the Impact*

Our recommendation is that NMFS' authorization extend only to predatory animals with physical features distinguishing them from other pinnipeds (natural features, brands, or other applied marks), thus meeting the requirement that they be “individually identifiable.” To be considered predatory, an animal must 1) have been observed eating salmonids in the observation area below Bonneville Dam between January 1 and May 31 of any year, 2) have been observed in the observation area below Bonneville Dam on a total of any 5 days (consecutive days, days within a single season, or days over multiple years) between January 1 and May 31 of any year, and 3) be sighted in the observation area below Bonneville Dam after having been subjected to active non-lethal deterrence.

An animal meeting all of these criteria has learned that the area contains a preferred prey item and is successful in pursuing it in that area (criterion 1), is persistent in pursuing that prey item (criteria 2 and 3), and is not likely to be deterred from pursuing that prey item by non-lethal means (criterion 3). Given its success at obtaining prey in the area and its resistance to non-lethal deterrence efforts, such an animal has shown itself to be making a significant contribution to the pinniped predation problem at Bonneville Dam, and is not a naïve animal that can be driven away from the area through non-lethal means. A list of animals presently identified as meeting these criteria is attached to the letter of authorization to the states, and the letter describes the process by which additional animals may be included on the list.

## **B. Section 120(d) – Consideration of Other Factors**

In considering whether to approve the States' application, NMFS and the task force are to consider several factors, enumerated above under "MMPA Section 120" and discussed individually below.

### *Populations trends and feeding habits of the pinnipeds; location, timing and manner of the interaction; and number of pinnipeds involved*

The United States stock of California sea lions is currently at carrying capacity with a population of about 238,000 animals. California sea lions are opportunistic feeders, feeding on a variety of fishes that are locally and seasonally abundant. In the Columbia River, California sea lions follow migrating salmonids as far as Bonneville Dam, where the fish concentrate prior to entering the fish ladders. For the period 2002 to 2007, almost 80 percent of the fish observed being eaten below Bonneville Dam were salmonids. Pinniped predation on salmonids occurs from mid-February through May 31.

Table 1 shows the number of sea lions with either natural or human-applied identifying marks that were seen from observation platforms at Bonneville Dam from 2002 through 2007.

It is likely that more pinnipeds are present than are observed, since observations are recorded only from observation stations at the dam, observations do not occur at all hours, and only sea lions with distinguishing features are counted. The observation areas are large and poor weather conditions, murky and turbulent water, and heavy debris can make it difficult to identify animals that might only surface for seconds. Because of these limitations, the exact number of California sea lions arriving in the area each season is uncertain. For purposes of calculating the potential benefits to salmonid survival from removing sea lions, The EA uses a conservative estimate that only 30 sea lions would be removed given the limitations of the authorization NMFS is proposing (particularly the location of animals that may be removed). At the same time, to ensure the analysis is adequately protective of the California sea lion population, the EA evaluates impacts on the population of removing the full number authorized (1 percent of PBR, or 85 at current population abundance).

### *Past non-lethal deterrence efforts and whether the applicant has demonstrated that no feasible and prudent alternatives exist and that past efforts have been unsuccessful*

In 2006 and 2007 the Corps, NMFS, and the states of Oregon and Washington attempted to deter pinniped predation at Bonneville Dam using non-lethal methods. These included physical barriers and acoustic devices to keep sea lions out of fishways, and vessel chasing, underwater firecrackers, aerial pyrotechnics, and rubber bullets to chase sea lions away from the tailrace area immediately below the dam. Based on experience with non-lethal deterrence measures in 2006 and 2007, NMFS has concluded that non-lethal methods may have reduced pinniped presence in the fishways but did not reduce pinniped predation on salmonids. This is reflected in the increased numbers of salmonids observed being eaten by sea lions below the dam in 2007 compared with 2006, notwithstanding the fact that fewer sea lions were observed. NMFS' conclusion is shared by the States and the task force. Non-lethal deterrence measures are currently not a feasible alternative to lethal removal. Although several commenters recommended that additional non-lethal methods be attempted instead of lethal removal, there

are no additional known methods beyond those already tried. One manufacturer has proposed an electrified field to deter pinnipeds, but the technology is untested.

*Extent to which such pinnipeds are causing undue injury or impact, or imbalance with, other species in the ecosystem, including fish populations*

California sea lions are opportunistic feeders and consume many species other than salmonids. While salmonids are by far their primary prey at Bonneville Dam, California sea lions have also been observed consuming lamprey and shad. From 2002 through 2007, between 2.5 percent and 25.1 percent of all observed California sea lion takes were of lamprey. There is presently not enough evidence to support a conclusion that this level of consumption represents undue injury or impact to lamprey at Bonneville Dam.

For Steller sea lions, the primary prey item is sturgeon. The states have not requested authority to lethally remove Steller sea lions, which are listed as threatened under the ESA. Harbor seals are present in small numbers and the states have not requested authority to lethally remove these pinnipeds.

*Extent to which the pinniped behavior presents an ongoing threat to public safety*

There is no evidence that pinnipeds in the area immediately below Bonneville Dam present a threat to public safety.

## ***VIII. Discussion of Additional Factors***

### *Humane Killing*

Section 120 does not require that the lethal removal be humane; however, we have included requirements intended to increase the likelihood that the capture, holding, transfer or killing of any sea lions will be humane. We have also included requirements to minimize risks to Steller sea lions.

### *Future Options*

The States requested, and the majority of task force members recommended, that the States be given authority to lethally remove any California sea lion above navigation marker 85. The EA examines this approach through Alternative 4. We need not decide now whether lethal take under Alternative 4 would be consistent with the statute, since we are not recommending authorizing take of any California sea lion above navigation marker 85 due to concerns about practicability. We may revisit this issue later, depending on the results of the initial authorization.

### *Transfer to Permanent Captivity*

To the maximum extent practicable, captured predatory sea lions will be transferred to permanent captive facilities rather than euthanized. MMPA section 120 does not authorize the transfer of captured predatory sea lions to a permanent captive facility. Accordingly, NMFS would rely on section 109(h) and 112(c) of the MMPA to support this effort, if available. Section 109(h) allows government officials (i.e., Federal, state, or local) to take marine mammals in the course of their official duties, including the non-lethal taking of nuisance marine

mammals. In addition, section 109(h)(3) requires, if feasible, that any marine mammal taken by government officials as a part of official duties be returned to its natural habitat. If it is not feasible to return any of the predatory sea lions to their natural habitat, they may be retained in captivity and transferred to a permanent captive facility in accordance with section 112(c). These lines of authority were challenged in 1996 when sea lions were captured near Ballard Locks. The court supported NMFS' determinations that: (1) the captured sea lions had been identified as candidates for lethal removal in the 1996 LOA, (2) NMFS did not act unreasonably when it concluded they were "nuisance" animals, (3) it was not feasible to return the captured sea lions to the wild because they would be subject to immediate lethal removal by the State of Washington, and 4) NMFS acted reasonably and within the scope of its authority when it captured the individual sea lions and made arrangements for their transfer to Sea World for public display (*Humane Society of the United States, et al. v. Department of Commerce, et al.*, Civil Action No. 96-0623 (CKK) (D.D.C. April 13, 1999).

NMFS and the States have determined that the California sea lions at Bonneville Dam are nuisance animals. NMFS and the states have witnessed increasing numbers of California sea lions at Bonneville Dam over the past 5 years. These animals migrate to the dam each season primarily to consume salmonids passing through the facility. Although efforts have been taken to non-lethally deter these animals, the results have been ineffective. Moreover, these animals have been seen preying on species other than salmonids (e.g., sturgeon); removing fish from hooks or nets in commercial, recreational, or tribal fisheries; and impeding migration of other fish species through the fish passage facilities at Bonneville Dam.

For purposes of the 109(h)(3) determination and the 112(c) transfer, NMFS has concluded it would not be feasible to return individually identifiable, predatory sea lions to their natural habitat. The transfer program is designed to target predatory sea lions that have no chance of being released into their natural habitat because of their contribution to the adverse impacts on salmonid stocks. In addition, the States have advised NMFS that any captured predatory sea lion would be euthanized (provided authorization is granted), if a determination is made that the predatory sea lion would be returned to its natural habitat. With respect to the potential capture of sea lions that are not deemed to be predatory, NMFS and the States would release these animals into their natural habitat. However, once these animals meet the definition of a predatory sea lion, they would become candidates for transfer, if captured in a trap, or lethal removal.

To facilitate rapid transfer of captured predatory sea lions if the situation were to arise, NMFS has contacted permanent display facilities to determine their ability and willingness to accept captured predatory sea lions. A list of pre-approved permanent holding facilities has been prepared, and NMFS would transfer the affected sea lions to permanent captivity pursuant to MMPA section 112(c), and the sea lions would be added to the inventory of captive marine mammals.

### *Monitoring*

Under the conditions of the proposed authorization, the States are required to develop and implement a monitoring plan to evaluate (1) the impacts of predation, (2) the effectiveness of non-lethal deterrence, and (3) the effectiveness of permanent removal of individually identifiable

predatory sea lions as a method to reduce adult salmonid mortality. To the extent practicable the States are required to use data collected by the Corps or other agencies to help fulfill the monitoring requirement, avoid duplication of effort, and ensure data consistency across programs. If resources are available, the States are encouraged to monitor pinniped impacts on salmonids elsewhere in the lower Columbia River to assess the level of impact from predation relative to observed levels at Bonneville Dam and to other sources of mortality that are being managed under the various salmon recovery plans. The States are also required to submit monitoring reports to NMFS annually, on or before November 1, to assist NMFS and the Task Force in evaluating the effectiveness of lethal removal, as required by the MMPA. The reports shall include a summary of actions taken to reduce predation (non-lethal and lethal), the States' compliance with the conditions of the authorization, and plans for future actions in compliance with the authorization.

#### *Contrast with Previous Section 120 Authorization*

The situation at Bonneville Dam is distinguishable from that at Ballard Locks, where California sea lions were consuming as much as 60 percent of the run and their predation was threatening to extirpate steelhead from Lake Washington. In the case of the Ballard Locks, NMFS initially limited the initiation of sea lion removal activities until a 10 percent predation rate was observed within a 7-day period at the dam. However, this restriction was subsequently revised to remove that limit, based on the conclusion that even one steelhead mortality was significant. At the time of the section 120 request at the Ballard Locks, sea lion predation was the principal factor affecting steelhead survival, in contrast with Columbia River stocks, which face a host of threats that all inflict an incremental amount of mortality.

#### *Controversial Issues*

Authorizing the States to lethally remove predator California sea lions at Bonneville Dam will be controversial with some segments of the public and animal welfare groups. Many feel that until other sources of mortality are eliminated (such as harvest), it is immoral to lethally take marine mammals. These issues are addressed in the decision documents, but it is unlikely these groups will be satisfied.

### ***IX. Recommendation***

Based on the foregoing and the analysis contained elsewhere in the record, I have determined that the requirements of section 120 have been met and it is therefore reasonable to authorize lethal removal of individually identifiable predatory California sea lions because they are having a significant negative impact on the decline or recovery of at-risk salmonids; the level of lethal removal authorized would not be significant because California sea lion populations are robust and are at carrying capacity; the proposed annual taking would be limited to only 1 percent of California sea lion PBR; non-lethal deterrence efforts have thus far proved ineffective; Columbia River salmonids are killed at every life stage by multiple causes and their recovery requires us to at least attempt to reduce all sources of mortality, including mortality from pinnipeds, to the extent practicable; and human-caused factors are enabling levels of California sea lion predation to exceed levels that would be possible in the absence of such factors.

I therefore recommend that you concur in my determination that individually identifiable pinnipeds are having a significant negative impact on at-risk salmonids at Bonneville Dam. The

Office of Protected Resources will sign the attached letter of authorization to the States and *Federal Register* notice.

I concur  Date 3/14/08

I do not concur \_\_\_\_\_ Date \_\_\_\_\_