

Marine Mammal Commission  
4340 East-West Highway, Room 905  
Bethesda, MD 20814

19 February 2008

Mr. Garth Griffin  
National Marine Fisheries Service  
1201 Lloyd Boulevard, Suite 1100  
Portland, OR 97232

Dear Mr. Griffin:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the draft environmental assessment (draft EA) prepared by the National Marine Fisheries Service on “Reducing the Impact on At-risk Salmon and Steelhead by California Sea Lions in the Area Downstream of Bonneville Dam on the Columbia River, Oregon and Washington.” Based on our review, we offer the following comments. These are intended to supplement the comments previously submitted by the Commission on the proposed issuance of an authorization under section 120 of the Marine Mammal Protection Act (MMPA) for the lethal removal of California sea lions at Bonneville Dam.

General Comments

As we noted in our previous comments, the primary objective of the Marine Mammal Protection Act is to maintain the health and stability of the marine ecosystem. Protecting and conserving marine mammals is certainly one aspect of that charge. However, situations may arise where it is necessary to remove marine mammals—even lethally—to conserve some other part of the ecosystem. In many such situations, management deliberations and actions will be compromised by imperfect data regarding the need to respond and the means to do so. The predation problem at Bonneville Dam is one such situation, and we begin this letter by recognizing and expressing our appreciation for the considerable work undertaken by the Service and others to address this difficult problem.

As recognized in the draft EA, the salmonid stocks being affected by pinniped predation at Bonneville Dam face a suite of other risks, including high levels of at-sea mortality. We therefore believe that it is essential that efforts to protect these stocks address that mortality to the extent that it might be influenced by human activities (e.g., fisheries bycatch). In that regard, the entire effort to monitor takes of salmon by sea lions should be paralleled by a careful study to assess other sources of mortality for the salmonids in question. Without such information, it is impossible to put the effects of pinniped predation into context and to manage and conserve salmon effectively.

Section 120 of the MMPA provides the framework for managing the situation at Bonneville Dam and for determining if lethal taking can and should be authorized. Given the controversial nature of this matter, we believe it is essential for the Service to provide a clear and comprehensive rationale for the management alternatives considered and selected as a result of this process. Although we do not expect that all stakeholders will agree on the appropriate course of action, the rationale behind that course should be clearly described.

Section 120 requires that the Service base its actions on a finding that individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of the affected salmonid fishery stocks. It appears that the Service intends to adopt a two-part test for making these determinations, as recommended by the Commission. That two-part test involves determining whether (1) the overall impact of predation is significant and (2) the individual pinnipeds to be removed are contributing significantly to that predation (a determination that requires that the animals be individually identifiable).

We generally concur with the approach put forth in the Service's EA. However, we also believe it is important to support that approach with a robust, quantitative assessment of the term "significance." In our previous letter, we recommended that the Service articulate a clear standard for determining when pinnipeds are having a significant negative impact on salmonid stocks, and that such a standard should relate the observed/estimated predation rates with impacts on the decline of or impairment to recovery of the affected salmonid stocks.

The Commission recommended that the Service develop a quantitative standard for making this determination and suggested possible alternatives for the Service to consider. Those alternatives are discussed in section 2.1.3 of the draft EA, but the Service declined to adopt any of them. The Service also declined to propose any alternative measure of significance and seems to be basing its determination solely on the factors proposed by the task force. Many of those factors are not relevant to determining whether pinnipeds are having a significant negative impact on salmonids at Bonneville Dam (e.g., whether California sea lions are at OSP, whether the proposed removal levels will have adverse impacts on sea lion populations). If the Service decides to base its finding on those criteria, it should explain which factors are relevant and how they are being used to support the agency's decision. At present, we still have no quantitative guidance for determining what constitutes significance. We believe the lack of such guidance undermines the Service's ability to make and support sufficiently the findings required under section 120 of the MMPA. For that reason, the Marine Mammal Commission again recommends that the Service develop and include in its decision documents a clearly articulated quantitative standard to support any finding that pinnipeds are having a significant negative impact on salmonid stocks.

With respect to our suggestion that the Service look to the results of past section 7 consultations as a possible measure of significance, the Commission recognizes that the jeopardy standard and the significant negative impact standard are not identical. Nevertheless, there are parallels between the two provisions that make such a comparison relevant. Both standards relate directly to impacts on the survival and recovery of listed species. Both require the Service to make an assessment in the context of other activities and factors (e.g., by including the environmental baseline as part of its analyses). The jeopardy standard under section 7 (to reduce appreciably the likelihood of the survival and recovery of a listed species by reducing its reproduction, numbers, or distribution) appears to us to be similar in that it seeks to identify what would constitute a significant negative impact on the decline or recovery of a salmonid fishery stock under section 120 of the MMPA. As such, we urge the Service to provide a more detailed explanation of significance than is currently provided in the draft.

The Commission also does not agree with the Service's response to our recommendation that it consider delay in recovery time as a possible measure of significance. That response suggests that, if this standard were applied to the host of factors affecting salmonid survival and recovery in the Columbia River, it would allow an unsustainable number of salmonids to be removed. Such an allowance likely would violate the jeopardy standard under section 7 of the Endangered Species Act. The fact that the Service continues to issue no-jeopardy biological opinions for a variety of actions in the Columbia River would argue that the cumulative impact on recovery has not yet reached the jeopardy threshold. We continue to believe that delay in recovery time is an appropriate measure of whether the impact of pinnipeds on listed salmonid stocks is significant, and we suggest that the Service not reject it out of hand. It provides a quantitative measure of predation impact (or impact from other factors) and generally can be estimated using model predictions. That is, it would establish a feasible, quantitative measure of effect that provides useful information to decision-makers. If the Service believes that the 10 percent delay in recovery time proposed by the Commission is not an appropriate measure, then it might consider adopting some other percentage rather than dismissing the idea entirely.

We note that the Service's preferred alternative would suspend lethal removal authority if the observed predation rate of salmonids at Bonneville Dam drops to 1 percent over a three-year period. This suggests that the Service believes that predation at this rate would no longer be considered significant. This is a good step toward quantifying significance. However, a justification should be provided for establishing this level of predation as such a threshold.

Under the preferred alternative 3, the Service proposes a three-part standard for identifying which individual sea lions are significant contributors to salmonid predation and thus would be targeted for removal. To some extent, these criteria track recommendations made by the task force. Here, too, we believe clear standards need to be described and supported by a well-reasoned rationale. Doing so will provide benefits in the Bonneville case and in future cases where similar concerns are at stake. The purpose of an EA is to clarify the issues for decision-makers, and the rationale for proposed alternatives is an essential part of that clarification. With respect to the proposed criteria under alternative 4, we still do not believe that a sufficient rationale has been provided for allowing lethal removal of any pinniped observed above navigation marker 85. Without such a rationale, we do not believe authorizing such removals is consistent with the statutory requirements set forth in section 120.

Some aspects of the criteria proposed under alternative 3 are new and should be clarified. This alternative refers to pinnipeds having been observed eating salmonids (in the plural form) in the observation area. It would be helpful for the Service to clarify whether this means that each sea lion must have been observed eating more than one salmonid before it would be subject to removal. If not, the Service should explain why it believes that a single observation is sufficient to indicate that an individual sea lion is contributing significantly to the predation problem. Under the third proposed criterion, any pinniped sighted in the observation area after it has been subjected to active non-lethal deterrence would be considered predatory and would be subject to removal. Although such information suggests the persistence of a particular individual animal, it does not directly indicate that such animal is contributing significantly to salmonid predation. For that reason, it

would be useful for the Service to provide data pertinent to the question of whether California sea lions that do not vacate the area following non-lethal deterrence efforts are more likely to be preying on salmonids than are other individuals.

Importantly, the draft EA did not respond to the Commission's recommendation that, to the extent practicable, any lethal removal program begin by targeting individual pinnipeds identified as the largest contributors to the predation problem. The Commission continues to believe that such a phased implementation is appropriate and is more likely to provide information needed to assess the effect of removals on salmonid stocks. As has been noted in supporting documentation, some individual pinnipeds consume many salmon, whereas others have not been observed feeding on salmon or have been seen eating only one or two. Although the proposed removal methods may limit the ability of officials to select specific animals, focusing on those individuals that consume the most salmon could provide a larger benefit with fewer removals, which we believe is the most efficient approach to the problem.

One aspect of the situation that the draft EA does not discuss is the possibility that animals removed under the authority of section 120 would provide a source of information concerning predation rates and patterns of sea lions at Bonneville Dam. The examination of the stomach contents of lethally removed animals or those captured for possible maintenance in captivity provides the best snapshot of what the animals have been consuming, and the information might also be used to assess how accurate observations are at estimating what is being eaten. To that end, we believe the Service should consider ways in which pinniped carcasses and captured animals might best be used to provide better information on predation levels and patterns and incorporate appropriate requirements in any authorization it issues to facilitate collection of such information. Such information provides feedback to managers and a basis for improving management of these difficult situations.

Another issue warranting further consideration in the draft EA is how the effectiveness of any authorized lethal removal program will be evaluated. Such an evaluation is required under section 120(c)(5) of the MMPA. At present, the draft EA notes only that a five-year review will be conducted. It does not provide criteria for such a review and the proposed alternatives do not seem designed to collect the types of information that might be useful in conducting the review. This is an area that warrants additional thought and explanation in the EA. For example, some members of the task force indicated their belief that a lethal removal program should not be considered successful, and should not be continued, if it did not result in a significant reduction in the consumption of listed salmonids (e.g., if the animals removed were simply replaced by other "predatory" sea lions). Although this issue is touched on in the draft EA (e.g., page 4-7), a more explicit discussion of this possibility and its implications would be useful.

#### Specific Comments

Table 1.1-1: This table provides information on the "current Endangered Species Act listing status" of various salmonid populations in the Columbia River. The listing dates in the table do not correspond to the dates provided in the discussion in section 3.5 of the draft EA. These apparent discrepancies should either be reconciled or explained.

Table 1.1-3: It seems that these counts have the potential to overestimate the number of sea lions present, inasmuch as the P category animals (those identified with a high level of confidence within years but not between years) could be counted more than once if they are present in multiple years. This possibility should be acknowledged in the draft EA.

Table 1.1-4: The discussion accompanying this table states that the number of salmonids taken by California sea lions at the Bonneville Dam tailrace “increased consistently” from 2002 to 2007. Although the trend increased generally, the increases have not been consistent over all of the years. For example, the take of salmonids observed in 2005 and 2006 was less than that observed in 2004. This should be clarified here and elsewhere in the draft EA.

Page 1-5, first full paragraph: The same is true with regard to the number of California sea lions observed at Bonneville Dam. That number has increased during the years 2002 to 2007, but the increase has not been consistent and, in fact, seemed to have peaked in 2003 and declined since (see Table 3.4-2).

Pages 2-8 through 2-10: Under the discussion of cracker shells and other noise-generating harassment devices, the draft EA references various thresholds that have been established by the Service for determining when disturbance of marine mammals is considered likely to occur. However, the Commission is not aware that these thresholds have been formally adopted by the Service. As such, it would be useful if references to the establishment of these thresholds were provided. Also, the drafters of the EA should check to see if these values are used consistently by the Service when assessing impacts to marine mammals in various settings. This comment also is applicable to similar statements made elsewhere in the draft EA (e.g., in section 4.4.2).

Page 2-13, section 2.2.3(3)(d): The discussion of temporary or permanent holding under alternative 2 identifies temporary (e.g., seasonal) maintenance of sea lions in captivity as an available non-lethal alternative. This possibility is not carried through in the discussion of alternative 3, which considers only permanent placement in a pre-approved research, zoo, or aquarium. We see no reason why temporary placement in captivity could not be considered under alternative 3, including possible placement in facilities used for rescuing and rehabilitating stranded marine mammals. Such facilities may not meet all standards applicable to public display facilities under the Animal Welfare Act, but they may be suitable for caring for animals on a short-term basis.

Page 2-13, section 2.2.3(3)(k): This section pertains to removal of animals in other areas, and the Commission finds it confusing. Presumably this section refers only to sea lions hauled out in areas outside of the boat-restricted zone but above navigation marker 85, but this should be clarified. If removal of “predatory sea lions” is being contemplated in other areas, additional description and justification should be provided. Unless removals would be allowed in areas beyond the Columbia River, the exclusion for rookeries should be deleted because no California sea lion rookeries occur in that area.

Page 2-14, section 2.2.3(5): This provision of the preferred alternative would require the applicants to report any permanent removals within 30 days “so that NMFS can fulfill its management requirements under the MMPA.” These management requirements are not explained and are not

clear. Further, it is not clear why a 30-day delay in filing reports of removals is appropriate for meeting those requirements. The need for such a delay should be explained. We believe that keeping close track of removals is an essential part of managing this situation to ensure that animals are not taken needlessly. In addition, the killing of sea lions is an issue of considerable public interest and closer to real-time reporting and dissemination of information should be required. We do not believe that a shorter time frame will impede the states' ability to carry out their other responsibilities under section 120.

Page 2-14, first full paragraph: In assessing the likely impacts of alternative 3, the Service has based its analysis of effects on an estimated take of 30 animals, when it is proposing to authorize the removal of up to 85 animals (1 percent of the potential biological removal level). We do not agree that this is appropriate, as the impact analysis may underestimate the possible impacts. The Service should revise its analysis to cover the worst-case scenario or reduce the number of lethal takes the authorization would allow to correspond to what is being analyzed.

Table 3.4-2: This table provides selected data on the presence and abundance of pinnipeds at the Bonneville Dam tailrace for the past several years. Although the information presented suggests a worsening situation—in general, sea lions are arriving earlier, leaving later, and staying longer, and the peak number of sea lions present on a given day is growing—several key pieces of information necessary to inform decision-makers about the trends in pinniped presence and abundance at the dam are missing. The extremes of individual behavior are reported, but we believe trends based on means and variations would likely be more informative. We therefore encourage the Service to expand its analysis to include information on yearly variations in the total number of pinniped-days spent in the vicinity of the dam and/or information on the average number of days that pinnipeds were observed at the dam. Also, data from 2007 should be included.

The text that accompanies Table 3.4-2 notes that the number of pinnipeds present at the dam likely is greater than the number observed. The Commission concurs with this assessment and the rationale provided. The draft EA then goes on to quantify the extent by which the number of pinnipeds is underestimated by observers. The Service states that, for purposes of its analyses, it will assume that there are as many as 40 percent more pinnipeds than observed. However, no analysis is provided to justify the selection of this value, and such justification is needed. In addition, the Commission believes that, among other things, the analysis should recognize that pinnipeds are more likely to go unobserved if they are present in the vicinity of the dam for a relatively short period of time (i.e., there would be fewer opportunities to observe them). It also seems reasonable to assume that sea lions that are present at the dam for brief periods are less likely to consume significant numbers of salmonids than those that are observed over several days.

Page 3-10: The third sentence in the second paragraph under section 3.4.3 is not clear. Presumably the point is that, although non-lethal methods can successfully deter sea lions from feeding on salmonids at certain locations and for limited periods, it does not appear to have an overall or net effect on the number of salmonids being eaten because the sea lions simply shift their predation activities to other areas and/or times. This should be clarified.

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The second paragraph under section 3.4.2.2 provides data on the number of pinnipeds observed at Bonneville Dam since 2002, concluding that “the number of observed individuals in 2007 is more than double 2002 observations.” The information presented is helpful, but additional context should be provided. In particular, information on sighting effort and any changes to the conditions under which observations were made would be informative. A doubling of the number of sea lions observed at the dam between 2002 and 2007 could represent a significant increase in the presence of animals or, at least to some extent, could be an artifact of how the data were collected.

Page 3-11: The first paragraph under section 3.4.3.1 concludes with the statement that up to 300 seals and sea lions are known to feed in these upriver areas during the spring. Additional information should be provided to explain the basis for this estimate and to delineate which parts of the river are considered “upriver areas.”

Page 3-13, first full paragraph: As with our comment concerning the discussion on page 3-10, additional information on observer effort in different years is needed to provide a better context for assessing the inter-annual trends in observed predation rates.

Page 3-13, second full paragraph: This paragraph provides estimates of total salmonid consumption at Bonneville Dam. Although we believe that it is useful for the draft EA to present a worst-case scenario, further discussion of the upper estimate of 48,000 salmonids eaten per year is needed. For example, based on observations made over the past several years, is it reasonable to assume that as many as 150 pinnipeds will remain in the vicinity of the dam for as many as 32 days each season? If so, how likely is it that all of those individuals will successfully capture as many as 10 salmon per day during their time of residency? In this regard, this estimate seems to assume that sea lions anywhere in the action area (i.e., above navigation marker 85) are eating salmonids at the same rate observed immediately below the dam. This most likely is not the case, as salmonids downstream probably are less susceptible to predation and sea lions in those areas are less likely to be the most successful foragers.

Based on the available information, the upper bounds of these estimates seem to rely on overly pessimistic assumptions that do not comport with actual observation rates or residency times. This being the case, the Commission believes that it would be useful to reexamine this issue and look at it from other perspectives as well (e.g., what impact would we expect to see on salmonid stocks if the predation rate were in fact as high as 48,000 spawning fish per year and are impacts of that magnitude being detected?). Also, as indicated in our general comments, if pinniped removals are authorized under section 120, the Service should use that opportunity to examine stomach contents to obtain better information on predation rates.

Page 3-15: The first paragraph under section 3.4.3.3 summarizes various authorities for lethal taking under the MMPA. The second sentence should be revised to indicate that intentional lethal taking of pinnipeds to protect fishing gear and catch was authorized under a statutory exemption only between the effective dates of the 1988 and 1994 amendments to the MMPA. Prior to 1988, any such taking was authorized by regulations promulgated by the Service to carry out section 101(a)(2), not by a statutory exemption. The Commission also believes that the third sentence should be revised to clarify that, although section 109(h) of the MMPA authorizes federal, state, and local

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officials to take marine mammals by lethal means under certain circumstances, none of those circumstances exist in the case of pinniped predation of salmonids in the Columbia River. The final sentence of this paragraph discusses the current situation at Ballard Locks. It would be useful if this discussion were expanded to indicate the frequency with which sea lions are observed in the area below the locks where predation formerly occurred.

Page 4-4: The third paragraph on this page includes several figures concerning the number of California sea lions observed at Bonneville Dam in various years. In comparing the numbers used in this paragraph and those provided in Table 3.4-2, it appears that this text draws on the total number of pinnipeds observed, rather than the number of California sea lions. These figures should be checked and corrections made as appropriate. (We also checked these figures against those set forth in Table 1.1-3 and noted additional discrepancies among the three sources, which presumably should agree.)

In the same paragraph, the Service suggests that the occurrence of sea lions is likely correlated to inter-annual variations in salmonid run sizes. However, the evidence for a simple correlation between the two variables is sketchy, at best. For example, the number of identifiable California sea lions observed in 2006 was about 10 percent less than in 2005, although the salmonid run size was more than 20 percent greater. Also, we question the basis for the view that run sizes of about 80,000 salmonids would translate into limited feeding opportunities that might cause such large fluctuations in pinniped abundance at the dam.

Pages 4-5 and 4-6, carryover paragraph: The Service discounts the potential for seal bombs to cause hearing loss or other types of injuries in pinnipeds. Among other things, the draft EA notes that there have been no observed injuries over the past three years despite having detonated more than 8,700 seal bombs. Nevertheless, the Commission believes that the potential for physical injury, including hearing loss, exists and needs to be recognized. Inasmuch as sea lions generally are very good at foraging even when their hearing or vision has been impaired, it may be that sublethal, but harmful, effects can occur without there being readily observable injuries or obvious changes in an animal's behavior.

Page 4-9, first paragraph: The first sentence of this paragraph notes that it may be difficult to distinguish between California and Steller sea lions in the water and that under alternative 4 it is possible that some Steller sea lions could mistakenly be shot. Any such taking would be inconsistent with section 120(e), which specifies that intentional lethal taking of pinnipeds listed under the Endangered Species Act is not authorized. If there is a possibility that Steller sea lions might be taken by mistake, approved lethal taking methods should be limited to those that provide greater assurance that pinniped species are identified correctly.

Page 4-11, first paragraph: The first sentence is unclear and should be revised. As written, it states that the removal of experienced sea lions would make it less likely that they would learn to forage successfully. Rather, removal of these animals will make it such that they do not forage at all. Presumably what is meant is that removal of experienced animals will reduce the likelihood that other sea lions will pattern their behavior on the removed animals and establish themselves in the area below Bonneville Dam. Also, this paragraph should note that there is reason to believe that



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non-lethal deterrence techniques are likely to be more effective against naïve animals than for sea lions that have already become established predators on salmonids at the dam. This being the case, it is important for non-lethal deterrence to continue, as would be the case under alternative 3, to help minimize the possibility that new animals will simply move into the action area to replace predatory sea lions that are removed.

Please contact me if you have any questions concerning our comments.

Sincerely,



Timothy J. Ragen, Ph.D.  
Executive Director