

Comments on Idaho, Oregon, and Washington States' August 18, 2011, MMPA Section 120 Application for the Lethal Removal of California Sea Lions at Bonneville Dam

March 1, 2012

The National Marine Fisheries Service (NOAA Fisheries) published the States' Section 120 application in the Federal Register on September 12, 2011 and accepted comments from the public for 30 days. *See* 76 Fed. Reg. 56167. We received more than 800 comments (as well as several thousand more included in one comment), most of which were form letters opposing the permanent removal of California sea lions at Bonneville Dam. We did not provide specific responses to these types of comments as the issues raised were similar, if not identical, to the views we considered during our 2008 Section 120 process. However, we also received two substantive comment letters (Humane Society United States (HSUS) and Marine Mammal Commission (Commission)), for which we provide a summary of the main issues presented and our responses to each. All of the comments received on the application were considered as part of the MMPA decision making process.

Comment 1: HSUS claims, based on NMFS' 2011 draft Stock Assessment Report (SAR), that the agency intends to increase the Potential Biological Removal (PBR) level to 9,200 for California sea lions (CSL) and therefore, the States could be authorized to remove up to 92 animals per year (up from the current maximum of 85 CSLs per year based on the 2007 SAR). HSUS contends that any increase in the number of CSLs authorized to be removed under a new Letter of Authorization (LOA) would need to be examined in the context of a supplemental Environmental Assessment (EA) or an Environmental Impact Statement.

Response: We are aware of the new information on California sea lion abundance and the related adjustments to the PBR level for the population. We considered the new information in our 2012 Supplemental Information Report and concluded there is no need to supplement our 2008 EA because the new information is not "significant" in that it will not result in any impacts that are uncertain or different from those we described in the 2008 Environmental Assessment.

Comment 2: HSUS questions whether the analysis undertaken in 2008 pertaining to the projected lethal take of 30 CSLs per year remains unchanged. They contend that if NMFS decides to increase the number of CSL removals above the 30 animals analyzed in the 2008 EA, the agency would need to prepare a supplemental NEPA analysis of the effects of taking the higher number of CSLs.

Response: The current proposed action is identical to the 2008 proposed action in terms of authorizing California sea lion removals up to 1% of PBR annually. As stated in Section 4.4.3 of the 2008 EA, and as re-examined in Section V.A.1. of the 2012 Supplemental Information Report, removing up to 1% of PBR will have no effect on the range-wide abundance, distribution, and productivity of the California sea lion population. (The 2008 EA analyzed the impact of removing twice that amount, or 2% of PBR, as part of Alternative 4, and concluded it would have no effect on the population because the number of animals removed would be extremely small when compared to current PBR.) We estimated in 2008 that the States would likely kill far fewer California sea lions than the authorized limit because of the limitations on which animals could be killed and where they could be killed. We estimated a more realistic annual removal rate of 30 California sea lions per year, based on trapping experience in prior years. Under the 2008 LOA, the States intentionally removed 7, 15 and 14 California sea lions in 2008, 2009, and 2010, respectively, confirming that there are practical limitations on the number of animals that can be removed annually. (In 2008, four California sea lions were also accidentally killed on the traps, thus the total number of animals removed in 2008 was 11.) Given the experience to date and the encouragement from the Task Force to expedite removals, we estimate that 30 CSLs per year is still a reasonable expectation of the number of animals that are likely to be removed each year. The 30 CSL estimate is substantially lower than the total number of CSLs that are authorized for removal and for which the analyses conclude there would be no population effect.

Comment 3: HSUS asserts that lethal removal has not affected sea lion presence at the dam, citing the Corps of Engineers' reports to support its assertion. With respect to the presence of individually identifiable animals, HSUS asserts that there were far fewer CSLs present daily on average in 2011 than any year since 2004 and the maximum number seen on any one day in 2011 was the same in 2009 and less than any year since 2002. They claim that, in spite of the fact that there were virtually no removals in 2011, the Corps saw the fewest average number of California sea lions per day since 2002 (implying that the reduction in sea lion numbers in 2011 was not the result of removals).

Response: The Corps data report that the average number of California sea lions per day at the dam increased from 2.3 animals per day in 2002 to 14.3 in 2006. In 2007 the average dipped to 12.5 then bounced back to 14.1 in 2008. After the initiation of the removal program in 2008 the average number of California sea lions per day declined to 10.0 in 2009, 8.9 in 2010, and 5.5 in 2011. Lacking scientific controls these data are insufficient to confirm a causal relationship between removals and fluctuation in sea lion numbers, however, the data appear to contradict the commenter's assertion. Wright (ODFW) and Stansell (Corps) analyzed the Corps data in response to questions from the Pinniped –Fishery Interaction Task Force and found that the average daily counts of California sea lions appeared significantly lower statistically in 2009,

2010, and 2011 following the initiation of lethal removal than the preceding three years 2006 – 2008.

Comment 4: HSUS notes that CSLs do not stay as long as they did previously, implying that non-lethal hazing is effective at deterring newer animals. Finally, HSUS maintains that the new information gathered since 2008 concerning CSLs supports their view that new animals continually arrive at the Dam and the number of fish eaten has not declined in association with permanent removals.

Response: The 2008 EA cited information showing that new CSLs are identified at the dam each year and that some of these animals return to forage on salmonids in subsequent years. The EA noted that the number of CSLs could be reduced at the dam by removals but that some level of recruitment of new individuals would be expected. The Corps data reports that percentage of California sea lions returning each year increased from 19.2% in 2003 to a peak of 77.1% of California sea lions observed in 2005. Returning California sea lions comprised 62.3%, 65.6%, 66.2%, and 69.8% of the California sea lions present in 2006, 2007, 2008, and 2009 respectively. In 2010 there was a large influx of juvenile male California sea lions along the Oregon Coast and the number of returning California sea lions accounted for 34.6% of the California sea lions observed at the dam that year. In 2011, returning California sea lions climbed back up to 64.6% of the California sea lions seen.

Non-lethal hazing was first tested targeting sea lions at the dam in 2005 and more consistent use of shore based and on-water hazing began in 2006. The Corps data report that the average number of days that individually identified California sea lions were present at the dam increased from 5.3 days in 2002 to a peak of 19.9 days in 2006. In 2007 through 2009 the average stayed above 19 days (19.7 in 2007, 19.2 in 2008, 19.1 in 2009). There does not appear to be a direct correlation between the advent of hazing and the number of returning versus new individuals seen each year or the average number of days that individual sea lions spend at the dam. For the first four years of hazing, 2006 – 2009, new individuals seen at the dam each year remained relatively constant at below 40% of the California sea lions seen and the average number of days that individuals were present hovered between 19 and 20 days.

After the removal of 23 identified California sea lions in 2008 and 2009, the average number of days that identified California sea lions were present dropped to 9.3 days in 2010. In 2010, 14 more identified sea lions were removed and the following year the average attendance by individual sea lions again dropped down to 7.3 days. As was the case for changes in abundance (see response to #3 above), the lack of scientific controls means these data are insufficient to confirm a causal relationship between removals and changes in the average attendance by

individual sea lions but it is possible that some of the most persistent individuals at the dam were removed thereby lessening their contribution to the attendance average.

In 2011 the number of salmonids consumed by CSLs was lower than the previous year for the first time since 2005. However, a causal relationship between the removals and the decrease in predation cannot be definitively shown. It is also possible, as HSUS asserts, that non-lethal deterrence may discourage some new arrivals from becoming established. The management concept relied on by the States in making their request for authority to kill CSLs is that if experienced animals are removed, non-lethal deterrence may be successful at discouraging some new animals from becoming established, thereby reducing the numbers of experienced predators and therefore the rate of salmonid consumption. This may be the explanation for the reduced salmonid consumption reported for 2011, although the data are not sufficient to reach a firm conclusion (Stansell et al. 2011).

Comment 5: HSUS notes that the number of Stellar sea lions (SSL) has increased “eight-fold” since NMFS completed its EA in 2008 and that the agency can no longer conclude that there are “only a few” SSLs at Bonneville Dam; thus, NMFS must analyze the effects of the proposed action in light of the increase in SSLs.

Response: Prior to 2009 the Corps used the maximum daily count of Steller sea lions as the minimum estimate of abundance for this species at the dam. The maximum daily count provides a measure of abundance at one point in time but is ill suited for estimating total number of animals visiting the dam over the course of a season because not all animals are likely to be present for any one count. In 2009, the Corps conducted a retrospective analysis of data from 2008, using physical characteristics to identify individual SSLs. The methodology, similar to that used for identifying CSLs, resulted in a revised estimate of minimum number of SSLs at the dam upward from 17 to 39 individuals present in 2008. The new estimate revealed that SSLs accounted for 32% of the total pinnipeds present that season and provided a more accurate estimate of SSL abundance at the dam (Stansell et al 2010). The new methodology was applied to observations in 2009 -2011 and established that the number of SSLs was increasing, with 26 in 2009, 75 in 2010, and 89 in 2011.

The methodology affords an opportunity to attribute observed predation events to specific animals, but does not change estimates of mean daily abundance or daily maximum abundance, which rely on periodic tallies of observed numbers by species. The expanded salmonid consumption estimate is also not affected by the change in methodology for estimating the minimum annual SSL abundance.

The information on increased SSL presence between 2008 and 2011 is new information, but it does not rise to the level of being “significant” new information relevant to environmental concerns and bearing on the proposed action. The current proposed action is identical to the 2008 proposed action with respect to SSLs, which is to engage in non-lethal hazing activity (which the States could do with or without MMPA Section 120 authorization). The intensity of the effect would be the same or less than that considered in the 2008 EA. In the 2008 EA we predicted that non-lethal hazing would displace some SSLs because experience at that time suggested SSLs are intolerant of hazing. In the 2008 EA we concluded that displacement of a small number of SSLs under the proposed action would not affect the range-wide abundance, distribution, or productivity of the population because the numbers of SSLs affected was small compared to the total population and alternative foraging areas were available.

The growth in the numbers of SSLs since non-lethal hazing began indicates that SSLs are more tolerant of non-lethal hazing than anticipated in the 2008 EA, thus the intensity of effect of the current proposed action may actually be less than was anticipated in 2008. We now have information to suggest that SSLs return to the area both within and between seasons, indicating that displacement is temporary. In addition, the greater number of SSLs at the dam remains small compared to the total population (which has also grown since 2008 from 47,885 to between 58,334 and 72,223).

Comment 6: HSUS asserts that NMFS must, in light of the increased number of SSLs, reconsider the impact of trapping and lethal removal of CSLs. HSUS contends that SSLs will be at greater risk of harm, particularly when SSLs are in proximity to CSLs if shooting is to be conducted from significant distance in the turbid water where visibility is compromised. HSUS states that this greater risk of accidental death of SSLs was not considered in the 2008 EA and must be considered if the agency authorizes lethal removal of CSLs.

Response: As we explained in section 4.4.3 of the 2008 EA, there continues to be minimal risk of accidentally shooting a sea lion other than the one identified on the list of predatory sea lions. The conditions for shooting animals, including their location relative to the dam, the fact that a marksman would only be authorized to shoot animals from shore, and the requirement to observe animals for as long as necessary to positively identify the target animal, support this finding. Also, there are obvious physical differences between CSLs and SSLs and trained biologists would be employed to observe and target the correct animal, thereby minimizing the risk of shooting SSLs. In addition, since no shooting occurred between 2008 and 2011 and the States have indicated they are very unlikely to shoot free-ranging sea lions, there is an even lower risk to SSLs from firearm use than that anticipated in the 2008 EA

HSUS also contends that SSLs may be at greater risk from trapping operations. There is always some degree of risk to target and non-target species whenever a lethal removal program is authorized. However, we have considered the risk of accidental SSL injury or death from trapping operations and continue to believe it is minimal. The states have implemented new trapping protocols to correct the problems that may have contributed to the accidental mortality in 2008 and to date there have been no instances of injury or death from trapping operations. The data reveal that only a few Steller sea lions were caught in the traps during 2008-2011 – 4, 1, 9, and 10, respectively (two of the four in 2008 died accidentally) and we assume that this trend is likely to continue in the future. In the unlikely event there is another instance of an injury or accidental death of SSLs from trapping operations, we expect it would only involve a very few individuals and there would be no effect on the range-wide abundance, distribution, and productivity of the population.

Comment 7: HSUS maintains that since completion of the 2008 EA, run sizes of salmon in the Columbia River have been increasing and this indicates that runs are stable or increasing and not on the verge of collapse.

Response: The salmonid run size declined from 2002-2006, fluctuated slightly from 2006-2008, increased steadily from 2008-2010, then declined slightly in 2011. Salmonid runs fluctuate over time, sometimes dramatically, in response to a host of environmental conditions. Some of these conditions themselves fluctuate over decades. The increase in run size since 2008 is a welcome development but the timeframe is far too short to support a conclusion that long-term trends are improving. During the recent status review for Columbia River salmon, the status review teams noted several items from the last review that are relevant to Columbia River salmonids including (1) high uncertainty regarding changes in habitat; (2) no change relative to harvest levels or hatchery practices; (3) degraded conditions due to climate change; (4) no substantive change in impacts by avian and non-native predators; (5) concern regarding increased pinniped populations along the entire West Coast; and (6) continued uncertainty regarding the overall impact of pinniped predation in the lower Columbia River and estuary. Review teams noted that recovery is likely to take several decades, abundance levels are likely to fluctuate with changing environmental conditions, and much of the recent increase in abundance can be attributed to good ocean conditions. The underlying threats remain a concern for long-term recovery.

Information on the status and trends of ESA listed salmonids in the Columbia River are encouraging, because they indicate modest increases or stability rather than decline, but the current status of the stocks that are potentially impacted by pinniped predation remain listed and vulnerable as was the case during the previous listing determinations. Salmonid runs increase and decrease based on numerous natural and manmade conditions. The overall abundance is in

the range of what was analyzed in the 2008 EA. For example, the average run size from 2002-2004 was over 228,000 while the average run size from 2008-2011 was over 225,000.

Comment 8: HSUS contends that NMFS misled the public when it stated that impacts from predation may be underestimated because the estimates only apply to daylight predation within a ¼ mile stretch of the Dam and that many fish are also injured by predation attempts which could contribute to delayed mortality. HSUS points to the Corps' reports to demonstrate that nighttime predation is considered and that a recent peer-reviewed publication (Naughton, et al., 2011) casts doubt on the assumption that there is significant delayed mortality from predation events.

Response: We have used the “*expanded salmonid consumption estimate*”, developed by the Corps, for reporting salmonid consumption by pinnipeds because the expanded estimate methodology has remained consistent over time allowing comparisons across all of the years for which data are available (2002-2011). The *expanded salmonid consumption estimate* represents the number of salmonids observed taken at the surface during hours of daylight, expanded to daylight periods when observers were not present (meals, breaks, etc.) and are minimum estimates.

The Corps also reports the “*adjusted salmonid consumption estimate*” which incorporates estimates of predation during hours of darkness and apports takes of unidentified fish according to the observed proportions of identified prey taken by pinnipeds. The *adjusted consumption estimate* is useful for emphasizing that *expanded consumption estimates* are indeed minimum estimates and also supports further our conclusion that pinnipeds are having a significant negative impact on salmonids; however, *adjusted consumption estimates* are not available for years prior to 2006 and therefore are of limited use for purposes of comparing current conditions to conditions when systematic observations began.

A recent tagging study on the influence of pinniped caused injuries on survival of Columbia Basin salmonids (Naughton et al. 2011) concluded that injuries from pinnipeds occurred on a high proportion of Columbia River salmonids but did not consistently influence survival of Chinook or steelhead to spawning areas. Spring Chinook and steelhead showed more negative survival effects from pinniped injuries than summer or fall Chinook with all years of the study combined. Fish without injuries survived at higher rates in 80% of bi-weekly sampling periods for spring Chinook and 90% of sampling periods for steelhead. The differences were small, however, and rose to the level of statistical significance in only one year of the eight year study for spring Chinook and two years of the study for steelhead. The study confirms our conclusion that salmonids injured by pinnipeds may suffer latent mortality, that salmonids migrating past Bonneville Dam when pinnipeds are present are more likely to be impacted, and that in some years the impacts may be statistically significant.

Comment 9: HSUS recommends that new information concerning non-lethal deterrence measures has been developed since 2008 and that NMFS must consider this new information. Specifically, HSUS believes the following measures need to be examined: (1) eliminating convenient haul-out sites to reduce the presence of sea lions; (2) increasing spill rates and/or releasing water earlier at the Dam to allow for higher and faster rates of fish passage; (3) considering recommendations made by the International Marine Animal Trainers Association. HSUS contends that the States have not met their burden to show that they have utilized all reasonable non-lethal deterrence methods without success and thus, NMFS cannot authorize lethal removal.

Response: The International Marine Animal Trainers Association provided three recommendations; 1) maximize expansion of the sea lion exclusion device zone; 2) investigate modifications to the acoustic deterrent devices to allow “command activation”; and 3) support travel by Association personnel to provide training to project staff to maximize the effectiveness of the hazing tools currently in use at Bonneville Dam (IMATA 2009). In addition, in 2010 the Task Force suggested that agencies consider how changing spill patterns at the dam might impact predation by CSLs. They specifically noted that the proportion of predation observed early in the run appeared to fluctuate, with lower predation proportions seen in years when spill at the dam occurred earlier in the year.

Sea lion exclusion devices are physical barriers installed at all of the fish ladder entrances at the beginning of each year and are removed following the seasonal departure of sea lions. Installation of additional sea lion barriers elsewhere at Bonneville is not contemplated at this time because all entrances are currently fitted with exclusion devices when sea lions are present. The construction of additional barriers below the dam is not feasible because of the dynamic hydrologic conditions in the tailrace and the potential for negative effects on flows and fish passage. Additional research and testing would be required to determine potential effects on fish passage and in-water construction if new sea lion exclusion devices were to become available for installation in the river itself.

The Corps conducted a number of observations and tests of the acoustic deterrence systems installed at the dam and determined they did not keep sea lions from approaching the fish ladder entrances regardless of operating strategy. The devices were removed from the dam in 2010. NMFS contacted the States concerning additional training by Association personnel, but there have been no follow-up training sessions because many of the changes suggested by the Association focused on operational strategies using the existing tools analyzed in the 2008 EA, which have already been adopted by hazing crews.

The Corps, with jurisdictional control of operations at Bonneville Dam, responded directly to the Task Force suggestion to consider spill changes to potentially affect early season predation. In short, the Corps reminded the Task Force that the timing of water release is complex and is influenced by factors such as water availability and the timing of outmigrating smolts, which are naturally variable events. They also indicated that early season predation is likely influenced by the timing and availability of migrating adult salmonids that may or may not be influenced by water releases at the dam.

Comment 10: HSUS contends that the lethal removal of at least 40 sea lions has had no effect on predation and that the number of CSLs sighted at the Dam has not decreased as a result of permanent removals. HSUS also takes issue with estimates of salmonids saved based on permanent removals and argues that these estimates do not consider that other sea lions moved in to replace animals that had been permanently removed such that the overall number of fish consumed did not decline as the States and NMFS conclude. Finally, HSUS asserts that the States have not met their burden of explaining what the “expected benefit of the taking” of CSLs would be and that the fact that new animals arrive to replace those who have been removed clearly shows that the program does not work.

Response: Many factors may influence the number of salmonids taken by sea lions each year and it would likely take several years of data before there is enough information to draw firm conclusions about the impact of a removal program on pinniped predation. The data currently available show that the expanded estimate of predation increased each year from 2002 through 2004, dropped a bit in 2005, and then increased steadily through 2010, even in years following the initiation of lethal removal. In 2011, after three years of pinniped removals at the dam, predation dropped from 6,081 in 2010 to 3,557 in 2011 a 41% decrease. This is the largest annual drop in predation since data collection began in 2002.

As reported in the 2008 EA, each year’s cohort of sea lions at Bonneville Dam is comprised of identified animals returning from previous years and a cadre of newly identified animals. The relative representation of newly identified individuals to returning known animals varies from year to year but, for most years, returning individuals outnumber new arrivals (the exception being 2010). By definition all CSLs targeted for removal are individually identified and many are animals that are known to return from year to year. Accordingly, the removal of animals from this pool of returning individuals would likely have a cumulative effect on sea lion presence at the dam. Analysis presented to the Task Force by Wright (ODFW) and Stansell (Corps) in 2011 showed that average daily counts of sea lions at the dam were significantly lower during the 3-year post removal period (2009 through 2011) than the previous 3-year period. We accept the methodology used by the States, and presented to the Task Force by Wright (ODFW) in 2010, for estimating the number of salmonids saved as a result of permanent

removals. We also note that the 2008 EA presented estimates of salmonids saved as a range from 901 to 6,090, based on the anticipated removal of 30 CSLs per year. The estimates by Wright (ODFW) are within the range of that estimate.

Comment 11: HSUS contends that fisheries take far more of the ESA-listed salmonids than CSLs and that the harvest is not well controlled. HSUS states that in-river fisheries have regularly exceeded the maximum rate allowable with no subsequent penalty and that measures to control harvest are ineffective. In addition, mortality from bycatch of some of the same ESUs in ocean fisheries is becoming a problem. Finally, HSUS notes that a blue ribbon panel criticized hatchery management and harvest reform efforts and NMFS needs to take this into account.

Response: The risks to salmonids from uncontrolled pinniped predation are in contrast to the risks from managed human harvest in many respects. While both sources of mortality are measurable, mortality from fisheries has been sharply reduced, while pinniped predation has grown. Fisheries are heavily regulated, while pinniped predation is currently unmanaged and could continue to increase if not addressed. This presents an unmanaged and substantial risk to listed salmonids. In contrast, all fisheries can be terminated immediately when unforeseen circumstances warrant. Fisheries are monitored and enforced, with adjustments made in season as warranted, while pinniped predation is difficult to monitor and requires years of management to achieve results.

Although both sources of mortality have a measurable effect on the numbers of listed adult salmonids contributing to the productivity of the affected ESUs/DPSs, abundance-based harvest has a “compensatory” effect (taking advantage of favorable survival conditions to harvest excess fish, and minimizing harvest removals when run sizes are low) while pinniped predation has a depensatory effect (increasing the risk of populations entering an “extinction vortex” at low run sizes) (Ferguson pers. comm 2011). In addition, the pinniped predation occurs disproportionately on early and late arriving fish. The best available information shows that these fish are from discrete populations, with the result that pinniped predation is having a disproportionate impact on those populations (Ferguson pers. comm 2011).

The Northwest Fisheries Science Center in collaboration with other salmon scientists in the region developed models to better analyze the potential impact of various management actions on the likelihood that salmonid populations will achieve recovery targets. We specifically asked the Center to model the impacts of recent levels of pinniped predation on extinction risk of Snake River spring/summer Chinook, one of the ESUs affected by pinniped predation at Bonneville Dam. However, the results from this modeling are too preliminary and inconclusive to provide reliable estimates on the absolute impact of pinniped predation. Some early model runs do suggest, however, that current levels of pinniped predation and the harvest regime under *U.S. v.*

Oregon may have roughly equivalent effects on extinction risk. This preliminary result needs to be further tested as the models are refined. If these initial results are confirmed, we would take that into consideration in any future NEPA decisions, but it would not undermine the conclusion that pinniped predation is having a significant negative impact on at-risk salmonids, as we interpret that standard under Section 120 of the MMPA.

Spring season in-river fisheries are managed by the states and tribes in coordination with us and the U.S. Fish and Wildlife Service. Early in the season managers rely on the preseason forecast, but set fisheries using a 30% buffer on the forecast to account for uncertainty. In-season updates to the forecast are based on counts at Bonneville Dam. The forecast, allowable impact rates, and fisheries are adjusted continuously to account for the new information as it becomes available. Fisheries are monitored and catches are reported daily and compared to allowable impact limits. Fishing schedules and openings are adjusted weekly or even daily during critical parts of the season to achieve compliance with the management objectives including ESA-related limits. Despite these efforts, actual harvest sometimes deviates from the objectives. In six of the last eight years, exploitation rates have been less than the allowable year-specific limits with an average deviation of 1.3%. In two of the last eight years, exploitation rates have exceeded the allowable limits by an average of 4.3%. The average deviation across all eight years is 0.1%. Managers have adjusted the system to address specific problems as they become apparent. For example, the 30% management buffer was a response to forecast imprecision. In reviewing the fisheries we look for patterns of consistent bias in the post season results. We have been satisfied that *U.S. v. Oregon* fisheries are managed carefully and within allowable limits, and that there is an ongoing effort to learn from evolving circumstances and make adjustments that are necessary and appropriate.

HSUS contends that bycatch of the affected ESUs in ocean fisheries is becoming an increasing problem. We are responsible for ESA consultations on all ocean fisheries that may affect the listed ESUs and are unaware of any evidence to support that contention. Coded wire tags have been used for forty years to monitor the catch of various salmon stocks in ocean fisheries. It is apparent that upriver spring Chinook stocks migrate offshore and are rarely caught in any ocean fishery. More recent technology that depends on genetic analysis confirms this general result. Steelhead are not targeted in ocean fisheries and are likewise rarely taken as bycatch.

Comment 12: HSUS asserts that very little, if anything, has been done to address mortality of listed Columbia River salmonids by hatchery-raised fish, non-native fish that are deliberately stocked by the government, and a variety of birds. HSUS cites to a number of reports and studies to support their contention that efforts to address predation by other wildlife have been ineffective and that more needs to be done to reduce these threats. Finally, HSUS relies on the Section 120 legislative history to argue that the current protections afforded to pinnipeds should

not be lifted “without first giving careful consideration to other reasons for the decline” and that NMFS “must first give actual consideration to these other, far more significant sources of mortality, before authorizing the lethal removal of sea lions.”

Response: In the 2008 EA we acknowledged that ESA-listed salmonids face numerous threats, including predation by other fish. A bounty based removal program is in place for one salmonid predator (pikeminnow). In addition, a number of the non-indigenous fish species that have been introduced to the Columbia Basin are targeted by recreational fisheries. The extent of juvenile/smolt salmonid mortality from non-indigenous fish is unknown at this time.

The Northwest Power Act requires the Bonneville Power Administration (BPA) to mitigate the adverse environmental effects from operating hydropower dams in the Columbia Basin. Over the 3-year period 2007-2009 BPA provided \$385 million dollars in competitive funding to universities, tribal groups and state agencies to conduct research and manage natural resources in the Columbia Basin. The expenditures are heavily weighted toward mitigating the impacts of the hydrosystem, hatcheries, harvest, and habitat (\$358 million). Sanderson et al. (2009) reviewed the projects funded by the BPA and found that \$3 million had been spent to control non-native fish, \$13.5 million had been spent controlling native predators (including pikeminnow) and \$3.5 million was spent on researching the impacts of native and non-native predators during this period. This funding is separate from the Bonneville sea lion observation project funded by the Corps.

In addition to the procedural requirements, Section 120 directs us and the task force to consider four substantive factors when evaluating whether an application should be approved or denied. *See* 16 U.S.C. § 1389(d). These include:

1. population 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 nonlethal 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; and
4. extent to which the pinnipeds are exhibiting behavior that presents an ongoing threat to public safety.

The MMPA does not require consideration of any other factors in issuing an authorization under Section 120. Section 120’s legislative history states “. . . the Committee recognizes a variety of factors may be contributing to the decline of these stocks, and intends that the current levels of

protection afforded to seals and sea lions under the Act should not be lifted without first giving careful consideration to other reasons for the decline, and to all other available alternatives for mitigation” (H. Rep. No. 103-439, at 40). This concern was not included in Section 120 as adopted nor does Section 120 indicate that we must first eliminate or greatly reduce other sources of impact on salmonids before acting under the MMPA. At most, the legislative history indicates we should consider other sources of impacts and consider other available alternatives to mitigate impacts to salmonids, which we did in 2008, and have again here.

Comment 13: HSUS questions NMFS’ decision to no longer rely on the interim goal of reducing predation to 1 percent of the run size. HSUS argues that NMFS’ proposed approach of reviewing the program annually to evaluate its effectiveness in reducing predation is “vague and somewhat subjective” and lacks specific criteria for gauging success.

Response: The use of a 1% predation rate of the adult salmonids tallied by fish counters over 3 years (i.e., 2008 LOA Condition 15) is unnecessary to protect CSLs. Accordingly, we propose to eliminate the 1% predation threshold as a limit on sea lion removals or as a basis for evaluating success of the overall program to reduce sea lion predation on salmonids at Bonneville Dam. We propose instead to assess predation trends over the course of the 5-year LOA and determine, at the conclusion of the LOA, whether the lethal removal authorization should continue. A more detailed explanation of the basis for removing the 1% predation rate is included in the MMPA Section 120 Report.

Comment 14: HSUS expressed concern over the possibility that the lethal removal program may include the option of shooting CSLs and that such activities would likely not be considered “humane” under the MMPA. HSUS implies that any shooting would, per se, be “inhumane” because animals would likely be wounded and not killed. Thus, NMFS should not authorize shooting because it would likely not meet the test for being “humane.”

Response: We disagree that shooting CSLs would not be considered a form of “humane” removal. In the event that any shooting does occur (and at this time it is very unlikely to be conducted by the States), it would be conducted in accordance with the States’ Institutional Animal Care and Use Committee in a manner that ensures the least possible degree of pain and suffering practicable to any CSL taken, e.g., experienced marksman, appropriate weapons, field biologists to identify CSLs, and proximity to animals.

Comment 15: HSUS questions NMFS' interpretation of whether CSLs are having a "significant negative impact" on at-risk salmonids. HSUS argues that NMFS' criteria are not appropriate and the available data do not "appear to comport with even the vague criteria outlined in the Federal Register." Each of HSUS' specific concerns are addressed below.

Response: As a general matter, we have concluded that our interpretation of whether CSLs are having a "significant negative impact" on at-risk salmonids is based on a permissible reading of Section 120 and that our interpretation is reasonable. As we explain in more detail in our Section 120 Report, we identified numerous factors, applied the data to each factor, and reached a conclusion that collectively CSLs at Bonneville dam are having a significant negative impact.

Predation has increased from year to year for the majority of years that data have been collected. The data indicate that from 2002 through 2011 the number of salmonids consumed by sea lions in a given year increased over the previous year except in 2005 and 2011. In spite of the drop in predation in 2011, following three years of sea lion removals, the increasing trend in predation over the past decade is cause for concern and is a contributing factor in our determination that pinniped predation is significant.

Comment 15b: HSUS commented that NMFS's concern that adult mortality is "sufficiently large" to have a measurable effect on the number of adult salmonids contributing to the productivity of the affected ESUs is subjective and unquantifiable. Similarly the Marine Mammal Commission (Commission) suggested that NMFS develop a quantitative standard that relates specific consumption rates (or numbers) to population level impacts on the affected fish stocks.

Response: The preliminary results of models to calculate a quantifiable impact of predation on individual populations of listed salmonids are as yet uncertain. During review of the States' first request for removal authority in 2006 we spent a considerable amount of time discussing with the Task Force whether a quantitative assessment tool was available to inform our MMPA assessment. No such model or tool existed at that time. During this current decision-making process, in response to comments by the Commission and the Ninth Circuit court's decision, we again sought to quantify the impact of pinniped predation at Bonneville Dam on salmonid populations. We asked the Task Force, but no new information was received. We then asked the Northwest Fisheries Science Center (Center) if it would be possible to model the effect by incorporating a constant level of pinniped predation into salmonid life cycle models the Center was developing. The Center produced preliminary results, but we considered the results of absolute impacts too uncertain and inconclusive to provide a reliable basis for our MMPA decision-making process. Until the models have been further reviewed, both within and

outside the agency, and results produced for several populations, they are not useful for establishing a quantitative estimate of pinniped impacts on salmonids.

Replying to our inquiry, the Center (Ferguson pers comm. 2011) described in a memo two distinct concerns about pinniped predation. One is that the predation occurs disproportionately on early and late arriving fish. The best available information shows that these fish are from discrete populations, thus pinniped predation is having a disproportionate impact on those populations. The other is that a constant level of impact has a compensatory effect on salmon populations (i.e., reproduction is less successful as abundance declines), increasing the risk of populations entering an “extinction vortex” at low run sizes. Thus, although the Center could not assist us with reliable quantitative estimates at this time, they did provide information valuable in qualitatively assessing the risk pinniped predation poses to salmonids.

Comment 15c: Predation by sea lions is less than other sources of mortality and lethal impacts resulting in much higher levels of mortality by other sources (competition with hatchery fish, bird predation, and predation by introduced non-native fish) remain unaddressed (i.e., they are not subject to corrective action).

Response: In the early 1990s, we asked a team of scientists to recommend recovery actions for declining salmon and steelhead runs on the Columbia River. In its 1994 recommendations, the team observed that there were many causes for declines of Columbia River salmon and steelhead, that no single factor was responsible, and that no single action would restore the runs. In short, there was “no magic bullet” to restore these runs. Instead, the team recommended that NMFS address the problem at all possible levels. The team also stated that while marine mammals may not have been a major factor in the salmon declines, their effects currently are “potentially significant and represent an important factor in recovery” (Bevan 1994).

The principle of attempting to reduce all sources of mortality has guided NMFS’ salmon recovery program in the Columbia River and elsewhere. Recovery plans are in place for many of these salmon and steelhead populations and, as with the early recommendations of the scientific team, they recommend that all causes of mortality be reduced to recover the runs. Neither the States nor NMFS have treated the reduction of sea lion predation as a solution that by itself will recover depressed salmon and steelhead runs, but rather as one of many actions that taken together can lead to recovery. Tribal, state, and federal agencies have restricted numerous human activities and spent hundreds of millions of dollars to reduce human impacts to Columbia River salmon and steelhead populations. Actions have been taken and are ongoing that address all factors for decline from habitat modification, hydropower development, hatchery impacts, harvest management, predation by birds and non-native fish, chemical contaminants, and

invasive species. Some of these impacts are more and some are less than the impacts from pinniped predation. The point is that all sources have to be addressed and there is no requirement in the Section 120 of the MMPA that requires us to eliminate the other sources of mortality before authorizing lethal removals.

Comment 15d: Lethal taking has not been successful at reducing the numbers of CSLs or the amount of predation. New sea lions appear each year and the overall number of CSLs and the total number of fish estimated to have been consumed did not go down until 2011. Factors other than removals (weather, water temperature, slower fish runs, non-lethal hazing) reduced the number of animals present and the number of fish eaten.

Response: The average daily abundance of CSLs was significantly lower in 2009-2011, following the initiation of lethal removal, than in the preceding three years (see response to Comment 4 above). The data presented by Stansell et al. (2011) show that many CSLs seen at Bonneville Dam do not become eligible for permanent removal during the first year observed. This is, at least partially, because not all predation events that are observed are attributable to a known individual sea lion. In any given year the overall number of CSLs observed at the dam includes individuals that will not become eligible for removal. However, on average more than half of the CSLs present at the dam in any given year are individuals returning from previous years and they are more likely to become eligible for removal as the number of times they return increases. Accordingly, the effect of removing eligible animals is likely cumulative over time (known individuals that would have returned will have been removed). Pinniped predation at Bonneville Dam is not a controlled experiment and presents complex challenges for analysis in light of dynamic variables including weather, water conditions, salmonid run timing, and the changing mix of sea lions. Stansell et al. (2011) hypothesize that the removal of 37 CSLs between 2008 and 2011 likely contributed to the decrease in level of salmonid consumption in 2011, but the data are not sufficiently complete to draw a firm conclusion at this time.

Comment 15e: It is difficult to predict whether predation will increase when run size decreases. When there are fewer fish to eat there may be fewer sea lions coming to eat them.

Response: Available data suggest that the predation *rate* increases when the run size decreases. For example, in 2007, pinnipeds consumed 3,859 salmonids out of a run size of 88,000. This represented over 4% of the run and was the highest *rate* of consumption observed from 2002-2011. In 2011, pinnipeds consumed about the same number of salmonids (3,557) but it represented just 1.6% of the run due to a larger run size. As another example, in their April 1, 2011 weekly report, Robert Stansell, Bjorn ver der Leeuw, and Karrie Gibbons, Fisheries Field

Unit, Corps of Engineers, reported that the observed pinniped predation rate on the early part of the spring Chinook run was as high as 48%.

The circumstances at Bonneville Dam, with adult fish congregating at the entrances to the fish ladders, means that it is much easier for pinnipeds to catch salmonids than would be the case in a free-flowing river. Similar to what was seen at Ballard Locks in Washington, the logistics at Bonneville Dam facilitate an increase in the rate of predation as the salmonid run size decreases.

The expanded estimate of salmonids consumed (observation based) has steadily grown from year to year from 2002 through 2011 except for decreases between 2005 to 2006, and 2010 to 2011. The estimate of salmonids consumed by pinnipeds reached a high in 2010 of 6,081 salmonids. The estimate of salmonids consumed increased from 2006 to 2007 even though the salmonid run size was smaller. Salmonid consumption by pinnipeds increased six-fold from 2002 to 2010. While some of this growth in predation is attributable to SSLs, CSLs account for the majority of salmonids caught. The only year in which the level of predation declined noticeably was 2011. Given that past predation has grown steadily except in 2011, there is no evidence to suggest that pinniped predation levels have reached a maximum possible level. We therefore expect that predation levels could continue to increase if not addressed.

Comment 15f: Whether or not SSLs are eating salmonids and adding to the consumption by CSLs does not provide a rationale for considering that the impact of predation by CSLs is significant.

Response: In our 2008 decision documents, we explained the two-part interpretation we adopted for applying this standard, as recommended by the Marine Mammal Commission. The first part is to determine whether pinnipeds collectively are having a significant negative impact on listed salmonids and the second part is to determine which pinnipeds are significant contributors to the impact and therefore may be authorized for removal. Our two-part interpretation was upheld by the Ninth Circuit in *HSUS v. Locke*. We apply this interpretation to the current facts.

Contributions by SSLs to the overall consumption of salmonids by pinnipeds at the dam are included in the Corps' expanded salmonid consumption estimate. We have used the expanded salmonid consumption estimate for the first test to determine whether pinnipeds collectively are having a significant negative impact on listed salmonids. Over the past several years the presence of SSLs has increased and the number of salmonids consumed by SSLs has also increased. This has not lessened the impact of pinnipeds collectively on listed salmonids. NMFS does not include consumption of salmonids by individually identified SSLs in our second prong of the interpretation to determine which pinnipeds are significant contributors to the impact because SSLs are listed under the ESA and Section 120 of the MMPA does not allow

removal of listed species. The States have not included SSLs in their request for lethal removal authorization for this reason.

Comment 15g: Numbers of CSLs fluctuate independently of lethal removal and can be expected to continue to fluctuate rather than to necessarily grow.

Response: The minimum number of CSLs present at Bonneville Dam varies from year to year with approximately two thirds of the animals present being returnees from previous years. The number of animals eligible for removal increased from year to year as individual animals were observed returning to forage successfully on salmonids over time after being exposed to non-lethal hazing (i.e., as they met the criteria as contributors to the predation conflict).

Comment 16: HSUS states NMFS' criteria for adding individual sea lions to the list for lethal removal is inappropriate. HSUS contends the criteria ultimately permit the removal of sea lions that are observed eating only one salmonid and that this is not what Congress intended when it allowed for the limited exception to the MMPA's broad prohibition on the take of marine mammals in Section 120.

Response: In considering a state's request to lethally remove pinnipeds, we are required, pursuant to Section 120(b)(1), to make a determination whether individually identifiable pinnipeds are having a significant negative impact on the decline or recovery of at-risk salmonid fishery stocks. In our 2008 decision documents, we described the two-part interpretation we adopted for applying this standard, as recommended by the Commission (See Response to Comment 15f above).

The States' current request defines "predatory" CSLs in the same manner as the 2008 authorization, with one minor change. They request that the definition of predatory CSLs include individually identifiable animals observed taking salmonids not just below Bonneville Dam but also in the fish ladders or above the dam. The remaining criteria that apply within the observation area below the dam (number of days present, time of year, subjected to hazing) would apply to animals taking fish at and above the dam. 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, is persistent in pursuing that prey item, and is not likely to be deterred from pursuing that prey item by non-lethal means.

The primary prey of CSLs at Bonneville Dam is salmonids. The analysis of sea lion scat collected at the dam indicated a 92 percent occurrence frequency of salmonid remains. In other

words, there is a 92% likelihood that a sea lion at the dam is there eating salmonids. Approximately half of the predation events witnessed at the dam are attributable to specific individuals. For these reasons, it is reasonable to conclude that an individually identified CSL that has been observed foraging at the dam multiple days, exposed to non-lethal hazing, and identified successfully taking even one salmonid at the dam is contributing to the overall predation on salmonids by pinnipeds collectively. The Task Force has repeatedly recommended that we eliminate the criteria for adding animals to the list and allow the States to kill any CSL above mile 85, because this would be the most effective way to reduce the predation problem. We continue to decline to accept this recommendation and propose again to require convincing evidence that an individual is contributing to the overall predation.

Comment 17: HSUS asserts that NMFS cannot rely on the differences between statutory schemes to “explain away” its findings of significance in the sea lion context with that of “insignificant” impact from sources of mortality to the same ESA-listed salmonid populations. Similarly the Commission was unconvinced by NMFS’ discussion in the *Federal Register* that the standards under the three statutes at issue – the Marine Mammal Protection Act, the Endangered Species Act, and the National Environmental Policy Act – are wholly unrelated. The Commission suggests as an alternative that we consider levels and types of mortality by source and the overall impact on the status and trend of the affected salmonid stocks.

Response: We have conducted additional analyses and prepared a Report *on Consideration of Statutory Factors under Section 120 of the MMPA* (NMFS 2012) to further address the concerns raised by the court and the public in making our current decision. The Report describes the factors that went into our determination of significance, which have to do not so much with the rate of predation but the nature of the problem – that sea lion predation is a growing and uncontrolled source of mortality. The Report also notes that we have taken similar approaches in addressing both pinniped predation and other sources of mortality, with the goal of reducing overall salmonid mortality. The Report also describes our effort to develop models that could predict the effect on extinction risk of various sources of mortality. These models are not yet sufficiently developed for use in the current decision, but as they are more fully developed they could be used to inform future decision-making under NEPA, ESA, and the MMPA.

In addition, the Report notes that NEPA, the ESA and the MMPA are different statutes with different purposes, policies, and provisions. The agency is making a decision under a specific provision of the MMPA. Section 120 of the MMPA applies to a unique and narrow set of circumstances (interspecies conflict where one species is robust and increasing and the other is at risk) and requires consideration of four specific categories of information. That information pertains to pinnipeds, past management actions aimed at pinniped predation, and their effect on the ecosystem, including fish populations. *See* 16 U.S.C. 1389(d)(1). There is no question

Congress recognized the problem of pinniped predation on at-risk salmonids, hence its decision to provide States the tools to stem an emerging and unchecked source of mortality. While Congress specified fairly clear procedural standards for issuing a lethal removal authorization, the substantive standards (i.e., “individually identifiable pinnipeds” and “significant negative impact”) are less clear.

Comment 18: The Commission suggests that the similarities of determinations under the various statutes be recognized. Specific to the ESA and MMPA they point out the similarities between the ESA Section 7 “jeopardy standard” and the MMPA Section 120 “significance standard”.

Response: Unlike the MMPA’s Section 120 “significance” standard, we have promulgated regulations implementing section 7 and published a handbook guiding our implementation of the regulations. The regulations create a distinction between informal and formal consultation. As described in the ESA Section 7 Consultation Handbook and our consultation regulations, if the action agency determines that an action is “not likely to adversely affect” a listed species or designated critical habitat and we concur, the informal consultation is concluded. ESA Section 7 Consultation Handbook, pp. xv.-xvi, 3-12 (March 1998); 50 C.F.R. 402.13(a). The Handbook provides that an action is not likely to adversely affect a species if the effects are “insignificant, discountable, or entirely beneficial.” ESA Section 7 Consultation Handbook, pp. xv.-xvi, 3-12 (March 1998). An effect is considered “insignificant” if “based on best judgment, a person would not . . . be able to meaningfully measure, detect, or evaluate insignificant effects.” ESA Section 7 Consultation Handbook, pp. xvi, 3-13. If effects are more than insignificant, and there is a more than discountable likelihood they will occur, formal consultation must proceed. If take will occur, informal consultation is not allowed. At the conclusion of the formal consultation we issue our biological opinion on the effects of the action, and if necessary include an incidental take statement with terms and conditions.

Comment 19: The Commission questions the relevance of distinctions between the ESA Section 7 and MMPA Section 120 because both statutes are focused on effects at the stock or species (ESU/DPS) level.

Response: We acknowledge that the goals of both the ESA and the MMPA are focused on the population level effects but do not agree that this fact casts doubt on our conclusion of the significance of pinniped predation at Bonneville Dam (NMFS, 2012) or the effect that lethal removal will have on the overall health of the California sea lion population.

Comment 20: The Commission also recommends that NMFS, in an effort to reconcile seemingly disparate findings, revisit our past NEPA and ESA determinations and bring them into conformance with the MMPA Section 120 findings.

Response: The action before us, and on which we must make a decision, is the states' application under Section 120 of the MMPA. As explained in more detail in our Section 120 Report, we evaluated past harvest and hydropower activities per the Ninth Circuit's instruction and provided a more thorough explanation of our significance determination under Section 120 in light of what the court viewed as "... seemingly inconsistent factual determinations in earlier environmental assessments of fishery impacts."

Comment 21: The Commission commented that NMFS might usefully solicit the Task Force for assistance with the issues raised in the comment by the Commission and others.

Response: We convened the Task Force on October 24, 2011 and, in addition to requesting their thoughts on the state's application and comments received from the public, solicited their response to several questions, some of which related to the Commission's concerns, e.g., developing a quantitative standard for measuring the significance of pinniped predation.

Comment 22: The Commission recommended that we structure the taking authorization to require the States to give priority to targeting sea lions that are the greatest contributors to the predation problem. The data indicate that some sea lions account for a higher percentage of salmonid takes than others.

Response: The States have no control over which sea lions will present an opportunity for removal first. All sea lions that become eligible for removal are known to be successful predators at the dam. Some may have more salmonid takes attributed to them either because they are more readily identifiable at a distance, or behaviorally they are more visible when they take a fish (closer to the observer), or because they are more successful than others. Approximately half of the predation events observed are not attributed to an individual sea lion.

Comment 23: The Commission suggested that NMFS and/or the States consider other management options available under the MMPA, i.e., a waiver of the moratorium or return of management to the States.

Response: Congress, through Section 120 of the MMPA, provided the states and NMFS with authority to lethally remove individually identifiable pinnipeds that are having a significant negative impact on the decline or recovery of at-risk salmonids. We appreciate that some do not believe this to be the most effective tool in dealing with pinniped predation at Bonneville Dam. However, because the program has not been implemented fully (and without interruption), we have not been able to realize the benefits of Section 120, as applied in the Bonneville Dam context. We recognize other authorities exist to deal with pinnipeds and will examine their use, as appropriate.