Facilitator’s Summary Notes

October 24 & 25, 2010
Double Tree Lloyd Center
Portland, Oregon

Task Force Members Present for All or Part of the Meeting: Daryl Boness (Retired Marine Mammal Scientist), Bruce Buckmaster (Salmon for All), Jody Calica (Confederated Tribes of the Warm Springs), Joyce Casey (USACE), Bob DeLong (NOAA Marine Mammal Lab), Doug Hatch (CRITFC), Chris Hathaway (Lower Columbia Estuary Partnership), Tom Loughlin (Retired Marine Mammal Scientist), Barry McPherson (American Fisheries Society), Guy Norman (WDFW), Joe Oatman (Nez Perce Tribe), Dennis Richey (Oregon Anglers), Carl Scheeler (Confederated Tribes of the Umatilla Indian Reservation), David Shepherdson (Oregon Zoo), Rob Walton (NOAA), Steve Williams (ODFW), Sharon Young (Humane Society of the US).

Task Force Alternates present for all or part of the meeting: Charlie Corrarino (ODFW), Sandra Jonker (WDFW).

Technical Resources and Advisors present for all or part of the meeting: Robin Brown (ODFW), Patty Dornbusch (NOAA), Garth Griffin (NOAA), Steve Jeffries (WDFW), Brent Norberg (NOAA), Michele Rub (NOAA), Scott Rumsey (NOAA), Robert Stansell (USCOE), Bryan Wright (ODFW).

Also present: Scott Clemans (USACE), David Cottingham (NOAA), Debbie Duffield (PSU), Tom Eagle (NOAA), Barry Espenson (Columbia Basin Bulletin), Mitch Fong (NOAA), Karrie Gibbs (USACE), Michael Gosliner (Marine Mammal Commission), Rick Hargrave (ODFW), Mark Hodor (NOAA General Counsel), Douglas Hunt (Assoc. of NW Steelheaders), Matt Rossell (In Defense of Animals), Jessica Sall (ODFW), Matt Tennis (PSMFC), Sara Thompson (CRITFC), Bjorn van der Leeuw (USACE), John Whitaker (CRITFC), Pete (Channel 12 news), and 3 members of public who wished to remain anonymous.

DS Consulting Facilitation Team: Donna Silverberg, Erin Halton and Robin Gumpert.

NOTE: The following notes are a summary of the October 25 & 26, 2010 meeting of the Pinniped-Fishery Interaction Task Force. Questions or clarifications about these summary notes may be raised to the facilitation team. These notes will be reviewed and refined by Task Force members prior to being posted to the website.
Day 1 – October 25, 2010

Getting Started, Welcome and Introductions
Facilitator Donna Silverberg, DS Consulting, welcomed participants and opened the meeting with a round of introductions for the task force members and meeting attendees. She explained that there would be time for members of the public to share input at the beginning of Day 2 but that most of the time throughout the process would be reserved for task force deliberations. Garth Griffin, NOAA, added that the Yakama Nation is also a member of the Task Force but was not able to send a representative to this session.

A Note about Meeting Materials: All materials related to the Pinniped/Fishery Task Force process will be posted to the facilitation team’s website under the 2010 Pinnipeds Task Force page: http://www.mediate.com/DSConsulting/pg23.cfm. Final meeting summary notes will be posted after Task Force members have adequate time to check and correct any errors made by the facilitation team.

Overview of Context and Task
Garth Griffin, NOAA Fisheries, provided a power point presentation that illustrated the context, timeline and task overview for the 2010 Task Force process, including:

- Basics of Section 120 of the Marine Mammal Protection Act (MMPA) – he noted the connection to the Ballard Locks process and the key tenets of the Act.
- Duties and considerations of the 2007 Task Force process.
- NOAA’s 2007 Decision to allow for limited lethal take – including the process of evaluation and the issuance of ‘No Significant Impact’ under the NEPA EA and ‘No Jeopardy’ under ESA.
- Overview of the 2010 Task Force Assignment.
- Processes that followed the 2007 Task Force meetings:
  - NOAA’s Letter of Authorization (a 5 year authorization) to the States and 3-year check in point (this reconvening of the Task Force).
- Brief summary of the results from the first 3 years of the program (non-lethal deterrence techniques, re-location, euthanization, tagging and Table 3.3. list refinement).
- Reasons for reconvening the Task Force:
  - Per recommendation in the report, to help evaluate effectiveness of the last three years of the program; to document the full range of opinions; develop recommendations; and provide an opportunity for public participation.
- Review of the five questions posed to the Task Force in their 2010 instructions:
  - The Task Force previously recommended as an interim criterion for determining the effectiveness of the program that the average observed salmonid predation rate falls below one percent of the observed fish passage at Bonneville Dam. Does this criterion remain useful for
evaluating effectiveness of the permitted lethal removal? If not, what changes do you recommend?

- Does non-lethal hazing appear to be an effective aid in reducing sea lion predation on salmonids in the area? Should non-lethal efforts be modified (increased, reduced, or re-directed) to improve effectiveness? Have new non-lethal techniques been shown to be effective at deterring pinnipeds from predation that may be applicable to this interaction?
- Do the criteria in the authorization for identifying predatory sea lions remain appropriate? If not, how could these criteria be modified to improve effectiveness?
- Does the available evidence suggest removal activities may be displacing sea lions to other sites along the Columbia River? If so, does this displacement present predation issues at other sites where salmonids are vulnerable?
- Are there other terms and conditions of authorization or aspects of the States' implementation of the removal activities that limit effectiveness of the permitted lethal removals? If so, what changes are recommended?

- **Humane Society of the US, et. al v. Gutierrez** Complaint filed in March 2008 challenging NMFS’ Section 120 authorization. In November 2008 the District Court decision upheld NMFS’ NEPA Environmental Assessment findings and decision. The HSUS appealed that decision to the 9th circuit court of appeals. As of today’s meeting, the 9th Circuit Court had not yet issued a decision on the sufficiency of the NEPA compliance and that issuance of the permit.

**Clarifying Questions and Answers**

- Were all alternatives reviewed in the EA within the current authority of the MMPA? NOAA response: Yes.

**Review Agenda for Day and Task Force Process**

Donna Silverberg said that much of the first day’s meeting would be spent grounding the Task Force in the current status of pinniped/fishery interactions and the non-lethal and lethal take program before moving on to Task Force deliberations. She referred to the Task Force Protocols and Meeting Guidelines/Procedures. She also referred the task force to the “5-finger consensus tool” (1 meaning full support and 5 meaning no support) that was used during the 2007 process and will be used again to help guide the group through recommendation/decision points.

**Consensus:** The Task Force Protocols were supported with a show of all “1’s”.

Garth said that while there is no specific requirement, NOAA would like to have the Final Task Force Report completed by mid-December 2010. He also clarified that the current authorization is in place for two more years, and that the Task Force discussion and recommendations will be important considerations for NOAA’s decision about
whether and how to modify the current authorization. The report will summarize the Task Force work and will be an important product for NOAA’s use.

**Getting Grounded: What Has Been Done Since 2007 Presentations**

**California Sea Lions: Life History and Status:** Bob DeLong, NOAA Marine Mammal Lab, recalled that Sharon Melin provided much of the data on California Sea Lions (CSLs) when the Task Force first met in 2007. He referred the Task Force to a slide showing US CSL pup births through 2008. He reviewed details of the typical breeding season and noted that adult males typically leave the southern California area in August/September; they head north, then return in the spring for breeding. DeLong noted that changes in prey fields has influenced the behavior of the animals. He shared pup births and mortalities and said overall, the growth rate of the population is slowing. In 2009-2010, the data showed an oceanographic anomaly developed in the central and southern California portions of the California Current resulting in dramatic decreases in sea lion food availability – as a result adult females brought a good number of pups to the ground, but there were very high mortality rates of pups up to 3 months of age. In July-August of 2009, El niño conditions further decreased prey availability and Bob suggested this will be reflected five years from now by a decline in recruitment of adult females to the breeding population.

In relation to pinniped/fish interactions, scientists began in 2009 to observe adult females (some associated with pups) in northern California, Oregon and Washington, and many stayed north through the birthing season of 2010. DeLong said it is unclear whether they will return next year, or whether we will see them maintain their new, more northern location. He said this is another example of the ‘plasticity’ of behavior or the species and suggested that it is probable these animals will eventually return south.

**Task Force Questions/Comments:**
- Births were down in 2010 – but mortality rates are average? A: Yes, and the pups seem to be in very good condition this year.
- In your comment about changing prey fields – is there a link to what we’re seeing at Bonneville? A: No, I think that some portion of the population is simply following the large sardines as they regress to Southern California.
- Regarding the animals that have been euthanized – what can you say in regard to their population? A: My sense is that they fall in the median age of the overall population – 8-12 years – but the teeth have not yet been studied.
- For how many years can females reproduce? A: 20 at most, 16-17 years on average.
- Besides the prey base, what else determines the animals’ carrying capacity? A: Mostly food; habitat may play a role as well, but it does not seem to be a limiting factor. Predation (e.g. sharks) can play a role too.
- Regarding growth rates slowing down – how much are they down? A: We’ve seen a drop from 4.5% in the late 1990 to 2% at the current time(2008)
- Has there been a slightly higher rate of parasite loads? A: Yes, in 2001 we detected a rise in the prevalence of hookworm disease and an associated increase in pup
mortality, it peaked in 2004 and has since declined as a mortality factor in the CSL population.

- Columbia River salmonids do not affect pup production – so shouldn’t we look more at male success? A: Yes. And note that the Columbia River males are 30-40% larger than average males when they arrive. They are so heavy they can’t easily maneuver on the rocks. While males typically don’t get aggressive until after the pups are born, these animals have shown their ‘staying power’ (ability to establish and maintain reproductive territories for long portions of the breeding season) and provide good protection for the pups once they are born.
  - What are the sea lions’ other primary food source? A: Sardines and anchovies are a very dense prey – and of good quality. All age classes feed on sardine, anchovy, rockfish, hake and market squid.

- Do the heavier sea lions have a significant advantage or disadvantage over their smaller counterparts? A: Not sure – the data will need to be teased out. The larger animals might have an advantage as they have more stored energy and can stay on land for longer periods of time.
  - Is there reason to believe that there is a genetic component to the larger animals’ foraging habits? A: No – I think it is just dumb luck they found this source of very high quality prey.
  - Are rock fish part of the sea lion diet? A: Yes, particularly short-belly rock fish. Those stocks have been depressed over the last couple decades but saw a recent increase (in recruitment and standing stock of juveniles).

- What percentage of the animals that come up here return to their breeding grounds and breed? A: Probably a tenth of 1% to 1%. There are a great number of “surplus” or non-productive males.

### Columbia River Salmon: Population Status and Recovery Plans

**Salmonid Populations:** Scott Rumsey, NOAA, shared listing information for salmonids in the Columbia system, noting that his agency is in the middle of a five-year review of listed species. He shared a graph of species whose migration timing overlaps with the presence of pinnipeds in the Bonneville area, including Lower Columbia Steelhead, Mid-Columbia Steelhead, Upper River Spring Chinook, and Snake River Spring/Summer Chinook. He acknowledged that there are other species that overlap with pinniped presence in the lower river.

Scott shared that since the agency is in the middle of a comprehensive 5-year review process, it is not certain yet what the updated listings will be. He reviewed steelhead status and trends for the Lower and Mid-Columbia, noting the Lower are currently at moderate/high risk and Mid-C are at low risk. The geometric mean for Snake River steelhead is up from the previous (2005) review period. Upriver spring Chinook trends are comparable to what was seen in the last review, with increases due to increased hatchery spawners. Scott shared a graph of Snake River spring/summer Chinook – in general the trend for those populations was consistent with the 2005 review. Rumsey noted that overall, the abundances of the potentially impacted populations have increased or stayed about the same since the last review. Impacts of climate change on habitat and predation have also been considered in this review. He noted no net negative change in
the level of impacts by avian and non-native predators and said there are concerns with the increase in sea lion presence and predation. Rumsey said the team noted no improvement in harvest or hatchery practices have occurred since the last review.

Task Force Questions/Comments
- What is the status for threatened sea lions? Is de-listing of the eastern population of Steller sea lions eminent? A: A biological review team has not yet been convened; presumably this would come out of the Alaskan region. NOAA is beginning to gather information and the soonest the review could be done is likely two years.
  - **Action:** NOAA staff will look into this and get back to the Task Force with more specifics.

Columbia Basin Recovery Plans: Patty Dornbusch, NOAA, provided information on NOAA’s Columbia Basin Recovery Plans, focusing on the common elements that all of the plans share: current status, recovery criteria, strategies and actions (and cost) and M&E. She said all plans address: Where are we now, where do we want to be, how do we get there, and how do we know that we’re there? In the course of recovery planning, hydro, habitat, harvest and hatcheries are addressed, and “ecological interactions” have more recently been added to the plans – predation is addressed within the estuary module component of the recovery plan. Each population is assigned a persistence probability, and while not all populations need to be rated ‘high’, there is a requirement to recover a certain number of populations within an “Ecologically Significant Unit” (ESU) to a high level of persistence probability. Detailed monitoring and evaluation (M&E) programs are a critical piece of recovery plans that allow for adaptive management in implementation. Patty showed a map of the relevant salmon and steelhead ESUs by recovery domain and the timing for when each recovery plan will be available for public review/comment.

Patty said impacts are quantified where they can be, and that ecological impacts are generally qualified in regard to marine mammal, avian and non-native predation issues. Actions are tailored specifically to issues with each population and address the life cycle, All-H and ecological interactions. As researchers have developed a better understanding of predation and other impacts, NOAA has begun incorporating these impacts into the recovery plans. She said that all Columbia Basin Recovery Plans acknowledge that no single limiting factor accounts for a decline; recovery will not happen by addressing a single factor; even small increments of improvement in actions to address limiting factors are crucial; and that at a minimum, a limiting factor should not become more limiting.

Patty then showed a slide of the prioritized tiers, each of which contains multiple limiting factors, and pointed out that pinniped predation was listed in the 2nd tier as a high priority. She reviewed components of estuary recovery actions, and noted one of the most important actions for stream type salmonids (those with a life-history characteristic whereby juveniles spend at least one winter in freshwater before migrating to the ocean) is to reduce predation by pinnipeds. She concluded with a note that all management actions need to be implemented in order to be successful, and marine mammal predation is a significant factor.
Task Force Questions and Comments:

- Is there anything going on to identify predation in the lower river? A: Michelle Rub’s (NOAA) research is starting to get at that – we do know it is needed.
- There was a year that we saw a delay in migration and high jack counts – any analyses as to what caused that? A: Guy Norman (WDFW) – other than good ocean and Columbia system weather conditions, there is nothing specific that we are aware of.

Data Related to Mortality Rates and Emerging Problems: Michelle Rub, NOAA, reviewed slides regarding a study to evaluate sampling and tagging methods for estimating survival of adult Chinook salmon through the estuary and lower river. Estimates of adult salmon survival from the mouth of the Columbia upstream 234 km to Bonneville dam have never been developed, and so conservation impacts and run size predictions might be underestimated, if there are impacts in the estuary that are significant to particular life stages. Although the effects of predation at Bonneville are being studied, NOAA is aware that the majority of the population is in the lower river. Michelle’s research took estimates of predation based on the bioenergetic model developed for use at Bonneville and extrapolated from it to assign a number to populations in the lower river. From that, they concluded that as much as 10-20% of fish populations could be taken by sea lions. Michelle noted that physical evidence of harbor seal attacks has been on the rise since the early 1990’s. The study helped provide survival estimate and acoustic data, and this will help evaluate fish movement through ten sections of the river.

- Were both hatchery and wild fish marked? A: Yes, and genetic sampling was used – which have clear markers for upriver/downriver fish populations.

Michelle also reported on the study’s established protocols for catching and handling fish. The research team wanted to validate assumptions that PIT tagged fish behave normally, and that acoustic tagged fish act similar to PIT tagged fish. The gill net method of capture was used and only vigorous fish were tagged. Michelle reviewed slides showing the fish tube method used for holding, moving through the restraint area and the tagging process. The study determined the percentage of ‘unexplained mortality’ – which ranged from -13% to +25%, with a mean of 10%, though she stated that there was no way to directly implicate pinniped predation as part of this research design. Total actual marked fish was 333, less than the targeted 500. Michelle said she shared this data with caution, acknowledging the small sample size. Researchers plan to repeat the study in 2011 and continue to validate assumptions that gear/tagging did not affect the data. During the next study, researchers will incorporate dummy tags and temperature sensors, and NOAA hopes to expand the acoustic infrastructure in 2012.

Task Force Questions and Comments:

- You chose fish in good condition – did you differentiate between marked and unmarked fish in harvest counts? A: No – we used an estimate of marked: unmarked ratio.
Can you say what percentage is affected by pinniped predation? A: No but we believe all stocks are impacted. Genetic sampling can help us confirm species.

Did you sort by ESU or population? A: The cleanest delineation is by upper vs. lower river stocks – we also have Mid-Columbia and Western Cascades groups.

What percent of the fish can be excluded as Willamette River stocks? A: About 25%. We will try in the next iteration to tag everything.

**Action:** Request for a hard copy of the pinniped predation slide.

Can injuries be distinguished by type of seal/sea lion? A: Steve Jeffries (WDFW) – By looking at the distance between teeth marks, yes. There are differences in the space between inner canines.

Your information showed 13% of entanglement, and this includes an estimate of pinnipeds? A: Yes. C: So you may be double dipping there? A: We will change that assumption for the next study.

**Interactions between Sea Lions and Salmon: Review Monitoring**

Information of Pinniped and Fish Interactions at Bonneville Dam: 2002-2010: Robert Stansell, USACE, reviewed the study site, methods and objectives of ongoing observations of sea lion/salmon interactions from 2002-2010. He reviewed abundance estimates, noting that pinniped abundance dropped in 2007 and 2009, but was the highest ever in 2010. He reviewed daily average maximum pinniped abundance for the study period and seasonal distribution graphs – again noting the high numbers for 2010. He shared graphs of annual salmonid passage and estimated consumption, noting that the numbers for each column have increased annually over the 2002-2010 timeframe. He also reported on nighttime predation estimates and an increase in ‘kleptoparasitism’, where Stellers are stealing prey from CSLs. He also shared a map with the frequency of distribution of take by each type of pinniped – noting that Stellers take typically further away from the dam than CSLs.

**Task Force Comments and Questions:**

- Do you think hazing is why Stellers are taking further away from the dam? A: Yes – this method seems to work better for them than CSLs.
- Is there a breakdown of take by fish entrances? A: Yes, there are 4 main entrances that fish typically use – and of these, most take occurs at Powerhouse 2.
- Do observers spend more time observing one of the zones vs. another? A: No – they keep their peripheral vision on all the zones. Note, however, that the observation is a large area and a challenge to cover.
- How do you decide the priority of the information being gathered – if identifying individuals is secondary to the level of predation? A: A lot of the individual identification falls to project staff – and the intern observers focus more on actual predation.
- How do you deal with instances when you see multiple attempts on the same fish?
  - This is a challenge. Right in front of the dam is a really high energy area. Identification is also a challenge when the pinnipeds are belly-side up.

Robert shared a finding that early run stocks are targeted more than later run stocks and also noted that sturgeon catch by Steller sea lions has been increasing substantially over
the last few years. Most of the sturgeon catch is in the Powerhouse 2 area – and also quite a bit is seen in the zone 7 area further away from the dam. Lamprey predation has also increased.

**With regards to non-lethal deterrents:** Robert shared that generally, Sea Lion Exclusion Devices (SLEDs) and floating orifice gates (“FOGs”) have been effective, but acoustic deterrents have been ineffective. Hazing by land and boats have had limited effectiveness.

**With regards to capture and removal:** Robert shared information about the capture and removal program for 2008-2010. A total of 40 animals have been removed during this period. Comparing listed and non-listed CSLs, those that were removed were the biggest eaters and were observed on a higher number of days. Weight levels and weight gains were recorded, and Robert noted that the two highest individual weights ever recorded occurred during this timeframe.

Robert summarized that:
- Physical barriers have been an effective deterrent at preventing pinnipeds from entering the fishways;
- Four years of non-lethal deterrence has failed to reduce predation;
- The trapping and removal program is working and we will have a better understanding of its impacts in 5 years;
- Salmonid catch continues to increase; and
- An increase in the presence of Stellers has become more of a problem.

**Task Force Questions and Comments:**
- Do you haze Stellers? A: Yes.
- Have you observed CSLs in the fall? A: Not many, but yes. We have a full crew observing from the second week of January through May – this includes six interns plus staff from sun up to sun down Monday-Friday.
- Is it reasonable to assume during a 3-week period of peak passage that there are areas where pinnipeds aren’t preying on salmon? A: No, even if we can’t identify an individual, we think they are all taking salmon.
- Please clarify – take by individual CSLs has gone up? A: Yes.
- Looking at the fish passage timing graph, it seems that if you can get the fish over the dam (enhance passage), you could have a big impact on large groups of fish. A: Temperature and flow are also factors important to fish passage.
  - Could starting spill earlier help reduce predation? A: Probably not, as there are may pinnipeds hanging around waiting for the fish to arrive. If we spilled earlier, the sea lions would likely just take more at the other powerhouse.
- It seems like the majority of CSLs are there mid-April to mid-May – does this correlate to the timing of the largest run of salmon passage? A: We think the newer recruits follow the run upriver.
- Decrease of CSLs in 2009 –do we know why? Is it bullying by other CSLs? A: Not sure. Typically 2/3 are repeat animals. This past year, however, 2/3 were new animals.
- How long can pinnipeds be held? Is it possible to hold them while the fish pass? A: There is not currently a facility that could support holding for a period of time needed to be effective with this management measure.

Robert reviewed pinniped identification procedures, reminding the Task Force that they had established the criteria in 2007 that included identification of the animal, observation at the designated sea lion exclusion zone and observed take. Robert showed examples of brands and other markings used to identify individuals, and the cataloguing process that includes photos, written descriptions and identification categories. To date, 116 of the 420 CSLs observed since 2002 have been branded. Robert included a table showing repeat sightings of CSLs by identification category. He shared a table of repeat sightings of listed and removed CSLs and the percentage of highly identifiable animals returning to Bonneville each year – again noting that this year many (about 2/3) were new animals. About 15% of branded CSLs were seen only 1 year. Robert shared the updated Table 3.3 that includes all the ‘listed’ CSLs eligible for removal.

In summary, Robert reported that:
- The observation team is currently able to identify most CSLs at Bonneville;
- Some management actions are at odds: Identification and harassment efforts, and hazing and encouraging hauling out in the traps;
- Individual catch contributes to about 30-70% of the observations;
- 85-93% CSLs will return to Bonneville for more than 1 year, and about 70% of branded CSLs that do not return to Bonneville are never seen again.

**Task Force Comments and Questions:**
- Does seasonality impact effectiveness of hazing? A: No, we don’t think so.
- **Action:** It would be useful to have cross-data for listed animals and there known locations. NOAA and the COE will coordinate to get that information to the Task Force.
- Can removals be done in a way that enhances hazing? For example, combining the two management measures to improve effectiveness? A: Not sure – we do know that no bond seems to exist between the animals – so what is done to one animal may not have a deterring impact on another. (This comment was addressed again by the Task Force on day two during their deliberations of the questions. See below for more discussion on this point.)

**Review of Sea Lion Movement Data:** Bryan Wright, ODFW, reviewed a presentation of sea lion movements. Beginning in 2009, the team tagged six CSLs that did not qualify for removal, put acoustic tags on them and released them at the dam. Work continued this spring with added sensors to help determine depth. Bryan showed slides of the location of arrays that collected the data, ranging from the mouth of the river to the dam. He described transmitter capabilities and type of data collected. The data helped tease out how long an animal stays in the tailrace, and suggested that there is no response to
hazing. The data also showed evidence of some nocturnal diving, but that most often diving occurs during the day.

Wright said most often, movement occurs in 4-5 day spells near the dam, then the sea lion goes downriver. Wright’s team hopes to do more tagging in the future to see other patterns. Stellers more often go back and forth from Phoca Rock (9-10 miles downriver by Cape Horn) up to the dam. The researchers also used satellite telemetry to observe where the CSLs go when not at Bonneville. ‘River’ type sea lions tended to not stray too far from the river, but the ‘non-river’ type had more range to their movement including broad movements in the ocean. However, it is unclear the pattern of Stellers’ movement overall. They tend to go to a geographic area together, but forage as individuals. Overall, he said that telemetry data has been very helpful in showing where animals go when not at the dam; gauging the response to hazing; showing nocturnal activity; and validating observer data.

Task Force Questions and Comments:
- How can the animals see at a depth of 10 feet at night? A: They probably go to a depth where they expect to find fish – darkness is not as restrictive for them.
- You are seeing animals move back and forth between the powerhouses, but not downriver, correct? A: Yes – they mainly stay in the tailrace.
- Steve Jeffries, WDFW, shared that C 697 locked through and spent from May through the summer in the forebay of the dam. He was captured in January 2010, released near the mouth of the Columbia, later returned and was observed taking fish, and was removed.

Sea Lion Movement Data: Doug Hatch, CRITFC, provided animation of movements for several CSL and Steller sea lions. He noted that hazing one or two Stellers can turn into hazing several at once, which isn’t the case with CSLs. He also noted high detection rates with arrays.

Task Force Questions and Comments:
- Are there false positives with acoustic tags? A: It depends on interpretation, but usually confirmed by multiple detections. Radio tags have also been used with fish, and those are more prone to false positives.
- Elsewhere, harbor seals were using bridge lights to find prey – are there lights at Bonneville? A: No.

Review of Non-lethal Deterrence Measures Since 2007: Steve Jeffries, WDFW, reviewed slides of the dam area and shared information about non-lethal deterrent measures. He said initial sea lion hazing efforts began in 2004 and in 2005, a haze/no haze test was used to evaluate the effects on fish passage. 2006-07 hazing occurred from March through May, while in recent years, hazing has occurred from December through May. During the spring of 2009, the International Marine Animal Training Association (IMATA) came to observe hazing at Bonneville and offered recommendations to help change the behavior of the animals. This included reducing haul out opportunities, which
the states tried to employ as a method for deterrence. Steve noted the complication with hazing while at the same time trying to get the animals to ‘haul out’ into the traps.

The USACE used SLEDs and acoustic deterrents, but acoustic deterrents, Steve offered, are less effective since the sound can be absorbed by air bubbles that are common in whitewater areas in front of the dam. He also reported that the USDA Wildlife Services use various non-lethal deterrents (but do not use seal bombs), and haze from the dam face observation area. WDFW, ODFW and CRITFC use boats for hazing, with a focus on areas with lower spill that are safer for boats. One lesson learned from IMATA was that hazing in the area closer to the dam will be more effective than chasing the animals away and then hazing from an area further out where they don’t forage as much – so in 2010, hazing efforts have been more concentrated in the tailrace. Steve recalled that when the Task Force met in 2007, they discussed a new non-lethal method, an electric grid developed by Smith-Root. Steve reviewed excerpts from the Smith-Root final summary report to BPA, which is also posted with the other Task Force materials. He shared that the voltage needed for impacting the pinnipeds negatively impacted spring Chinook at three different voltage gradients at Bonneville. So, the electric grid option was no longer on the table. Steve acknowledged the need for better non-lethal tools and shared IMATA’s suggestion that non-lethal measures will be more effective on naive animals.

Task Force Questions and Comments:
- Do you mean naive to hazing? A: Those animals that have newly arrived to the area. Comment: This speaks to why we should focus on the area in front of the dam – making that area unfriendly is the best use of our efforts.
- Is there a hierarchy used to select the type of deterrent? A: The main deterrent is cracker shells. We stop using seal bombs around the first of April, for fish protection.

Review of Lethal Removal Measures Since 2007: Robin Brown, ODFW, reviewed NOAA’s Letter of Authorization (LOA) describing the states’ authorization and parameters for capture and removal of CSLs. He showed the trap sites and noted that most trapping occurs in the early morning hours. He described the process of handling the sea lions with squeeze cages and transporting animals with cranes. He said that for safety reasons, use of firearms in the apron area was not allowed and there was a concern with public relations. He also reviewed a table of CSLs removed during the 2008-2010 period, including the four accidental mortalities that occurred at the outset of the program. In 2010, no relocation facilities were available for captured CSLs. Chemical euthanasia was used on all lethally removed individuals.

Task Force Comments and Questions:
- Say more about the process of getting an animal listed. A: Basically an animal has to be a known individual, seen 5 days at the dam, observed killing a fish, and already been exposed to non-lethal hazing. The states work closely with the COE to add animals to the list once they qualify, but that process is not instantaneous.
What else is impacting the time lag? A: We just feel we have missed some (not many) opportunities to add more animals to the list due to the processing time it takes to add an animal to the list.

- Once the states decide to euthanize an animal, they take full responsibility for the carcass – how are they used? A: For those euthanized so far, there have been multiple requests for sampling. Comment: If someone asks for sampling type, you should be able to grant it. A: Yes, and we need more resources/support to meet all requests.
- The Animal Care Committee (ACC) may not be as independent as it could be. A: To be clear, the committee only recommends how, not whether to euthanize. Comment: You might want to consider who does the paperwork.
- Is the process for adding animals to the list as seamless as it can be? A: With the level of detail required, we have to be really careful, and are working to be as efficient as possible while taking all the necessary steps to make no mistakes with regards to euthanizing.

Animal Care Committee Report
Bob DeLong, NOAA Marine Mammal Lab, reviewed known CSL information from beached and stranded animals. The lab found diseases in the animals that include: leptospirosis, urogenital cancer and domoic acid tissue damage. The examinations revealed that cancers in stranded animals are frequently advanced and that most CR males have squamous cell carcinoma. Bob reviewed specifics of domoic acid tissue damage – noting that the prevalence of 33% exposure in adult males in the Columbia River is the first such sample of the population. Bob concluded that there was high scientific value of studying euthanized CSL adult males.

Task Force Questions and Comments:
- Any surprises in what was found in the stomach contents? A: We will review this in the upcoming session.

Estimates of Salmonids Predated and Salmonids “Saved”: Bryan Wright, ODFW, reviewed the process used to calculate salmonids taken and ‘saved’ over the course of the removal program, using a bioenergetic model and a Monte Carlo simulation. He reviewed CSL weights at removal and scat data indicating that adult salmonids made up a 92% frequency of occurrence in their diet while juveniles made up 10% (among other things). He shared the process for calculating the number of days of residency – and the adjustments made for sampling and detectability. He added that the research showed that the whole fish is eaten nearly every time.

In translating the data into number of fish saved, the Monte Carlo model produced different results. Outputs are adjusted as necessary for in-season removal date and subsequent season return rates. The model was run 1,000 times, and Bryan shared some of the results:
- Median individual daily salmonid requirements = 3 salmonids per day, 54 salmonids per season.
• For the 9 CSLs removed in 2008: 135-549 fish are estimated to have been saved in 2008, 173-838 in 2009, and 185-826 in 2010.
• For the 15 CSLs removed in 2009: 266-822 fish are estimated to have been saved in 2009, 400-1180 saved in 2010.
• For the 14 CSLs removed in 2010, 198-706 are estimated to have been saved.

Task Force Questions and Comments:
• Is the weight increase accounted for in terms of the same weight of fish? Are we underestimating take? A: We account for three times the amount of fish that would equate the biomass we would expect from the weight gain.
• Were different inputs used for NOAA’s EA? A: One of the inputs was different. Comment: One of the issues raised in the lawsuit was that the model overestimated the amount of take.
• It looks like all evidence suggests that removal saves only what that animal would have taken – but does not account for the animal that likely replaced the one removed. A: Yes, and we are not sure how to get at that data.
• It seems we have seen a decline in CSLs per year – could those numbers be equated to a reduction in salmonid populations? Response: No - this year the adult passage numbers went back up.
• The important question is one of ‘significant impact’. If we look at the magnitude of the population in the Columbia River –about 232,000 fish – and up to about 24% are being taken – this should weigh on our decisions.
• Andrew Trites provided a declaration to the court challenging some of the assumptions used in calculating consumption at Bonneville Dam.
• I am still curious about the conversion rate between weight gain and likely number of fish eaten.
• Additional information on what would happen if we stopped the removal program, or did more, would be helpful. I recognize there are many constraints – but within those, is there more to consider?
• We need to apply mortality rates to some of these results.
• Were the results looking at Bonneville dam animals or just those removed? A: The weight data was from the removed animals – but in the model there is a bit of both. The model could be refined.
• The LOA describes the goal of minimizing take to 1% or less. Can we use the model to show how successful the program could be? A: Yes, the model could provide that analysis.
• There is also a need to consider predation in the context of other impacts to salmon that remain unaddressed including recent recommendations for broad-based harvest and hatchery reform and a report that indicates predation by introduced non-native fish consume up to 2 million salmon smolts each year.

Bryan reviewed the results and comparisons with other data and seasonal total data. He noted that all estimates are probably low and that model refinements will be on-going.
Robin Brown, ODFW, added that over 2/3 of the animals released were later added to the Table 3.3 eligibility list.
**Day 1 Wrap Up**
In closing, the Task Force acknowledged the work of all the agencies that supported this effort to date, and thanked the presenters for providing the important information from that effort to aid in their deliberations. Donna asked Task Force members to consider the specific questions posed to them by NOAA in preparation for the next day’s meeting. With that, today’s meeting was adjourned.

**Day 2 – October 26, 2010**

**Welcome/Introductions**
Donna welcomed everyone and a round of introductions was conducted.

**Public Comment**
An opportunity for oral public comment was provided, but no member of the public offered comments.

**Task Force Clarifying Comments/Questions from Day 1**
The Task Force revisited comments shared during Steve Jeffries’ presentation regarding IMATA’s recommendation to focus deterrence efforts on naïve animals at the dam. Some members felt that there were no ‘naïve’ animals at the dam, while others suggested removal of the more experienced animals could minimize predation and allow for more concentrated non-lethal efforts on the less experienced animals – those new to the area. Folded into this discussion was the issue around the social aspects of the animals – how social are they, and in what ways? Some believe the animals forage as individuals and their movement is driven solely by the food source, while others believe there is some learning around foraging behavior from other animals in their group. Also, there is uncertainty as to how many of the animals return during subsequent years, some of which may not all be identifiable. There was an additional comment that the movement of the pinnipeds up to the Columbia is a relatively recent behavior change and still needs to be studied. In general, the group agreed that the issues are complex, and Donna reminded everyone to keep their focus on how these discussions will help them answer the questions posed to them by NOAA.

Additional clarifying comments and questions included:
- How well do we know the correlation between salmon run size and number of pinnipeds present at the dam? **States**: There does not appear to be much of a correlation – more and more we are discovering pinnipeds at the site despite fish run size.
- Given that we know the max run size and a mean daily number – these are in no way the total number of animals seen at the dam – so we have no idea from season to season how many unidentifiable animals are present? **COE**: We count unidentifiable animals and do spot checks so we know how many animals are in each zone. So yes, we do have some idea how many are present from year to year.
- Over the years, it would not be unusual to see some animals returning a couple years apart. I also want to see whether CSLs are learning behavior from the increasing number of Stellers.
  - The concept of ‘learning from” means where to forage? Or learning that hazing will not hurt them?
- What about looking at sea lion days at the dam and teasing out whether any change has occurred and whether this is having an impact?
- Clearly there is a need for more behavioral information – and if there is social learning happening, couldn’t the sea lions also learn that there are consequences to lethal hazing? There are a number of other species for which this is true – but it hasn’t been tested in this case.
- If there is territorially going on, and only a certain number that can feed at once – we should then see replacement and no net effect on predation.
- We heard that non-lethal hazing is ineffective. Are resources better spent on collecting data, to use for not just this situation but future situations to help improve effectiveness?
- Figure 11 in the Stansell Report, page 19 indicated the mean number of animals present at Bonneville per day have declined even though the total numbers are up compared to the past four years.
  - Yes but this also coincides with an increase in Steller sea lions, which means they could be the ‘replacement’ animals.
  - The number of sea lions declining correlates with the number of fish declining – it could be argued, then, that there’s a limit to what an individual can take. Are we underestimating take per animal?
  - Steve Jeffries (WDFW): Some of this may be abundance based in terms of prey available at the dam. We have improved our knowledge base dramatically, but there will always be questions raised that we will never have all the answers to.

**States’ Perspective on Effectiveness Measures to Date**

**Steve Williams, ODFW:** From Oregon’s perspective, given the constraints and limitations, we believe we have been successful. We believe that we have removed some of the serious predators in a short period of time, and that if we hadn’t removed them, the situation would be worse. The trapping hasn’t been as effective as we had hoped, nor have we been able to capture as many CSLs as we had hoped to. The next step might be to continue our efforts under Section 120 authorization but provide additional trapping opportunities and modify CSL listing criteria to automatically include those that are observed in two consecutive years, regardless of the number of days they are observed in the area. In addition, non-lethal hazing from boats has not been effective – it just moves the sea lions from one powerhouse to the next. Instead, focus resources and efforts on hazing from the dam, especially the fishway areas that have appeared to be more effective. We have other areas where pinniped/fishery interaction is a growing problem, e.g. Willamette Falls. Section 120 does not allow for us to address those areas and we don’t have the resources to sustain, long term, the actions being taken under this current authorization. As such, from Oregon’s perspective, other tools should be sought and
evaluated (e.g. Sections 101, 109 of the MMPA) for the long term, while we continue to use Section 120 as a short term tool.

Task Force Question: Is there any evidence to suggest the sea lions have moved from Bonneville to Willamette Falls? A: They seem to be separate animals. We have begun some hazing below the falls and will increase our efforts this year. We believe we will begin to have the same problems there that we are seeing at Bonneville. Oregon first started branding animals in 1996 because we observed animals at Willamette Falls. In 2000 and 2002, we saw Willamette Falls numbers decline and the number of animals at Bonneville increase. Now we are seeing that despite the numbers at Bonneville, the numbers at Willamette Falls are again increasing. We saw three sea lions in the fall, which was new and perhaps correlated to the bigger run size of coho.

Guy Norman, WDFW: In terms of effectiveness and other directions we might consider, Washington agrees with Oregon. And, it is important to look at the reason the states applied for authorization in the first place – when we applied we were focused on recovery plans for threatened and endangered fish populations and as a contributing action to the recovery efforts for the overall population. The gap analysis shared by Patty Dornbusch showed that all sources of mortality have to be addressed – as no single factor will lead to recovery – and this is the context the states are working from, to manage in a comprehensive way toward a minimum goal of no increase in mortalities. Marine mammal predation has increased over the last decade and is a Columbia Mainstem issue affecting all populations. Boat-based hazing is not producing the results we had hoped and we should consider redirecting the efforts to other options – perhaps more resources should be put into predation monitoring and other actions to improve the program, while continuing hazing efforts around the fish ladders. The information we looked at yesterday showed challenges with new California sea lion recruitments up, no decrease in overall consumption and an increase in the number of Stellers. In terms of the overall objective this task force described 3 years ago, the proportion of run size predated upon has decreased overall and that is a positive outcome. Also encouraging was that we saw less days at the dam per animal which may have to do with the removal of certain animals that had been returning to the site multiple years. A significant investment has been made and it is not clear that Section 120 is sustainable as a long term solution, but I also agree that we don’t want to lose it as a tool – this is a progressive effort, and to stop any of our efforts would have a negative effect on progress made over the past few years. 40 animals have been removed which is less than our objective; but we shouldn’t confuse effectiveness with our ability to trap enough animals. We need to continue to explore ways we can improve the current program – the EA did evaluate a larger number of animals so we should look at how effective we might be if we remove more of the animals on the list.

Task Force Questions

The Task Force began its deliberations of the five questions NOAA asked them to consider during this process. The questions were included in the Task Force instructions in advance of the meeting, and were listed on the agenda. During today’s deliberations, they addressed the first three questions.
Consensus Tool: The following ‘five finger’ approach was used to gauge the level of agreement of the Task Force members. Each recommendation includes the Task Force member vote of the 15 Task Force members that were present for the discussion.

1 = Consensus
2 = Consensus
3 = Won’t block, but not consensus for the Task Force recommendation
4 = Won’t block, but not consensus for the Task Force recommendation
5 = Actively block

Question (1) The Task Force previously recommended as an interim criterion for determining the effectiveness of the program that the average observed salmonid predation rate falls below 1% of the observed fish passage at Bonneville Dam. Does this criterion remain useful for evaluating effectiveness of the permitted lethal removal? If not, what changes do you recommend?

Task Force Comments:

- Given the information I heard today, this issue is very complex. What can genetic information tell us about salmon? If we could tell that certain populations were being targeted, this might help our discussion.
- Do we know if we’re at 1%? A: Based on the Stansell report, predation has fallen to near 2%. Note that the 1% target was chosen as similar to that of historical predation levels.
- Caution against getting stuck on whether we have met this criterion, when we have not been effective on meeting our target actions.
- The focus has always been reduction, not elimination of predation.
- We have not seen any new information that suggests we will reduce that 1% level – I see no basis for changing the criterion at this point.
- Can we get levels down to 1%? A: Possibly. In three years we haven’t succeeded, but we also haven’t had a full shot at taking the number of animals that were allowable – we haven’t gotten there yet.
- In the EA that accompanied the justification, NOAA stated that it would be difficult to assess the effect – and difficult to calculate.
- 1% is totally dependent on run size. If we have ‘x’ number of sea lions that consume the maximum number of fish, the run size will dictate the percentage of take.
- 1% represents an objective, and we need to ask ourselves if we can stay below the 3-4% levels we have seen in the past – and at least have no increase.
- We can expect new sea lion recruitments to rise and fall with run size. Methods should be adaptable and effective at trying to reduce opportunities that exist at the dam.
- Recovery plans teach us to look longer term – if we intend to be successful, we will have an increased run size and more spring fish – and this will be more of an attraction. Also, in the event that catastrophic events occur in hatcheries above Bonneville, there would be a dramatic increase in predation on wild stocks. And, fishery harvest would be impacted. We need to prepare for these events, and keep
in mind the ration and how we calculate 1%. It is reasonable to target predation levels below 1%.

- Based on the literature, there have been improvements to the predation % in relation to run size, because predation as a percentage of the run is down with an increase in run size. To some extent there is a limitation to how many fish each animal can eat. Instead, recovery efforts could focus on limiting factors that can be addressed in a more robust manner. Predation by introduced non-native fish is also a major factor. Our focus here is on pinniped predation, but other factors should be addressed in a meaningful way as well.

- In general, the Task Force noted that progress has been made from 4% toward 1%. Questions remain about the impact on protected stocks, and the ratio between hatchery and wild fish. More information is needed on the genetic make up of the fish taken, and the run timing of listed stocks.

- The question remains useful but we haven’t been able to test it yet.

- Is the criterion targeting 1% of the overall run, or 1% of wild fish? The original intent was to reduce impacts on wild fish, so we will need to be clear this time if we are changing that assumption. One suggestion is to change this only if there is a substantial shift in hatchery: wild ratio.

- We do have mark rates, and can reasonably conclude that predation rates on hatchery and wild fish are the same. We have genetic information to distinguish between Snake and Columbia River stocks.

- If we have been implementing improvements to hatcheries as we think we have, there should be less distinguishing characteristics between hatchery and wild fish. Therefore, target 1% of the total run.

- Within the Spring Chinook stocks, there are some endangered, threatened, and not listed populations. It would be useful to know which stocks are being taken.

**Consensus:** The Task Force believes that the combination of boats and fishway hazing has not been effective in reducing predation in the area.

**Task Force Recommendation:** The Task Force agreed by consensus, with all 1’s and 2’s, to the following statement in response to Question 1:

**The 1% criterion should not be changed at this time, as it has not been tested. If the ratio of wild and hatchery fish changes substantially, there may need to be an adjustment to this target.**

**Information needs:** The states and federal agencies will share PIT-tag and other data to inform the Task Force on type and ratio of stocks being taken.

**Question (2) (a)** Does non-lethal hazing appear to be an effective aid in reducing sea lion predation on salmonids in the area? (b) Should non-lethal efforts be modified (increased, reduced, or re-directed) to improve effectiveness? (c) Have new non-lethal techniques been shown to be effective at deterring pinnipeds from predation that may be applicable to this interaction?
Task Force Comments:

- How do we define “area”? A: The sea lion exclusion zone (SLEZ) / Boat Restriction Zone (BRZ)
- If you stop hazing, could you trap more? ODFW: We really don’t think so – it would be beneficial to limit the hazing near the traps, and avoid hazing at 500 meter semi-circle around the traps.
- We have heard that boat-based hazing has not been effective, and non-boat based is somewhat effective. Could you take the funds from boat hazing and use it to improve M&E so we can come up with a strategy to be most effective in answering the questions? A: Yes, we could re-direct resources to non-boat hazing and be more effective with CSL. For Stellers, though – boat based hazing is the only deterrent, so we don’t want to move away from that altogether.
- I am not sure we have seen conclusive evidence that says hazing – either type – is effective vs. ineffective; it depends on our definition. If we define effective in terms of whether sea lions are disrupted in their feeding activity, we could do a targeted study using a hazing vs. non-hazing period and compare the amounts being consumed.
  - COE: We did that study in 2006, and found no net effect on fish taken – but, we did not separate between boat and non-boat hazing.
  - Action: It was suggested the Task Force review the study from 2006.
  - Our tracking shows that animals were not leaving the area with our hazing efforts, and that is how I gauge effectiveness.
- The IMATA report suggested that if trapping was done to the best extent, and if you could focus on naïve animals, hazing could be more effective. We don’t know that yet. Also, I have not heard evidence that lethal removal combined with hazing would not be effective and am still interested in pursuing that.
  - Recall that in 2007 we heard we cannot necessarily teach sea lions anything by killing an animal next to them.
- We heard that Acoustic Deterrent Devices (ADDs) are not having much of an effect. I have heard that ADDs lose their effectiveness when also using seal bombs, as animals might have hearing damage and therefore not be affected by ADDs. So you might consider abandoning that tool.
  - COE: We do not use seal bombs after April 1 due to potential impacts on the migrating fish. The question we should ask is whether background noise from the dam is too loud for ADDs to be effective.
- In 2007, we felt we really needed to investigate these non-lethal hazing tools to determine effectiveness, and we heard yesterday that no, these efforts are not proving effective. While we could do more research, the bottom line is we need to control predation and so far methods have been under-implemented. We need to evaluate our expenditures and look beyond the next two years, when we will be addressing this issue in other locations. I also appreciate that we have no tools other than boat hazing to deter Stellers.
- The data Stansell et. al provided in the 2007 process raised the question of whether hazing downriver would affect consumption. We are hearing now from IMATA that hazing should be focused near the dam. But we still needed to know
the answer to the downriver question. I am not hearing new evidence regarding the effectiveness of downriver hazing from the presentations made so far.

- Robin Brown, ODFW: This being a large area brings a unique challenge – there are fish everywhere, so simply moving pinnipeds may not save any fish. About 40% of hazing time was spent downriver, and we felt we were not effective in keeping up with animals. ADDs have been proven to be fairly ineffective in every location they have been tested.

- What if non-lethal methods have just not been applied at a high enough level? Could you use volunteers for a test with 10 times as many boats and see what can be done in the SLEZ?
  - A: We tried that in 2005 and they fled, but this operation was not sustainable. They would return soon after.

- When animals move up/down river, do they haul out? A: We do see them haul out at a fishery dock 10 miles below the dam, and of course the haul out sites at the dam; the animals manage to find a place to rest when they need to. There are many other places where they could haul out, but they choose to do so right near the dam where it is most convenient. Other haul out spots aren’t consistently used, and not for extended periods of time.

- The animals sometimes leave the area – is there any reason to believe it is due to hazing? A: Not likely.

- From the perspective of those that have been conducting the hazing, how effective have non-lethal actions been? A: Dam face hazing will not stop – this is a Wildlife Service function that addresses multiple predators. We have seen over the years that predation rates are greater near the entrance to the fish ladders. We are limited in terms of the resources we can put to this issue – CRITFC is also putting many resources toward boat hazing. With the caveat being Stellers, boat hazing has not been effective. Also, new techniques have not proven to be effective. Dam based hazing does not appear to be effective at chasing animals any more than 20 feet away. For the long term, the current approach is not practical or reasonable.

- We need to remove more Stellers to be able to get at the CSLs and encourage them to haul out. Therefore we should continue boat hazing and target Stellers.

- The COE’s report suggests that hazing is not effective in terms of reducing consumption. NOAA should consider removing non-lethal as a requirement if we think it is not an effective means of reducing predation.

- How do we deal with pinnipeds that use the lock system to get up above the dam? We may want to change the observation boundaries.

- De-emphasize boat hazing and dam-based hazing, as ground crews deem appropriate. Continue to use hazing as a tool for Stellers. Is this practically possible? A: Yes, we could work with our partners to determine where to reduce hazing in certain areas and consider how to redirect the resources to be more effective.

- Would a combination of lethal and non-lethal measures be practical, e.g. killing a problem CSL and leaving it in the water or on haul out areas? A: This would likely not serve as a deterrent – the animals might flee the area, but then make no further connections. There is evidence in other types of seals that would support
some initial deterrence, but there was no lasting effect. We don’t know for sure because we have not tried this measure.

- In terms of modifications, I agree with the idea to de-emphasize but not eliminate hazing altogether. We should recommend that the states/COE make modifications that assist trapping, that still address Stellers, and that are generally more effective. The current level of support to manage the pinniped/fishery interaction should stay as it currently is.

- If you shot an animal in the water or left a carcass in the water, wouldn’t that require a modification of the LOA, or a new NEPA process? A: Authority already exists to shoot animals in the water under certain circumstances. But the LOA requires that reasonable efforts be made to retrieve carcasses of animals that have been shot.

**Task Force Recommendation:** The Task Force agreed, with 15 votes of ‘1’ or ‘2’, to the following recommendation on Question 2:

The task force finds that the current hazing program does not appear to be effective at reducing predation in the area at this time. As such, the TF recommends removing non-lethal hazing as a condition of the permit. Instead, allow management agencies to modify the hazing plan as deemed necessary to enhance removal efforts, such as:

- Retain dam based hazing
- Re-direct resources to support the overall program of reducing predation.

**Note:** There was some discussion about whether to include a recommendation for a test of combined lethal and non-lethal techniques. Those in favor suggested it had not yet been tested on CSLs, that it had proven effective in other animals, and that it might be a way to use limited resources in the most optimal way. Other Task Force members felt that agency staff should make this call based on biological and human perception factors, and that the recommendation from the Task Force should be left open enough to allow agency staff to determine the best way to modify non-lethal deterrent measures. Still others opposed this suggestion and pointed to problems with public relations if dead sea lions are left at the dam. If this suggestion were added to the overall recommendation, the Task Force would not have consensus on the recommendation.

**Question (3)** Do the criteria in the authorization for identifying predatory sea lions remain appropriate? If not, how could these criteria be modified to improve effectiveness?

**Task Force Discussion:**

- We might want to modify the criteria as they seem to be an impediment to being able to remove as many as are truly persistent predators.
- Suggest that if an animal is seen in an area one year and seen again in year 2 – it should automatically be qualified for removal.
- We should be deliberate in removing the animals that have been there before and see what the impact is – so we can weigh what impact our best efforts really had.
• Suggest changing the definition of “area” to include the entire river above Tanner Creek.
• Reduce the required observation number of days to 3 days.
• Is it necessary to include the third criteria requiring non-lethal measures taken, if we are changing the criteria from Question 2 above?
• If we simply change the 2nd criteria to “twice in ____ period” – this will still take multiple days of review to get the CSL added to the list. If animals are there and known to be killing salmon, we should have criteria in place that allow for their immediate removal.
• It seems to me the most important criterion is the observation of animals eating salmon. We can assess whether an animal has eaten fish in other ways – such as conducting enemas on animals that are trapped. If an enema on a CSL that is not on the list shows it has eaten salmon, then it is immediately qualified for lethal removal.
• 1/3 of all animals are not returning – the 2nd criterion gives some leeway for cases that are not confirmed predators.
• The Task Force recommended 7 days in the report. NOAA reduced this to 5 days. If a reduction to 5 days is acceptable, is a reduction to 3 days acceptable? NOAA response: It is up to the Task Force to make the recommendation.
• It is safe to assume that any CSL in the area is preying on salmon.
• Is it clear whether we did not reach removal goals because not enough were added to the list quickly enough, or due to a lack of resources? A: Getting the animals on the list into the trap is really the bottleneck. The paperwork is as fast as it will get. Of 30 animals caught and branded, 2/3 were added to the list fairly quickly. Getting that same animal back on the trap again is the bottleneck. However, we do think reducing the # of days would get more animals on the list and automatically including those observed in the 2nd year, should improve our ability to move forward.
• Ultimately, we need longer term solutions.
• How many animals were on the trap and then released from the trap? A: We did not specifically keep a tally, but would guess that at some point or another, each listed animal has spent time on the trap before listing.
• Suggest “multiple days and/or multiple years” – the exact number of days seems arbitrary.
• The Task Force developed criteria in 2007 based on the desire to target known problem animals and avoid taking lethal measures against naïve animals.
• Suggest extending the timeframe for observing salmon beyond the January-May period.
  o This Task Force was convened to consider only spring-run salmon and therefore we can’t extend the timeframe outside that migration period.
• I am concerned that trapping takes time so if we look at 5 days of required observation, it will take several more to actually list and then trap the animal.
• Provide an additional tool for observing CSL? Change language from ‘observed’ to ‘documented’.
• Change the requirement to meet more than one criterion to just needing to meet one? And if so, should we recommend more days (7) to the observation criteria?
• The second option from the 2007 Task Force report referred to a much larger area than that above Tanner Creek – something like above mile marker 85. (NOAA response: We tried to take a conservative approach to avoid listing/trapping ‘naïve’ animals, as this was a concern expressed by the Task Force.)
• Note that these criteria we are developing seem more liberal than the first round. Maybe our option should require criteria 1 AND 2 or 3. (Some Task Force members agreed with this, others felt they were staying consistent with the thinking from before, since NOAA’s final LOA was more conservative than the original Task Force recommendation. Generally, the Task Force felt the authorization for lethal take needed to be toward repeat offenders.)
• I question the multiple years criteria – that pool of animals that may be seen only once.
  o We are trying to change behavior so we need to target those eating salmon and those bringing their cohort up to eat salmon. We need to be assertive with the program so we are actually testing out our criteria – we have not reached our allowable take number yet.)
  o After two years absence, an animal is not likely to be seen again. If this is the case, I am ok with the multiple years language.
• With 78 animals on the list, how many are reasonably expected to be eliminated next year? ODFW response: The most we have taken is 15 in one year. We thought we could get to 30 per year. The list has always been between 60-80 eligible pinnipeds.
  o Given that, if we add more eligible CSLs to the list, will that increase our removal probabilities? ODFW: No, not immediately.
• How realistic will it be to observe all the way down to mile marker 85? ODFW: Not likely from the dam. It could be done from boats, but has not traditionally been done.
• Can we infer that an animal is a major forager from the number of days it is observed to be hauled out? ODFW: CSLs generally haul out for about 2 days as seen in Astoria, and Stellers up to a week.
• Do you often observe sea lions not hunting salmon in the water? COE: No, they are hunting if they are in the water – or fleeing a hazing effort.
• We should not make it more difficult to get animals listed. I see requiring 7 days’ observation as doing that – so suggest we stay with 5. COE note: All CSL removed were observed for more than 7 days.
• There should be more than one sighting and one consumption to be a ‘significant impact’ animal.

Task Force Recommendation: The Task Force developed the following draft language on Day 2 of their deliberations; 12 members voted a ‘1’ or ‘2’ for the criteria, one voted a ‘3’, and two members voted a ‘4’:

The Task Force finds that the criteria should be modified:
1) Have been documented eating salmonids in the Columbia River above Tanner Creek Jan 1- May 31 of any year OR
2) Have been observed above Tanner Creek on any 5 days within a season OR
3) Have been observed above Tanner Creek in multiple years.

Task Force Members who voted a ‘4’ shared these concerns with the modified criteria:

- Not sure we can meet it. Too conservative. Many more predators at Bonneville need to be removed to get at our goal of 85 pinnipeds removed. We are well short of that number. This recommendation would make take easier than the current allowable, but still it does not get us there. I won’t block the recommendation if the Task Force decides to move forward with this recommendation.
- The lethal take goal is to reduce predation and increase recovery of salmon. Data indicates it is not doing this, so continuing take will not help us reach our goals. Replacement sea lions will continue foraging, and the program is doomed to fail in terms of meeting the 1% predation goal. Hundreds of animals are seen over the years, and this is a very different situation than at Ballard Locks, which held a limited number of animals.

Rationale: Since the Task Force recommended a modification to the current criteria for lethal take, NOAA requested the Task Force include justification for the modification. On Day 2, the Task Force recommended the following language, with a vote of ‘1’ or ‘2’ from 14 Task Force members, and a vote of ‘4’ from one Task Force member:

\textit{This modification increases effectiveness by enhancing the states’ ability to identify animals for inclusion on the list and ability to increase rate of removal.}

\textit{Task Force Member Comment:}

- Since NOAA chose a more conservative option last round, I do not feel we are going back to our original recommendation but instead we are moving toward our previous recommendation, and therefore the recommendation is reasonable. That said, it is highly unlikely we will reduce predation to 1% -- therefore Section 120 actions are likely to fail in the long term. While it is premature to give up at this point, for the short term (at least until authorization runs out), we should keep working at it and monitoring our effectiveness while at the same time seeking longer term solutions, e.g. Section 101 or 109. This will likely take time. My support is contingent on the commitment to this parallel effort.

\textbf{Next Steps}

During its next deliberation, scheduled for November 9-10, the Task Force will examine the final two questions posed to them. In the meantime, a number of information needs and action items were identified:

- NOAA: Evidence to inform question #4 – the degree to which removal displaces animals to other sites.
- COE: Reanalysis of data from Fig 5 Stansell report – page 12. Plots salmonid passage over dam and predation cumulative from 2002-2010. Suggests 700 fish/year loss to predation before passage of 2k fish/day begins. Concern with
timing of fish passage, usually earlier in the year. Is operation of the dam impacting that passage and delaying it such that predation is more likely? A year by year analysis break down would be helpful.

- **WDFW**: Numbers of animals marked; those that have hauled out again vs. those that have not hauled out again to look at ‘trap shyness’. Bonneville trap specifically.
- **Marine Mammal Commission**: Any additional non-lethal techniques available to us?
- **WDFW**: Impacts ESU by ESU – run timing, other sampling information to get at impacts to different stocks. Upper Col/Mid-C/Snake. Overlap with presence of CSL.
- **NOAA**: Smelt population declines may have impacted sea lion predation behavior – what is the current status and future indications? Status of other prey bases?
- **COE and Bob DeLong**: Those major predators not seen again—where are they? Cross walk of listed animals.
- **DS Consulting**: The Facilitators’ Summary and Draft Report outline will be available for review prior to the next Task Force meeting.
- **Action**: DS Consulting will distribute and post data received in advance of the meeting.
- **Action**: The group discussed their reimbursement process, which will be handled through NOAA. DSC will share contact information for Joanna Donnor, coordinator for all task force reimbursement logistics.
- One written public comment was submitted and the Task Force received a copy at the meeting to review and use as desired.

**Meeting Evaluation**

Task Force members suggested holding a shorter round of meetings next time, perhaps starting later on the first day and ending sooner on day two to allow for travel. It was also suggested that the meetings incorporate small group discussion, as was done in 2007. One Task Force member cautioned against shortening the meetings by too much, as time is needed for discussion.

These notes respectfully submitted by the facilitation team, Donna Silverberg, Erin Halton and Robin Gumpert. These notes were finalized and approved by task force member consensus on 12-17-10.