

DRAFT

**North Pacific Fishery Management Council  
Steller Sea Lion Mitigation Committee  
September 12-13, 2006  
Alaska Fisheries Science Center**

**Minutes**

The Steller Sea Lion Mitigation Committee (SSLMC) convened at the Alaska Fisheries Science Center on September 12-13, 2006. Committee members present were: Larry Cotter (Chair), Jerry Bongen, Julie Bonney, Sam Cotten, Ed Dersham, Kevin Duffy, John Gauvin, John Henderschedt, Dan Hennen, Sue Hills, Terry Leitzell, Dave Little, and Art Nelson. Also present were Kristin Mabry, Shane Capron, Melanie Brown (rapporteur), Kaja Brix and Dana Seagars (NMFS AK Region); Doug DeMaster, Lowell Fritz and Brian Fadely (NMFS AFSC), John Lepore (NOAA GC, AKR); and other NMFS and State personnel and members of the public. The primary focus of this meeting was a review of Chapters 1-4 of the preliminary draft Biological Opinion (BiOp) and continued work on the proposal ranking tool developed by the SSLMC with assistance from Peggy Merritt of Resource Decision Support of Fairbanks, Alaska.

Chairman Cotter reviewed the agenda, and Ms. Mabry briefly explained that the structure of the proposal ranking tool and some examples of model runs and sensitivity testing will be reviewed with the SSLMC after the BiOp discussion. A third version of the CD with the most recent supporting materials was given to each member of the SSLMC and others. This CD includes the responses to questions that were used to develop the draft BiOp, and presentations from the August and September SSLMC meetings. The minutes from the August 2006 meeting were accepted with Ms. Bonney's correction of attendees which she emailed to Bill Wilson.

Review of Draft BiOp

Notes here are based on the draft BiOp PowerPoint presentation attached to these minutes and from the discussion during this agenda item. Mr. Shane Capron of NMFS AKR Protected Resources Division (PR) presented a summary of the first four chapters of the draft BiOp. These chapters were provided to the SSLMC by NMFS Sustainable Fisheries Division (SF) and are not subject to public review at this time. The SSLMC and Council may wish to provide comments to SF to include in SF comments to PR by November 1, 2006. The public review draft BiOp is scheduled for release on December 1, 2006. The Council will review the entire draft BiOp at its February 2007 meeting. Once the public review draft of the BiOp is released, the SSLMC may begin considering potential changes to the action described in the BiOp. Fur seals are not part of this process because that are not listed, and ESA-listed salmon are being consulted on separately with the NMFS NW Region.

Chairman Cotter stated that it is likely that most of the SSLMC members have not had a chance to read the document since it was not released from NMFS SF until September 7, 2006, and some committee members did not receive the document via email and FTP transmittals attempted in the few days between its release from SF and this meeting. Mr. Capron stated that this new BiOp is also new to the agency with much new information and will take time to review.

The consultation process began on April 19, 2006, with SF requesting formal consultation with PR. PR agreed to initiate consultation and received an extension to produce the BiOp. PR gave the first four chapters of the draft BiOp to SF on September 7, 2006. SF provided this document to the SSLMC to allow for development of comments which the Council may consider if they choose to provide comments to SF. SF may incorporate the Council's comments in its response to PR. PR is seeking comments from SF on the baseline description and accuracy of fisheries and pertinent information in other chapters before moving forward with the analysis in Chapter 5.

Several sources of information provided important background for the BiOp. These included:

- Biological Assessment of the Effect of the Federal and State Parallel Groundfish Fisheries on ESA-listed Species and designated critical habitat. This document is SF's analysis of all ESA-listed species occurring in the action area, description of the action, and determinations of whether the fisheries were likely to adversely affect the species or designated critical habitat,
- Programmatic Supplemental Environmental Impact Statement for the Alaska Groundfish Fisheries,
- Response to Questions posed by PR to AFSC and SF regarding Steller sea lions and fisheries. This document is important for describing baseline and effects information,
- Draft Revised Steller Sea Lion Recovery Plan,
- Goodman et al. 2002 for the description of the action, and
- Other literature.

Mr. Capron gave an overview of the process for developing the BiOp, which includes a deconstruct of the action, identifying species and critical habitat occurring in the action area, describing species status, and analyzing and determining effects. The current draft BiOp only addresses Steller sea lions and their critical habitat, but humpback whales and sperm whales will be added to the final draft of the BiOp.

The final draft BiOp may have up to twelve chapters, depending on whether a jeopardy or adverse modification (JAM) determination is made. Chapter 2 is a more complete description of the action compared to Chapter 2 in the 2000 BiOp. The reasonable and prudent alternative (RPA) chapter would not be needed if the agency does not make a JAM determination.

Chapter 2 includes a deconstruction of the action (Figure 2.1). The action is broken into four main components: fisheries management policy, exploitation strategy, annual fisheries assessment, and fisheries implementation. An important part of the description that has not yet been completed in this draft is where, when and how much catch occurs inside and outside critical habitat. Dana Seagars is working with Mr. Capron to resolve data issues and to produce this analysis for the final draft. Mr. Seagars is on a detail from the US Fish and Wildlife Service to assist PR with the BiOp. Catch data will cover years 1990 through 2005. The description of the State of Alaska fisheries is in section 4.4.4, and this will be updated when the State finishes a new description of the fisheries. The new ADF&G document uses 2005 as the base year and will describe by fishery: the harvest management strategy, recent changes in temporal and spatial distribution since the 2000 document, and potential Steller sea lion interactions. The State's report will be provided to the SSLMC when it is available.

Chapter 3 describes the status of species and critical habitat. The Steller sea lion pup and non-pup survey for this year is not as comprehensive as in previous years due to the Humane Society litigation. The 2006 survey results will be included in the final draft BiOp. The population status including stock structure is based on recent papers looking at genetic structure using DNA (nuclear and mitochondrial) analysis. The DNA analysis indicates that the Asian stock should not be split at this time. One paper also has indicated that the current genetic fingerprint has been influenced by previous glaciations. Chapter 3 also includes information on Steller sea lion life cycle, demographic modeling, vital rates, and population viability analysis (PVA). Juvenile and adult survival has rebound since the 1970s, but female reproduction rates have declined. Mr. Capron noted that a decline in the fecundity will slow population increases and that the current reproductive rates indicate that continued increases in the population size is unlikely.

Telemetry results discussed in Chapter 3 are similar to the 2000 BiOp. Most locations recorded were inside 0-10 nm of critical habitat. Data to support the junk food hypothesis are lacking; therefore, other hypotheses have replaced it (e.g., Chronic Nutritional Stress Hypothesis). Nutritional stress appears likely to have occurred in the past and may still be a stressor based on the low fecundity. Nutritional stress is the most likely rationale to support the importance of bottom-up effects on Steller sea lion population dynamics. Because of the low pup

production, scientists at the AFSC have postulated that a continued increase in the population is not likely, and the population is expected to stabilize.

Chapter 3 includes an analysis of count data to identify sites important to Steller sea lions. Currently, 19 additional sites (RPA sites) are included with critical habitat sites that have protection measures. The 2000 BiOp considered protection of these sites important to avoid jeopardy. Chapter 3 of the draft BiOp identifies an updated total of 22 sites in this category, including some of the original 19 sites and several rookeries and haulouts that have been deleted or added based on recent usage by Steller sea lions. The analysis also discusses the relative importance of each season. This information will be useful for determining the potential effects of any proposed actions. This analysis also assists PR in understanding how the action may be important in terms of jeopardy because these sites are not critical habitat. Critical habitat cannot be changed with the consultation process. These 22 sites will not be part of the adverse modification analysis because they are not critical habitat, but they can be considered in the jeopardy determination.

Chapter 4 is the description of the environmental baseline. Climate and biological regime shifts and Steller sea lion responses to these shifts are examined. . There are some conflicting conclusions based on the use of two different scales: single species and ecosystem wide perspectives.

Killer whale (KW) predation was a concern to some SSLMC members. Mr. Capron and Dr. DeMaster stated that KW predation is unlikely to be a current stressor on the population. Ms. Bonney stated that reported numbers of KW predation events was not believable (86 events is likely too few) based on anecdotal observations in Kodiak alone. Mr. Capron stressed that the researchers have determined that KWs are not a stressor on Steller sea lions because (1) of the relatively high observed survival rates and low rates of reproduction and (2) the transient population, given the best available data on dietary preferences, is not big enough to influence Steller sea lion population trends on a stock-wide scale. However, it was noted that data are missing for some locations such as in the western Aleutian Islands.

Other items in Chapter 4 include an expanded discussion on Steller sea lion prey resources beyond pollock, P. cod and Atka mackerel and historical accounts of Steller sea lions (Section 4.3.11).

The description of the impacts of fisheries is very incomplete. Mr. Capron stated that Chapter 2 and 5 will need to be completed before the impacts of the fisheries on the baseline in Chapter 4 can be completed. The groundfish fisheries are part of the baseline because the current environment is modified by the fisheries. Two questions that PR will look at are:

- What would be the baseline if we hadn't fished?
- What would the baseline be like if we stopped fishing?

No conclusions have been developed for this section. PR looked at prey overlap and did mostly a cursory review. Fisheries catch data from Chapter 2 have not yet been compiled and are important to Chapter 4. The analysis will look at all species harvested because Steller sea lions eat more than just Pacific cod, Atka mackerel and pollock. This discussion will be expanded.

Some preliminary conclusions are based on information in the draft BiOp and are included in Table 4.8. These conclusions are up for review and may change. The consultation handbook requires NMFS to show stressors other than the action in the baseline description. The SSLMC had significant and lively discussion over the contents of Table 4.8. This table shows how PR's opinion of the contribution of different stressors on Steller sea lions has changed since the 2000 BiOp. The opinion of PR on the indirect fisheries effects has changed from "possible" in 2000 to "likely" in this draft opinion. Mr. Capron stated that enough information exists to detect a fisheries signal in the prey field along with all of the other environmental changes that have occurred. The next task is to determine how important fisheries are and what effect they may have on the Steller sea lion population, as mediated through bottom-up effects. Some SSLMC members were concerned that KWs have moved to the unlikely category for a current stressor on Steller sea lions. Dr. DeMaster stated that this table is

based on information in the Recovery Plan where fisheries were ranked a potentially high threat to Steller sea lion recovery. KW predation and shooting are not stressors that would lead to a reduction in fecundity. In the draft BiOp, PR is trying to synthesize the information and cannot disentangle fisheries and environmental effects. Mr. Capron stated that KW data do not support the idea that KW predation is outside the realm of nature mortality and that pieces are missing that are needed to inform the arguments for the conclusions.

The whole first part of Chapter 4 looks at regime changes and fisheries impacts. It is not clear how to determine separate effects. Some reports show fishing clearly changes ecosystem dynamics. If fisheries detract from the pristine environment, then fisheries are considered a current stressor and were therefore a likely contributor to the decline of the wSSL.

SSLMC members were concerned that different definitions are used in Table 4.8 for 2000 compared to 2006, and that the determinations are not well explained. Dr. DeMaster stated that in 2000, NMFS did not have adequate (1) vital rate information from resights of branded animals and from photogrammetric studies, (2) telemetry data from juvenile SSL, and (3) data on killer whale numbers and dietary preferences. Because NMFS now has information to indicate fecundity is down, a nutritional stress conclusion seems reasonable. Mr. Capron stated that in 2000, NMFS had a primarily single species perspective. Now NMFS can look at both single species and ecosystems perspectives. It was also noted that NMFS now (relative to 2000) knows more about fisheries impacts on the prey field of SSL, that they likely have had long-term (and possibly irreversible) impacts, and impacts are more complicated than a traditional single species evaluation would suggest. NMFS now has data to support the conclusion that fisheries have fundamentally changed the baseline environment for SSL.

Chapter 5 will have two parts: an exposure analysis and a response analysis at the individual and population levels.

#### Adverse Modification and Jeopardy

Counsel Lepore reviewed the agency position on analyzing adverse modification of critical habitat based on the Hogarth memo from 11/7/05. Only the statutory definition of adverse modification can be used and not the regulatory definition based on this memo. This is based on a case where the court determined that the agency should not use a similar definition for adverse modification and jeopardy. Therefore, the agency focuses the jeopardy question on the survival and recovery of the population while the adverse modification question addresses only critical habitat and focuses more on recovery. The 2000 BiOp used the old definitions from the regulations, but the new BiOp will follow as policy the approach outlined in the Hogarth memo for adverse modification and use the regulatory definition for jeopardy.

Recovery in the new BiOp will rely on the proposed recovery criteria reported in the draft revised Recovery Plan for SSL. It was pointed out that this was necessary because the existing SSL Recovery Plan is out of date, as it does not apply the correct population designations listed for this species under the ESA. NMFS hopes that the draft revised Recovery Plan for SSL will be done in time to support the final BiOp.

#### National Steller Sea Lion Survey.

Mr. Cotten requested additional information on a contingent valuation project conducted by the AFSC. Dr. DeMaster summarized the history of this project back to 2001, noted the need for OMB clearance to distribute a survey to the US citizenry. He added that he and others and the Center and Region were involved in making revisions to the draft text of the survey. It was further noted that the purpose of the project was to assign an economic value to the existence and protection of SSL. More will be shared with the SSLMC when it is available.

Chairman Cotter instructed the SSLMC members to take the afternoon of Tuesday, Sept 12<sup>th</sup>, to read the draft chapters of the BiOp in detail, and to be prepared to ask PR questions the next morning.

#### SSLMC Discussion regarding the draft BiOp

On the second day, no one took the opportunity for public comment in the morning. Lowell Fritz, Mr. Capron and Brian Fadely answered questions regarding Chapters 3 and 4 of the draft BiOp. The following are the issues discussed by the SSLMC regarding the draft BiOp.

**Recovery criteria:** Chairman Cotter wondered what the basis was for the recovery criteria of 1 percent in 100 years. Dr. DeMaster stated that the agency had not agreed a specific value for ESA listing. However, he added that this value was recommended by participants at a NMFS sponsored workshop considering ESA Listing Criteria for large whale species. It was noted that the Conservation Biology literature commonly includes the 1% in 100 years standard for recovery. NMFS and the USFWS have tried to come up with more guidance, but the USFWS preferred to address it on a case by case basis. Dr. DeMaster commented that he worked with a joint NMFS/FWS working group assigned to address quantitative ESA listing criteria, which provided three alternatives for delisting criteria to NMFS and FWS. Currently, a post doc is analyzing the three alternatives including: a generalized PVA approach, an approach that uses life history and population data as a proxy for estimates of risk of extinction, and a Bayesian modeling approach. Mr. Capron reiterated that there is no policy or guideline for determining risk of endangered of extinction at present to follow regarding determinations in this Biological Opinion. He added that whether a population may become endangered is looked at over a longer time period than looking at the potential for a species to be threatened.

**Chapter 4, page 83:** The discussion here on the probability of extinction was based on the information reported in Winship and Trites 2006. They concluded that certain metapopulations within the wSSL population will likely be extirpated but not the entire population. It was noted that these conclusions were significantly different from those reported by Goodman, where he assumed that the population was basically composed of a single, large, intermixing population. Under this scenario, major portions of the range could be extirpated and the whole range would therefore be at risk of going extinct based. Unfortunately, the data needed to reliably select one model over the over are not available. Given the burden of proof mandates under the ESA, the Agency noted that a precautionary approach seemed prudent.

**Chapter 4, page 42:** This section describes the directed causes of mortality. Shooting data are for 2000-2004. It was noted that the data to estimate the actual number of mortalities caused by shootings is unknown; nonetheless there are estimates in the literature, which were reported in the draft revised Recovery Plan and used in the Goodman PVA. This estimate of 250 animals was recommended by Recovery Team members that worked on data to input into the Goodman PVA. Some members of the SSC think the shooting estimates for all of the time periods may be significantly underestimated. If the number of mortalities could be ascribed to a single period of time and if they estimate of 250 animals is negatively biased, the likelihood of extinction in the PVA would be reduced. The Recovery Team based the shooting estimates prior to 1990 on publications by Trites et al. From 1990 on, there are on published estimates to refer to; therefore estimates post-1990 are an order of magnitude estimates based on expert opinion. It was noted that the reason the estimated risk of extinction would be reduced in the PVA was because human activities can be controlled and therefore, it is reasonable to assume that the shooting portion of mortality will not happen in the future.

**Table 3.14:** Ms. Bonney recommended that this table should show the 0-3 nm zone because management measures are specific to 0-3 nm, and NMFS has emphasized the importance of this area. Mr. Capron confirmed that 0-3 nm is important but data were presented in 0-10 nm for analytical purposes and to be clearer to the court. The information in this BiOp is consistent with previous information in the 2003 Supplement to the 2001 BiOp. Therefore, the data were not binned at 0-3 nm and 3- 10 nm. Ms. Bonney responded that it was likely that the public will want the 0-3 nm information.

**Toxicity:** Chairman Cotter was concerned with the lack of discussion of toxicity and potential impacts on the recovery of the wSSL. Mr. Capron stated that the draft currently discusses all that is known regarding this issue, but perhaps more weight could be given to it in the discussion of baseline. Very little is known about toxicity effects on fecundity of SSL. However, Dr. DeMaster noted that studies have been done on harbor seals that indicate that an immune response would be expected at the levels of contaminants observed in SSL, which might affect reproduction.

**Chapter 4, page 19:** This paragraph eliminates the environmental effect as the sole cause of the Steller sea lion decline. Capron noted that NMFS cannot distinguish between fisheries and environmental effects with the available data. This is a general summary section and NMFS will look at other effects that may have caused the decline.

**Chapter 4, page 17:** One of the members of the SSLMC commented that there was a disconnect exists between paragraphs regarding the timing of the ramping up of the fisheries. This paragraph states the ramp up of fisheries occurred in the 1980s, but paragraph on page 19 states it occurred in the 60's and 70s. Further, it NMFS was asked whether the ramp up was for the foreign or domestic fisheries? This section is linking the ramp up with the environmental change. Mr. Capron stated **this section needs to be revised and condensed.**

**Single species modeling vs. multi species:** Broad conclusions are made at the end of Chapter 4. The Ecopath model was used to show that if fishing is stopped, the Steller sea lion population would likely initially increase and then decrease. Capron noted that NMFS is trying to reconcile single species model predictions of linear or exponential recovery of wSSL with the predicted results from the Ecopath model that shows fisheries do not have that much impact on the prey field after the time necessary for the simulated ecosystem to equilibrate. Capron commented that NMFS will need to struggle with this issue in Chapter 5. NMFS will have to make a determination as to whether Steller sea lion populations exposed to fisheries will become seriously depleted relative to the unfished condition. Chapter 4 conclusions are intended to be stepping off points for Chapter 5. Fisheries can change age structure and distribution of key prey species of SSL, and NMFS needs to determine what this impact would mean regarding the dynamics of Steller sea lions. PR will go back to Chapter 4 and reevaluate how the fisheries are described after doing Chapter. 5. Dr. DeMaster explained that the single species models of fishing at  $F_{40}$  predict greater impact on the ecosystem than do the multispecies model. However, DeMaster also noted that multispecies, ecosystem models are not ready for use in management decisions. He went on to comment that a conservative single species approach is still the most appropriate management approach at this time. In addition, it was pointed out that while a  $B_{40}$  fishing strategy was of potential concern under the Marine Mammal Protection Act in terms of whether or not commercial fishing could potentially cause marine mammal populations to become depleted, it was unlikely that this same strategy would significantly increase the risk of extinction of marine mammal populations dependent on prey species utilized by commercial fisheries.

**Telemetry, Chapter 3, page 28:** Recent telemetry data show a slight decrease in telemetry hits in the 0-10 nm area and a slight increase beyond 20 nm compared to previous data. The change was so minimal; therefore, it was noted that this would not change how zones were prioritized.

**State Waters:** There was discussion on federal regulations in state waters. Federal regulations include no-transient zones under the ESA and no groundfish fishing zones from 0-3 nm around rookeries under the MSA. Harvest in the GOA may be underrepresented in catch data near shore compared to the BSAI because of less observer coverage in the GOA. In many instances in the GOA, NMFS has data reported by State statistical area only. Chairman Cotter suggested that NMFS needs a better monitoring program beyond VMS such as electronic log books. **Mr. Cotten requested a better description of the sources of state waters harvest information compared to federal harvest information.** In the draft BiOp, observer catch information was used to estimate harvest in areas without observer data. In the past, NMFS tried to extrapolate from fish ticket data, but the resulting estimates were considered unreliable because conclusions were not robust to the assumptions made in deriving the estimates. It was also noted that estimates based only on data collected by at-

sea observers would underestimate total catch. The degree of underestimation would be related to the level of observer coverage by vessel size class. **One suggestion to evaluate the potential magnitude of the bias was to compare 2001 ADF&G fish ticket data with observer data in GOA.**

**Chapter 4, page 52:** One question raised by the SSLMC was why the harvest in State waters would have more effect than previously reported by NMFS? It was noted that NMFS was comparing current telemetry data to what was known in 2000. This section will be revised when the State completes its review of the State fisheries. It was noted that the State was close to finishing the document and providing it to NMFS.

**Salmon Sharks:** One SSLMC member asked if stomach analysis is planned for salmon sharks? Salmon sharks are primarily fish-eating but some have speculated whether this species also preys on marine mammals. Anecdotal information indicates that salmon sharks prey on sea otters. Dr. DeMaster reported that such additional studies would only be considered after the 07 budget was available. He added that there are no current plans for such research, and that it was not a priority for the SSL research program at this time.

**Foraging:** Chapter 3, page 37 and Figure 3.20b. It was noted that the dominant prey items vary considerably by region. Table 3.20b contains the same information that was used for the proposal ranking tool model development. These species are frequently consumed. Several SSLMC members recommended that NMFS expand its analysis of potential fishing impacts on prey beyond pollock, Pacific cod, and Atka mackerel. Further, it was noted that publications by Merrick et al. and Trites et al. relate composition or diversity of the diet to population trends. There appears to be less decline and stability where more prey items are available.

**Table 3.23, page 76:** The SSLMC recommended that **NMFS add information from the SE region to the table for comparison.** Mr. Fritz led the SSLMC through a review of the Holmes et al. model. This model gives the numbers of females at age in 2004. NMFS projected the age structure forward with the best available estimates of vital rates. The results suggested that adult and juvenile survival were at levels consistent with expected population increases; however, the estimated fecundity rates were insufficient to support a sustained increase. Fritz commented that based on this analysis, the observed increase in wSSL numbers was likely a transitory feature of a population that would stabilize or possibly decrease in the near future. Table 3.25 on page 78 provides the building blocks for projections. Fritz extrapolated data from the CGOA for other regions. Fritz noted that this seemed reasonable because ratios of pup to nonpup and juvenile to non-pup from the CGOA were observed in other regions. Table 3.26 shows the adult female to pup ratios. Because adult females come and go from the survey sites, the estimated pup/females ratio is lower than the theory would predict; therefore, it should be noted that these ratios are only indices of the true underlying ratios. Nonetheless, the observed ratios should be adequate for inferences regarding regional differences or similarity in fecundity. Fritz commented that about 44 % of all of the adult SSL females are photographed during a typical survey compared to 100% of the pups. He concluded that observed regional differences in pup/female ratios reflect regional differences in natality rates. He also commented that the prime years for female reproductive appear to be between 7 and 16 years of age.

Capron noted that NMFS cannot measure fecundity today in the same manner as it was measured in the 1970s because the research programs today do not involve killing the animals. NMFS therefore compares natality today to fecundity (pregnancy) back in the 70s. Natality is giving birth to a pup that survives to 1 month so they can be counted in an aerial survey. It was recommended that **NMFS should refer to table 3.26 in text and clarify what was intended. There was concern that the 44% in 1976 compare to 35% today on table 3.26 may not be accurate. Fritz agreed to check the 44% number in the text.** Table 3.26 attempts to look at regional differences in natality. Not all regions declined the same amount from 1976. Table 3.29 shows how population changes with changed fecundity and various population growth rates. This demonstrates that it is difficult to get populations to grow with even modest improvements in natality relative to current estimates. This analysis accounts for age specific changes in reproductive capability. Branding data show that juvenile survivorship is almost the same now as in the 1970s. Holmes et al. shows adult survivorship may be higher now than it was in '76. Based on Holmes et al. and branding data, increasing populations in some subareas may

be driven mostly by adult and juvenile survivorship. Empirical support for this hypothesis is shown in Table 3.26. Fritz noted that one would expect to see more pups if the population increase was driven by a combination of improved rates of survival and fecundity. Members of the SSLMC recommended that **NMFS should add a footnote to Table 3.27 that explains the use of natality rates now vs. fecundity rates from 1976.** It was also noted that the Holmes et al. paper is available from her website.

Mr. Leitzell was concerned about using CGOA data in this analysis and extrapolating to all areas, especially considering the different findings in Winship and Trites 2006 compared to Holmes et al. Fritz explained that Winship and Trites assumed the adult survival could be no better than in the which forced fecundity to be a higher rate. Holmes et al. accounted for juvenile recruitment so that the changes in age structure reflect changes in fecundity. He suggested that his extrapolation was appropriate because the site count data in other regions were consistent with what is seen in CGOA.

**Table 3.13, page 65:** Ms. Bonney asked that the data be binned to various depths. Dr. Fadely stated that the data have been filtered to remove surface positions associated with dives less than 4 m because NMFS scientists are not certain that feeding is going on in less than 4 m. **Ms. Bonney asked for the depth data to be displayed in a manner similar to the telemetry data.**

**Chapter 3, page 49:** The question was raised as to whether the population estimates from the 1970s were the basis for the subsequent estimates of percent decline in abundance of the wSSL population. NMFS answered to the affirmative. It was also noted that incidental takes in the fisheries had been estimated to account for approximately 25% of total mortality between 1985-89. Some SSLMC members thought that this estimate was negatively biased. It was noted that once this source of mortality was stopped in 1990, there should have been an immediate increase in overall survival of SSL. It was recommended that **NMFS include references for the early decline data discussed in this section.**

**Nutritional Stress vs. Disease and Contaminants:** Mr. Gauvin was concerned that there was not enough consideration of the potential effects of disease or contaminants on fecundity. He noted that one could argue that because adult and juvenile survival appear to have increased, that SSL were not affected by bottom up factors. Mr. Capron stated that NMFS cannot rule out influence of contaminants on reproduction, but NMFS does not have substantive evidence for it either. Females with a pup have to acquire a lot of energy and are limited on where they can go for foraging. This limitation makes females more sensitive to changes in prey availability. Capron added that there was a much greater decline in pregnancy in lactating females relative to mature, non-lactating females. He considered this affect to be sub lethal. **Dr. Fadely stated that disease effects on fecundity will be covered in the next revision of the draft BiOp.** He added that improved adult survival doesn't necessarily mean conditions (i.e., prey field) are able to support high levels of natality. This is because getting pregnant and carrying a pregnancy through the first trimester is not a large energetic cost (relative to costs of lactation), which may be why pregnancy rates are similar between the 1970s and 1980s. Energetic costs are greater later in the pregnancy term. It was also noted that the incidence of disease and contaminant levels were the same in the east and west populations of SSL, where the trajectories over time were considerably different. This finding is inconsistent with a conclusion that disease and contaminants are significant potential stressors on natality.

**Chapter 3, page 40:** **Some members of the SSLMC recommend that the contaminants section should be expanded here and on page 20 Chapter. 4.** Mr. Capron explained that the expanded discussion on this topic is in the draft revised Recovery Plan, and these sections are a condensed version. It was suggested that additional references to the draft revised Recovery Plan be added.

**Mr. Dave Fraser recommended that a section should be added that includes information on the degree to which there is overlap in the depth of fishing and depths of dives by SSL. He also recommended information be added on the overlap in depth of fishing for Atka mackerel, pollock, and Pacific cod.**

**Finally, he recommended the inclusion of a figure on the size distribution of Pacific cod from the Pacific cod fisheries.**

**Fig. 2.4 on page 98:** The question was raised as to why the carrying capacity reaches 0 before biomass of prey reaches 0? There was concern that this figure shows carrying capacity going to 0 around  $B_{30}$ . This does not agree with the figures of biomass showing  $B$  dropping below 30, yet the Steller sea lions have not disappeared. Mr. Capron stated that at some point before 0 biomass is reached, there will be no Steller sea lions because the available biomass would not support foraging. NMFS still does not have a clear understanding of the relationship.

**Chapter 4, page 24:** The question was raised as to how Williams et al. calculated the number 240-500 Steller sea lions killed in the BSAI by KWs? Some of the SSLMC members suspected that the number should be higher. Mr. Capron stated that there may be seasonal components or other factors that is not described. Paul Wade with the AFSC addressed this issue in Question 42 in the Response to Questions document. Most KWs are assumed to come from the west of the Shumagins in his calculations with a smaller number to the east, and the analysis is based on an 8 month time period. **DeMaster agreed to look into this issue and report back to the SSLMC at their next meeting.**

**Chapter 4, page 6:** There is conflicting information related to the biological and climate regime shifts. Mr. Capron stated that this shows the different perspectives from different authors. **NMFS will continue working on this and do a narration to deal with conflicts and what it means.**

**Weaning:** Dr. Fadely stated that new information on weaning will be considered for including in the draft BiOp

**Chairman Cotter commented that he believes the SSLMC does not need to comment on the draft BiOp to the Council, but will report at the October Council meeting that the SSLMC did receive and review the draft BiOp.** Kaja Brix stated that the Council Chair wants a status report and not a review of the document, so the BiOp is only an informational item at the October Council meeting.

#### Presentation of Proposal Ranking Tool

Ms Kristin Mabry presented the Proposal ranking tool (PRT) to the SSLMC including a review of the scope, structure, and variables of the model, and a demonstration of how the model works including examples model runs and sensitivity analyses. Her PowerPoint presentation is included with these minutes.

The PRT is designed to rank proposals according to their relative impact to Steller sea lions against each other and against the status quo. Model output is only one piece of information that the SSLMC will use to make informed decisions when putting together a package of recommended changes for the Council. It is very important to note that the PRT does not provide any information as to whether the proposals individually or cumulatively will result in JAM.

It was further recognized that once the SSLMC knows how much additional impact, if any, will be considered under the 'jeopardy bar', models scores from the proposal runs and status quo scenarios could be used to 'trade' one score for another, and to compare status quo situations to additional restrictions, in order to find a suitable cumulative accounting of impacts. The SSLMC may wish to consider other tools beyond the PRT to account for impacts and benefits not explicitly addressed in the model. Other determinations outside the PRT must be carefully documented.

The current PRT is spatially and temporally explicit, so its use in scoring proposals that have spatial and temporal components is straightforward. Many of the proposals received by the SSLMC and some examples discussed at this meeting do not fit as easily into the current model structure as presented. These proposals will

require clarification and extra information from the proposers to make sure the model is characterizing proposal effects correctly. A PRT subcommittee was appointed to include committee members Dan Hennen, Sue Hills, Kristin Mabry, Doug DeMaster, and Lowell Fritz. The subcommittee is tasked with assembling datasets for model use and making and documenting technical determinations about best use practices for the PRT.

A number of PRT variables needed to be more clearly defined, and committee discussion during Ms. Mabry's presentation resulted in the following definitions. In a few cases, the committee may choose to revisit definitions at one or both of the October meetings as data become available and proposals are more clearly understood.

**% TAC:** Percentage of the sum of all the seasonal TACs for that target species. For instance, Pacific cod would be the percentage of all the sectors seasonal allocations. A specific year does not have to be assigned to the TAC value. The calculation would either add or subtract the percent of TAC from the status quo. If a shift of seasonal TAC is for one sector, the model would need the overall effect for the entire Pacific cod fishery.

**Duration:** This term is related to intensity of harvest (amount and time) and addresses localized depletion concerns. Less harvest in a longer time frame is less likely to result in localized depletion, and this would be considered a longer duration fishery. There was some discussion about semantics, and some members of the public offered the term "temporal distribution" as an option to the term duration. It could be that shifting TAC by eliminating or instituting seasonal splits would change the duration of a fishery, but not necessarily the duration within the season.

**List of Sites:** Mr. Fritz reviewed how the sites were categorized based on use and time period. Sites to consider include critical habitat and additional sites that NMFS has identified as important. The percent of sites is based on the number of sites affect in a subarea. The model does not differentiate importance among sites and that would have to be done based on criteria outside the model. The delisting criteria in the current version of the Steller sea lion recovery plan identified six subareas of roughly equal importance to delisting. There was some committee discussion that all sites and all regions might not be considered equal based on population trajectories from Anne York's metapopulation work, and opinions provided by the PR in the 2004 informal consultation. **The SSLMC also needs to decide how to deal with different types of sites in a subarea.** Options include using the worst case scenario, using the type of the majority of sites in an area, or adding the effect of each type of site together.

**Season:** The effects of fisheries on Steller sea lions dimension of the PRT defines the season variable based on breeding/non-breeding Steller sea lion behavior, and the effects of fisheries on the prey field defines the season variable based on fishing season. The regulatory seasons for fishing do not match up with the breeding seasons for Steller sea lions. **The PRT subcommittee needs to determine how to use the model to address partial overlaps between these two variable definitions. Ms. Bonney and Mr. Henderschedt volunteered to work with Ms. Mabry to develop a table that assigns the regulatory seasons to the seasons in the model. This table will include their experience regarding timing of harvest to ensure the actual harvest during a season is taken into consideration.**

**Status Quo:** There was considerable discussion on how to define Status Quo in the model to detect impacts correctly for each proposal. The example runs (described below) show that definition of status quo has a direct bearing on the net effect of each proposal. The SSLMC generally agreed that status quo needs to be considered in the context of each proposal, scoring the model variables consistently in each case.

Ms. Mabry presented model runs on the negative impacts portions of two proposals that were considered by the SSLMC in 2004 for potential changes to the GOA Steller sea lion protection measures. One of the proposals was accepted and implemented (Puale Bay) and one proposal (Marmot Island) was rejected. Because the SSLMC expert judgments in the PRT weigh proximity and site-type very heavily in scoring proposals, the model gave a higher score (more negative impact) to the Puale Bay proposal than to the Marmot Island

proposal. Even though Marmot Island is a rookery, this proposal only opened up critical habitat down to 10 nm from shore. The Puale Bay (haulout) proposal opened up critical habitat down to 3 nm. In 2004, PR determined that Marmot Island as a single rookery was important to the recovery of the species, and the agency needed to maintain protection in that area. Currently the model does allow for this level of spatial discrimination. The committee discussed the possibility of assigning differential weights to individual sites based on detailed information from PR (see List of Sites text above). If the model is not fully informed with this type of information, then decisions about proposals outside the use of the model should be fully documented with that information. Several members of the SSLMC and the public stayed after the close of the formal meeting to look at the sensitivity of the model. In Expert Choice software, the user can interactively shift priorities among variables, and watch the resulting model weight change. Two hypothetical proposals were run through the model. One had an expected high impact, and the other had an expected low impact. The SSLMC were glad to see the actual model output scores reflect a common sense approach to categorizing the impacts. Additionally SSLMC members wanted to see what happened to total proposal scores when different bins were selected for the variables. For example, if a proposal changed from a shorter duration to the same (current) duration, they could see the total score decrease, reflecting the preference for a longer temporal fishery distribution to avoid SSL nutritional stress. Also, if a proposal changed species from Atka mackerel in the western Aleutian Islands to Pacific cod in the same area, the total score decreased, reflecting the importance of Atka mackerel in SSL scats in that area. This pleased those in attendance, as the model is accurately representing the expert judgments the SSLMC members contributed in the formulation of the model. Ms. Mabry will present additional model runs at the next two SSLMC meetings so that the committee can see how model development is progressing.

Chairman Cotter requested PR's feedback **on the SSLMC's use of the PRT and for guidance on how the resulting proposal package might be viewed in terms of the latest findings in the complete draft BiOp** before taking this package to the Council in February 2007. Counsel Lepore stated that PR likely will not be able to give an evaluation of the model before the BiOp is completed. Dr. DeMaster stated that it is reasonable to ask for PR's impression on whether the conservation measures have been changed and the direction of change, and on the criteria that will be used to judge proposals relative to JAM. PR's response could be to not accept actions that would be too aggressive, be noncommittal about moderate impacts, or accept actions that have minimal impacts. Counsel Lepore stated that this is difficult to predict at this time because we do not even know PR's opinion on status quo yet.

The Council is scheduled to take final action in June 2007. The final BiOp that includes the SSLMC package may show the fisheries as amended are not likely to result in JAM, or if JAM is determined, it would include RPAs to offset potential impacts to SSL. IT was recommended that the Chair of the **SSLMC let PR know what the committee needs in terms of future meetings as soon as possible.**

### Wrap-Up

Ms. Mabry will compile the Response to Questions reference in the draft BiOp presentation into an easier to use document and distribute to committee members in the next few days. She will work with AFSC and the PRT subcommittee to assemble datasets required to score variables correctly in each proposal and in status quo. She will work with the PRT subcommittee to begin fine-tuning the model and running more examples for discussion at the next 2 SSLMC meetings.

The revised PRT will be presented to the SSC at the October 2006 Council meeting to get feedback on any additional improvements. **Each of the SSC's concerns from their August meeting should be addressed in the presentation.**

The SSLMC will give a presentation at the Board of Fisheries meeting on October 14-15, 2006. The BOF has specifically requested NMFS be at this meeting. At the October 16 -18 meeting of the SSLMC immediately following the BOF in Anchorage, the BOF action will be presented **NMFS needs to review the BOF proposals and be prepared to provide the federal perspective on the potential impacts.** Also at this meeting, each

proposer will be given the opportunity to present their proposal to the SSLMC in detail, and should be available to answer questions. **Ms Mabry is working on an outline for proposers, detailing necessary information to be included in each presentation.** This meeting will be held at the Hawthorne Suites in Anchorage. The late October meeting will include fine-tuning the PRT based on subcommittee input, bundling/eliminating proposals, and model runs. This meeting will be held at the AFSC October 30 – November 1.

Two meetings will likely be needed in January. The first meeting will be to review and comment on the entire draft BiOp which will be released in December, and the second meeting will be completion of the package of the SSLMC's recommendations for management measures for presentation to the Council in February. The Council may refine these recommendations.