

**North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
August 28-30, 2006
Alaska Fisheries Science Center, Seattle**

Minutes

The Steller Sea Lion Mitigation Committee (SSLMC) convened at the Alaska Fisheries Science Center on August 28-30, 2006. Committee members present were: Larry Cotter (Chairman), Jerry Bongen, Kevin Duffy, John Gauvin, John Henderschedt, Dan Hennen, Dave Little, Art Nelson, and Earl Krygier (alternate for Ed Dersham). Also present were Bill Wilson and Chris Oliver (Council staff); Doug DeMaster and Lowell Fritz (NMFS AFSC); Kristin Mabry, Scott Miller, Melanie Brown, and Sue Salveson (NMFS AK Region staff); John LePore (NOAA General Counsel AKR); Shane Capron (NMFS AK Region PR), and several other NMML and AFSC staff and members of the public. The primary focus of this meeting was to receive additional information on results of SSL research, particularly work in the central and western GOA regions, and to receive and list proposals received from the public. This meeting also included continued development of a proposal ranking tool which was moderated and facilitated by Dr. Peggy Merritt of Resource Decision Support, Fairbanks, Alaska.

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Chairman Cotter reviewed the agenda (attached), the work schedule for the coming several days, and Bill Wilson reviewed the handout materials provided to each committee member. The minutes from the July meeting were approved. Kristin Mabry reported that a third edition of the Committee's resource CD will be produced and provided to the Committee in a week. Mr. Cotter noted that the Committee has several meetings scheduled for the upcoming months, culminating in a recommendation on proposed changes to fishing regulations to be submitted to the Council for their February 2007 meeting. In the immediate future, the Committee's September 12-14 meeting (Seattle) will focus on finishing the proposal evaluation tool and reviewing the first four chapters of the draft BiOp. The October 16-18 meeting (Anchorage) will include a review of the Board of Fisheries actions on groundfish proposals for State waters that might have effects on Federal fishery management. A meeting scheduled for October 30, 31, and November 1 (Seattle) will be to conduct initial reviews of the proposals and identify data needs.

The Committee received the results of scientific studies in the central and western GOA conducted by University and Aleutians East Borough researchers. The Committee also received a presentation from archeological studies of Aleut and SSL coexistence dynamics over the past 6,000 years in the western GOA and eastern Aleutian Islands area.

Ecosystem-based Research on SSL Decline

Dr. Kate Wynne, University of Alaska Fairbanks, introduced the SSL research program conducted by the university and other groups in the central and western GOA. The focus of much of this work is on the interactions and diet overlap between piscivorous birds,

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fish, and marine mammals in this region and the implications for SSLs. The focus is on natural changes in the prey base RE: human and non-human competition for prey.

Dr. Wynne noted that, in the central GOA, SSL observations have occurred continuously over multiple years; results show considerable seasonal variability in abundance at rookeries and haulouts seasonally, and studies show movement of SSLs between sites is common. Reasons are unclear; some occurrences of SSLs at commercial salmon fishing sites may relate to availability of salmon prey in fishermen's nets, while other reasons include weather, specific site conditions (topography, geologic changes), and certainly prey availability. Dr. Wynne noted that while prey items in SSL scats may indicate diet preferences, the locations where these prey items were obtained is largely unknown although can be inferred from foraging trip duration.

Dr. Wynne presented SSL diet information based on scat collections. Diet preferences vary by region, and in the Kodiak area sand lance, pollock, arrowtooth flounder, Pacific cod, and herring are the most prevalent items. Seasonal differences have been observed where diet preferences shift – e.g. salmon are important in summer. Also, some SSLs during certain time periods or locations may feed on one or two main items, while in other areas their diet may be comprised of a dozen items. It is likely that SSLs are opportunistic feeders, taking those prey that are abundant in that area or season. Brand-resighting studies show movement among sites, occasionally large distances. This work also has shown that weaning may not occur after a single year but may include some juveniles that wean after two years.

This program also includes diet overlap studies, including work on prey items of whales and birds and comparisons with feeding ecology of SSLs inhabiting the same areas/seasons. Harbor seals consume similar prey items as SSLs; however, harbor seals in the Kodiak area are increasing in abundance while SSLs are not. Fin and humpback whales also are increasing in abundance in the North Pacific and may be potential competitors for SSL prey as they consume some small forage fish along with large zooplankton. Studies will continue in future years to examine this potential prey overlap between whales, harbor seals, and SSLs. Piscivorous birds also co-occur with SSLs and prey on some similar items such as sand lance, capelin, sandfish, and salmon. Dr. Wynne's research results pose the question: if SSL competitors are increasing or stable in abundance, yet feed on the same or similar items, and SSLs are trending down in the same areas, why? One potential answer might be predation on SSLs, such as killer whales or sharks; the "Kodiak killers" are an example. Future research may provide insights.

Shumagin Islands Region SSL Surveys

Kathy Foy reported on studies sponsored by the Aleutians East Borough on SSL abundance, trends, and diet preferences in the Shumagins area. Ms. Foy reported that SSL abundance on sites in this area fluctuates seasonally, with higher numbers of SSLs present on rookeries in summer, the breeding season, with abundance then falling off as winter approaches when many SSLs leave rookeries to use other sites in the winter months. SSL diet in the Shumagin Islands region is similar to the SSL diet in the Kodiak

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area, consisting primarily of pollock, sand lance, salmon, arrowtooth flounder, and Pacific cod. This research program is currently limited because of permit constraints.

Aleut History and the North Pacific Ecosystem

Dr. Herb Maschner, Idaho State University, presented an overview of his archeological studies of Aleut culture and co-habitation with SSLs and other components of the ecosystem from midden and other evidence from the past 6,000 years. Conclusions reached to date include:

- SSL skins were of prime importance to Aleuts to meet needs for kayaks used for transportation; five to seven skins were needed for each boat, which had to be replaced once per year; SSLs were the only source for usable skins
- Aleuts harvested about 30,000 SSLs annually; 400 to 1,000 years ago SSLs were at their peak abundance
- SSLs responded to this harvest by inhabiting sites that were more remote or difficult to hunt, and by producing large numbers of young to compensate for the harvest; this adapted behavior is likely one of the reasons for today's observed SSL behavior and population dynamics
- Cold periods of time are bad for SSLs, warm periods good; climate records (e.g. pollen cores) and midden evidence for SSL abundance indicate a close correlation, but this correlation falls apart when examining data for more recent years
- SSL abundance collapsed in the early 1900s when wood dories appeared; Aleuts no longer needed to hunt SSLs as intensively; the SSL population continued to grow until it crashed
- In historic times, SSLs were most abundant during periods of cooling climate – e.g. 4,000 and 600 years ago

Dr. Maschner presented a great deal of information on the prehistory of the Aleutian Islands and other areas inhabited by Aleut peoples. He reported on how Aleuts lived in communal houses, the evidence of which provides a picture of living conditions, abundance of SSLs, tools used, etc. He ended the presentation with a perspective on historic cycles of SSL abundance which was related to Aleut hunting, climate regime shifts, and other factors. A technical paper that summarizes much of Dr. Maschner's work has been submitted for publication; the paper was provided to the Committee for reference.

SSL Trophic Ecology

Dr. Bob Foy, University of Alaska Fairbanks, Kodiak Campus, presented data on SSL prey dynamics based on studies in the Kodiak area, primarily around the Long Island haulout and the Marmot Island rookery. These studies relate to some of the hypotheses for the SSL decline: prey availability, competition for prey, and environmental variability.

Prey availability studies include acoustic surveys of prey biomass in the study area. Researchers have used survey data to develop contour plots of biomass and then quantify

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biomass by subarea, by prey species and size (for some items – e.g. pollock, capelin), in pelagic and demersal habitats. Results include seasonal variability in biomass, areal variability, and variability in amount over seasons. Prey distribution studies near a haulout and a rookery showed more prey in winter at the study haulout. This may correlate with observed SSL movement patterns – i.e. perhaps some SSLs depart certain rookeries for haulouts where they may have more prey available during winter months. These studies also included more detailed studies of prey items within the 10 n mi zone. Monthly surveys showed greater abundance of prey within this zone in May and June, followed by lower abundance in July through September. Another study is looking at herring and pollock abundance in bays around Kodiak; preliminary results indicate pollock can be abundant in winter, less so in summer; and pollock may be highly concentrated in some bays, and nearly absent in others.

Fine Scale Density of Nearshore Fishes

Cathy Foy reported on studies conducted at several sites around Kodiak of the frequency of occurrence of fishes that could be SSL prey items. Surveys were done with SCUBA gear and were conducted in different depth strata, comparing areas near a haulout versus an area near a rookery. No differences in prey species richness were observed between site types, although there was variability in species abundance at certain depths.

Pollock Movement Studies

Dr. Foy summarized a study that has been initiated to capture pollock and tag them to track movements. To date, capture techniques have been attempted so as to avoid pollock mortality in trawl cod ends and swim bladder injury. This study continues.

Energy Content of SSL Prey

Dr. Foy also reported on studies of energy content of SSL prey using proximate body composition assays (lipid, protein, ash, water). The primary focus is on gross lipid content to determine potential energy values of different SSL prey items. Data indicate higher lipid content in early winter versus spring for pollock. Of the prey items tested, eulachon (hooligan, Frank) are the highest in lipids followed by arrowtooth flounder.

Other Studies at UAF

Dr. Foy summarized briefly a number of additional studies under way in the Kodiak area:

- Composition of prey for humpback and fin whales
- Humpback whale foraging habits
- Arrowtooth flounder prey composition; these flatfish prey on some items that are consumed by SSLs; they also are SSL prey themselves
- SSL prey field response to environmental variability
- Zooplankton distribution and abundance
- Pacific cod swimming performance related to temperature change
- Pacific cod and pollock bioenergetics

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Proposal Review

Larry Cotter and Bill Wilson introduced the proposals received at the Council offices by the August 18, 2006 deadline. Twenty-nine proposals for changes to SSL protection measures in the pollock, Pacific cod, and Atka mackerel fisheries were received and will be reviewed by the Committee. Additional, as yet to be determined, proposals developed by the Alaska Board of Fisheries may be added to that group. The Committee went through the proposals in hand and discussed them briefly. The Committee noted that the kinds of changes in these proposals might help guide the Committee's work to finalize the proposal evaluation tool.

A report will be provided to the Council at the October 2006 meeting on the number of proposals received, and the schedule for Committee review and eventual recommendation for action.

Proposal Evaluation Tool – SSC Review Comments

Bill Wilson reviewed the minutes from the SSC meeting of August 15-16, 2006. During that meeting, the SSC provided comments on the draft proposal evaluation tool report. Those comments include suggested refinements to the tool that the SSLMC will consider at this meeting. An excerpt from the SSC minutes with the SSC's recommendations for improving the tool are attached. The following is a review and a summary of the Committee's discussions of the SSC comments (nine total).

Comment 1 includes two issues. The first suggests that the SSLMC include a ranking for how a proposal may increase/decrease anthropogenic effects on SSLs such as through incidental disturbance or injury. The Committee discussed this at some length, noting that it previously considered this as a factor but decided not to include it in the ranking tool but rather deal with this potential, although rare, issue outside the ranking tool procedure. John Gauvin noted that fishery-related injury or mortality is already addressed in the List of Fisheries process. Others on the Committee commented that this should be considered outside the tool procedure. The Committee agreed to report to the SSC the sentiments above and exclude anthropogenic effects from the evaluation tool.

The second issue was a suggestion by the SSC to include effects on bycatch of non-target SSL prey species. Discussion included various pros and cons for considering bycatch, but the general agreement was to look at this issue later and possibly to include some kind of measure related to status quo of a proposal's impacts on bycatch.

The second SSC comment suggested several alternative measures that might be included in the model rather than the Committee's previous TAC-to-biomass ratio concept. One alternative would be to use the biomass field data provided in the 2003 BiOp Supplement. Generally, the Committee did not have a good substitute for the TAC/biomass ratio suggested at the last meeting. Additional work on this issue was completed later in the meeting.

The third SSC comment recommended including in the tool a criterion for target fish species removal rates by gear type. The Committee has previously dealt with this

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question and decided to address removal rates in another part of the model, as part of the pulsed versus prolonged fishery rating. To go further with this concept may require data that are not available.

SSC comments four through nine were discussed briefly. Many of the SSC's comments can be addressed by including additional narrative in the next draft of the report.

The Committee discussed how the NMFS Protected Resources Division might interact with the Committee in development of this proposal evaluation tool. Larry Cotter noted that NMFS PR should provide some kind of agreement that use of this tool is appropriate for rating proposals. Shane Capron noted that the agency is aware of its development, but is focusing on the consultation process and writing the draft BiOp and likely would not be interacting with the Committee further on the development of the tool. Chris Oliver expressed concern that after proposals are reviewed and a sub set is selected for analysis, the agency might not concur with how the tool was applied and thus require the Committee to backtrack to gain PR's concurrence. Mr. Capron noted that the Committee is ahead of the process and probably won't be able to fully evaluate proposals until the draft BiOp is completed; at that time the Committee will have the agency's perspective on fishery interactions with SSLs. Mr. Cotter suggested that the SSLMC proceed with development of the model and then revisit the model and its assumptions when we have the draft BiOp in hand.

Adaptive Management Subcommittee

The Adaptive Management group met on Tuesday, August 29, during the noon break to continue work on the design of a possible experiment that would test fishery effects on SSLs. That subcommittee report will be provided separately. Joining that group at this meeting were Dr. Andrew Trites, Dr. Bob Foy, Lowell Fritz, Melanie Brown and Dr. Anne Hollowed along with subcommittee members Hennen, Gauvin, DeMaster, Krygier, and Wilson. Dave Fraser, Kristy Despars and Sandra Moller also attended.

Proposal Evaluation Tool

Peggy Merritt provided an overview of the proposal evaluation tool as it was configured at the last meeting. Dr. Merritt discussed some of the SSC comments, and presented a draft straw man hierarchy that might address the SSC concerns. The first issue the Committee addressed was the suggested substitute for the TAC/biomass ratio concept. Discussion included concern over lack of data to improve on the Committee's previous idea. The Committee was joined by Dr. Pat Livingston, member of the SSC, to help provide additional insights into the SSC's suggestions. The concept the SSC believes should be added to the model is a criterion that considers target species biomass after removal by a fishery relative to the combined biomass of Pacific cod, pollock, and Atka mackerel before removal of the target species biomass. This would put into perspective the harvest relative to the total prey field. Some regions may have a large abundance of pollock relative to the combined biomass of all three species while another area may have a small amount; removals of pollock from each area could have different impacts.

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The Committee discussed this at length. Comments included concerns over lack of data to properly develop a total prey biomass field for each region. Others suggested returning to the original TAC/biomass ratio concept. John Henderschedt suggested that the issue is the intensity of a fishery: will the proposal result in an increase in the length of a fishery (harvest over time)? Will it result in an increase in the amount: how fast, how long, over what size of area? Kevin Duffy noted that the Committee has already addressed this issue when it developed the weighting factors for the three fisheries relative to the entire prey field available, including other species. Mr. Duffy noted that this process was based on a table of relative importance of Atka mackerel, pollock, and Pacific cod relative to all other known SSL prey items provided to the SSLMC at the July meeting by the subgroup (DeMaster, Fritz, Wilson); the Committee's minutes from the last meeting bear this out. Others agreed, but Earl Krygier indicated that his voting for weighting factors did not take that into account and that perhaps the Committee should revisit this and perhaps revote.

After a break, the Committee again discussed this in considerable detail, exploring a variety of concepts. With considerable disagreement on approach, the Committee eventually settled on a concept that would be revisited the next day (on Wednesday). This would use removal amount and rate of removal of target species relative to the status quo as a first level variable. Under that would be season and whether the proposal would result in a removal within that season or shift removals to another season. Under those variables would be quantity of harvest (large, moderate, etc.) and the duration of the harvest.

The Committee returned to this issue on August 30. During a review discussion, Pat Livingston provided a suggestion to incorporate a regional element in the bycatch category. This led into a general discussion of bycatch and how to address the potential bycatch of nontarget species that are important in the diet of SSLs. Including the term "relative to status quo" was suggested to clarify how a proposal would be scored in this category. Also suggested was including "importance of other prey" along with "importance of target species" as the two main elements under seasons (in the nutritional needs of SSLs main element). There was some agreement with this approach as it recognizes the importance of the entire prey field and how a proposal might affect components of that prey field (i.e. the target species and effects on the other prey items as well). Also, this visibly shows to the public that the Committee is considering the entire prey field in ranking proposals, per suggestion from the SSC.

An alternative would be to just revisit the weightings the Committee members assigned to the three main fisheries in context with the bycatch of other prey items in each fishery. This discussion continued for hours. Eventually, the Committee Chairman suggested that other prey items be explicitly included, and then the Committee should revote and score the three fisheries plus other prey items in relative importance, by region.

Public Comment

Dave Fraser commented on the Committee's ratings of importance of a target species based on diet data in the Aleutian Islands. He also commented on ratings made for opening zones around SSL sites. He did not provide any specific numerical

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recommendations but pointed out some data on importance of diet components by region. Mr. Fraser also suggested that the Committee consider location when rating harvest relative to available biomass.

Continued Development of Proposal Evaluation Tool Hierarchy

The Committee discussed whether to include in the prey dimension an element for considering the changing biomass of target species into the future. The Committee felt there was too much uncertainty and decided to not include this variable.

The Committee took a break and worked in subgroups on several elements. One group (Hennen, Krygier, Wilson) took the prey data by region (scat data) and back-calculated number of scats where each prey item occurred and then calculated the percent frequency of occurrence of pollock, Atka mackerel, and P. cod in SSL diets in each region relative to total prey. The subgroup then scaled those frequencies relative to the highest, which was for Atka mackerel in the C/W Aleutians. The Committee discussed this and felt that only the frequency of occurrence, within a region, within a season, was appropriate.

Dr. Livingston presented to the Committee what data may be available to break down biomass for target species, and bycatch species, by region. Calculations of other species bycatch relative to catch of target species may yield results that will show the dominance of the target species with bycatch of other prey items very low, and thus this might not be appreciably different across regions. Also, we do not have biomass estimates for some prey items. Dr. Livingston agreed to develop a data set that the Committee can use to develop regional biomass estimates for prey items so that they can calculate relative fishery removals of target species relative to all prey available. These data should be available in about one week.

&&& Pat to send me a paragraph on this??????&&&

The Committee continued discussion of options for addressing bycatch, and whether inclusion of a rating would make a difference in overall proposal scoring. The Committee felt that addressing this issue in the text of the report might be the appropriate way to address the SSC comments. It was agreed to include a white paper in our report on this topic.

&&&Who will write it??????&&&

The Committee returned to the issue of how to rank the importance of Atka mackerel, pollock, and P. cod in the SSL diet relative to the entire suite of prey items used by SSLs in each region, by season. Dr. Hennen provided a set of ratings of prey items relative to the highest score among the three target species, by region. He also provided frequency of occurrence of the three target species relative to the entire prey field; he also added "other" prey items as a combined element. The Committee discussed the "mindset" that should be used in scoring. Mr. Henderschedt advised being careful of incorporating the total sum of all "other" prey items as a factor since in some areas this skews the frequency in significant disfavor of any target species. Others were uncomfortable scoring this element because of difficulty in defining "importance". Some recommended

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returning to their past scores of the importance of the three target species to SSLs (from the last meeting) to be sure they adequately reflect the importance of the target species in each region relative to the total of all prey items available in that region. The Committee decided to do that – revisit the scores and thus deal with the importance of target species relative to all diet species available in that manner. John Gauvin pointed out that this exercise and discussion points out the elements of difficulty in understanding the dynamics of SSL prey based on the scant data available. The Committee decided to abandon any effort to look at biomass ratios in favor of using the scores from the last meeting. Those scores were revisited; none felt the need to change their previous votes.

The prey field subgroup (who met at lunch) presented their perspectives on how to score target species removals, by season. They recommended scoring by amount harvested: would the proposal result in an increase in harvest (in a region) that would be a slight increase, a moderate increase, a large increase, or would the harvest stay the same or decrease? For each target species, the criteria for judging would be a slight increase = 1 to 5% of the total seasonal TAC for all sectors in that fishery for that season, a moderate increase = 6 to 10%, and large increase = >10%, and no change or decrease.

That group also looked at pulsed versus extended fishing as a footnote to their discussions. This isn't meant to go into the model; rather, this is the kind of assessment of pulsed fishing this subgroup considered when developing the above criteria for judging. If the seasonal harvest remains the same or increases and the time taken to harvest the amount decreases from >10 days to a period of 3 to 10 days, then this is a pulsed fishery.

For duration, the subgroup felt that if the proposal would result in a season that is shorter, the same, or longer, these three were good criteria for judging duration.

The Committee discussed seasons and how to weight the relative importance of harvesting in winter versus summer, and how to weight a proposal that might harvest in each season. The Committee also discussed having a weighting process for proposals that might shift harvest from one season into another. After discussion, the Committee agreed to use these four categories and rated each according to what extent the harvest is removed may impact the prey field.

For proposals that might shift harvest, the Committee felt the only issue would be a shift from summer to winter; no proposals we have in hand propose to shift harvest the other direction. Fisheries tend to prefer harvest in winter when fish are more aggregated or in higher condition and therefore are more valuable. Regarding scoring winter versus summer, some felt that these seasons are equal; SSLs have need for prey year round. The Committee recounted compelling reasons for weighting the importance of the summer and the winter foraging seasons: In summer, SSLs are breeding, pupping, and attending young; females forage for nutrition for lactation; some attending juveniles continue to develop foraging skills. In winter, SSLs forage further from sites, expending additional energy. In winter, females continue to nurse young and juveniles continue to develop foraging skills.

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The Committee scored the season elements. The result of the scoring show that the Committee as a whole finds little difference between seasons.

The Committee discussed how to weight differing harvest amounts. Most felt that the scoring should be relative to status quo – that is, is the proposal going to result in a large increase in harvest, a moderate increase, a slight increase, or no change? The Committee agreed with these criteria and scored these four categories, in each of two seasons, and in the two harvest shift categories.

Finally, the issue of duration of harvest was discussed. Again, the Committee felt weighting factors need to be developed that are based on how a proposal would change harvest duration relative to status quo. This would be broken down into season (and season shift), by relative amount. The question to base weighting on is: To what extent does duration of removal at a *higher (moderate, lower, or no change)* amount impact prey in *winter (or summer)*? The main categories would be a lot more, a moderate amount, a slight amount, and the same or less, by season and season shift (four categories). The sub-categories are shorter, the same, and longer.

At this point the model has been built based on the hierarchy developed by the Committee over the past two meetings. The Committee still needs data from Dr. Livingston on TAC to biomass data for regional and local areas. After considerable discussion, the Committee decided to not pursue this approach and will ask Dr. Livingston to not develop these data at this time. The reason for not pursuing this is due to the difficulty in determining what is the difference between *regional* and *local* relative to prey and target species biomass, and the likely lack of data to refine the differences between regional and local scales. The original intent was to develop regional ratios of, for example, cod TAC/cod+Atka mackerel+pollock biomass. Then the Committee would take these regional ratios and score each based on the potential effects of harvest in each area relative to removals of the available prey base. The Committee felt uncomfortable with this approach, not only because of the difficulty in looking at local areas (no data) but also because the Council already takes into account the exploitable biomass when setting TAC and, by definition, would not accept a proposal that would go beyond what the stock assessment science provides. The Committee also agreed to include in the report a statement to the effect that we would like to have the data to develop biomass estimates for regions and smaller local areas within each region so that local-scale proposals could be adequately evaluated. When those data become available, the Committee would pursue inclusion of this element in this model.

Next Steps

Larry Cotter informed the Committee on the topics for the next meetings. In September the Committee will do some sensitivity tests of this proposal evaluation tool and run some demonstration proposals through the model. In this process, the Committee can do some reality checks and assess the process for inputting proposals. The first four chapters of the draft BiOp also will be presented in September for discussion and to prepare comments for the Council. The Committee also will look at the proposals in hand to be sure that the model will have the elements required to evaluate them. In mid October the Committee will review Board of Fisheries actions and further review the

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proposals, develop a list of information required from each proposer, and develop a list of scientific or other data that will be needed to evaluate each proposal.

Adjourn

The Committee adjourned at 4:30 pm Wednesday August 30, 2006. The next meeting will be at the AFSC on September 12-14, starting at 8:30 am on September 12.

Bill Wilson

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North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
Alaska Fisheries Science Center, Seattle
August 28-30, 2006

Meeting available by teleconference. Dial-in phone number: 907-789-6622.
Meeting times listed below are Pacific Standard Time.

Purpose: Review new Steller sea lion research results. Review proposal ranking tool report, review SSC comments, and continue development of hierarchy and rating factors. Receive proposals from the public for changes in regulations related to Steller sea lion protection measures in the pollock, Pacific cod, and Atka mackerel fisheries in the Gulf of Alaska and Bering Sea/Aleutian Island; conduct an initial review of those proposals.

AGENDA

August 28 – 8:30 AM – 5:00 PM

1. Introductions and Opening Remarks, Announcements, Agenda Approval (Cotter)
2. Minutes of Last Meeting, Report on SSC Meeting (Wilson)
3. Update on SSL Research – University of Alaska Fairbanks, Aleutians East Borough (Wynne et al.)

NOON to 2:00 PM - Lunch Work Session: Adaptive Management Subgroup and AFSC Scientists (Gauvin et al.)

4. Steller Sea Lions – An Archeological/Historical Perspective (Maschener)
5. Receive Proposals – Initial Review and Discussion (All)

August 29 – 8:30 AM – 5:00 PM

6. Proposal Ranking Tool Report and Work Session (Cotter, Wilson, Merritt)

August 30 – 8:30 AM – 5:00 PM

7. Proposal Ranking Tool Work Session - Continued
8. Action Items, Closing Remarks, Adjourn (Cotter)

Public comment periods will be provided during the meeting.

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Contact Bill Wilson at the Council offices if you have questions: 907-271-2809 or bill.wilson@noaa.gov

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Excerpt from:

**DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
August 15-16, 2006**

The Scientific and Statistical Committee met during August 15-16 at the Federal Building, Juneau, AK. The meeting was teleconferenced to sites in Seattle and Anchorage and by dial-in from other locations. Members present were:

Gordon Kruse, Chair <i>University of Alaska Fairbanks</i>	Pat Livingston, Vice Chair <i>NOAA Fisheries—AFSC</i>	Keith Criddle <i>University of Alaska Fairbanks</i>
Sue Hills <i>University of Alaska Fairbanks</i>	George Hunt <i>University of Washington</i>	Franz Mueter <i>Sigma Plus Consulting</i>
Steve Parker <i>Oregon Department of Fish and Wildlife</i>	Terry Quinn II <i>University of Alaska Fairbanks</i>	Doug Woodby <i>Alaska Department of Fish and Game</i>

Members absent:

Steven Hare <i>International Pacific Halibut Commission</i>	Mark Herrmann <i>University of Alaska Fairbanks</i>	Anne Hollowed <i>NOAA Fisheries—AFSC</i>
Seth Macinko <i>University of Rhode Island</i>	Ken Pitcher <i>Alaska Department of Fish and Game</i>	Farron Wallace <i>Washington Department of Fish and Wildlife</i>

Decision Tool to Evaluate Proposals for Changes to SSL Protection Measures

Dr. Margaret Merritt (Resource Decision Support) presented a draft SSLMC report on the status of development of a multi-criteria decision tool to evaluate proposals for change in SSL protection measures in the GOA and BSAI Groundfish fisheries. Bill Wilson (NPFMC staff), Larry Cotter (SSLMC chair), Daniel Hennen (SSLMC) also contributed to the report presentation and provided information about the anticipated timing of SSLMC work to refine the decision tool and the receipt and review of proposals. Dave Fraser (Adak Enterprise Corporation) provided public comment.

In our June 2006 minutes, the SSC expressed reservations about the proposal evaluation tools then being considered (bump and zonal) and suggested consideration of an AHP-based decision tool as an alternative; the multi-criteria decision tool described in the SSLMC report was developed in response to our suggestion. The SSC would like to express appreciation to the SSLMC for their consideration of our request. We commend Dr. Merritt, the SSLMC, and NPFMC and NMFS staff for progress that has been made

towards development of the decision tool. The SSC is encouraged by the initial progress in development of the decision tool and recommends that the tool continue to be refined in advance of the October 2006 Council meeting. Among other refinements, the SSC encourages the SSLMC to consider the following suggestions:

1. The decision tool should reflect the suite of anthropogenic factors that have been identified as potential threats to the recovery of distinct population segments of the SSL population. Even though some of the potential threats (e.g., commercial takes, subsistence takes, illegal shooting, incidental takes, and entanglement) may be invariant across proposals, explicit inclusion of these threats as criteria for judging the likely impact of proposals will assure the public that these factors have been considered. In addition, the decision tool should consider the impact of the proposals on non-target species including species taken in state-water fisheries for salmon and groundfish as well as bycatches of other non-target species that are SSL prey.
2. The proposed use of a TAC/biomass ratio as a proxy for prey availability is ill-advised because it has been demonstrated that likely prey-field effects operate on a local scale and not on the global scale at which biomass is assessed and TAC is set. Moreover, the absolute and relative abundance of the mix of prey species available in near proximity to SSL protection areas varies over time and the importance of these species to SSL diets is likely to vary depending on the season of the year and the age and gender of the SSL, etc. While data are not currently available to model local scale effects, the TAC/biomass ratio seems particularly problematic. As alternatives, the SSC suggests that the SSLMC consider other proxies for prey availability. Potential proxies might include: (1) a ratio of the target species biomass to the biomass of all principal prey species; (2) the ratio of current prey species abundance to B_0 ; (3) biomass density per area or depth stratum; and (4) the ratio of prey species biomass within a local area to the number of SSL. Where data on local prey availability become available, they should be used in place of global scale proxies.
3. One variable used in the decision tool is fishing duration, expressed as pulse (TAC taken in 3-10 days) versus prolonged (TAC is spread out over time). The SSC encourages the SSLMC to consider including in their analysis estimates of fishery removal rates as a function of gear type and total effort. To the extent that a pulse fishery is more likely to cause localized depletion, some gears remove fish more quickly than others. Also, some gears remove other SSL prey differentially through bycatch. The combined rate of reduction of SSL prey (both target and non-target species) should factor into the ranking of proposals with regard to fishing duration.
4. The SSLMC should consider that some proposals may be difficult to score using the decision tool because the tool presupposes that all actions will fall into predetermined categories affecting either prey abundance and distribution or SSL behavior and physiology. The analysis of proposals should retain some flexibility to address special situations for which the tool cannot adequately address.
5. The SSC cautions that scat data expressed as the frequency of occurrence of prey species in the diet of SSL does not provide an unambiguous indication of the relative energetic contribution of those prey species to SSL diet. However, use of

the scat frequency data is appropriate as the best available science until better measures become available.

6. Because it can be anticipated that some of the proposals will suggest changes at scales that are too fine to be resolved by the decision tool given the current level of resolution in important data series, the SSC suggests that provision be made for the decision tool to evolve as more refined data become available. In the interim, sensitivity analyses and bounding analyses (best case-worst case scenarios) could be helpful.
7. The SSC concurs with the intent of the SSLMC to examine the decision tool at various levels of the hierarchy to ensure that weightings accurately reflect SSLMC assessments of the importance of the variables.
8. It should be noted that the decision tool can be used to conduct pairwise comparisons of proposals or to compare proposals against a status quo standard. In addition, the decision tool can be used to assess the likely impact of combinations of proposals.
9. The next revision of the report should include a clear statement of the intent of the decision tool and the problem statement that it addresses — the decision tool is intended to be used to form consensus judgments about the likely relative consequences of the proposals, a reflection of SSLMC's perception of the problem and not a stand-alone measure of the impact of the proposals on SSL populations. In addition, the report should include a simple example to help convey an understanding of jargon to members of the public. Data sets used in the decision tool should be fully referenced.