

**North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
May 7-10, 2007
Alaska Fisheries Science Center, Seattle**

Minutes

The Steller Sea Lion Mitigation Committee (SSLMC) convened in Seattle at the Alaska Fisheries Science Center on May 7-10, 2007. The SSLMC's Subcommittee on Proposal Scoring met on May 7 (8:30 am – noon) to refine and prepare recommendations on a procedure for scoring proposals. The full SSLMC started at 1:00 pm on May 7. Their report is provided as a part of these minutes. Committee members present were: Larry Cotter (Chairman), Jerry Bongen, Sam Cotten, Ed Dersham, John Gauvin, John Henderschedt, Dan Hennen, Terry Leitzell, Steve MacLean, Max Malavansky Jr, and Art Nelson. Also present were Earl Krygier (ADF&G), Bill Wilson (Council staff); Kristin Mabry and Melanie Brown (NMFS AK Region staff); John LePore (NOAA General Counsel AKR); several NMML scientists; and several members of the public.

The primary focus of this meeting was to score proposals and their corresponding status quo with the Proposal Ranking Tool (PRT) based on the proposal review conducted at the April 2007 meeting in Juneau and the recommended scoring triggers drafted by the Subcommittee on Proposal Scoring.

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 of the SSLMC's April 17-19, 2007 meeting were reviewed and approved.

Subcommittee on Proposal Scoring

This subcommittee (Hennen, Mabry, Wilson, Brown) reviewed the materials prepared at the April 2007 meeting, and went through all the proposals to verify scoring recommendations developed previously and to refine those recommendations for presentation to the SSLMC later in the day. The subcommittee also drafted a list of "outside the model" considerations that could be the basis for a larger and more comprehensive list developed by the SSLMC. The subcommittee acknowledged the need for some discussion by the SSLMC of how to address outside the model issues, how to deal with proposals that either tend to cancel each other or conflict with each other, and how to assemble groups of proposals that might work together synergistically as a package for eventual recommendation to the Council. A spreadsheet was developed to be handed out to the SSLMC. No scores will be recommended; the subcommittee recommended only that the SSLMC identify the elements in the PRT that each proposal "triggers" and then the scoring process would occur afterwards. Each proposal will have a score and a companion status quo score, the difference between which will be the proposal's rank. Note that the Board of Fisheries (BOF) proposals correspond to this numbering system: BOF 6 = Proposal # 30, BOF 182 = 31, and BOF 185 = 32.

SSLMC Review of Proposals

Dr. Hennen and Ms. Mabry presented the subcommittee's report to the SSLMC and walked the committee through the process at hand: identifying the elements of the PRT that each proposal "triggers". Each SSLMC member was provided with a handout containing the subcommittee's recommended starting point for triggers for each proposal. The SSLMC then walked through each proposal, identifying their recommendations for how to input each to the PRT. The following is a brief overview of the discussions and PRT triggers.

Proposal 3

Triggers: prey field: duration. The SSLMC discussed at length the meaning of duration in relationship to the length of a fishing season that could be affected by this – or any – proposal. Does a shift in the season start date to an earlier date lengthen the season when a fishery as a result might fish more efficiently and harvest the TAC quicker – thereby actually, and in reality, shortening the overall season? Higher value catch (e.g. roe-bearing fish) might attract greater effort resulting in quicker harvest of the TAC. The subcommittee recommended as a start that only the regulatory season be considered – i.e. if a proposal asks to start a fishery earlier, but doesn't ask to have it end earlier, then that season would lengthen. The subcommittee suggests that the SSLMC be consistent in how it judges fishery duration. Some suggested such considerations could be evaluated outside the model. Other outside the model considerations (OTMC) for this proposal would be safety, weather, and other fisheries. The SSLMC followed the subcommittee's suggestions for inputting this proposal to the PRT.

Proposal 4

Triggers: prey field: % of TAC shift; and SSL prey: season. The SSLMC again discussed the length of season issue. The subcommittee felt there was no duration issue triggered. An offsetting consideration could include a shortened season but this was an option and not part of the main proposal. The SSLMC also noted that this proposal may affect more than one season. Mr. Cotter suggested that the SSLMC could run these kinds of proposals two ways: with season duration changed and not changed to evaluate the effect. It was noted also that in the future, if cooperatives develop as a result of cod apportionment changes made by the Council, this may affect rate of harvest. The SSLMC further discussed the effect of moving TAC to the A season on harvest rate and season length. No firm agreement was made on how to evaluate proposal effects on fishing duration.

Proposal 1

Triggers: none of the three arms of the PRT are triggered by this proposal. The model is insensitive to what this proposal would accomplish, and thus is "neutral" on its effects on SSLs. The proposal will have OTMCs such as economic effects. There also is a question as to effects of changing the end of B and start of A season "window" on SSLs (November 1 through January 20); this proposal offers a shortened A season to accommodate an earlier start, it would cut into that "window" having potential effects on

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SSLs that are not modeled by the PRT. The SSLMC also noted that for some proposals, there may be effects on a fishery that harvests prey items of potentially less (or greater) value to SSLs than another proposal, and this is not captured in the PRT. These kinds of issues can be considered outside the model; perhaps also when two closely-ranked proposals are compared, perhaps such a consideration could be a way to further differentiate between them.

Proposal 2

Triggers: prey field: season, amount of TAC shifted and SSL diet: season. This proposal offers a different TAC apportionment scheme when the annual TACs change (if below 1.3 million mt, then the apportionment would shift to apportioning more TAC in the A season). One possible outcome is a shortening of the season if the fleet has the capacity under lower TACs to harvest a greater proportion of the TAC early, thereby shortening the overall season. Or it may now, depending on fleet behavior, which is difficult to define *a priori*. This uncertainty might be clarified by obtaining data on A versus B season pollock CPUEs. Another consideration discussed was how a proposal might affect fishing near SSL CH areas such as the SCA.

Proposal 7

Triggers: prey field: season and duration. The subcommittee felt that this proposal has two parts, a summer part and a winter part, each of which should be scored and then added. The SSLMC discussed the proposal at length, and decided to set it aside for a review later. The proposal is complex and may be too difficult to input to the PRT.

Proposal 8

Triggers: spatial/temporal: proximity and % of SSL sites. It also may trigger SSL diet: subregion. There is an inter-region trade-off in this proposal, opening some areas and closing other areas (SSL CH areas). While the proposal may affect only portions of some SSL closed areas, the model requires taking a worst case and assumes the effect is on the entire closed area around the SSL sites affected. An OTMC would be the amount of the closed area affected.

Proposal 9

Triggers: prey field: season; and SSL prey: season. The TAC shift would be all within the winter season in practicality, but for the PRT scoring the SSLMC needs to consider the TAC transfer to be summer to winter. The TAC harvest by this sector is very small so the TAC shift is nearly undetectable by the PRT, and thus TAC shift is not triggered.

General Note: The SSLMC discussed the process for changing proposals as it works through the current proposals; it was agreed to not make changes now, but run them through the PRT first and then later in the analysis process accommodate changes. The SSLMC also requested that each proposer eventually develop information on the characteristics of the fishery their proposal would impact, and provide this information to the SSLMC: average weekly harvests, by season, by geographic area, etc. This

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information will help the SSLMC with the analysis process. This information is requested for the next SSLMC meeting, which might be well into the future.

Proposal 10

Triggers: prey field: season and TAC shift; and SSL prey: season. This proposal is similar to Proposal 9. It would shift about 18% of the regional TAC; this amount needs to be verified. It would affect all gear groups.

Proposal 11

Triggers: prey field: season and % TAC shift; and SSL prey: season. This is another TAC shift proposal (from one season to another). The proposal seeks to put more TAC into the A&B seasons. The SSLMC discussed how TAC is apportioned in the GOA to regions and seasons. Regional apportionments are based on pollock biomass distribution which is estimated as part of the annual stock assessment process.

Proposal 12

Triggers: spatial/temporal: proximity. The proposers are unsure whether Jude Island has changed from a haulout to a rookery, and how that reassigning takes place.

Proposal 13

The UNFM clarified the amount of cod that would be requested for the Bogoslov exemption area: it would be based on 1% of the BSAI cod TAC which for 2008 would be approximately 560 mt. The proposers also request including pot gear as allowable fishing gear for the exemption area. The SSLMC concurred with this request. The proposal potentially would trigger prey field: % of TAC and duration, but the SSLMC felt this proposal would affect such a small amount of TAC that the PRT would not be sensitive to this small a TAC shift. Thus, the proposal was judged to be a net zero or *de minimus* and would be scored as a net neutral effect.

Proposal 14

Triggers: prey field: % TAC and duration. The subcommittee recommended breaking it into two subproposals, one for aggregating small TACs in the winter season, and another for aggregating small TACs in the summer season. Some suggested a need to consider how this proposal might affect the GOA pollock stock assessments and how biomass is distributed. It was also noted that with small seasonal quotas, this fishery can be difficult to control so that the harvest of the TAC is optimized while not over harvesting the TAC.

Proposal 15

Triggers: spatial/temporal: proximity. The main issue is to provide a safe area for small vessel harvesting.

Proposal 16

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Triggers: SSL prey: duration. This proposal would shorten the C season by 7 days. This helps alleviate the fish processing conflicts in Kodiak. The SSLMC notes that the local fleet already voluntarily does this, but is requesting that it be in regulations.

Proposal 17

This proposal should be broken into several subproposals because of the multiple seasons affected. Triggers: both the SSL prey field and the SSL prey arms of the PRT. There would be one subproposal for the C GOA and one for the W GOA. The SSLMC felt that the PRT doesn't have the resolution to differentiate the two optional apportionment schemes requested in the proposal; both would likely result in the same score. For inputting this proposal to the PRT, the triggers are: prey field: season and % TAC shifted; and SSL prey: season. This proposal has several OTMCs.

Proposal 18

Triggers: spatial/temporal: proximity. This is another proximity proposal that opens a closed area, albeit only a small portion of a closed area. It would affect 1 of 9 SSL sites in the region.

Proposal 19

Triggers: Spatial/temporal: proximity. This is similar to proposal 18, but proposes enlarging a closed area. It was noted that this also includes a research component (an OTMC). Some suggest that in the analysis of this proposal, two options be considered: a 3 to 20 n mi closure and a 3 to 10 n mi closure to examine the economic effects of both.

Proposal 20

This has 2 subproposals for the PRT, one affecting a summer haulout and another affecting a winter haulout. Spitz Island is 1 of 39 haulouts in this region. Triggers: spatial/temporal: proximity.

Proposal 21

Triggers: spatial/temporal: proximity. This is similar to proposal 20. There would be few vessels affected; 1 of about 56 SSL sites would be affected in the region.

Proposal 22

This should be broken into 4 subproposals, 1 for the rookery affected and 3 for the haulouts affected with varying proximity issues involved. Triggers: spatial/temporal: proximity and % of sites; and SSL prey: subregion (2 involved: C AI and W AI). The SSLMC discussed whether this proposal also triggers the prey field arm by shifting TAC.

General Note: Some believe that nearly all proposals trigger the third arm of the PRT: diet composition. The SSLMC discussed whether we should score all proposals with this

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element triggered to differentiate the effects of each on SSL diet components. In some regions, the target species affected by the proposal may have more or lesser importance to the SSL diet than the target species affected by a different proposal. Using this arm of the model would enable differentiation among all proposals in terms of relative impact on important SSL prey items. The Subcommittee on Proposal Scoring will do this.

Another discussion point was to consider scoring all proposals that request opening a previously-closed area to be consistent in comparing proposals. This would address the shifting of TAC issues. The SSLMC suggested retaining this as an OTMC for now.

Proposal 23

This proposal cannot be scored by the PRT.

Proposal 24

The Subcommittee was uncertain how to score this proposal in terms of season affected. The SSLMC consensus is that winter would be the season affected. Also, there may be a need to develop several subproposals. Triggers: prey field: duration. After considerable discussion, the SSLMC felt this proposal will be difficult to score in its current configuration. Also, it is somewhat similar to Proposal 7. The SSLMC asked proposers for 7 and 24 to merge their proposals into a single proposal affecting the AI Atka mackerel fishery. A new Proposal 7/24 will be presented later.

Proposal 25

Triggers: spatial/temporal: proximity. This proposal may affect both a rookery and a haulout, so to input it to the PRT the SSLMC will need subproposals, 2 for SSL site type and 2 for season.

Proposal 26

Triggers: prey field: % TAC shift; and SSL prey: season. This proposal shifts cod TAC from the C season into the A season in the BSAI, compressing the fishery into two seasons.

Proposal 27

This is similar to proposal 2, but without a TAC trigger and includes a caveat for extra TAC to be harvested outside SSL CH. Triggers: prey field: season and % TAC; and SSL prey: season. The SSLMC has some uncertainty as to whether this proposal will shorten this fishery.

Proposal 28

Triggers: prey field: duration. This proposal extends the B season 1 extra month. OTMC: salmon bycatch may change.

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Proposal 29

Triggers: prey field: duration. This is similar to proposal 1. If the option to close the end of the season earlier also, this would then not change the duration element.

Proposal 30 (BOF # 6)

There would be two site types affected: 1 rookery and several haulouts. Triggers: spatial/temporal: proximity. The fishery would occur in the winter only. It is a fairly straightforward proposal to score. OTMC: important economic benefits to Seward, and Chiswell Island is an ongoing SSL research site.

Proposal 31 (BOF # 182)

This proposes to potentially shift TAC into W GOA State waters. The SSLMC referred to the NMFS letter commenting on how this proposal may affect SSLs. It is a difficult proposal to score, although some assumptions could be made to facilitate scoring it. The SSLMC consensus was to not score this proposal to be consistent with the Committee's set procedures for inputting proposals to the PRT.

Proposal 31 (BOF # 185)

This proposes a vessel size limit, and this cannot be scored with the PRT.

Proposal 32

This is a proposal generated by blending proposals 7 and 24. The proposal would change management of the Atka mackerel fishery in the Aleutians from the current platoon system to a system managed under intercooperative agreements to limit daily catch rates in regulatory areas and within SSL CH areas. The consensus among the SSLMC is that this proposal is not scorable with the PRT but would be evaluated outside the model.

New BOF Proposals

Art Nelson reported that BOF staff reviewed new proposals received by the BOF. Several affect groundfish fisheries, but none of those appear to have SSL issues. There could be Agenda Change Requests received by the BOF in the future that may have SSL issues associated with them; these would be brought to the Council and SSLMC if received.

Proposal Ranking Modeling Results

After the proposals were reviewed by the SSLMC, they were input to the PRT and scored. A score was developed for the proposal and for its *status quo*, with the difference between the two scores (proposal score minus *status quo* score) the rank each proposal receives.

Scientific Presentations

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The SSLMC received updates on SSL and other related research conducted in 2006. The following are brief summaries of these presentations. These presentations will be placed on the next SSLMC Resource CD as well as the new scientific papers discussed during these presentations.

Steller sea lion research

Lowell Fritz presented an overview of recent SSL studies. These include vital rates studies based on brand/resightings, aerial nonpup surveys (partial in 2006 because of HSUS lawsuit and injunction), and abbreviated field demographic and behavioral observations.

Vital rates studies are conducted to estimate survivorship, by year, using pup brandings. About 5800 pup brandings have been made since 2000 (including eSSL, wSSL, and AsianSSL populations). These may continue, depending on the outcome of the HSUS lawsuit and EAS and future permitting decisions.

Nonpup aerial surveys suggest that abundance trends are up since 2000, and in 2006 (recognizing the central AI and central GOA were not well surveyed) trends were little changed from 2000-2004 in most areas but in the western AI trends were down slightly. Plans are to do a 2007 pup survey.

Survivorship and natality studies (in the central GOA) using the pup and nonpup counts suggest that juvenile and adult SSL survivorship has increased in the past several decades, but trends for pups is down (based on modeling by Holmes and York). Researchers believe some factor(s) is influencing the ratio of pups to nonpups through reductions in production of pups or increases in the proportion of nonpups. Model results have been checked against independent field data including brand survival, late term pregnancy rates on Marmot Island, and the 2004 age structure. A question: is carrying capacity (K) lower now versus the 1970s, and why? Another question: why does K appear to be unchanged for lower trophic level organisms (e.g. groundfish)? The most pressing research need appears to be data on late spring pregnant female SSLs, especially those SSLs that are both carrying a near-term fetus and nursing a juvenile, placing large energy demands on those females during the spring.

In 2007, NMML plans to do aerial nonpup surveys, brand resighting and natality estimates, cruises to do vessel-based brand resightings, and hopefully (if permits are granted) pup condition surveys, scat collections, and SSL captures for telemetry work.

Some discussion focused on possible factors affecting the SSL decline. One issue raised was the role of contaminants in adult SSLs and the potential for “dumping” contaminant loads on fetuses, possibly affecting natality.

Northern fur seal studies

Brian Fadely provided an overview of the 2006 NFS studies. These included pup and bull counts on the Pribilof Islands, scat collections for diet studies, NFS foraging

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behavior using satellite telemetry, and winter migration (telemetry). Both spew and scat data are necessary to better characterize NFS diet and prey item sizes. NFS migration data show that NFS pups make extensive migrations across the entire North Pacific, while adult females are more directional to areas east of 180 degrees.

Telemetry work indicates that foraging females segregate to specific foraging areas depending on the rookery sites they are from. Bogoslov Island NFS telemetry work indicates these animals forage closer to the rookery. Bogoslov NFS foraging distances are <150 km while Pribilofs NFS forage ~300 km from land. Foraging duration is shorter at Bogoslov (2 days) versus the Pribilofs (7-9 days). And Bogoslov pups gain weight quicker than on the Pribilofs.

NFS studies for 2007 include continued bull and pup counts, telemetry and female foraging studies, winter migration studies of Pribilof pups and juveniles and adults, and new tagging studies to gather vital rates data.

Transient killer whale research

Paul Wade and other NMML cetacean researchers are at the International Whaling Commission meeting, and John Bengtson presented this overview. Recent work on transient killer whales include a series of recently-published papers that respond to the Springer et al. paper on cascading collapse of North Pacific megafauna. These papers point out some inconsistencies or discrepancies in the original paper. Transient killer whale tagging studies have continued, including both vessel-based surveys, satellite tagging, and observations of cookie cutter shark bites suggesting movements of some whales to warmer waters. Recent studies have also included stable isotope analyses of killer whale samples to study diet. Killer whale abundance studies also continue, with recent data suggesting that for the Kenai to Tanaga Pass area ~250 tKW are present seasonally; other studies suggest up to 370 tKW in this region. Further studies and calculations of the energetic demands of tKW indicate that SSLs probably constitute around 4-8% of the overall annual tKW diet and that the tKW-caused mortality of SSLs (wSSL) may be in the range of 2700 to 4200 SSLs per year.

NPUMMRC Updates

Andrew Trites presented an overview of recent SSL studies conducted by various researchers associated with the North Pacific Universities Marine Mammal Research Consortium and the Vancouver Aquarium. Most of these studies focus on one or more of the hypotheses for the SSL decline.

A recent paper (Guenette et al) discusses correlations of trends among various ecosystem components to the SSL decline; results suggest that some potential competitive interactions could have had some effect (e.g. SSLs with arrowtooth flounder, predation of SSLs, or commercial fishery effects) but those with the larger potential effect were climate change. This work suggests that climate may have been a major factor but predation also can have an effect when SSL abundance is low.

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Dr. Trites also reported on recent papers that discussed the role of predation, diet, and PDO effects on SSL trends. Another paper explored the relationship between the SSL and NFS trends, noting that the SSL decline appears to have lagged the NFS decline.

New research has included exploring some of the potential clues to SSL population health. These include diet and whether SSL diet has changed over time from higher nutritional value items before the decline to lower value items in recent years. Other clues include juvenile production, SSL body size (including some recent work on adult skull size), SSL birth rates, pup or juvenile suckling (by sex), parent-offspring conflict behavior, and reproductive failure (when and to what extent pregnant females abort fetuses).

New research shows that some haulouts are also used as breeding sites in the eastern SSL population. Observations show males guarding harems and copulation on these haulouts. Dr. Trites also reported on new studies of seasonal diet and SSL body size, seasonal changes in feeding and growth in captive SSL facilities, and new ecosystem modeling of SSL critical habitat. This latter study was a modeling effort using physical oceanographic data and observations of SSLs from platforms of opportunity to develop a probabilistic depiction of female SSL habitat. Overlain with commercial fishing data, such an approach might be used to reevaluate the concept of critical habitat. Probability plots of potential critical habitat show areas of likely high concentrations of female SSLs, with different “pictures” of critical habitat in winter versus summer seasons.

Aleutian Islands Ecosystem Modeling

Sarah Gaichas with the AFSC presented an overview of recent work on a Fishery Ecosystem Plan for the Council. The Council is preparing the FEP as a guidance document for future fishery management decisionmaking in the AI region. The focus has been on ecological modeling to identify relationships among ecosystem components in a risk assessment framework. This approach would allow the Council to put into perspective potential consequences of alternative actions.

The FEP will be a compendium of information but will not have legal authority; that will remain with FMPs. Dr. Gaichas reviewed the various elements of the FEP. The FEP provides an historic timeline of biomass removals in the AI region, and descriptions of the physical and biological environment, biological relationships, food webs, and energy flow models. These models portray prey production and consumption among the main predators in the AI ecosystem including commercial fisheries. Dr. Gaichas noted some of the interesting and strong relationships between Atka mackerel and pollock because of mutual predation interactions.

Ecosystem modeling in the AI region includes illustrations of spatial complexity in food webs across the geographic range of the Aleutian Islands. The FEP also includes information on socioeconomic relationships among AI communities and potential interactions between communities and the regional ecosystem.

The FEP provides a characterization of the overall AI ecosystem structure and function and the interactions among ecosystem components in context with the probability,

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extent, and duration of interactions to develop a risk assessment (i.e. the probability of interactions occurring relative to the degree of impact on the ecosystem from these interactions). Examples of interactions include marine shipping, fisheries, military activities; each has potential risks associated with their interactions with the AI ecosystem.

The FEP is being revised and will be presented in near final form at the June Council meeting.

Spatial fisheries values in the North Pacific

Matt Berman with the University of Alaska Anchorage presented recent work on economic modeling to evaluate potential effects of SSL closures, or other MPAs, on commercial fisheries. The focus is on how spatial and temporal scales of closed areas affect fishery costs. Dr. Berman's approach is to link spatial variability of fisheries to opportunity costs affected by closed areas to examine profits forgone from time/area closures.

This approach uses available data on depth (bathymetry), and remotely-sensed data on chlorophyll, seasurface height, water temperature, and salinity, all of which are various indicators of potential ocean productivity and in turn areas that may be valuable to foraging by SSLs. Other inputs include output from Regional Ocean Modeling System (in the GOA). Data are combined in a GIS to try to explain patterns of fish distribution (from survey data) and fishery catches (from observer data). Output are spatial plots of predicted fishing areas overlain with closed areas to calculate fishing areas affected by closures. An economic model element based on fishing costs and fishery values predicts values of fishing areas (an important factor is distance of fishing areas to ports). The goal is to use such modeling to help evaluate potential costs to a fishery from various alternative area closures in different regions by season.

Fishery Interaction Team updates

Libby Logerwell presented an overview of recent FIT research. This included new pollock and Atka mackerel studies. The pollock study at Kodiak continued in 2006 to examine potential effects of fishing on pollock in Barnabas and Chiniak Troughs, with Chiniak the control and Barnabas the experimental. Acoustic surveys of pollock were conducted in each trough before and after commercial fishing occurred in Barnabas Trough. In 2006 there was some decrease in pollock biomass after fishing, but this occurred in both the fished and unfished troughs, and thus an effect of fishing could not be detected. It is uncertain if this experiment can be continued due to uncertain availability of a NOAA survey vessel.

The 2007 Aleut Corporation/AFSC AI pollock Exempted Fishing Permit study of pollock biomass in the AI region resulted in a larger survey than in 2006. Data are currently being analyzed; a report may be provided to the Council late in the year.

The Atka mackerel study focuses on the efficacy of trawl exclusion zones (TEZ) around SSL sites in the AI region. The approach is to tag mackerel inside and outside TEZs and

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recapture tagged fish later in the year using chartered and commercial vessels. The studies in 2006 were at Seguam Pass and Kiska Island. Combined results from this year and previous years indicate that Atka mackerel tend to remain in geographic areas to some extent, but that some “leakage” outside areas does appear to occur. But, movement patterns indicate there is both movement from outside to inside, and from inside to outside, TEZs and this pattern differs by area in the AI. Biomass of Atka mackerel also varies by area (inside and outside) and by region within the overall AI area. It appears that the areas around Seguam Pass are important spawning areas and biomass levels there are generally higher than other areas. Atka mackerel seem to be feeding more in this area also.

Review of PRT output: proposal rankings

Kristin Mabry led the SSLMC through a series of spreadsheets that explained how the PRT scored proposals and their relative rankings. Handouts included the detailed list of elements triggered by each proposal and the rankings and a set of tables showing the model weightings for all elements (all bins in the model). The model output is a series of proposal scores that range from +0.0248 to -0.0087. Some proposals cannot be scored with the PRT because they don't trigger PRT elements; some proposals have low or neutral scores because they either have little impact or impact cannot be detected by the PRT. Six proposals could not be scored because of the above issues. Two proposals were combined with the resultant proposal (the resultant proposal also could not be scored – it is one of the six).

All proposals were also run through the “Effects on SSLs: diet composition” arm of the PRT to rank proposals in terms of potential effects on SSL nutrition (based on fishery target species and region and season). It is important to note that these “SSL nutrition effects” scores cannot be added to the PRT scores as they have different meanings; this is just another tool that can be used to evaluate proposals.

It is important to note that all model output and proposal scores are DRAFT at this time. The next steps in the proposal review process include asking all proposers to review the process used by the SSLMC to input them to the PRT to verify elements of the model triggered by the proposal. Mistakes or other issues will be discussed at the next meeting and a final ranking will be produced. Individuals can run the model on their own from the spreadsheets distributed at this meeting. Ms. Mabry will prepare for a session at the June meeting explaining how to run a proposal using the spreadsheets for those who are interested. At this point, the PRT and these proposals may be set aside until the consultation process can “catch up”. When the SSLMC picks this up again, it will then move into consideration of OTMCs, further analyses, and development of a package for Council consideration.

The next meeting will be at the AFSC on June 19-21, 2007. Agenda items include:

- A review and update of PRT output and proposal rankings
- Overview of how to input proposals to the PRT using the model weightings spreadsheets
- New SSL research results from the Alaska Sea Life Center
- Review the revised draft SSL recovery plan

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Adjourn

The Committee adjourned at 3:30 pm May 10.

Bill Wilson

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North Pacific Fishery Management Council
Steller Sea Lion Mitigation Committee Meeting
Alaska Fisheries Science Center
Seattle, Washington
May 7-10, 2007

Purpose: Proposal Scoring Subcommittee prepares recommendations for inputting proposals to the PRT and defining *status quo* for each; SSLMC receives updated information from proposers and reviews subcommittee report; SSLMC inputs proposals to PRT and scores all proposals; SSLMC receives new scientific information.

NOTE: Time Certain: May 7-8 will focus on proposal work; May 9-10 will focus on new scientific information

AGENDA

May 7 – 8:30 AM – Noon

SSLMC Subcommittee on Proposal Scoring Meets to Review/Score Proposals (Hennen, DeMaster, Mabry, Hills, Wilson)

May 7 – 1:00-5:00 PM

1. Introductions and Opening Remarks, Announcements, Agenda Approval (Cotter)
2. Minutes of Last Meeting (Wilson)
3. Review New Proposal Information (Wilson, Mabry)
4. Receive Report from Subcommittee on Proposal Scoring (Hennen et al.)
5. Input Proposals to Proposal Ranking Tool (Mabry, Hennen, All)
6. Develop Status Quo Scores for Proposals and Develop Ranking List (Mabry, Hennen, All)

May 8 – 8:30 AM – 5:00 PM

7. Proposal Scoring and Ranking (Continued)
8. Update on SSL Recovery Plan Review (Wilson, Cotter)

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May 9 – 8:30 AM – 5:00 PM

9. Introduction to Presentations on New Scientific Information (Wilson)
10. SSL and NFS Research Updates (Fritz)
11. Updates on NMML Cetacean Studies/Emphasis on Transient Killer Whales (Wade, Durban)
12. Updates on NPUMMRC and UBC/Vancouver Aquarium SSL Research and Ecological Modeling (Trites)

May 10 – 8:30 AM – 5:00 PM

13. Aleutian Islands Fishery Ecosystem Plan and SSL/Fishery Interactions Modeling (Gaichas)
14. Economic Effects of SSL/Fishing Regulations (Berman)
15. Fishery Interaction Team Updates – Atka mackerel and pollock (Logerwell)
16. Action Items, Closing Remarks, Adjourn (Cotter)

Public comment periods will be provided during the meeting.

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

Effect of Fishing on SSL
Nutritional Needs

Summer		Target Species			
		cod	pollock	atka	other
Region	EGOA	0.0006	0.0006	0.0002	0.0090
	CGOA	0.0002	0.0036	0.0001	0.0060
	WGOA	0.0020	0.0027	0.0012	0.0039
	EAI	0.0019	0.0025	0.0011	0.0044
	CAI	0.0006	0.0006	0.0071	0.0017
	WAI	0.0006	0.0061	0.0126	0.0072
	Pribs	0.0070	0.0092	0.0056	0.0076

Winter		Target Species			
		cod	pollock	atka	other
Region	EGOA	0.0004	0.0004	0.0001	0.0068
	CGOA	0.0020	0.0020	0.0001	0.0037
	WGOA	0.0017	0.0043	0.0001	0.0017
	EAI	0.0015	0.0020	0.0017	0.0026
	CAI	0.0017	0.0009	0.0032	0.0020
	WAI	0.0017	0.0009	0.0032	0.0020
	Pribs	0.0011	0.0029	0.0001	0.0017

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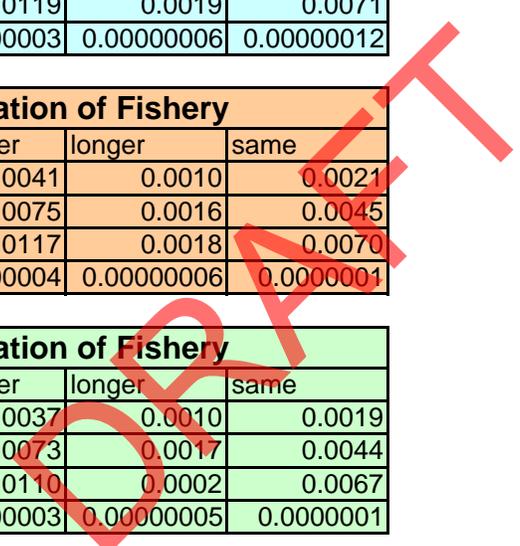
Effect of Fishing on Prey

% TAC	summer	Duration of Fishery		
		shorter	longer	same
1-5%		0.0044	0.0013	0.0023
6-10%		0.0081	0.0019	0.0049
>10%		0.0129	0.0023	0.0079
no change		0.000037	0.00000006	0.00000013

% TAC	winter	Duration of Fishery		
		shorter	longer	same
1-5%		0.0041	0.0010	0.0020
6-10%		0.0074	0.0015	0.0044
>10%		0.0119	0.0019	0.0071
no change		0.00003	0.00000006	0.00000012

% TAC	summer-winter	Duration of Fishery		
		shorter	longer	same
1-5%		0.0041	0.0010	0.0021
6-10%		0.0075	0.0016	0.0045
>10%		0.0117	0.0018	0.0070
no change		0.00004	0.00000006	0.0000001

% TAC	winter-summer	Duration of Fishery		
		shorter	longer	same
1-5%		0.0037	0.0010	0.0019
6-10%		0.0073	0.0017	0.0044
>10%		0.0110	0.0002	0.0067
no change		0.00003	0.00000005	0.0000001



Effect of Fishing on SSL
Spatial/Temporal

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
summer rookery					
0-3	0.0039	0.0096	0.0163	0.0214	0.0264
*3-10	0.0030	0.0074	0.0127	0.0167	0.0206
*10-20	0.0017	0.0041	0.0070	0.0092	0.0114
20+	0.0013				
not CH	0.0005				

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
summer haulout					
0-3	0.0025	0.0062	0.0105	0.0138	0.0171
*3-10	0.0022	0.0053	0.009	0.0119	0.0146
*10-20	0.0011	0.0027	0.0047	0.0062	0.0076
20+	0.0005				
not CH	0.0003				

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
summer other					
0-3	0.0010	0.0024	0.0042	0.0055	0.0067
*3-10	0.0007	0.0018	0.0030	0.0040	0.0049
*10-20	0.0004	0.0011	0.0018	0.0024	0.0030
20+	0.0004				
not CH	0.0003				

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
winter rookery					
0-3	0.0029	0.0070	0.0120	0.0157	0.0194
*3-10	0.0024	0.0058	0.0099	0.0131	0.0161
*10-20	0.0011	0.0027	0.0045	0.0060	0.0074
20+	0.0010				
not CH	0.0004				

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
winter haulout					
0-3	0.0027	0.0067	0.0114	0.0150	0.0184
*3-10	0.0023	0.0057	0.0098	0.0129	0.0158
*10-20	0.0008	0.0020	0.0034	0.0044	0.0054
20+	0.0005				
not CH	0.0004				

Proximity (nm)	Percent of Sites Affected				
	*1-10	*11-25	*25-50	*50-75	*76-100
winter other					
0-3	0.0011	0.0026	0.0045	0.0059	0.0073
*3-10	0.0007	0.0018	0.0031	0.0040	0.0050
*10-20	0.0003	0.0008	0.0013	0.0017	0.0021
20+	0.0005				
not CH	0.0003				

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
1 NO MODEL SCORE	Pollock A starts 10-15 days earlier			Nutrition score .002	Outside model: Shortening window between close of B and start of A Positive economic impact Unknown impact on Chinook bycatch Shoreside logistical concerns Effect b/c it closes earlier – go to cod trawl? – general spill-over effects Shift occurs when TAC drops below 1.3 MT, but what is effect to SSL? (low biomass)
2 .0041 Net=.00160	Reapportion TAC from B to A, magnitude of shift depending on total TAC (BSAI pollock trawl)	Sum-Wint/1-5%/Same		Wint/EAI-BS/Pollock Nutrition score .002	Not based on ABC, but on TAC If shift when biomass low, multiplicatively worse? than when biomass is high Outside model: Positive economic impact Look at A and B season CPUE data
SQ .0025		Sum/No Chng/same		Sum/EAI-BS/Pollock	
3 .00000006 Net= - .00000007	CP Cod Start date shifts 17 days earlier	Sum/No Chng/longer		Nutrition score -.0019	Outside model: Economic benefits? Safer fishing in august Beneficial effects by extending season? Allow king crabbers safer fishing season Shortening window between close of B and start of A Offsetting considerations: may not effectively be a longer season Small number of vessels, small TAC
SQ .00000013		Sum/No Chng/same			

SSLMC Proposal Ranking Tool Model Output

May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
4 .0036 Net=.00170	Reaportion TAC from B to A (BSAI cod - LL CP) A = 1/1 - 2/18 B = 8/15 - 10/21	Sum-Wint/1-5%/same		Wint/EAI-BS/cod Nutition score .0015	Small percentage of whole TAC (8%) Offsetting considerations: Amount of fishing days will decline – pg 3 of proposal Fishing outside of CH for additional catch in A season Could report an annual 'shorter' duration score as well Could be a co-op
SQ=.00190		Sum/No Chng/same		Sum/EAI-BS/cod	
7 RETRACTED	Removing some limits on TAC allocation from inside and outside CH & restrictions on concurrent cod and AM fishing- limit per day included				Changes some limits inside CH and would consider use of coops
8 Total -0.0087	Reduce size of trawl exclusion zone in Seagum Pass for AM trade off with expansion at Cp Wrangel and Buldir			Nutition score .0032 Worst case of opening up fishing in WAI for atka	beneficial from trade off at Buldir and and Attu Open up rookeries at seguam, but not foraging area
8 A .0011 Net=.0001	Reduce TEZ at Seguam expand TEZ at Attu/Wrangell and Buldir winter		wint rk/10-20/1-10%		Seguam is 1 of 12 rookeries in central Aleutians (SSL areas) Attu/Cape Wrangell and Buldir are 2 or 4 rookeries in western Aleutians (SSL areas)
SQ .001			wint rk/20+/1-10%		

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
8 B .001 Net=-.0035	expand TEZ at Attu/Wrangell and Buldir winter		wint rk/20+/26-50%		
SQ .0045			wint rk/10-20/26-50%		
8 C .0017 Net=.0004	Reduce TEZ at Seguam Summer		sum rk/10-20/1-10%		
SQ .0013			sum rk/20+/1-10%		
8 D .0013 Net=-.0057	expand TEZ at Attu/Wrangell and Buldir summer		sum rk/20+/26-50%		
SQ .0007			sum rk/10-20/26-50%		
9 .0015 Net=-.0004	Shifting 29% TAC from B to A (BSAI cod - pot CV >= 60 ft) A = 1/1 - 2/3 B=9/1-12/31	Sum-Wint/no change/same		Wint/EAI-BS/cod Nutrition score -.0015	Offsetting considerations: most catch will likely shift from late winter to early winter. The status quo summer in column 3 is worst-case scenario assuming all catch taken in September – first month of B season. Total change in TAC is not detectable by the model, estimated at <1% of that sector's allocation.
SQ .0019		Sum/No chng/same		Sum/EAI-BS/cod	
10 .0087 Net=.0067	Allow all TAC to be harvested in A (WGOA - cod assumed fixed gear from given start date) A=1/1-6/10 B=9/1-12/31	Sum-Wint/>10%/same		Wint/WGOA/cod Nutrition score .0017	Outside the model: Large amount of fish not caught in B season, but under this scenario, will likely be taken during the A season. Net increase in harvest.

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
SQ .0020		Sum/No chng/same		Sum/WGOA/cod	
11 .0113 Net=.0086	Increase pollock TAC in A,B by 1/3 (total) (WGOA) A=3/10 B=3/10-5/31 C=8/25-10/1 D=10/1-11/1	Sum-Wint/>10%/same		Wint/WGOA/pollock Nutition score .0043	
SQ .0027		Sum/No chng/same		Sum/WGOA/pollock	
12 .0041 Net=.0028	Open Jude Is. to 10 nm for pollock trawling 9 rooks in WGOA - Jude = 14% of sites		sum rk/10-20/11-25%	Nutition score .0027	Alternative to open only Pavlof Bay portion Jude is one of 7 rookeries in the western gulf
SQ .0013			sum rk/20+/11-25%		
13 No MODEL SCORE	Removing/increasing catch limits on fixed gear cod (<60ft) fishing in Bogoslof closure area (1 of 9 rooks in EAI)			Nutition score .0015	Outside the model: Increase in harvest of about 500MT in an already open area Small boats only, small % of overall TAC Adding pot boats
14 Total .025	Aggregate A and B and C and D pollock seasons when TAC is low (WGOA) A=1/20-3/10 B=3/10-5/31 C=8/25-10/1 D=10/1-11/1			Nutition score .0043	Outside the model: Triggered when TAC is low (biomass is low). SSL effects? Could help control the fishery and keep it under quota.

SSLMC Proposal Ranking Tool Model Output
 May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
14 A .0119 Net=.0119	A + B Winter	Wint/>10%/shorter			
SQ .00000012		Wint/No chng/same			
14 B .0129 Net=.0129	C + D Summer	Sum/>10%/shorter			
SQ .00000012		Sum/No chng/same			
15 .0023 Net=.0015	Allow trawl pollock fishing to 3nm of Cape Ugat during A and B and to 10 km in C and D (WGOA)		Wint HO/3-10/1-10%	Nutition score .0043	Outside the model: Safety concerns (1 of 26 haulouts in the central gulf)
SQ .0008			Wint HO/10-20/1-10%		
16 .000037 Net=.000037	Move pollock C season back to 9/1 (from 8/25)	SUM/no change/shorter		Nutition score .0036	Outside the model: To prevent conflict with salmon processing Gentleman's agreement to stand down anyway, practically status quo Offsetting considerations: 7 day change only
SQ .00000013		SUM/no change/same			
17 Total .0155	Re-apportionment of cod TAC in GOA. 17A 100% in A, 17B 80 % in A (both gear types) Afixed=1/1-6/10 Atrawl=1/20-6/10 Bfixed=9/1-12/31 Btrawl=9/1-11/1 SQ = 60/40			Nutition score .0017	Outside the model: Options in proposal include 80/20 or 100/0. the model cannot detect a difference since both are over 10%, triggering that element in the model. More cod will be harvested = economic benefit

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
17 A .0087 Net=.0067	wgoa	Sum- Wint/>10%/same		Wint/WGOA/cod	
SQ .002		Sum/no chng/same		Sum/WGOA/cod	
17 B .009 Net=.0088	cgoa	Sum- Wint/>10%/same		Wint/cGOA/cod	
SQ .0002		Sum/no chng/same		Sum/cGOA/cod	
18 .027 Net=.0017	Allow Cod trawl fishing to 10 nm from 1/20-6/1 and to 20 nm from 6/1 - 11/1 at Chernabura (WGOA)		Wint Rk/10-20/11-25%	Nutrition score .0017	Outside the model: All currently participating vessels are less than 60 feet Opens a fraction of closed area around rookery 1 of 7 western gulf rookeries
SQ .001			Wint Rk/20+/11-25%		
19 total Net=-.0042	Extend closures around Dalnoi Pt (from 3) Pribis 20nm year-round			Nutrition score -.002	Outside the model: Closure would cover other ssl sites Research component – counts of animals in all seasons Reduce bycatch 1 of 9 Bering Sea Haulouts Offsetting considerations: Include 3-10 as well as 10-20 (Look at amount of harvest) and seasonal aspects

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
19A .0005 Net=-.0022	Expand to 20 winter		Wint HO/20+/1-10%		
SQ .0027			Wint HO/0-3/1-10%-50%		
19B .0005 Net=-.002	Expand to 20 summer		Sum ho/20+/1-10%		
SQ .0025			Wint HO/0-3/1-10%		
20 Total .0007	Open Spitz Is. HO to beach for jig and pot gear WGOA Now closed to 3nm			Nutrition score .0037	1 of 13 western gulf haulouts Outside the model: Variable seasonal use by ssl, possibly very little use Would ultimately be a BOF action for state waters fishery.
20 A .0025 Net=.0003	Summer		Sum HO/0-3/1-10%		
SQ .0022			Sum HO/3-10/1-10%		
20B .0027 Net=.0004	Winter		Wint HO/0-3/1-10%		
SQ .0023			Wint HO/3-10/1-10%		

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
21 Total .0035	Open Sutwik to 3nm for cod pot and jig gear CGOA Now closed to 20nm			Nutition score .0022	Outside the model: 4 vessels Amenable to small boat limits 1 of 26 central gulf haulouts
21 A .0022 Net=.0017	summer		Sum HO/3-10/1-10%		
SQ .0005			Sum HO/20+/1-10%		
21 B .0023 Net=.0018			Wint HO/3-10/1-10%		
SQ .0005			Wint HO/20+/1-10%		
22 Total .0242	Open all CH in AI to pollock trawling to 10 nm from rk and 3nm from HO			Nutition score .02	Outside the model: New effort in AI CH Economic boost for Adak Research component All rookeries and haulouts affected – (other options available) Estimate catch that may occur here
22A .0083 Net=.0079	Rookeries		Wint Rk/10-20/76-100%		
SQ .0004			Wint Rk/not CH/1-10%		

SSLMC Proposal Ranking Tool Model Output
 May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
22B .0167 Net=.0163	HO's		Wint HO/3-10/76-100%		
SQ .0004			Wint HO/not CH/1-10%		
23 NO MODEL SCORE	TAC allocation split for cod between AI and BS				Can't be addressed by the model
24 RETRACTED	Temporal dispersion of AM fishing in CAI				Outside the model: Trip limits, weekly limits
25 Total .0057				Nutrition score .0103	
25 A .0023 Net = .0019	Allow AM fishing to 10 nm from Kasatochi. CAI rook winter		Wint HO/3-10/1-10%		(1 of 12 rks)
SQ .0004			Wint HO/not CH/1-10%		
25B .0022 Net=.0019	summer HO		Sum HO/3-10/1-10%		1 of 36 haulouts
SQ .0003			SumHO/not CH/1-10		

SSLMC Proposal Ranking Tool Model Output
May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
25 C .0011 Net=.0007	CAI - winter		Wint rk/10-20/1-10%		
SQ .0004			Wint rk/not CH/1-10%		
25 D .0017 Net=.0012	summer		Sum rk/10-20/1-10%		
SQ .0005			Sum rk/not CH/1-10%		
26 .0036 Net=.0017	Transfer the BSAI cod trawl CV C apportionment (3.3%) to A. A=1/20-3/8 C=7/19-8/31	Sum-Wint/1-5%/same		Wint/EAI-BS/cod Nutrition score .0015	Outside the model: Compacting 3 seasons into 2
SQ .0019		Sum/no chng/same		Sum/EAI-BS/cod	
27 .0041 Net=.0016	Shift pollock BSAI trawl A from 40% to 45% of TAC A=1/20-4/1 B=6/10-11/1	Sum-Wint/1-5%/same		Wint/EAI-BS/Pollock Nutrition score .002	Likely result in shorter fishery? Groundtruth. Increased efficiency Extra 5% outside of CH Like #2
SQ .0025		Sum/no chng/same		Sum/EAI-BS/Pollock	
28 .00000006 Net =-.00000006	Extend BS pollock B season till 12/1 A=1/20-4/1 B=6/10-11/1	Sum/no change/longer		Nutrition score -.0025	Outside the model: Salmon bycatch issues Shortening window between close of B and start of A

SSLMC Proposal Ranking Tool Model Output
 May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
SQ .00000012		Sum/no chng/same			
29 .00000006 Net =- .00000006	Make start date for BSAI pollock 5 days earlier A=1/20-4/1	Wint/no chng/longer		Nutition score -.002	Offsetting considerations: Close the A season five days earlier shorten separation between end of B and beginning A season
SQ .00000012		Wint/no chng/same			
30 (6) total .0132	Open closed areas >3 nm from SSL sites in EGOA near Seward Haul outs Rugged Is. HO, Seal Rx Kenai, Chiswell Rk.			Nutition score .0004	Chiswell as a rookery under draft biop eastern gulf (1 of 3 rks); Seal Rocks (Kenai) and Rugged Island are 2 of 12 haulouts in eastern gulf Outside the model: Economic benefit for seward Important research rookery
30 (6) A .0099 Net=.0054			Wint Rk/3-10/26-50%		
SQ .0045			Wint Rk/10-20/26-50%		
30 (6) B .0098 Net=.0078	haulouts		Wint HO/3-10/11-25%		
SQ .0020			Wint HO/10-20/11-25%		

SSLMC Proposal Ranking Tool Model Output
 May 10, 2007

Proposal #	Description	Effects on Prey Field	Effects on SSL Proximity	Effects on SSL Nutrition	Outside the model
31 (182) NO MODEL SCORE	Shift TAC in area M into state waters, subsection of WGOA			Nutrition score .0017	Model NMFS' analysis of proposal Not sure if including SSL protection measures. Outside the model: Handled by BOF
32 (185) NO MODEL SCORE	Restrict large vessels from cod fishing in st. water WGOA area 610. winter			Nutrition score .0017	Outside the model: could lengthen season by allocating catch to vessels with lower catch rates Local economic benefit
33 New Joint Proposal combining former 7 and 24 NO MODEL SCORE				Nutrition score .0032	Outside the Model; Control daily removals rates to help avoid localized depletion Allow slightly higher percentage taken inside CH where AM already occurs

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Proposal Ranking Tool
 DRAFT Model Output
 May 10, 2007

Negative Impact

↑
 increasing magnitude of impact

Proposal #	Offsetting Considerations
14	
22 total	
17	
30 (6) total	
11	
10	
25 total	
21 total	
12	
18	
26	
4	If shorter duration, score is between 21 and 25.
27	
2	
15	
20 total	
16	if not shorter season, score is closer to 0.
28	
29	if duration is not longer, score is closer to 0.
3	if not a longer season, still scores near 0.
9	
19	at 10nm, the score is closer to 0 between 3 and 9.
8	

No Impact

↓
 increasing magnitude of impact

Positive Impact

BOLD numbers indicate negative scores (positive impacts to SSL) as measured by the PRT and the SSLMC expert judgment

No Outside Model Considerations Here!!!

SSLMC Proposal Ranking Tool
 Draft Model Output
 May 10, 2007

Negative Impact

↑
 increasing magnitude of impact

#	Effects on SSL Nutrition
22	WINTER/AI/POLLOCK
25	WINTER/CAI/ATKA
33	winter/AI/atka
14	winter/summer/wgoa/cod
11	WINTER/WGOA/POLLOCK
15	WINTER/WGOA/POLLOCK
20	SUMMER/WGOA/COD
16	SUMMER/CGOA/POLLOCK
8	winter/wai/atka
12	SUMMER/WGOA/POLLOCK
21	SUMMER/CGOA/COD
1	WINTER/EBS-AI/POLLOCK
2	WINTER/EBS-AI/POLLOCK
27	WINTER/EAI-BS/POLLOCK
10	WINTER/WGOA/COD
17	WINTER/CGOA/COD
18	WINTER/WGOA/COD
31	winter/wgoa/cod
32	winter/wgoa/cod
4	WINTER/EBS-AI/COD
13	winter/eai-bs/cod
26	WINTER/EAI-BS/COD
30 (6)	WINTER/EGOA/POLLOCK
9	WINTER/EAI-BS/COD
3	SUMMER/EBS-AI/COD
19	WINTER/EAI-BS/POLLOCK
29	WINTER/EAI-BS/POLLOCK
28	SUMMER/EAI-BS/POLLOCK

No Impact

↓
 increasing magnitude of impact

Positive Impact

BOLD numbers indicate negative scores (positive impacts to SSL) as measured by the PRT and the SSLMC expert judgment