

SOUTHWEST ALASKA SEA OTTER RECOVERY TEAM

Meeting Minutes
for
16-18 October 2007
at the
North Pacific Research Board Conference Room
1007 West 3rd Avenue, Suite 100
Anchorage, Alaska 99501

Recovery Team Members in Attendance

Lance Barrett-Lennard, Jim Bodkin, Douglas Burn, Jim Curland, Doug DeMaster, Dick Jacobsen, Lloyd Lowry, Ken Pitcher, Kathy Ralls, Margaret Roberts, Tim Tinker, Kate Wynne. Kathy Burek and Jim Estes participated in portions of the meeting via teleconference.

Other Meeting Attendees

Verena Gill, Katie Kucher, Ellen Lance, Dana Jenski, Gina Palmer, Peggy Osterback, Leslie Slater, Bob Small.

Tracey Goldstein present for portions of the meeting via teleconference.

Day One

During the review and approval of the [agenda](#), Tim Tinker noted that many aspects of the southwest Alaska sea otter (SWAKSO) population model he had been developing were relevant to the discussion on delisting criteria. The agenda was modified to include a brief introduction on the population model between items VI. A and B.

Update on SWAK SO management actions

Douglas Burn informed the Team that there had been no work done on critical habitat designation yet, but that funds are available in Fiscal Year 2008, and that the Service has a court-ordered deadline of November 30, 2008. Kathy Ralls asked who would actually be preparing the critical habitat proposal. Burn responded that he would be the principal author, with assistance from Angela Doroff, Verena Gill, and staff from the Endangered Species Division in the Fish and Wildlife Service Alaska Region.

Lloyd Lowry asked if a plan for analyzing science data relevant to critical habitat had been laid out, and if the data had been analyzed. Burn responded that the initial work would be done in November and December 2007. Jim Bodkin asked what data were available for consideration. Burn responded that it would primarily be survey data.

Ralls asked how the Recovery Team would be included in the process of designating critical habitat. Burn replied that he had been trying to get the Team involved, but nothing substantial had really materialized yet. Burn reiterated that the Service is bound by the court settlement to publish something in the Federal Register by November 30, 2008, but that the Service does not want to propose something that has not been discussed and supported by the Recovery Team.

Tinker asked if it was possible to designate critical habitat on a provisional basis, and revise it later as more information becomes available. As critical habitat designations are typically a very involved process, they are not often revised later on. Burn reminded the Team of how critical habitat is used in the regulatory process of consultations under Section 7 of the Endangered Species Act (ESA).

Dick Jacobsen said that it would be a good idea for the Service to go out to communities in advance of proposing critical habitat and gather information on what kinds of things are being done in areas that might be proposed as critical habitat.

Ralls asked if critical habitat needed to be sufficient for the species to recover, if it turned out that the designated habitat was all that was left. Lowry responded that according to Doug DeMaster at the previous Recovery Team meeting, that was not the case.

Bodkin asked if there were any historical data sets applicable to current situation, such as survey or habitat data. Burn responded that critical habitat can be based on where the animals currently are, and can also include unoccupied habitat. After some discussion about habitat needs, Lowry reminded the Team that the guidance for designating critical habitat is to identify the physical and biological features that are essential to the conservation of the distinct population segment (DPS), so what features should be protected? Ken Pitcher noted that it might make sense to complete the threats analysis before designating critical habitat, but that may not be possible given the court-ordered deadline.

Lowry asked if there are any specific areas that the Team felt are so special that they meet the criteria for critical habitat. Tinker noted that there are some areas that have certain similarities. Burn asked the Team about what are some of the possible threats to habitat, both now and in the future. The Team discussed the idea of forming a habitat subcommittee and also revisited the types of information, such as radio-telemetry data, that may indicate what areas seem to be important to sea otters.

Ellen Lance gave the Team a brief summary of ESA Section 7 consultations, including one with the Federal Aviation Administration regarding the construction of an airport on Akun Island in the eastern Aleutians, which would use a hovercraft to transport people and materials to and from the community of Akutan. Of all the consultations that have occurred since the time of listing, this was the only one where the proposed activity rose to the level of actual take.

Update on 2007 SWAK SO research

Burn [reported](#) on the August 2007 *Tiglex* cruise to the Near and Rat Islands. The survey of Attu Island was completed in 2 days with 319 otters sighted, more than twice the number observed in 2005 (147). That rate of population growth is not biologically possible from reproduction alone, and although immigration is possible it seems unlikely. It will be important to re-examine the survey conditions from 2005 to see if they may have affected the 2005 survey count at Attu. Agattu Island was surveyed in a single day, with results virtually identical to 2005 (48 vs. 46). The Semichi Islands were also surveyed in a single day, with results comparable to the previous complete survey of those islands in 2003 (26 vs. 24). Of note was that no otters were observed at Shemya Island again.

The survey Team completed the north side of Amchitka in a single day, recording 214 otters. Similar to Attu Island, this result was more than twice that of the 2005 survey (97). In this case however, it may have been possible for there to have been immigration from south side of the island. Kiska and Little Kiska Islands took four days to complete, with slightly higher totals than in 2005 (186 vs. 159). Rat Island was surveyed in a single day, with similar number numbers as 2005 (21 vs. 24). Tinker noted that these results may indicate a slowing in the rate of decline in the Aleutians.

The live-capture study in Lower Cook Inlet to investigate the ongoing Unusual Mortality Event (UME) was discussed next. Burek clarified that the underlying pathology is septicemia as well as valvular endocarditis, although it is unclear what is causing otters to be susceptible to this syndrome. Verena Gill talked about the possible causes of immunosuppression in otters, including contaminants, viruses, congenital defects, and diet-related causes.

In 2007, the Service captured and implanted radio transmitters in 44 otters in Kachemak Bay. Although the capture team did try to work in Kamishak Bay on the west side of Cook Inlet, weather conditions and otter distributions did not allow them the capture any otters there. Gill provided the Team with a list of samples collected and tests conducted. Weekly monitoring flights have located all the captured animals at least once. They seemed to be very active, moving over the entire area.

Barrett-Lennard asked about the rationale for trying to capture otters in Kamishak Bay. Gill responded that it contains a large number of sea otters within the listed population, adjacent to Kachemak Bay.

There was additional discussion about monitoring and the importance of recovering and examining carcasses should some of the tagged animals die. There are also plans to follow up with foraging observations of tagged otters in 2008. Lastly, Burn informed the Team that there are funds available to conduct additional surveys of sea otters in Kachemak Bay over the next year.

Jim Bodkin presented the [results](#) of a U.S. Geological Survey (USGS) aerial survey of the outer coast of Kenai Peninsula. Results indicate the estimated number of otters in the Kachemak Bay portion of the study area increased substantially between 2002 and 2007. Bodkin also showed survey results and the population trend for otters in western Prince William Sound, which included both high and low anomalies from the overall trend, illustrating the need to cautious when extrapolating information, particularly when data is sparse. Bodkin next showed results of sea otter sightings from 1993-2005 collected during NMFS beluga whale surveys in Cook Inlet, which showed an increasing trend overall.

Bodkin next presented information from carcass surveys conducted in 2007 along the coast of the Katmai National Park. Most of the carcasses were mummified and for many the skulls had been crushed by bears.

Bodkin also informed the Team about an upcoming study funded by the North Pacific Research Board to delineate the geographic extent, causes, and constraints to recovery in the threatened

southwest Alaska DPS of sea otters. The study will work at 12 sites and examine diet, organization of benthic community, and population status and trends.

Lastly, Bodkin presented information about a study to examine the role of disease in the sea otter decline in Aleutians and possible limitations to recovery. The objective would be to look at otters collected in areas of decline and growth, including Bering, Adak, and Kodiak Islands. The study would involve comparison of antibodies to pathogens between areas. Tracy Goldstein noted that presence of antibodies indicate exposure to disease, not necessarily animals that are carrying disease. Bodkin said that comparison of exposure to disease across these different populations suggested that the incidence of disease in the Aleutians has been much lower. This is work in progress, with additional work to be done on the Kodiak population, with respect to the phocine distemper-like virus detected in recent live-capture operations. Burek asked Bodkin to send a copy of his presentation to her so she could review it further.

Tinker presented [information](#) on the Alaska SeaLife Center's study of sea otters in the Commander Islands. During the 2007 summer season a field crew collected radio telemetry data on 24 of the 27 study animals that were instrumented the previous year (this represents a relatively high annual survival rate). Analysis of body condition data from captured animals indicates that the average mass/length ratio of animals at Bering Island is similar to the Aleutian Island data from prior to the decline; likewise the mean distance to shore, diet diversity, rate of prey capture and activity budgets (% time feeding) of the radio-tagged study animals at Bering Island were more similar to data collected in the Aleutians in the early 1990's than to data collected post-decline. A whole-Island skiff survey of Bering Island in 2007 resulted in the highest count on record (over 4,000 animals uncorrected count) confirming that the population remains stable in this region.

Lianna Jack [reported](#) that the Alaska Sea Otter and Steller Sea Lion Commission has had significant funding reductions. Jack reported results of their sea otter winter mortality surveys conducted by four Tribes (Eyak, Seldovia, Yakutat, and Port Heiden), and also results of the small boat survey program.

Peggy Osterback reported that the Aleut Marine Mammal Commission conducted an aerial survey of sea otters in the Pavlof and Shumagin Islands area. Compared to similar surveys in 2004, the 2007 counts were approximately 20% lower.

Day Two

Recovery strategy, goals, and delisting criteria

The Team began by reviewing the draft recovery strategy prepared by a working group consisting of DeMaster, Estes, Ralls, and Lowry. Of the 10 main points in the strategy, Lowry wanted further discussion of point #3 regarding disease as a possible contributing cause of the decline. Bodkin said that he was not sure that existing data supported disease having played a substantial role in the sea otter decline. Jim Estes suggest alternate wording, to include a statement about considerable uncertainty regarding cause of decline, predation was the cause most supported by data, and that available data did not indicate that disease was demographically significant in decline. Barrett-Lennard suggested broadening point #3, to include predation in

general, so as not to exclude shark predation. Estes responded that there isn't any real evidence that shark predation has had any role in the sea otter decline. Barrett-Lennard agreed that killer whales should be the main focus, but that other predators may well have played a role. Tinker stated that although the weight of evidence suggests killer whale predation was a strong factor, there are other potential suspects. Estes agreed that point #3 could be generalized to predators overall, but questioned whether the Team was comfortable enough to include other predator species for which there is no evidence of impacts on otters. Barrett-Lennard felt that it was a good idea to admit that there is uncertainty on this issue. He noted that stomach contents from some sleeper sharks have had marine mammal parts identified, but it was not clear if those parts represented carrion or fresh kills. Lowry suggested that the Team discuss this subject further during threats analysis.

Curland asked about how funding needs are addressed, to which Lowry responded that the executive summary of the recovery plan should include the estimated costs per year for recovery actions, and the total cost of recovery until the population is delisted.

Tinker observed that point #10 was vague and in need of clarification. As written, "epiphenomenon of environmental change" could mean just about anything. Estes stated that the intent was physical environmental change, but that it was not essential to include this in the section on recovery strategy.

Bodkin added that habitat use may have changed over time, which may be something to consider when developing recovery criteria. He was not sure if point #9 referring to kelp forest collapse really captured that concept.

Lowry then led the discussion towards the recovery goals. The goal of plan is to describe actions that need to be taken, and that development of the recovery plan is one part of the overall program. Bodkin suggested changing the word "must" to "should" under Option 1 for the recovery goal.

Moving on to the Recovery Objectives, Lowry asked the Team if all five items on the list must all be accomplished together. The Team discussed various metrics that would be used to measure the status of sea otters and their habitat. Estes stated that one measure could be a sufficient number of otters to create a phase shift of kelp density since the kelp system is known to not vary linearly, and the distinction between the two phases is clear.

Ralls asked if the recovery of a species could be defined by their function in the ecosystem. Estes noted that with all that is known about how sea otters function in their ecosystem it would be relatively easy to define ecosystem-based criteria.

Lowry asked if the Team had any objections to including an ecosystem-based objective in the plan. Barrett-Lennard noted that it appears as if when objectives 2 and 3 are met, that would mean that objective 1 would also be met. He questioned whether it would be possible to have a well-distributed, self-sustaining population that is at a relatively low density such that they do not play their normal ecosystem role. Tinker noted that the current sea otter population levels are not maintaining the kelp-dominated ecosystems in the Aleutians. Estes stated that the science is way beyond policy on this one, and that the Team should push for an ecosystem-based

recovery objective in the plan. Bodkin added that we need to define the critical role in ecosystem that sea otters play. Ralls asked how strong an argument this should be, adding that the ESA is not entirely “science-based.”

Burn stated that the role of Recovery Team is to prepare draft of the recovery plan for the Regional Director, and therefore if the Team wants to include an ecosystem-based objective, they should do so. Kate Wynne said that this was a good concept, and that the Team should try to develop an ecosystem criterion. She also suggested changing the term “critical” to “functional” in objective 1. The Team then discussed some of the ways that progress towards meeting an ecosystem objective could be evaluated.

DeMaster noted that the delisting criteria for southern sea otters are not as progressive as what this Team is considering, and that inclusion of an ecosystem based objective would “raise the bar.” He also noted that consideration of ecosystem function is a hot issue right now. Lowry noted that objective 1 was somewhat different from objectives 2-5, and that perhaps we need to recover the ecosystem as well as the otters.

Bodkin voiced concern about the usage of the term “well-distributed” in objective 3. Tinker suggested something like “over a sufficient portion of historical range based on any point within last 100 years (or something like that) with self-sustaining numbers.” Bodkin offered the simpler “distributed throughout their range.” Lowry noted that some voids in sea otter distribution may be acceptable, as there may not be otters at every island throughout the range of the DPS. Lianna Jack noted that the ongoing discussion was reminiscent of the Steller Sea Lion Recovery Team, which asked similar questions about how many islands and how many sea lions per island are necessary to delist the population. Tinker noted that it might be possible to have a population that is so fragmented, there may be little or no gene flow between subpopulations, so objectives 2 and 3 should remain separate.

The Team discussed how to create criteria to meet objectives 4 and 5.

Katie Kucher, a graduate student at University of British Columbia, gave a presentation on her study of sea otter responses to killer whale cues, such as underwater vocalizations, blows, and dorsal fins. At Adak Island in 2007, she did not observe any behavioral responses. She noted that there weren’t many otters in Bay of Islands, Shagak Bay, and Clam Lagoon. It is unclear if the lack of response is due to small sample size, or otters that may not have any previous exposure to killer whales.. Additional work in 2008 will look at otter responses to boats, and will examine fecal samples for signs of stress. The Recovery Team asked several follow-up questions about behavioral responses, and how otters might develop them over time.

Delisting criteria

The Team discussed the use of Tim Tinker’s population viability analysis (PVA) model to set delisting criteria for the southwest Alaska DPS. Burn noted that there appears to be sufficient data to fully develop the model only for the western Aleutians. Lowry stated that although the recovery plan may approach this from a management unit perspective, the Service can only delist at the DPS level, and not unit-by-unit.

Pitcher asked if there is a threshold value for probability of extinction that is typically used as a delisting criteria. DeMaster responded that proxy values have been used, which can be precedent-setting, but also that it has been difficult to get agencies to agree on what those values should be. Burn asked if the timeframe for these decisions should be based on some number of generations. There was discussion of uplisting criteria, which would require knowing the probability of becoming extinct (which is implicit in the definition of an endangered species).

The Team also discussed what level the PVA model should use to identify quasi-extinction. The discussion then moved on to the number of management units that must meet the delisting criteria before the DPS could be delisted. This subject gets back to the recovery objective of having a “well-distributed population.” Tinker stated the opinion that sea otters should be at viable numbers and meeting their ecologically functional role in each unit.

Bodkin expressed concern about further constriction of what may currently be well-distributed populations, and that the current issue is primarily one of abundance, rather than distribution. Burn stated that it seemed unlikely that the population should be delisted if it were to become more fragmented than it is at present. DeMaster noted that the spatial scale is important for the first 3 recovery objectives. There was further discussion of combining objectives 2 and 3.

Update on population modeling

Tinker presented the results of his [PVA model](#) for the southwest Alaska DPS. It is a demographic model that includes age and sex, spatial structure, and dispersal between sub-populations. Forecasts of population dynamics are made by simulating variation in survival rates according to the observed range and patterns of variation from existing data. Specifically, the model utilizes estimates of density-dependent age/sex-specific vital rates available from various telemetry studies, and then maximum likelihood techniques are used to calculate the additional mortality rates necessary to cause the observed rate of decline, by fitting to skiff survey time series data. The results suggest that for some Islands, particularly some of the larger Islands, the additional age-independent mortality has decreased as the populations reach lower densities, resulting in a slowing of the rate of decline. The preliminary results highlight the need to better understand the spatial dynamics of the decline, and especially the potential for spatial “refuges” associated with Island size or coastline complexity (i.e. developing a habitat characteristic model).

Lowry asked if we could have these models developed within one year, to which Tinker responded they could be done fairly quickly after all the data are assembled. Burn listed the various sources of survey data, including helicopter, fixed-wing, and skiff-based surveys. Bodkin asked if we need more data points to determine population trends. Lowry asked about the availability of habitat data. Burn reported on the availability of bathymetric GIS data at varying scales.

Threats analysis

The Team filled out a threats assessment template for each management unit. During this process, there was discussion about shipping traffic through the Aleutians. The Team amended the template to include hazardous materials in addition to oil spills. They also changed the definition of “Level of Confidence” to mean “in this assessment,” as opposed to “that the threat will occur.”

Curland asked about the high level of confidence for subsistence harvest if the number of animals being taken is not known for certain. Burn responded that there isn't any information that indicates the harvest levels from the marine mammal Marking, Tagging, and Reporting Program (MTRP) are inaccurate.

The Team made several changes to the values in the "Immediacy" and "Likelihood" columns of threat assessment tables. They also separated the "contaminants" threat into "point source" and "non-point source" varieties.

Day Three

The meeting began with a discussion of the previous day's exercise completing the threats assessment tables. Burn agreed to distribute the completed tables to the Team via e-mail following the meeting. There was also some discussion about how to use the threats assessment to prioritize threats.

Recovery action narrative

Working through the draft Recovery Action Outline, the Team made numerous revisions that were incorporated into the outline after the meeting by Lowry, Tinker, and Burn. The more substantive portions of the discussion are included in these minutes.

Burn reported on how the sea otter monitoring plan was prepared in 2005 in collaboration with the USGS and Alaska SeaLife Center. The use of index sites to determine population trends was then discussed. Burn asked if it would be more efficient to collect trend information, but not do large-scale abundance surveys until there was some indication that the population may have increased toward delisting levels. Bodkin noted that in regions with significant subsistence harvest, abundance estimates are needed to evaluate the impact of that harvest. Tinker generally agreed with this approach, and added that it would be important to have abundance estimates periodically for a variety of management purposes, not only for delisting.

There was some question about how index sites should be selected. Bodkin responded that different survey methods are more appropriate for different areas. The Team discussed whether the existing monitoring plan should be revised.

During discussion of human impacts, Curland updated the Team on the status of the Defenders of Wildlife et al. letter to the Service regarding the Special Rule under Section 4(d) of the ESA. The Service responded in July 2007, however Defenders et al. are not satisfied that all their questions were adequately addressed. The main concern was in regard to the accuracy of harvest monitoring. Lowry stated that it is likely that subsistence harvest will continue and that there is no evidence that it is the cause of the decline, although it is possible there could be local effects of harvesting due to numbers and sexes of animals taken. There was broad agreement that the impact of subsistence harvest should be evaluated in a quantitative way on a management unit basis. The issue of struck and loss was discussed briefly, as it has never been quantified.

Burn stated that given the reported harvest levels, they would have to be off by a very large amount in order to be of concern relative to the population size. He also noted that the requirement that all hides must be tagged before a tannery will accept them would be expected to result in a high level of compliance with the MTRP. Burn also noted that the information from the MTRP tends to be more accurate when the hides are tagged promptly, although Bodkin stated that a bias in reporting accuracy has been demonstrated using genetics to determine sex. The bias in this case was for some males to be reported as females. The Team discussed several suggestions for improving the quality of information about the subsistence harvest.

Schedule for future meetings

The Team agreed to meet again in the spring of 2008. Burn agreed to send out scheduling calendars soon after this meeting.

Lowry expressed the possibility that the Team could have its draft of the plan transmitted to the Service by November 2008.