

SOUTHWEST ALASKA SEA OTTER RECOVERY TEAM

Meeting Minutes
for
24-25 October 2006
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, Kathy Burek, Douglas Burn, Jim Curland, Doug DeMaster, Jim Estes, Dick Jacobsen, Lloyd Lowry, Ken Pitcher, Kathy Ralls, Tim Tinker, Margaret Roberts, Kate Wynne.

Recovery Team Members not participating

David Benton

Other Meeting Attendees

Shannon Atkinson, Angela Doroff, Verena Gill, Lianna Jack, Dana Jenksi, Rosa Meehan, Peggy Osterback.

The meeting began with a welcome from Team Leader Lloyd Lowry. The meeting [agenda](#) was reviewed and approved without change.

Day One

Update on southwest Alaska sea otter population status

Douglas Burn presented [information](#) from a re-analysis of results from the Kodiak 2004 aerial survey. After correcting an error in calculation of the correction factor for otters missed by the observer, the estimated abundance in 2004 is approximately 11,000, as opposed to 6,200 from the original analysis. Burn reported that the Fish and Wildlife Service is working with Tim Tinker who will conduct a new modeling exercise of these and other data to estimate population trend. Margaret Roberts asked if this new information would have any effect on the Endangered Species Act (ESA) listing status, to which Burn responded the decision to list was driven primarily by the population declines in the Aleutian archipelago and Alaska Peninsula areas, and that the Service would have listed the distinct population segment (DPS) regardless of the Kodiak information. Roberts noted that the current understanding of the Kodiak aerial survey data was corroborated by residents of Kodiak prior to the listing action. Burn noted that no additional aerial surveys are planned for the Kodiak area in 2007.

The team discussed these findings, along with what is known about the Kodiak sea otter population in the 1980s, which was growing at an annual rate of around 10% per year at that time. The team recommended the Service complete their analysis of the Kodiak survey data and resubmit the paper for publication.

Tinker presented [information](#) from other survey efforts conducted in 2006. The U.S. Geological Survey (USGS)/Alaska Sea Life Center (ASLC) conducted skiff surveys at Adak, Kagalaska, and Little Tanaga Islands in the central Aleutians. Adak Island was surveyed by Jim Bodkin and his staff using methods similar to previous efforts. The 2006 count was slightly greater than the 2005 count, which was the lowest to date. Tinker also reported that the sea otter populations at Kagalaska and Little Tanaga Islands are very small, with an estimated decline rate of 20% per year.

Burn reported that due to a lack of funding the Service did not conduct any sea otter survey work in western Alaska in 2006. The funding situation is more promising for 2007 however, and the Service is planning to conduct additional skiff surveys of sea otters in the western Aleutians.

Update on southwest Alaska sea otter management actions

Burn reported on the publication of a final rule under Section 4(d) of the ESA that would align the prohibitions for the listed DPS with those of the Marine Mammal Protection Act (MMPA). The intent of the rule was to allow for the export of handicrafts that were legally taken, created, and sold. It also allows for the import and export of handicraft items as part of cultural exchanges with Canada and Russia. And finally, the rule revised the definition of handicraft under the ESA, to align it with the definition under the MMPA. Jim Curland noted that Defenders of Wildlife believes that the rule has some serious legal issues, and that they will be sending a letter to the Service with a list of questions. Burn will post the letter to the team's web site, as well as the proposed and final special rules as background information.

Burn reported on a 60-day Notice of Intent submitted by the Center for Biological Diversity on 3 October 2006, to sue the Service for failure to designate critical habitat for the southwest Alaska DPS within one year of listing. Burn discussed the likely steps that would follow, and that may result in a court-ordered deadline for designation of critical habitat. Doug DeMaster offered some perspectives on critical habitat designations based on his experiences with NOAA-Fisheries species. The team discussed what threats exist to sea otter habitat, and also what primary constituent elements (PCEs) for sea otters might be. Dick Jacobsen stated that any designation of critical habitat in southwest Alaska would have a profound impact on the residents of this region, and they should be considered throughout the process.

Jim Estes volunteered to write a white paper on the subject of sea otter critical habitat, with assistance from DeMaster and Kathy Ralls.

Update on southwest Alaska sea otter research

Jim Bodkin presented [results](#) from a USGS study along the coast of the Katmai National Park. This work was conducted as part of a long-term monitoring program supported by the National Park Service. Work included skiff surveys along the coast, carcass surveys on shore, and feeding observations. Skiff surveys documented some 5 km long segments of coastline with no otter sightings, and other segments of relatively high concentrations. The average density in nearshore transects was 5.6/km². A total of 37 carcasses were found, 32 of those were at haulout sites on islands. Observations of feeding otters indicated a diet consisting predominantly of clams, but also chitons, octopus, mussels, crab, and snails. The team discussed the future of this program, which will be expanded in 2007 to include work in the Kenai Fjords National Park and Prince William Sound as well as aerial surveys of sea otter abundance.

Estes presented [results](#) from recent studies in the Commander Islands, Russia, and Aleutian archipelago. This work is supported in large part by the ASLC through a grant from the Service. In 2006, a telemetry study was initiated on Bering Island, where 32 otters were captured and 27 instrumented. The otters will be monitored for two years, at which time they will be recaptured for removal of the time-depth recorders.

Estes also reported on analysis of sea otter growth rates in the Aleutians, which have increased as the population has declined. Based on telemetry and land-based surveys, it appears that the distribution pattern of sea otters in the Aleutians has shifted over the past decade, where most animals are now found closer to shore. Other changes over time include increases in sea otter prey availability, and shorter feeding bouts. These findings support the conclusion that the decline was not driven by nutritional limitation.

Estes described plans to study an encrusting coralline algae (*Clathromorphum nereostratum*), that is common in the Aleutian Islands and can live for centuries. Growth rings in the algae provide a historical record of growth rates that may correlate with the abundance of kelps, sea urchins, and sea otters.

Angela Doroff presented serology results from sea otters captured in the Aleutians, at Kodiak Island, and at Bering Island in 2004 and 2005. Exposure to a morbillivirus similar to phocine distemper was found for animals in Kodiak and the eastern Aleutians, but not those in the western Aleutians or Bering Island. Tinker asked if there were any comparable samples from harbor seals; Kathy Burek replied that there are seal and sea lion serum samples that may be available for testing. She also noted that additional work, including polymerase chain reaction (PCR) or culturing, is needed to confirm and identify the virus. These results are being developed into a manuscript for publication with Tracy Goldstein as the lead author. Estes noted that morbillivirus has not been an issue for otters in California, where serology indicates exposure, but, as elsewhere, there is no physical evidence of mortality from distemper. The team discussed the role of disease both in the observed sea otter decline and also as a threat to recovery of the population. Ken Pitcher noted that since the sea otter has been through a genetic bottleneck as a result of the commercial fur harvest, their resistance to diseases might be lower. Although the significance of these serology results is unclear, the team recommended that the issue warrants further investigation.

Verena Gill presented information about the declaration of a marine mammal Unusual Mortality Event (UME) for sea otters in Alaska. The area included in the declaration is from Kachemak Bay to Umnak Island. The declaration was based on recent increases in sea otter strandings especially in Kachemak Bay, along with the discovery that a large proportion of the mortality is due to a single cause: valvular endocarditis from a bacterial infection. The mortality also seems to be affecting prime age male sea otters, which is atypical. The team discussed some of the details of the infection, and pointed out the need to put this mortality in a demographic context, i.e., are the mortalities causing a decline in the regional otter population. Burn indicated that the Service is hoping to fund abundance surveys and live animal sampling in the Cook Inlet region in 2007.

Margaret Roberts presented information about research that the Alaska Sea Otter and Steller Sea Lion Commission (TASSC) has been conducting in recent years as part of their MMPA Section

119 Cooperative Agreement with the Service. Projects include small boat surveys, winter mortality surveys, Traditional Ecological Knowledge (TEK) studies, and biosampling of subsistence-harvested otters. Peggy Osterback briefly described the Aleut Marine Mammal Commission's Sentinel program conducted in the villages of Atka, Akutan, Unalaska, and King Cove. This program consists of year-round marine mammal monitoring, and is being coordinated with Peter Boveng of NOAA-Fisheries.

Review of data on factors that may be limiting the southwest Alaska sea otter population

Estes suggested it might be useful for the team to develop a matrix of all factors that may be limiting the population, and outline the available information that supports or negates the likely importance of each factor. The team spent considerable time developing such a matrix for the Aleutian archipelago (Attachment 1).

Infectious diseases (lead Burek)

The team discussed the potential role of disease in the decline to date, as well as its potential as a future threat to recovery. There is little evidence that infectious disease played a role in the population decline. The lack of carcasses is one piece of evidence that suggests disease was not a major factor. Burek questioned whether observer effort was sufficient to detect carcasses, especially year-round. Tinker noted that there were intensive search efforts each month for several years at Amchitka and Adak Islands in the Aleutians during the period when the population declined, and that less intensive search efforts detected large numbers of carcasses in these same regions prior to the decline.

The team discussed the characteristics of various types of disease epidemics, and what they would have looked like to observers. They also discussed the interpretation of serology results relative to population-level effects. There was general agreement that increasing the recovery, necropsy, and sampling of available carcasses from within the southwest Alaska DPS is needed.

Biotoxins (lead Burek)

Peggy Osterback asked if paralytic shellfish poisoning (PSP) is showing up in otters in the the Fox Islands. Estes asked if it was difficult to determine if an otter had died of PSP. Burek stated that the presence of PSP can be detected from stomach contents. The question of biotoxins in echinoderms was raised, but it was not clear if this was a possibility as they are herbivores rather than filter-feeders that accumulate PSP toxins. Mortality events related to PSP tend to be limited both temporally and spatially, and the team concluded that there was a low likelihood that PSP has had a major effect on the sea otter population.

Contaminants (lead Burek)

The team discussed the potential impacts of oil spills which, while well-documented as a threat to sea otters, did not play a role in the population decline in southwest Alaska. The team also discussed the potential impact of chlorinated hydrocarbons and heavy metals, but again available information does not suggest that these are major threats to the population.

Food limitation (lead Tinker)

Tinker presented a summary of available information and indicated that in his opinion all available evidence indicates that food limitation has not been a factor in the decline. The team agreed with this assessment.

Disturbance (lead Barrett-Lennard)

Lance Barrett-Lennard stated that he had assumed that the primary concern is with habitat disturbance. He also stated that in British Columbia (BC), disturbances that affect feeding animals or break up rafts of otters are important. Estes noted that there have been some studies of disturbance by boat traffic on sea otters in California, where the rafts do break up and reform frequently. Tinker noted that there have been a few Masters theses on the effects of tourism on sea otters. Curland did his Masters thesis on this topic, but the findings were not conclusive. Barrett-Lennard raised the subject of disturbance during aerial surveys – in BC they're done with helicopters and overflights at less than 1,000 feet can break up rafts. With respect to boat traffic, it seems the impact may depend on how habituated the animals are. Tinker stated that otters in the Aleutians are definitely disturbed by the presence of researchers in boats. Doroff pointed out that the Service does have literature available that asks boaters in Alaska not to approach too close to otters, and explains why it is important to avoid disturbance. Public reaction to this information has been generally good, but still there have been instances where boat strikes have killed otters. Estes noted that the area the team was focusing on (Aleutians) has very little boat traffic in nearshore waters. The team agreed that they did not need to add this information to the threat matrix for the Aleutians. The team also discussed recommendations for speed and minimum distances to minimize the impacts of disturbance.

Entanglement (lead Wynne)

Kate Wynne reviewed the types of fishing gear used within the range of the DPS that has potential to entangle otters, particularly fixed pot gear and gill nets. There are some observer data from State-managed fisheries in Prince William Sound (PWS), Cook Inlet, at Kodiak Island, and along the south Alaska Peninsula, and pot fisheries in Federal waters. During the 1990s there were very few takes documented, particularly in offshore waters. In PWS during the early 1990s, 8-10 otters per year were caught in gillnets, with no documented mortalities. In the Kodiak set gillnet fishery observer program in 2002, there were four entanglements; two otters escaped on their own, the other two with human intervention. No mortality or serious injury resulted. In Kodiak 2005, there was one entanglement with the animal releasing itself.

In the PWS fishery, there were about 1,800 drift net boats with surface nets, mostly attached to the boat and attended. During the 1980s, fishermen would pull in a net with an otter in it, and sometimes hit the otter to stun it before trying to untangle it. With outreach, fishermen were shown how to get the otter out of the net without injuring it.

For pot fisheries, smaller animals can get caught in pots and drown. The NMFS observer program recorded eight otters drowned in the Pacific cod pot fishery in 1992. These 8 takes were extrapolated to 24 takes for the entire fishery. Burn noted that these takes occurred when pots were set too close to shore in an area that was not open to fishing, and that there have been no recorded takes in the pot fishery since then. Although there does not appear to be a conflict at this time, Lowry noted that this gives us an idea of what might happen if a pot fishery were to open in nearshore, shallow waters inhabited by sea otters. Estes noted that dungeness crab pots are typically fished in sea otter habitat. Barrett-Lennard stated that this occurs in the BC population, but there isn't good quantitative data available. Also, we have seen the sea otter population decline in areas where this could occur, but there is a problem with detecting these events – they happen in California, but how big an issue it is in Alaska is unknown.

Burn stated that entanglement had recently been an issue during an ESA Section 7 consultation with NOAA Fisheries. The possibility of specifying a minimum depth requirement for pots was discussed, but it was not clear if that was possible from a regulatory standpoint. Jacobsen stated that he has been pot fishing since 1966 in areas such as Pavlof Bay with many otters present, and has never had an otter caught in a pot.

The issue of ESA consultations for fisheries occurring within State waters (within 3nm of shore) was discussed. Burn stated that he believed this could be addressed through a Habitat Conservation Plan with the State, and that the Anchorage Fish and Wildlife Field Office has been exploring this possibility.

The team concluded that entanglement was likely not a major factor in the sea otter decline, at least in the Aleutians.

Subsistence harvest (lead Burn)

Burn presented information from the Marine Mammal Marking, Tagging, and Reporting Program (MTRP), which requires hunters to have skulls and hides tagged within 30 days of the kill date. Although non-compliance with the program occurs but has not been quantified, hunting typically occurs from small villages, and the local taggers feel they have a pretty good sense of whether otters are being taken but not tagged.

In southwest Alaska, the subsistence harvest has averaged less than 100 animals per year. Areas where the sea otter decline has been the greatest, such as the Aleutians, have had little to no harvest. Conversely, the area with the greatest harvest, the Kodiak archipelago, has shown no evidence of decline.

Tinker asked if the MTRP data include struck and loss. Burn replied that they do not, and that it would be a difficult thing to measure. Osterback stated that there is an annual survey of all marine mammal harvest information in her area, and that this question could be included in that survey program, rather than investigated separately. Lianna Jack noted that the requirement that sea otter hides must be tagged in order for them to be tanned professionally helps ensure better compliance with the tagging requirement. Burn noted however, that not all otters that are recorded by the MTRP show up in tannery records, which may indicate that some hides are tanned by hunters themselves.

Burn noted that in the past year, the Service worked with the TASSC on promoting a voluntary “males only” hunting initiative in southwest Alaska. In prior years, females made up roughly 1/3 of the harvest in southwest Alaska. By asking hunters to avoid taking females, especially those with pups, it may be possible to further minimize the impact of the harvest on the population. The Service will monitor the effectiveness of this outreach effort in the future.

The team agreed that the available evidence does not suggest that the subsistence harvest has played a role in the sea otter decline, at least in the Aleutian Islands.

Predation (leads Tinker and Barrett-Lennard)

Tinker stated that demographically, predation would be assumed to not be age-specific, which the data from Adak Island seem to support. Barrett-Lennard stated that for many prey species killer whales tend to prey on the easiest animals, such as pups. Small marine mammals may avoid predation by hiding and waiting until the danger has passed, but pups may be naïve. Tinker and Estes talked about shark predation on sea otters in California, and what those wounds look like. Tinker stated that this may differ from killer whale predation, where otters may be engulfed and dragged under water. Barrett-Lennard noted that he had observed killer whales swimming past otters in PWS, which didn't appear to bother the otters. He also stated that the existence of a small "rogue" group of orcas developing a taste for otters seems odd, and that they likely just bash them around like they do birds.

The team discussed the available scientific information, including prey abundance, body condition, behavior, observed rate of attacks, and lack of carcasses, all of which would be consistent with predation. Lowry asked if the evidence was sufficient to determine if predation is the cause of the decline. Estes stated that no single piece of evidence is going to be compelling on its own, but rather the weight of all evidence is compelling in his view. Estes also noted that negative evidence can be very powerful.

Burek asked about the spatial distribution of killer whales. Barrett-Lennard discussed imaginary dividing lines for transient orcas pods. Barrett-Lennard also noted that killer whales from Cook Inlet have been observed around Kodiak. He provided additional details of where groups do (and do not) travel, and that there may be a break in transient killer whale distribution somewhere between the Commander Islands, Russia, and Kodiak. He also noted that our understanding of killer whale distribution is based primarily on summer data, with very little information about winter distribution. Lowry noted that the Commander Islands are rich in several kinds of marine mammals, not just otters. The question was raised about whether there is something that would keep killer whales from crossing between the Aleutians and the Commander Islands, to which Barrett-Lennard responded that whales from one social group may be reluctant to move into the home range of another. Tinker mentioned that a catalog of photo-identified killer whales is being created for the Aleutians.

Pitcher asked why killer whales would continue to patrol shorelines when sea otters have been reduced to such low densities, especially when other marine mammals may be present. Estes noted that his group has not been seeing killer whales in the Aleutians patrolling nearly as much as they had in the 1990s. Barrett-Lennard offered that a small group of killer whales could pick up the behavior of killing sea otters, but there are about 250 transient killer whales in the area from Adak Island to Kodiak Island and there is no way that they are subsisting primarily on otters.

Habitat concerns (lead Pitcher)

Pitcher stated that habitat in southwest Alaska is relatively pristine from human developments, with little growth expected in the foreseeable future, the one exception being oil and gas development. Both DeMaster and Estes believe that the potential impacts of oil spills should be included in the recovery plan. The team also discussed the issue of climate variability and climate change. It is possible that sea otters may expand their range northward in Bristol Bay

should sea ice no longer occur in winter. The role of warmer water temperatures on disease organisms, and possible impacts of warming on sea otter prey, were also discussed.

The team concluded that there is no evidence that suggests loss of habitat has played a role in the sea otter decline. While other than oil and gas issues there appear to be no major threats to habitat at this time, new fisheries could emerge and their potential impacts on the sea otter population should be considered.

Illegal Take (lead Burn)

Burn described the differences between legal subsistence take and illegal take as defined under the MMPA. Although there is very little information available to address this issue, it appears inconceivable that illegal take has played a significant role in the sea otter decline.

Future research needs

The FY2006 research proposal from the Alaska SeaLife Center had been posted to the recovery team web site. Burn outlined how the funding has been included in the Department of Interior budget as a line item for "Eider and Otter Recovery at the Alaska SeaLife Center." The allocation between eiders and otters has occurred at the ASLC level, and Estes said that he has not had any input into that decision.

Burn also noted that the Service's Marine Mammals Management Office is in line to get add-on funding in FY2007, some of which can be used to address high priority sea otter needs, including population monitoring and studies related to the UME. Bodkin stated that USGS Alaska Science Center only has the National Park Service work in Katmai and Kenai Fiords planned for the coming year.

The team also discussed work planned for the coming year under the MMPA Section 119 Cooperative Agreement with TASSC and the Aleut Marine Mammal Commission, including aerial surveys in the Shumagin and Pavlof Islands, and skiff surveys at Chignik Lagoon and Unalaska. It was suggested that information from these and other surveys be presented in a GIS format that would allow team members to get a better understanding of where these areas are and what the coverage is like.

Bodkin noted that the North Pacific Research Board has a call for proposals that is currently open. He and Estes are preparing a proposal for systematic sea otter studies at numerous locations within the DPS that would help identify the potential role of disease, variation in sea otter populations and their habitat across the range of the decline, and the geographic extent of the decline.

Day Two

The team began by reviewing the “matrix” exercise from the first day (Attachment 1), which several members believed was a useful way to summarize the available scientific information regarding the sea otter decline. The discussion then turned to the subject of recovery units, and their prospective boundaries. Pitcher noted that as he was drafting the section on habitat concerns, it occurred to him that habitat was different between the eastern and western Aleutians, with a division occurring in the area of Samalga Pass. There was some question as to whether it was appropriate to call these areas recovery units, or whether they should be called management units. Burn agreed to seek further guidance from the Service’s ESA Recovery staff on this issue. For the moment, the team agreed to divide the Aleutian unit into east and west with the boundary at Samalga Pass.

The team next moved into a discussion of the draft recovery action plan outline prepared by Burn and Lowry. The draft outline began using the Steller sea lion outline as a template. The draft outline does not have priorities assigned to each item, as that step occurs in the implementation schedule of the plan. Different research topics that might be included as action items were discussed, including the use of fatty acid analysis to study killer whale diets, and the behavioral responses of sea otters to killer whales. Burn recalled that a recovery strategy was included in the Recovery Outline prepared by the Service in October 2005, which had three main areas of interest: 1) research into threats; 2) population monitoring; and 3) conservation actions that could potentially mitigate threats. Lowry and Bodkin volunteered to draft a recovery strategy section to go into the draft recovery plan. Team members were asked to provide any input they have on this topic to Lowry/Bodkin by 15 February 2007, and they will then draft the strategy and provide it to the team prior to the next meeting.

The team discussed milestones for completing the background information and threats sections of the plan. Reviewers will provide comments to authors by 1 January 2007. Authors will revise their sections by 15 February 2007, and send those sections to Lowry and Burn, who will compile them into a single document. Bodkin suggested assigning reviewers to specific sections to ensure that everything gets at least some meaningful review. Burek also asked if it would be acceptable to have some review from non-team members. Both suggestions were agreed to by the team.

On the subject of delisting and uplisting criteria, the team agreed to look at examples from recently prepared recovery plans as guidance. The use of population viability analysis (PVA) and non-PVA based criteria was discussed. Bodkin, Pitcher, Lowry, Ralls, DeMaster, and Doroff volunteered to work on options for non-PVA based criteria and have those available for discussion at the next team meeting. Tim Tinker will continue to work on a PVA for otters in the western Aleutian Islands.

The team decided to meet again in approximately six months. Burn will coordinate with team members to find the best dates for the meeting. The team agreed that a 2-day meeting would be sufficient, and also that the use of the North Pacific Research Board conference room was convenient for out-of-town members.

Lowry reviewed several points that he would include in a letter from the team to the Service's Regional Director, including the importance of investigating the UME, the importance of continued population monitoring, and the team's concerns about designation of critical habitat for the DPS.

Attachment 1. Matrix of evidence for factors that could be impacting sea otter population status for the Aleutian Islands Andeanof Islands west including the Near Islands). No in a cell indicates that there is no evidence from a particular data category (columns) that supports a particular factor (rows), and yes indicates that there is support. Blank cells indicate that the data source does not provide evidence relative to that factor.

Factor	Prey Abundance	SO Body Condition	SO Demography	Spatial Pattern of SO Decline	SO Behavior	Rate of SO Food Intake	SO Carcasses	Temporal Pattern of SO Decline	Contaminants in SO or Prey	Observations of Interactions	Summary
Food Limitation	No	No	No	No	No	No					No
Biotoxins				No			No	No			Low Probability
Contaminants			No	No			No		No		No
Infectious Disease ^a	?	N/A	Possible	No	Unlikely		No	Unlikely			Low Probability
Predation			Possible	Yes	Yes		Yes			Yes	Likely
Disturbance											Unlikely
Entanglement											No
Subsistence Harvest											No
Illegal Take											No
Habitat											No

^a May need a separate table for disease or disease agents

^b No category for fish offal from processors that sea otters may consume