

**MARINE MAMMAL COMMISSION**  
4340 East-West Highway, Room 700  
Bethesda, MD 20814-4447

6 May 2008

Rosa Meehan, Ph.D.  
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1011 East Tudor Road  
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Dear Dr. Meehan:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the draft 2008 stock assessment reports prepared by the U.S. Fish and Wildlife Service for the three stocks of northern sea otters in Alaska. Based on its review, the Commission makes the following recommendations and comments.

## **RECOMMENDATIONS**

The Marine Mammal Commission recommends that the U.S. Fish and Wildlife Service—

- update the stock assessment reports for northern sea otter stocks in Alaska on the schedule specified in section 117(c) of the Marine Mammal Protection Act;
- review available information on stock structure of northern sea otters, including the strongly diverging demographic trends, to determine if there are more than three sea otter stocks in Alaska;
- describe more thoroughly the methods and analyses used to assess northern sea otter stocks, particularly with regard to estimates of population size and fishery interactions; and
- evaluate more thoroughly other factors that may be affecting the status of northern sea otter stocks, including the ongoing unusual mortality event and elevated contaminant levels in sea otters from certain regions.

## **RATIONALE**

### **Timely Revision of Stock Assessment Reports**

Stock assessment reports for northern sea otters in Alaska were last revised in 2002. The Service is obviously aware that these draft revisions are well behind schedule. Between 2002 and 2008 the southwest Alaska stock has continued to decline precipitously and was listed as threatened under the Endangered Species Act in 2005. During that same period, the southcentral Alaska stock has experienced an unusual mortality event that is still ongoing, and some portions of the southeast stock appear to have declined while others, notably the populations in Glacier Bay and Disenchantment Bay (near Yakutat, Alaska), have increased rapidly. In addition, population surveys were conducted for portions of the southeast Alaska stock in 2000, 2002, 2003, and 2005, for portions of the southcentral Alaska stock in 2000, 2002, and 2003, and for the Kodiak archipelago component of the southwest Alaska stock in 2004. Further, since the 2002 report, several scientific

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articles have been published on sea otter population dynamics, focusing primarily on declining trends in portions of the southwest Alaska stock (e.g., Burn et al. 2003, Burn and Doroff 2005, Doroff et al. 2003, Estes et al. 2005). On the one hand, the productive work of the Service's staff should be acknowledged and commended as it provides essential information about the status of these stocks. On the other hand, the timely distribution of summaries of the resulting data by means of stock assessment reports is essential for conveying important information to decision-makers and others interested in sea otter status in Alaska. Our understanding is that the Service's delay in updating stock assessment reports is largely due to clearance procedures at the agency's headquarters. As these are scientific documents, it is not clear to us why they should require such intense and prolonged scrutiny at the headquarters level. Although the Commission certainly welcomes the completion and availability of the 2008 drafts, it also must note that the long interval between the last update and the present one undermines the stock assessment process by failing to keep decision-makers and all other responsible and interested parties adequately informed. To meet the Service's statutory responsibilities and to provide timely information on stocks that are undergoing dramatic changes, the Marine Mammal Commission recommends that the U.S. Fish and Wildlife Service update the stock assessment reports for northern sea otter stocks in Alaska on the schedule specified in section 117(c) of the Marine Mammal Protection Act.

### **Stock Structure**

The Service currently recognizes three stocks of northern sea otters in Alaska, based largely on differences in morphology and maternal genetic markers (mtDNA) (Gorbics and Bodkin 2001). However, the relatively small home ranges of individual sea otters suggest the potential for reproductive isolation within the range of each recognized stock, particularly in the Aleutian Islands where otter habitats can be separated by hundreds of kilometers. Within the range of the southwest Alaska stock, sea otters in different regions have exhibited markedly different trends over the past few decades, suggesting that those subpopulations may be demographically isolated from one another. Between 1965 and 1992 sea otter numbers in the eastern (eastern Andreanof and Fox Islands) and far western (Near Islands) Aleutian Islands increased substantially, while numbers in the central Aleutians declined by more than 50 percent (Evans et al. 1997). Since 1992 the difference in trends within the Aleutians has become less apparent because the number of otters declined dramatically throughout the Aleutians, except possibly at the Commander Islands (Doroff et al. 2003, Estes et al. 2005). Between 1989 and 2001 sea otter numbers along the south side of the Alaska Peninsula declined from Castle Cape to the western end of the peninsula while numbers north and east of Castle Cape generally remained stable or even increased (Burn and Doroff 2005). During the same period on the north side of the peninsula, numbers west of 162°W longitude decreased substantially while those to the east increased; it is not clear whether eastward movement of animals contributed to these contrasting trends (Burn and Doroff 2005). A figure conveying these trends by region would be a useful addition to the report for this stock.

These observations indicate that the currently recognized southwest stock may encompass several smaller, demographically isolated populations that warrant recognition as separate stocks.

Such recognition may be necessary for their protection, as many of these units may not be able to withstand mortality levels commensurate with the range-wide potential biological removal level of 968 otters for the southwest stock. In other words, the Service may need to manage human impacts at a finer geographic scale to reduce the likelihood of local extinctions throughout the Aleutian archipelago. For these reasons, the Marine Mammal Commission recommends that the Service review available information on stock structure of northern sea otters, including the strongly diverging demographic trends, to determine if there are more than three sea otter stocks in Alaska.

### **Description of Methods**

The draft stock assessment reports do not describe in sufficient detail the methods used to estimate sea otter abundance or incidental take by fisheries. This shortcoming could be resolved either by providing more thorough descriptions in the reports themselves or by citing other documents where the methods are described in detail (as long as those documents are readily available to the interested public). The draft reports should describe the survey methods, derivation of correction factors for sea otters missed during the survey, and measures of confidence in final estimates (e.g., variance, coefficient of variation).

The description of fishery interactions is incomplete. The reports should list all fisheries known to interact with sea otters, observed and extrapolated bycatch estimates for those fisheries (with variances and analytical methods), and observer coverage. The draft reports do not consistently provide this information. For example, four entanglements of southwest Alaska sea otters were observed in the Kodiak salmon set net fishery in 2002, and bycatch for that year was estimated at 62 sea otters. However, the report does not describe observer coverage or the method of extrapolation used to produce the estimate of “total bycatch,” which apparently represents entangled animals and not necessarily the number of animals seriously injured or killed. All of the otters that were observed to be entangled in the Kodiak set net fishery in 2002 either escaped or were released alive with no apparent external injuries, but one sea otter mortality was reported by a fisherman in the fishery that year. In 2005 observers recorded another entangled sea otter that escaped, but it is not clear whether that otter suffered any serious injuries. What is clear from this information is that sea otters do become entangled in set net fisheries, and at least some of those entanglements result in death. The draft report concludes that “less than one animal per year” is killed or seriously injured as a result of all fishery interactions, but it is not clear how that estimate was derived.

The draft reports also do not adequately consider possible interactions in fisheries that are not observed or where observer coverage is low. To address this deficiency, one approach might be to evaluate all fisheries that have been known to take sea otters and then identify fisheries that use similar gear as used by those where interactions with sea otters would be expected. For example, some description is provided for the Pacific cod pot fishery and incidental bycatch of sea otters in that fishery in the early 1990s, but the draft reports do not discuss in sufficient detail any of the nine other federal pot fisheries that occur in Alaska waters. Some of these fisheries are observed as part

of the North Pacific Groundfish Observer Program, but observer coverage varies among fisheries depending on, for instance, the size of vessels involved. The portion of the federal pot fisheries that occurs within sea otter habitat also is not clear. Several commercial, recreational, and subsistence pot fisheries in state waters are not observed, and those fisheries are likely to occur in sea otter habitat. Although bycatch estimates cannot be derived or inferred from unobserved fisheries, the stock assessment reports should identify the fisheries that could take sea otters (e.g., pot and set net fisheries) and assess the likelihood of sea otters being killed or seriously injured incidental to those fisheries.

To address these concerns, the Marine Mammal Commission recommends that the Service describe more thoroughly the methods and analyses used to assess northern sea otter stocks, particularly with regard to estimates of population size and fishery interactions.

### **Oil and Gas Development**

All three draft reports contain a section that focuses on the impacts of oil spills resulting from oil and gas production and transport. The reports do not, but should, consider other impacts from oil and gas development, particularly the potential impact of noise from ship traffic or seismic exploration on sea otters. The reports indicate that “there is no evidence that routine oil and gas development and transport have a direct impact” on the sea otter stocks. However, the question is not whether there is evidence of such impact but whether such impact occurs. The absence of evidence is meaningful only if sufficient effort has been made to investigate the problem. The reports rightly do highlight the potentially severe consequences for sea otters when oil and gas accidents occur, such as the *Exxon Valdez* oil spill in 1989.

Fuel oil spills from ships other than those associated directly with oil and gas production and transport are mentioned but only in the southwest Alaska stock report. To be complete, the Service should recognize and evaluate the potential for fuel spills from such vessels, including cruise ships and vessels involved in commercial shipping.

### **Subsistence Harvest**

All three draft reports provide information on “reported age composition” of sea otters in the “Subsistence/Native Harvest Information” section. The information suggests that hunters target adult males, resulting in a skewed sex and age distribution of the harvest. The Service might usefully describe the reason for such selection and the implications for the demography and dynamics of the affected populations.

### **Other Factors**

The draft reports do not adequately evaluate “other factors” that may have an impact on the status of sea otter stocks. In particular, they do not mention the potential impacts of contaminants

on sea otters despite the fact that high organochlorine levels have been observed in sea otters at some islands in the Aleutian archipelago (Estes et al. 1997). The reports also provide only a brief synopsis of the ongoing unusual mortality event affecting the southcentral and southwest Alaska stocks. A synopsis of the number of deaths, the range over which such deaths have occurred, and their likely impact on the status of all three stocks would be informative and useful. The draft reports mention the stranding network in the Kachemak Bay area that detected the event by monitoring the shoreline and observing and collecting beach-cast carcasses. Such well-developed stranding networks are undoubtedly the exception rather than the norm as it would be difficult, if not prohibitively costly, to survey large stretches of the Alaskan coastline for carcasses. To be more accurate, the reports should consider (1) the likelihood that animals would die on the beach or be washed ashore, (2) the duration of time that a carcass would remain on the beach in different regions (e.g., are carcasses more or less likely to remain on the beach in semi-protected Kachemak Bay vs. the Aleutian Islands?), and (3) the relative beach survey effort among regions (i.e., how likely is it that someone would find a carcass if it were on the beach). To address these and similar concerns, the Marine Mammal Commission recommends that the Service evaluate more thoroughly other factors that may be affecting the status of northern sea otter stocks, including the ongoing unusual mortality event and elevated contaminant levels in sea otters from certain regions.

### **Changes in Abundance of the Southwest Alaska Stock**

Abundance of the southwest Alaska stock is estimated by adding regional estimates from different years during a period of known dramatic decline. The report should discuss the implications of this procedure as it likely leads to overestimation of the actual number of sea otters in 2004 if regional subpopulations surveyed in earlier years continued to decline. The report also should state clearly that the only new regional estimate added since the 2002 report is that for the Kodiak Island subpopulation based on a survey conducted in 2004. Thus, the apparent overall increase between 2002 and 2008 is based entirely on the change in abundance estimates for Kodiak Island between surveys conducted in 2001 (included in the 2002 report) and 2004 (included in the current report). Currently the draft report indicates that the difference in population size estimates is “primarily due to” the change in the Kodiak estimates, implying that some other estimates also changed.

### **Regional Population Trends within the Southeast Alaska Stock**

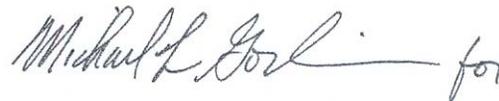
The draft report refers to a 2006 survey indicating that the Glacier Bay population increased from 1,266 sea otters in 2002 to 2,785 in 2006—an increase of almost 22 percent annually, which equals or exceeds growth rates estimated for northern sea otters during the 1970s and 1980s (Estes 1990). The total number of sea otters in Southeast Alaska (including Glacier Bay) apparently declined by almost 25 percent between surveys conducted in 1994 and 2002–2003 (although the draft report indicates that differences in survey methodology make direct comparisons questionable). Over the same period, the Yakutat population of sea otters increased more than threefold, and sea otters in the northern Gulf of Alaska portion of the southeast Alaska stock’s

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range declined by more than 90 percent. These results indicate that regional trends for otters in southeast Alaska have been highly variable, and it would be useful to include in the report a discussion of hypotheses that might explain this variability. The patterns observed might reflect large-scale movements of sea otters for unknown reasons. However, such movements are inconsistent with our understanding of the natural history of the species. Determining the cause or causes of this variability seems important, not only for the purpose of managing potential human influences but also for re-examining the stock structure of sea otters in this region.

Please don't hesitate to contact me if you have questions about the above recommendations or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy J. Ragen" followed by a flourish and the letters "for".

Timothy J. Ragen, Ph.D.  
Executive Director

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