MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
BETHESDA, MD 20814

13 February 2004

James W. Balsiger, Ph.D.
Administrator, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

Dear Dr. Balsiger:

Thank you for your 15 January 2004 letter providing the Marine Mammal Commission with the white paper describing the National Marine Fisheries Service's proposal for a long-term harvest management plan for Cook Inlet beluga whales. The Commission, in consultation with its Committee of Scientific Advisors and Dr. Daniel Goodman of Montana State University, who has been working on Cook Inlet beluga whale issues for the Commission, has reviewed your letter and the attached white paper and offers the following recommendations and comments.

Major Recommendations

- The Commission recommends that the Service adopt the proposal that the management of subsistence hunting for Cook Inlet beluga whales be governed by the goal of achieving 95 percent certainty that any harvest not delay the recovery time of the population by greater than 25 percent.

- The Commission recommends a harvest management strategy that 1) allows an annual harvest rate of 1.5 whales from 2005 to 2007, 2) calls on the hunters' experience to try to restrict the harvest to males only and reduces the number of strikes authorized if two or more females are harvested during this period, and 3) fully implements the long-term harvest criteria, with changes recommended by the Commission in this letter, for 2008 and thereafter.

- The Commission recommends that, to avoid confusion and misunderstanding among interested parties, the Service revise its proposed harvest management plan to provide complete descriptions of the variables (e.g., R_{max}, N_{min}), calculations, and models used to formulate the plan.

- The Commission recommends that, rather than establishing an arbitrary numerical floor below which no harvesting would be allowed, the Service implement a harvest management regime that fully satisfies the recovery objective of the 25-95 criterion beginning in 2008.

- With regard to the imposition of emergency harvest restrictions based on the annual number of deaths in the population, the Commission concurs that such restrictions are necessary but also recommends that the Service 1) provide evidence regarding its efficacy of detecting dead

PHONE: (301) 504-0087
FAX: (301) 504-0099

beluga whales throughout the population's range and 2) develop criteria that will more directly reduce harvest in response to unusual mortality events.

General Comments

As stated in your letter, the underlying objective of the Service's proposed plan is to ensure, with 95 percent certainty, that harvests do not delay the time to recovery of the Cook Inlet beluga whale population to its maximum net productivity level by more than 25 percent (the 25-95 criterion). The Commission strongly supports this proposal. We believe that this overarching objective needs to be included within the recommendation provided to Judge McKenna to establish the framework necessary to set acceptable harvest limits. The 25-95 criterion proposed by the Service would set an appropriate standard that provides a high likelihood that the harvest will not preclude achieving the primary goal of subsistence harvest management under the Marine Mammal Protection Act, i.e., recovery of the population. The proposed maximum allowable delay in recovery time of 25 percent is a reasonable standard that strikes an appropriate balance between the goal of achieving stock recovery without undue delay and, when consistent with that goal, providing subsistence opportunities for the affected Alaska Natives.

The Commission is concerned, however, that the specific triggers proposed by the Service to increase or decrease the allowable take level from that which has governed subsistence hunting over the past five years (1.5 whales per year) would set an inappropriately high and misdirected burden of proof that would favor perpetuation of that default harvest level. As a result, it is unlikely that the proposed harvest regime will satisfy the 25-95 criterion proposed by the Service as the underlying goal of its regulatory program. Using the present data, Dr. Goodman calculates that, under the proposed regime, there is only a 31 percent chance that the delay in time to recovery will not exceed 25 percent if the harvest continues at a rate of 1.5 whales per year. That is far below the 95 percent confidence level embraced by the Service and is inconsistent with the recovery mandate of the Marine Mammal Protection Act. In the next two weeks, we will provide a summary of Dr. Goodman's analysis so that you can review the calculations that led to this conclusion and compare them to your analysis.

Contrary to Dr. Goodman's findings, the Service states in the white paper that "...the current harvest level of 1.5 whales/year is consistent with the 25-95 criterion." In reaching its conclusion, the Service apparently has used a model that assumes the population will grow at a rate of between 2 and 6 percent annually. This is the range of values for R_{max} assumed at the Administrative Law Judge hearing in 2000, and is based entirely on studies of other beluga populations. R_{max} is a theoretical value that expresses how quickly a population at relatively low density would grow. Data now available do not support the use of such a high value for R_{max} for the Cook Inlet beluga whale population. In fact, Dr. Goodman's analysis of the empirical evidence indicates that there is a 75 percent probability that R_{max} for this population is less than 2 percent. In light of this empirical evidence, we do not believe that it is appropriate for the Service to continue to evaluate the impact of subsistence harvests using a population model that assumes a growth rate greater than or equal to 2 percent.

The inconsistency between the Service's conclusion, which appears to be based on an assumed R_{max} of between 2 and 6 percent, and Dr. Goodman's analysis, which is based on existing

data, illustrates a problem that can result if the harvest plan is not adequately described. The Commission believes that Dr. Goodman's model and use of the existing data are the more appropriate approach for setting harvest levels for this population in its present depleted condition. We also believe that the parameters, models, and calculations incorporated into the plan must be better described to ensure that future disagreements do not arise as a result of misunderstandings about the available data and how those data are to be used in carrying out the plan. To avoid confusion and misunderstanding, the Commission recommends that the Service revise its proposed harvest management plan to provide complete descriptions of the variables (e.g., R_{max}, N_{min}), calculations, and models used to carry out the plan. Additional examples of the need for better descriptions are provided in the specific comments below.

The Commission notes that the Service proposes to base upward and downward changes in the harvest limits on the likelihood that the realized growth rate of the population is above or below zero, while the underlying standard for allowing a harvest is based on the delay in time to recovery. These provisions are logically inconsistent. For example, if the population's growth rate remained at zero, this would never trigger a reduction in the allowable harvest level. Yet, without such a reduction, the population would never recover if all other factors affecting the population remained constant.

Both your cover letter and the white paper state that the parties at the 7 December 2003 meeting in Anchorage agreed that the harvest level could remain at 1.5 whales per year for the years 2005 through 2009; this is not the case. The Commission's representative, although agreeing that 1.5 whales was an acceptable starting point for the harvest during that period, explicitly disagreed to the establishment of such a default value for the entire five-year period. Rather, the Commission indicated that the long-term harvest management regime, even during the initial five-year period, would need appropriate triggers for increasing or decreasing the allowable harvest based on the trends detected by the Service's population monitoring program and other relevant data. As noted above, the Commission does not believe that the criteria proposed in the white paper for increasing or decreasing harvest limits are sufficiently sensitive to the actual data. In addition, the Commission notes that some parties to the rulemaking did not attend the Anchorage meeting. Thus, to the extent that there was an agreement, it is best characterized as being between the Service and the hunters, rather than one involving all of the parties.

Also, not all of the points raised at the Anchorage meeting are reflected in the proposed harvest management plan. In particular, the Commission's representative noted that, from a population recovery perspective, it was probably best that hunters target male beluga whales rather than females. This was a sentiment generally shared by the others in attendance. Nevertheless, the white paper does not contain any provision prohibiting the taking of females, limiting the number of females that can be taken, or even expressing a preference for targeting males. Whether hunters can reliably select males for harvesting is not clear, but their ability to do so could reduce the population costs of the harvest and should be explored over the course of the next several years. Because the harvest rate of 1.5 whales per year does not achieve the 25-95 criterion in the absence of such selection, the Commission recommends an approach that 1) allows an annual harvest rate of 1.5 whales for 2005-2007, 2) calls on hunters' experience to try to restrict the harvest to males and restricts the number of strikes authorized if two or more females are harvested during any five-year

period unless the 25-95 criterion is satisfied, and 3) fully implements the 25-95 criterion and other harvest criteria, incorporating the changes described in this letter, in 2008 and thereafter.

Another area of concern is the proposed "floor" on the stock's abundance, below which no harvest would be allowed. Criterion 2 reduces the harvest to zero only after N_{min} has dropped to 200 whales. The rationale provided for this threshold (stipulation 4.k.) is that "...at a level of 200 animals, as few as 100 reproductively active adults may be in the population. Below this level, the risk that further harvest of even one individual could compromise the genetic diversity of the population is significantly increased." The conservation biology literature does not identify a genetically effective population size (N_e) of 100 as the acceptable threshold. The threshold value usually cited is N_e=500 (Franklin 1980, Soulé 1980, Frankel and Soulé 1981, Ralls and Ballou 1983, Mace and Lande 1991, Ralls *et al.* 1996). Ralls, DeMaster, and Estes (1996) described how the recovery team for the California sea otter agreed that "...the endangered criterion should be based on a standard proposed in the scientific literature," and that "...a vertebrate population with an effective population size (N_e) of less than 500 that was subject to catastrophic population crashes should be considered endangered." We are aware of nothing in the current literature that indicates an effective population size of 100 is consistent with or sufficient for the long-term conservation of a large mammal population, particularly in view of the fact that the population dynamics of this population are not well understood, unknown factors other than the harvest may also be influencing those dynamics, and the population has not responded as expected to the imposition of a limit on the subsistence harvest.

For these reasons, the Commission believes that the population is already at risk genetically and should not be allowed to decline further. The Commission therefore recommends the 1.5-whale annual harvest limit be carried forward only for 2005 to 2007. In 2008, ten years of data should be available to evaluate the population's response to low harvest levels. At that time, the harvest management plan, with the modifications recommended in this letter, should be implemented fully. This approach also would provide an opportunity to assess how successfully hunters can select males during the harvest. The Commission believes that this approach eliminates the need to establish an arbitrary numerical "floor" below which no harvest would be allowed. Such a floor would allow further, significant population decline to occur before suspending the harvest, which is inconsistent with the Marine Mammal Protection Act goal of population recovery. We reiterate here that this population is, by all conservation standards, already at a dangerously low level. Neither the population nor Alaska Native hunters will benefit from a management plan that does not lead to recovery.

Criterion 3 of the proposed harvest management plan could result in an adjustment of the harvest level if *observed* mortalities exceed 6 percent of N_{min}, thereby indicating a significant decline in the population. The Service appears to be assuming that the observed number of mortalities is, in fact, the actual number. The Commission does not believe the Service has provided an acceptable basis for assuming that all dead beluga whales are observed. Although documenting the number of animals harvested may be relatively straightforward, documenting the number dying from all causes throughout the course of the year and throughout the population's range is likely to be extraordinarily difficult. For example, beluga whales that are consumed by killer whales would be unlikely to be documented in carcass counts. For many wildlife populations, only a small fraction of the animals dying each year is documented, and there is no basis for confidence that monitoring of

the Cook Inlet beluga population is as effective as is implied by the proposed emergency restrictions. In addition, when "excess" mortality is known to occur, it is likely that reductions in allowable harvest will be minimal unless N_{min} drops below the proposed floor of 200 whales. Thus, this provision is not likely to include any significant management response, even when the population has been challenged by a high rate of mortality that is inconsistent with recovery. To effectively use high mortality rates as a trigger for curtailing the allowable take levels, the Service also should take into account the increasing mortality rate that has been observed as the population has declined in recent years and conduct the needed research into potential causes. In view of the uncertainty in actual mortality levels, and the proposed limited response when a large number of mortalities is detected, the Commission recommends that the Service 1) provide evidence regarding its efficacy in detecting mortalities, and 2) develop criteria that will more directly reduce harvest in response to unusual mortality events.

Specific Comments

Page 1, first paragraph – This paragraph indicates that Cooperative Agreements will be developed for five-year periods and will include requirements pertaining to the number and allocation of strikes, hunting practices, hunting periods, reporting procedures, mitigating measures, and enforcement. This suggests that the Service intends to establish multi-year strike limits as a matter of course. The Commission believes that a more flexible approach is needed, under which strike limits would be reviewed annually, taking into account the most recent information on the stock's abundance and trends. The Commission also questions the desirability of deferring the establishment of requirements pertaining to hunting practices, seasons, reporting procedures, etc., until the Cooperative Agreement stage. Most, if not all, of these issues are integral to the operation of an effective harvest management regime and should be subject to review by all of the parties. The Commission continues to believe that the regulations should, at a minimum, establish general requirements concerning each of these elements that could, if necessary, be implemented more specifically in the Cooperative Agreements.

The final sentence in this paragraph indicates that the management of subsistence hunts "*will be based on*" the proposed terms and criteria set forth in the plan. This phrasing suggests that the Service intends to allow some latitude for deviating from those terms and criteria. If the Service intends to follow these terms and criteria, the phrase "will be based on" should read something like "will conform to...."

Page 1, second paragraph – The first sentence would be clearer if it were rewritten to read: "Management of the depleted CI beluga stock will provide for a subsistence harvest by Alaska Native hunters when consistent with achieving a delay in time to recovery to a population of 780 animals of not greater than 25 percent with 95 percent certainty (25-95 criterion)."

The last sentence in this paragraph uses the term "average estimated population size." The precise meaning of this term, although important in setting strike limits, is not clear. Additional guidance as to what is envisioned by the Service is needed; e.g., how will the average be calculated and over what period, what population estimates will be used (N_{min}, N_{best}, or something else), etc.?

Page 1, criteria for adjustments of the harvest – The second bullet under this heading refers to the population model under development by the Technical Committee. However, it is unclear to the Commission what the charge to the Technical Committee is, what work remains to be done to complete that effort, what product the Service expects the committee to provide, and how that product will be used by the Service under the proposed management plan. Thus, it is not apparent how the committee's efforts relate to the proposed criteria for adjusting the allowable harvest level. We therefore suggest that this reference to the Technical Committee be dropped or clarified.

The third bullet is written in a way that suggests that harvest rates will be constant over five- or ten-year periods. As discussed above, the Commission believes that more frequent adjustments may be warranted and should be accommodated within the proposed scheme.

The fourth bullet refers to mortality information determined from beachcast carcasses and carcasses found floating. It should be expanded to indicate that all credible sources of mortality information will be considered.

Pages 1-2, carryover paragraph – As discussed elsewhere, the Commission does not agree that harvest levels should be set for five-year periods as a matter of course. We therefore recommend that the first sentence of this paragraph be changed to accommodate more frequent adjustments, if warranted by the data. Also, this sentence is confusing. It is not clear who would conduct the proposed reviews or how they would be conducted. Further, we do not see how the Service can pre-determine that criteria 2 and 3 are not likely to be met in 2005, particularly criterion 3, which depends on the number of mortalities observed during 2004.

As noted above, only the Service and the hunters who attended the Anchorage meeting agreed that the harvest could remain at 1.5 whales per year for the period 2005-2009. The Commission expressly disagreed. The second sentence of this paragraph should be revised accordingly.

Page 2, criterion 1 – The last sentence uses the term "an assessment," thereby creating the impression that only a single assessment will be undertaken during the five-year period. We suggest that the sentence be revised to indicate that there will be an "ongoing assessment" or, alternatively, "annual assessments." If the term "initial planning period" means 2005-2009, we assume that "the next 5 year period" refers to 2010-2014. The Commission does not agree that allowing a default harvest level of 1.5 animals per year for the next 10 years is consistent with the 25-95 criterion.

Page 2, criterion 2 – Again, the Commission believes that the proposed criteria for adjusting harvest levels in response to population declines may need to be applied more than once every five years. If more frequent adjustments are warranted in light of population trends, they should be accommodated under the structure of the regulations. Also, the nature of the envisioned consultations should be discussed more explicitly.

Page 2, criterion 2, (a) and (b) – Additional explanation is needed as to how these determinations will be made. In particular, the proposal should explain how abundance estimates will be averaged and weighted and indicate what abundance estimates will be used (e.g., N_{min}). Also, it is unclear why upward adjustments of ½ - 1 strike per year would be possible under criterion 2(a), but that

downward adjustments under criterion 2(b) would be limited to ½-whale increments. This should be explained. The Service should also explain how it will round fractions of numbers if, for example, the harvest plan allows a harvest of 5.5 whales over five years.

Page 2, criterion 2(b) – As discussed in our general comments, the proposed standard is unlikely to result in the adoption of harvest limits that meet the Service's 25-95 criterion. Also, additional explanation is needed with respect to the aspects concerning a population below 300 individuals. First, the Service should indicate how N_{min} will be calculated. Does the Service propose to use the same methods it uses in its PBR guidelines? Second, the basis for selecting 300 as the threshold population size needs to be explained. Third, the phrase "shown to be declining" needs to be expanded to indicate whether it applies to any rate of decline and what level of confidence in such a conclusion is required. Finally, it is not clear when such determinations would be made. The introductory clause suggests that these determinations would be made once every five years. However, the inclusion of a provision specifying that a new five-year period would begin if a strike limit is decreased under this provision suggests that more frequent adjustments could be made.

Page 3, stipulation 4(c) – The word before "OSP" should be "at," rather than "to."

Page 3, stipulation 4(e) – This stipulation provides that the primary management tool for recovering and maintaining the Cook Inlet beluga whale population is regulation of subsistence harvest. The Commission questions the rationale for this statement, given that the population has likely continued to decline over the past several years despite very low harvest rates. The Commission continues to believe that listing this population under the Endangered Species Act is warranted and that research should be conducted on other factors that may be causing the decline or impeding its recovery.

Page 3, stipulation 4(g) – As discussed in our general comments, the Commission disagrees with the conclusion that the proposed strike limit of 1.5 whales per year for the five-year periods beginning in 2005 and 2010 is consistent with the 25-95 criterion. Calculations to support the Service's contention should be provided. In particular, if the Service's conclusion rests largely on the use of an R_{max} estimate of between 2 and 6 percent, the Service should provide justification for using this range of values in the face of available empirical evidence that the likely growth rate of the population is much lower.

Pages 3-4, stipulation 4(h) – The Service should explain its rationale for determining that 2-6 percent is a reasonable range of values for R_{max} for the Cook Inlet beluga whale population despite the trends detected since it began regulating subsistence hunting. Also, the relationship of this stipulation to the work of the Technical Committee needs to be explained. Is there something more that the Service is expecting from that committee prior to the submission of a proposed long-term harvest regime to the Administrative Law Judge next month? If so, this needs to be identified and its relationship to the Service's proposal should be described.

Page 4, stipulation 4(k) – As discussed in our general comments, we believe that allowing the stock to decline to as few as 200 animals before suspending the subsistence harvest is inconsistent with established principles of conservation biology.

Page 4, stipulation 4(l) – While some of these elements are appropriate for inclusion in Cooperative Agreements, others are so integral to an effective management program that they should be set forth in regulations. In addition, the stipulation should be expanded to reflect the goal/requirement to focus the harvest on male whales.

* * * * *

We look forward to working with you and your staff on these matters. Please let me know if you have any questions concerning these comments.

Sincerely,

David Cottingham
Executive Director

cc: Ms. Debra Blatchford
Mr. Joel Blatchford
Ms. Judy Brady
Ms. Kaja Brix
Thomas C. Eagle, Ph.D.
Roderick Hobbs, Ph.D.
The Honorable Parlen L. McKenna
Mr. Thomas J. Meyer
Mr. P. Michael Payne
Mr. John M. "Sky" Starkey
Trustees for Alaska

References:

Frankel, O.H., and M.E. Soulé. 1981. Conservation and evolution. Cambridge University Press, Cambridge, United Kingdom.

Franklin, I.R. 1980. Evolutionary change in small populations. Pages 135-149 *in* M.E. Soulé and B.A. Wilcox (eds.), Conservation biology: An evolutionary-ecological perspective. Sinauer Associates, Sunderland, Massachusetts.

Mace, G.M., and R. Lande. 1991. Assessing extinction threats: toward a reevaluation of IUCN threatened species categories. Conservation Biology 5:148-157.

Ralls, K., D.P. DeMaster, and J.A. Estes. 1996. Developing a criterion for delisting the southern sea otter under the U.S. Endangered Species Act. Conservation Biology 10:1528-1537.

Soulé, M.E. 1980. Thresholds for survival: maintaining fitness and evolutionary potential. Pages 151-169 *in* M.E. Soulé and B.A. Wilcox (eds.), Conservation biology: An evolutionary-ecological perspective. Sinauer Associates, Sunderland, Massachusetts.