1852.216–77 Award Fee for end item contracts.

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Award Fee for End Item Contracts

June 2000

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(d) Award fee determinations are unilateral decisions made solely at the discretion of the Government.

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[FR Doc. 00–15349 Filed 6–21–00; 8:45 am]

BILLING CODE 7510–01–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 216, 223, and 224

[Docket No. 000613174–0174–01; I.D. 032399A]

RIN 0648–XA53

Regulations Governing the Taking and Importing of Marine Mammals; Endangered and Threatened Fish and Wildlife; Cook Inlet Beluga Whales

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of determination; status review.

SUMMARY: NMFS received two petitions in March 1999 to list the Cook Inlet (CI), Alaska, stock beluga whales as endangered under the Endangered Species Act (ESA). The most immediate threat to the stock identified by the petitioners was the high level of harvest that was occurring under the Alaska Native exemption of the Marine Mammal Protection Act (MMPA). Since the receipt of the petition to list this species, legislative and management actions have been taken to reduce the subsistence harvest to levels that will allow the beluga whale stock to recover. NMFS has evaluated the factors cited in the petitions, the best available scientific information, and management actions that have occurred since the receipt of the petition to list the stock. NMFS has determined that listing the Cook Inlet stock of beluga whales under the ESA is not warranted at this time.

DATE: Effective: June 22, 2000.

ADDRESSES: Requests for copies of this determination should be addressed to the Chief, Marine Mammal Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, Maryland 20910.

FOR FURTHER INFORMATION CONTACT: Dr. Thomas Eagle, Office of Protected Resources, (301) 713–2322, ext. 105, Mr. Brad Smith, Alaska Regional Office-Anchorage, (907) 271–3023, or Mr. Michael Payne, Alaska Regional Office-Juneau, (907) 586–7235.

SUPPLEMENTARY INFORMATION:

Background

Prompted by a sharp decline in the estimated abundance of CI beluga whales between 1994 (653 animals) and 1998 (347 animals), a reduction of nearly 50 percent, NMFS initiated a status review of the CI beluga whale stock on November 19, 1998 (63 FR 64228). In the status review, NMFS evaluated the present status of CI beluga whales and made recommendations regarding a designation as depleted under the MMPA and listing as threatened or endangered under the ESA.

The comment period on the status review, which was initiated at the same time that workshops were convened to review beluga whale stocks throughout Alaska, extended from November 19, 1998, through January 19, 1999. The workshops were held by the Alaska Beluga Whale Committee (November 16–17, 1998) and the Alaska Scientific Review Group (November 18–20, 1998), a body established under the MMPA to provide scientific advice regarding marine mammals to NMFS and the U.S. Fish and Wildlife Service (FWS).

NMFS received two petitions in March 1999 to list CI beluga whales as endangered under the ESA. One petition requested an emergency listing under section 4(b)(7) of the ESA and the designation of critical habitat. Both petitions requested immediate promulgation of regulations to govern the subsistence harvest. NMFS determined that the petitions contained substantial scientific or commercial information indicating that the petitioned actions may be warranted (64 FR 17347, April 9, 1999).

To ensure that the status review was comprehensive and based on the best available scientific information, the comment period was followed by a NMFS-sponsored workshop on March 8–9, 1999, in Anchorage, Alaska, that reviewed relevant scientific information on this stock. At this workshop, NMFS received additional public comments and recommendations. The abstracts of presentations from this workshop are summarized in a NMFS report (NMFS, 1999) and are available to the public.

Following these reviews and taking into account the best information available at that time, NMFS proposed designating the CI stock of beluga whales as depleted on October 19, 1999 (64 FR 56298). NMFS also conducted a public hearing on November 22, 1999, on the proposed designation of the CI stock of beluga whales as depleted under the MMPA. NMFS issued a final rule on May 31, 2000, (65 FR 34590) designating CI beluga whales as depleted under the MMPA based on its determination that the stock is below its Optimum Sustainable Population (OSP) level.

NMFS had not made a final decision on the ESA petitions at the time of the depleted determination. The ESA petitions have now been reviewed in light of the best available scientific information. This review considered the significant legislative and management actions that have occurred since NMFS received the petitions.

Recent Conservation Actions

Prior to the receipt of the petitions, NMFS, Alaska Region, Protected Resources Division, recommended to the Regional Administrator (in a memorandum dated February 23, 1999) that NMFS seek legislative action to prohibit the sale of CI beluga products under the subsistence provisions of the MMPA and/or impose a moratorium on the hunting of CI beluga whales in 1999. The recommendation included advice that NMFS designate the stock as depleted under the MMPA or list it as threatened or endangered under the ESA. These recommendations were based on the then unsustainable level of the subsistence harvest and the fact that no regulations were in place to restrict the harvest because the harvest was believed to be the most important factor linked to the decline of the stock. The MMPA and ESA provide a specific process for limiting Alaska Native subsistence harvest. This process begins with the designation of a stock as depleted under the MMPA or listing as threatened or endangered under the ESA.

Results of the 1998 surveys were not completed at the date of the Division's memorandum. Because the stock was declining and there was no immediate mechanism to limit the harvest, the Protected Resources Division recommended that NMFS consider a proposed listing under the ESA.

The following events had a significant bearing on NMFS' determination not to list CI beluga whales as endangered or threatened under the ESA:

(1) Congress passed legislation to prohibit the taking of CI beluga whales for Native subsistence use unless authorized by a cooperative agreement between NMFS and affected Alaska Native organizations (ANOs). On May

21, 1999, President Clinton signed the legislation into effect as Public Law 106–31. Pub. L. 106–31 established an enforceable mechanism to control the harvest, which was the only factor found to be directly linked to the decline. Prior to this law, the Federal government could not restrict the harvest, and a Native Alaskan could have harvested beluga whales from Cook Inlet without the approval of any local tribal authority of any local tribal authority or governing body The legislation remains in effect until October 1, 2000. As a result of this legislation, there was no harvest in 1999.

(2) NMFS completed analyses of the 1994–1998 survey data. The results of the abundance estimates from surveys conducted 1994–1998 were 653 (CV = 0.43) in June 1994, 491 (CV = 0.44) in July 1995, 594 (CV = 0.28) in June 1996, 440 (CV = 0.14) in June 1997, and 347 (CV = 0.29) in June 1998. Subsequent analyses indicated a 71–percent probability that a 40–percent decline in abundance occurred between June 1994 and June 1998 surveys. These data provided the necessary scientific support to designate the CI beluga whale stock as depleted under the MMPA. NMFS has determined that CI beluga whales are depleted and has started the process under the MMPA to regulate the harvest.

(3) NMFS completed the analyses of the 1999 abundance survey data. The population estimate for CI beluga whales in 1999, in which there was no subsistence harvest, was 357 whales. This estimate is consistent with the results of simulation modeling for the stock in which there was no harvest. Although preliminary, these results suggest that controlling the harvest may be an effective mechanism to promote recovery of the stock. Results after 3–5 years of controlling the harvest would provide more conclusive evidence of recovery.

(4) On December 10, 1999, NMFS conducted a scoping meeting as part of a process under the National Environmental Policy Act (NEPA) to consider the environmental impacts of a Federal program to promote recovery of this depleted stock. After the scoping meeting, NMFS assessed the potential impacts to CI beluga whales caused by human-related activities ongoing in Cook Inlet, including the subsistence harvest of CI beluga whales by Alaskan Natives. Because the CI beluga whale stock is depleted, NMFS believes that any federally approved harvest plan would constitute a major action subject to the requirements of NEPA and, therefore, could not be completed until an Environmental Impact Statement (EIS) has been prepared. NMFS is preparing an EIS that assesses the impacts of various anthropogenic activities on CI beluga whales and their habitat. The draft EIS includes a discussion of the cumulative impacts of these activities on CI beluga whales. Following the completion of the final EIS and the procedure under the MMPA to limit subsistence harvest, NMFS will publish a final rule to regulate the subsistence harvest.

NMFS must ensure that future harvests are sustainable and do not cause the further decline of the CI beluga whale stock. Pub. L. 106–31, limiting subsistence harvest to that occurring under a cooperative agreement between an affected ANO and NMFS, expires on October 1, 2000. Therefore, NMFS must have one or more mechanisms in place to regulate this take prior to the next harvest season. In the absence of any action by NMFS to regulate the harvest, the future of this harvest, and the CI stock of beluga whales, would be uncertain.

Definitions

Endangered and Threatened Species: Section 3(6) of the ESA defines an endangered species as '' * * *any species which is in danger of extinction throughout all or a significant portion of its range * * *'' Section 3(19) defines the term threatened species as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

''Species'' under the ESA: Section 3(15) of the ESA defines species broadly as '' * * *any subspecies of fish or wildlife or plants and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.''

Summary of Comments Received during the Status Review

Comment 1: One of the commenters focused directly on the current size of the population and questioned whether any other marine mammal has a population estimate as low as that for CI beluga whales and is not listed as endangered under the ESA.

Response: No other population of marine mammals is as small as the CI beluga stock and is not listed under the ESA. Although NMFS is concerned with the low abundance of the stock, abundance alone does not necessarily mean that the stock is in danger of extinction.

Historical abundances of CI beluga have been reported from as few as 500 to as many as 2,000, and NMFS believes there may have been 1,000–1,300 whales in the early to mid-1980s. Thus, the stock would have been reduced to about 25 to 35 percent of its historical abundance. The population consequences of such a decline are much less substantial than those for other small populations, such as North Atlantic right whales, which were reduced to less than 10 percent of their historical abundance.

Population growth is not well documented for CI beluga; however, there is some evidence that reproduction in the stock has not been compromised. As discussed later in this document, the population consists of a large proportion of juvenile whales, and the age of sexual maturity has apparently decreased in recent years. These observations indicate that CI beluga whales have the reproductive capacity to sustain population growth. Furthermore, the 1999 abundance estimate suggests that the population may be increasing, rather than decreasing, as a result of controlling the harvest.

Comment 2: The Marine Mammal Commission (Commission) noted that, under criteria developed by the International Union for the Conservation of Nature and Natural Resources (IUCN), CI beluga whales would be classified as ''endangered'' or ''critically endangered''.

Response: The IUCN criteria are all based upon characteristics of the population and do not include a consideration of the adequacy of existing regulatory mechanisms as is required under the ESA. Under the IUCN criteria, CI beluga would qualify as ''endangered'' only if the decline were continuing. The major factor related to the decline of CI beluga whales has been stopped under Federal law and is not likely to revert to unsustainable levels in the near future.

Furthermore, under IUCN criteria, the stock would be classified as ''vulnerable'' if there were fewer than 1,000 whales. At 1,000 animals, the CI beluga stock would likely be within its OSP levels under the MMPA, perhaps at or near its carrying capacity. Thus, if the stock numbered 1,000 whales, NMFS would consider the stock as small, isolated, and healthy, but IUCN would characterize it as '' * * *facing a high risk of extinction in the wild in the medium-term future * * *''. Although the IUCN criteria are appropriate to identify species that may need conservation measures, they do not include the full range of factors that are included in the ESA; therefore, they are not appropriate for a determination of the status of a stock under the ESA.

Comment 3: The Commission stated that NMFS should consider how listing criteria have been used in the past and noted that NMFS listed the Guadalupe fur seal population as threatened when that population numbered between 1,200 and 1,500 individuals and was producing about 200 pups annually.

Response: The ESA listing criteria have to be applied to each situation individually. For some factors, NMFS reached similar conclusions about the two populations: (1) In neither case was the habitat considered to be adversely modified or diminished; (2) both had been reduced by human exploitation; and (3) there were adequate regulatory mechanisms in both cases.

The Commission noted that the fur seal stock was more abundant than CI beluga whales when the fur seals were listed. However, the fur seal stock was reduced by commercial exploitation in the 1700s and 1800s from a historical abundance, estimated to be 30,000 individuals, to very low numbers. The population was only about 6 percent of its historical abundance when it was listed in 1985, and it had been growing slowly since it was re-discovered in 1954.

On the other hand, CI beluga are probably about 25 to 35 percent of their historical abundance (as noted above). The large proportion of young whales in the stock indicates that reproduction has not been compromised. The 1999 abundance estimate is preliminary evidence that the stock is increasing. Therefore, NMFS believes that CI beluga are less likely to go extinct or to become endangered than Guadalupe fur seals were when they were listed in 1985.

Evaluation of ESA Factors Affecting the Species

NMFS and FWS issued a joint policy for listing, delisting and reclassifying species under the ESA (61 FR 4722, February 7, 1996). The policy outlines three elements to be considered in deciding the status of a possible distinct population segment as endangered or threatened under the ESA: (1) Discreteness of the population segment in relation to the remainder of the species to which it belongs; (2) the significance of the population segment to the species to which it belongs; and (3) the population segment's conservation status in relation to ESA criteria for listing.

Under the first element, the petitioners argue that the CI beluga whale population is discrete because it is markedly separated from other populations of the same species.

NMFS Response: NMFS concurs with this statement. Of the five stocks of beluga whales in Alaska, the CI stock is considered to be the most isolated, based on the degree of genetic differentiation between the CI stock and the four other stocks (O'Corry-Crowe, et al., 1997). This study suggests that the Alaska peninsula may be an effective barrier to genetic exchange.

Under the second element, NMFS must determine whether the population segment persists in an ecological setting that is unique and whether the loss of the discrete population would result in a significant gap in the range of the species. The petitioners assert that CI beluga whales are in a unique ecological setting (Cook Inlet) and are the only population of beluga whales in Alaska that are completely subarctic (south of the Alaska peninsula). Furthermore, they stated that the loss of the stock would create a significant gap in the range of the species.

NMFS Response: NMFS concurs with this assessment. The CI beluga whales are the only population of beluga whales that inhabit the Gulf of Alaska, and the genetic data show little or no mixing with other population segments. Therefore, the loss of the CI population segment would result in the complete loss of the species in the Gulf of Alaska with little likelihood of immigration from other population segments into Cook Inlet.

Therefore, based on the best available scientific information available to NMFS, the only supportable conclusion that can be reached (as recommended by the petitioners) is that CI beluga whales are a ''distinct population segment'' and, therefore, a species under section 3(15) of the ESA.

Under the third element of the joint NMFS/FWS policy, if a population segment is discrete and significant, its evaluation for an endangered or threatened status will be primarily based on a review of the factors enumerated in ESA section 4(a) after taking into account conservation efforts implemented pursuant to section 4(b)(1)(A).

Regarding CI beluga whales, section 4(a) of the ESA states that the Secretary of Commerce (Secretary) shall, by regulation promulgated in accordance with subsection (b), determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

Section 4(b)(1)(a) further states that the Secretary shall make determinations required by subsection (a)(1) solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices within any area under its jurisdiction or the high seas. The ''Recent Conservation Actions'' section of this document discussed efforts to protect CI beluga whales. The following sections of this document discuss the status of CI beluga whales with respect to the five factors included in the ESA.

A. The Present or Theatened Destruction, Modificatin, or Curtailment of Habitat or Range

The petitioners state that the current distribution of the CI population of beluga whales is reduced from historic levels and that all current descriptions of the species' range are largely limited to Cook Inlet. They cite the summary of survey data by Rugh et al. (In press), which states that in recent years a reduction has occurred in incidental sightings in the Gulf of Alaska, and a reduction has occurred in sightings in lower Cook Inlet and offshore areas of upper Cook Inlet. From this they inferred that the range of the species has been curtailed.

NMFS Response: A significant part of the habitat for this species has been modified by municipal, industrial and recreational activities in Upper Cook Inlet. Each of these activities (discussed later in this document), either individually or cumulatively, are of concern to NMFS. However, the data do not support a conclusion that the range of CI beluga whales has been diminished by these activities.

Cook Inlet beluga whales occupy the same range that they have always occupied. The information by Rugh et al. (In press) indicates that the summer occurrence of CI beluga whales has shifted to the upper inlet in recent decades whereas, historically, they were also found in the lower inlet during mid- to late-summer. There are many alternative hypotheses for the underlying cause of the change in distribution. For example, the overall population reduction in recent decades may have resulted in CI beluga whales inhabiting only the preferred feeding

areas within the range (i.e., the upper inlet). Therefore, the change in distribution does not necessarily reflect an adverse modification of the lower inlet. No indication exists that the range has been, or is threatened with being, modified or curtailed to an extent that appreciably diminishes the value of the habitat for both survival and recovery of the species.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petitioners discussed overharvest of CI beluga whales under the section on overutilization for commercial purposes. Although they recognized that this criterion focuses on commercial use of a species, the petitioners stated that distinguishing between whales killed primarily for subsistence and whales killed as part of a subsistence hunt and sold commercially is impossible.

NMFS Response: NMFS agrees that both forms of mortality are relevant to this discussion. However, the subsistence provisions of the MMPA allow a limited sale of edible products from marine mammals to be sold in Alaska Native villages, which include Anchorage, or for Alaska Native consumption. Therefore, although overharvest is of serious concern, NMFS has included the response on the overharvest issue in the analysis of other natural or man-made factors that affect the stock.

NMFS recognizes that even the limited sale allowed under the subsistence provisions of the MMPA may provide an economic incentive for one or more Alaska Natives to supply beluga products within Anchorage. Such a sale may help meet the cultural demand for traditional foods among the 20,000 or more Alaska Natives that reside in Anchorage. A successful long-term conservation strategy must address the sale of edible beluga products in Anchorage.

Although there was a commercial or sport (recreational) harvest of beluga whales in CI prior to enactment of the MMPA, none has existed since 1972. The only taking of beluga whales in Cook Inlet for scientific purposes is non-lethal and has no more than a negligible impact on the stock. NMFS is not aware of any taking for educational purposes in recent years that may have had an effect on the stock. Therefore, this factor is not causing the stock to be in danger of extinction, nor is it likely to do so in the foreseeable future.

C. Disease or Predation

Disease: The petitioners discuss the susceptibility of beluga whales to disease and suggest that very little is known on this subject matter specific to CI beluga whales.

NMFS Response: NMFS concurs that very little is presently known about the effects of disease on CI beluga whales. However, a considerable amount of information exists on the occurrence of diseases in CI beluga whales, and other beluga whale populations, and the effects of these diseases on the species.

Bacterial infection of the respiratory tract is one of the most common diseases encountered in marine mammals. Bacterial pneumonia, either alone or in conjunction with parasitic infection, is a common cause of beach stranding and death (Howard et al., 1983). From 1983 to 1990, 33 percent of stranded beluga whales in the St. Lawrence estuary (n = 45 sampled) were affected by pneumonia (Martineau et al., 1994).

Populations of beluga whales in Alaska appear relatively free of ectoparasites (Klinkhart, 1966, Hazard, 1988). Endoparasitic infestations are more common in beluga whales. Several species of endoparasites have been identified in beluga whales including populations found in Alaska and Canada (Klinkhart, 1966). Necropsies conducted on CI beluga whales have found heavy infestations in some adult whales. Approximately 90 percent of CI whales examined have had kidney parasites. Although extensive damage has been associated with this infection, whether this results in functional damage to the kidney (Burek, 1999a) is unclear. Stomach parasites are also present in CI beluga whales. However, these infestations have not been considered extensive enough to have caused clinical problems.

Parasites and the potential for diseases occur in CI beluga whales. Despite the considerable pathology that has been done on this species, nothing indicates that the occurrence of parasites or disease has had a measurable impact on their survival and health. Therefore, the factor related to disease does not support listing this population as threatened or endangered under the ESA.

Natural Predation: Killer whales are the only non-human predator of beluga whales in Cook Inlet. The petitioners state that the potential for significant impacts on the CI beluga whale population by killer whales cannot be ruled out given recent changes in prey availability to killer whales throughout the Gulf of Alaska (referring to declines in pinniped populations in the Central and Western Gulf of Alaska since the mid 1970s). The petitioners suggest that even a small increase in predation could result in population decline or impede recovery.

NMFS Response: The number of killer whales visiting the upper inlet appears to be small. However, predation by killer whales on CI beluga whales was considered by some commenters to be a mortality factor that may have contributed to the CI beluga whale declines in recent years. NMFS has received reports of killer whales in Turnagain and Knik Arms, between Fire Island and Tyonek, and near the mouth of the Susitna River. Native hunters have recently reported killer whales along the tide rip that extends from Fire Island to Tyonek (Huntington, 1999) and in Kachemak Bay.

No quantitative data exist on the level of removals from this population due to killer whale predation or its impact; however, killer whale pods prey selectively on salmon or marine mammals, including beluga whales, in Cook Inlet. During a killer whale stranding in Turnagain Arm in August 1993, one observer reported that a killer whale regurgitated pieces of beluga flesh. A potential dietary shift may account for some of the more recent sightings of killer whales in Cook Inlet.

On the other hand, pods of killer whales also feed on salmon, a prey of beluga whales. Therefore, seeing killer whales near beluga whales in the inlet does not necessarily imply that they are searching for beluga whales.

Assessing the impact of predation by killer whales on CI beluga whales is difficult. Anecdotal reports often highlight the more sensational, mortalities on beluga whales due to killer whales, thereby overemphasizing their impact. Further, these reports are from the early 1980s when beluga whales were more abundant. Consequently, they are of minimal value in evaluating current impacts to the population of beluga whales in Cook Inlet.

The loss of a few beluga whales could impede recovery, as suggested by the petitioners. However, in order for killer whale predation to be a significant factor in the observed decline in the beluga population, total mortality due to predation would have to be near the level of recruitment in the population. The literature and stranding records indicate that natural mortality in the CI beluga whale population does not exceed levels considered normal for other small cetacean populations. Therefore, predation by killer whales is not likely having a significant impact on the recovery of the CI beluga whale population.

Disease and predation occur in the CI beluga population and may affect

reproduction and survival. The best available information, however, indicates that these factors are not causing the stock to be threatened or endangered.

D. The Inadequacy of Existing Regulatory Mechanisms

The most immediate concerns by the petitioners were (1) the level of mortality as a result of subsistence harvest, and (2) the inability of NMFS, at the time of the petition, to control this harvest. The petitioners stated that the MMPA is inadequate to protect CI beluga whales. They further stated that under the MMPA, NMFS can pursue a co-management agreements with the tribes in the Cook Inlet region. However, the petitioners note, such an agreement provides no additional legal authority to NMFS to prosecute violations of the MMPA. According to the petitioners, even with a co-management agreement in place, neither NMFS nor the affected ANO can enforce its recommendations if hunters choose not to comply. Therefore, the petitioners suggested, such an agreement would not regulate non-local hunters nor restrict the sale of muktuk (whale skin, with blubber attached, used for food) in Anchorage. The petitioners stated that a co-management agreement was unlikely to reduce the Native hunt to sustainable levels and concluded that listing the CI population under the ESA was necessary to ensure complete compliance with agreed upon harvest limits, improve the monitoring of the harvest, and eliminate the sale of muktuk.

NMFS Response: Management of the CI beluga whale stock could be achieved through voluntary and cooperative efforts within a traditional Native community or through a co-management agreement. Prior to Pub. L. 106–31, no area-wide tribal authorities applied to all the Native Alaskans residing in Anchorage or the harvesting of CI beluga whales. For this reason, NMFS believes that the petitioners were correct in stating that a co-management agreement, without an enforceable regulatory mechanism, would not have provided the level of authority necessary to restrict the harvest to sustainable levels. Therefore, NMFS believes that the recovery of this stock requires not only the authority of a co-management agreement but also a Federal authority to protect and conserve CI beluga whales.

NMFS disagrees with the petitioners' statement that only through listing the CI population of beluga whales under the ESA can NMFS ensure complete compliance with agreed upon harvest limits, improve the monitoring of the harvest, and eliminate the sale of muktuk. On May 31, 2000, NMFS designated this stock as depleted under the MMPA. The depletion finding is the first step in the MMPA process for regulating the harvest. Under this process, annual harvest levels could be agreed upon through a co-management agreement and enforced, if necessary, through Federal regulations and tribal ordinances.

The process for regulating subsistence take of species listed under the ESA essentially mirrors the process for regulating of depleted species under the MMPA. Therefore, listing the stock under the ESA would not provide a better mechanism than under the MMPA to ensure compliance with harvest limits.

The petitioners further stated that Congress intended protections under the ESA to be applied in conjunction with protections under the MMPA because a marine mammal found to be threatened or endangered under the ESA is automatically listed as depleted under the MMPA.

NMFS Response: NMFS agrees that threatened or endangered marine mammals are protected under both the MMPA and the ESA. The MMPA states that marine mammals that are listed as threatened or endangered under the ESA are considered depleted under the MMPA. The ESA does not include a provision that requires a depleted marine mammal stock to be listed as threatened or endangered.

On at least two previous occasions, NMFS has designated stocks of marine mammals as depleted because these stocks were below OSP, but determined that the stocks were not threatened or endangered. NMFS was petitioned in 1991 to designate the eastern spinner dolphin and the northern offshore stock of spotted dolphin in the eastern tropical Pacific Ocean as depleted under the MMPA and to list them as threatened under the ESA. On October 19, 1992, NMFS published a determination that listing the eastern spinner dolphin under the ESA was not warranted and, on August 26, 1993, published a final rule designating the eastern spinner dolphin as depleted under the MMPA. Following a review of new information on the offshore spotted dolphin stock structure, NMFS designated the northeastern stock of offshore spotted dolphins (a smaller component of the northern offshore aggregation) as depleted on November 1, 1993. On January 7, 1993, NMFS issued a finding that the listing of northern offshore spotted dolphins as a threatened species under the ESA was not warranted. In both cases existing regulatory mechanisms were found to be adequate to allow the stock to rebuild and, thus, to prevent the stock from becoming endangered or threatened.

The existing regulatory mechanism is adequate to control the harvest of CI beluga whales to sustainable levels. To continue an adequate regulatory mechanism to restrict the harvest beyond October 1, 2000, NMFS would have to promulgate such regulations, or Congress would have to extend the special legislation that currently restricts the harvest. As discussed in other sections of this document, no other factor has been identified as having a significant adverse effect on the stock. Also as noted in other sections of this document, existing regulatory mechanisms are believed adequate to address future economic development in the area. Therefore, NMFS believes that an inadequate regulatory mechanism has not caused the stock to become in danger of extinction, nor is it likely to do so in the foreseeable future.

E. Other Natural or Manmade Factors Affecting Their Continued Existence

Stochastic Events: The petitioners stated that the population was currently so small that stochastic (random) events may cause the stock to decline to extinction. Their example related to strandings. The Commission also noted that the population was small and recommended that NMFS include an analysis of whether a listing as endangered or threatened is warranted simply because of risks posed by stochastic events.

NMFS Response: The analysis of strandings is discussed in the next section of this document. Breiwick and DeMaster (1999) examined the effects of stochastic events on the population dynamics of small populations of whales that are subjected to subsistence harvest. They used an individual-based model with stochastic birth and death rates to model populations subjected to harvest. They varied underlying intrinsic rates of increase from 0.025 to 0.049 and reported no extinctions in populations with no environmental stochasticity, even when these populations were subjected to harvest rates of up to 5 percent. When maximum environmental stochasticity (20 percent reduction in survival every 10 years) and the lower level intrinsic rate of increase (0.025) were used, no populations went extinct although populations harvested at a 3 percent level declined during 75 to 100 years of simulation. The results of the simulations indicate that CI beluga

whales are not in danger of extinction or likely to become endangered in the foreseeable future due to stochastic events.

Stranding Events: The petitioners asserted that the population was so small that it was vulnerable to all natural sources of mortality, such as disease, predation, and stranding. They further asserted that a large stranding could occur that would kill most or all of the remaining beluga whales.

NMFS Response: NMFS estimates that over 590 whales have stranded (both individually and as groups) in upper Cook Inlet since 1988. Mass stranding events have most commonly occurred along Turnagain Arm and have often coincided with extreme tidal fluctuations (''spring tides'') and involved both adult and juvenile beluga whales.

Beluga whale mortalities have been observed during these stranding events. A 1996 mass stranding of approximately 60 beluga whales in Turnagain Arm resulted in the death of four adult whales. Five deaths resulted from another stranding of approximately 75 whales in August of 1999.

Catastrophic mortality (the deaths of a large number, such as 50 or more whales) due to a mass stranding event was not considered in simulations of the CI beluga stock for purposes of the status review. Such mortality could significantly impede recovery if it occurred; however, such catastrophic mortality has never been reported. Although mass strandings have occurred, only 9 whales died from a total of 135 whales included in the two mass strandings in 1996 and 1999. Mass stranding events are not believed to be a factor that has caused, or had a significant role in, the decline of this stock to depleted levels. Therefore, strandings, either individual or mass, have not caused the stock to be in danger of extinction nor are they likely to do so in the foreseeable future.

Subsistence Harvest: The petitioners stated that overutilization of beluga whales was undisputedly occurring. They further stated that the 1994–1997 levels of harvest were unsustainable.

NMFS Response: NMFS agrees with these statements. The history of harvest estimates from the years 1987–1999 will be included in the draft EIS and varied between zero and about 20 whales per year. These estimates, however, are considered underestimates because Alaska Native hunters and others stated that many whales were not reported or that the struck-and-lost rate was too low.

NMFS estimated that the average annual harvest between 1995 and 1998 was 78 whales. While subjected to this level of harvest, the stock has declined at an average rate of 15 percent per year from 1994 to 1998.

NMFS has been working with the Cook Inlet Marine Mammal Council (CIMMC) to develop a co-management agreement to conserve CI beluga and co-manage subsistence use of them. CIMMC is an ANO that represents several Alaska Native tribal governments in the CI area. Because NMFS and CIMMC had not entered into a co-management agreement under Pub. L. 106–31, no harvest was conducted in 1999. NMFS and CIMMC have, however, negotiated an agreement that would allow the harvest of a single whale after July 1, 2000.

The harvest estimates from 1995–1997 and the abundance estimates from 1994–1998 clearly indicate that the harvest was unsustainable prior to restriction in 1999. Furthermore, the subsistence harvest can account for the decline of the stock during that interval. Therefore, NMFS agrees that a failure to restrict the subsistence harvest would likely cause CI beluga whales to become in danger of extinction in the foreseeable future.

The petitioners stated that a depleted finding would allow NMFS to initiate rulemaking to limit the subsistence harvest of CI beluga whales, but harvest restrictions would not adequately address the problems facing CI beluga whales.

NMFS Response: NMFS disagrees that limiting the subsistence harvest would not adequately address the problems facing beluga whales in Cook Inlet. The subsistence harvest of these whales accounts for the observed decline in the stock since 1994. As indicated in the following discussion of anthropogenic factors that may affect beluga habitat, no other activity has had a known significant adverse effect on the stock or would cause the CI beluga whales to become in danger of extinction or likely to become endangered in the foreseeable future.

Other Natural or Manmade Activities: The petitioners identified the following activities or sources of potential threat to the CI beluga stock: commercial fisheries interactions with beluga whales; oil spills; other pollutants, contaminants (toxins such as Polychlorinated Biphenyls (PCBs), pesticides, heavy metals, hydrocarbons); predation from killer whales; noise from oil and gas development with associated seismic activity, drilling and refineries, airplanes (Anchorage Airport) and vessels; prey availability; research; and vessel traffic including commercial (whale watching) boat traffic. The petitioners assert that potential impacts from these activities on CI beluga whales, their prey, and the marine environment may be direct (e.g., lower survival rates) or indirect (e.g., loss of access to habitat or food resources).

NMFS Response: NMFS recognizes that municipal, commercial, and industrial activities are of concern and may affect the water quality and substrate in the inlet. However, no indication exists that these activities have adversely impacted beluga whales, including a quantitative impact on the beluga whale population. The best available information (as discussed in the following sections) indicates that these activities, alone or cumulatively, have not caused the stock to be in danger of extinction and are not likely to do so in the foreseeable future.

Commercial Fishery Interactions with Beluga Whales: State and Federally permitted commercial fisheries for shellfish, groundfish, herring and salmon occur in the waters of Cook Inlet, and have varying likelihoods of interacting with beluga whales due to differences in gear type, timing, and location of the fisheries. Interactions include entanglements, injuries, or mortalities occurring incidental to fishing operations.

Reports of marine mammal injury or mortality incidental to commercial fishing operations are obtained from the existing literature, fisheries reporting programs, and observer programs. During 1990–93, certain fisheries were required to participate in a logbook reporting program, which provided information regarding fishing effort, interactions with marine mammals and the outcome (deterred, entangled, injured, killed) of the interactions. Data from this program were difficult to interpret (Young et al. 1993) and tended to underestimate actual incidental mortality rates (Credle et al., 1994).

The logbook program was replaced by the 1994 MMPA amendments with a fisher self-reporting program, in which all commercial fishers are required to notify NMFS of injuries or mortalities to marine mammals occurring during the course of commercial fishing. This program became effective in 1995 and is currently in operation. In general, however, fewer reports have been received under this program than expected, given the results of the previous logbook reporting program and results from observer programs. Thus, annual mortality rates derived from these programs should be considered minimum estimates (Hill and DeMaster, 1999).

A number of fisheries occurring in or near the inlet present little, if any,

chance of catching beluga whales. These fisheries are classified in Category III under the MMPA (65 FR 2448, April 26, 2000) because NMFS has determined that there is only a remote likelihood that they would kill or seriously injure any marine mammal incidental to their operations. These fisheries were classified in Category III fisheries during the period 1990 through 1994 and were not required to participate in the logbook program. Since 1995, when the existing reporting system required the reporting of all injuries of marine mammals incidental to fishing operations, none of these fisheries have reported incidental mortality or injury of marine mammals. In addition, no interactions between beluga whales and northern Gulf of Alaska groundfish trawl, longline or pot fisheries were reported by federal observers during 1990–99 (Hill and DeMaster, 1999).

The largest fisheries, in terms of participant number and landed biomass in Cook Inlet, are the salmon drift and set gillnet fisheries concentrated in the central and northern districts of upper Cook Inlet, where beluga whales are most likely to be found in the spring and summer (Rugh et al., In press). Times of operation change depending upon management requirements. In general the drift gillnet fishery operates from late June through August, and the set gillnet fishery during June through September.

The only reports of beluga whale mortality caused incidental to commercial salmon gillnet fishing in Cook Inlet are found in the literature prior to the observer programs and reporting systems required by the MMPA. Murray and Fay (1979) stated that salmon gillnet fisheries in Cook Inlet caught five beluga whales in 1979. An incidental take rate by commercial salmon gillnet fisheries in the Inlet was estimated at three to six beluga whales per year during 1981–83 (Burns and Seaman, 1986). Neither report, however, differentiated between the set and drift gillnet fisheries.

There have been no recent reports of beluga whales in Cook Inlet being killed or injured incidental to commercial fishing operations. No reports of injuries or mortalities incidental to salmon drift or set gillnet fishing were reported during the 1990–91 logbook reporting program, and none have been included in the reporting system in place since 1995.

To address the heightened concern in Cook Inlet and verify the results from the self-reporting system, NMFS placed observers in the salmon drift gillnet fishery and the upper and lower inlet set gillnet fishery in 1999. Observers were deployed on the first drift gillnet opening of June 28. Limited set gillnet fisheries were operating in the upper Cook Inlet on June 7, but observers were not placed until June 27. Thus, fishing effort associated with approximately 239 of 11,300 deliveries was unobserved during this period. Observers were placed on drift vessels during each of the eight regular and nine corridor-only fishing periods, and during emergency order extended fishing periods.

In 141 net-days (in which a net is fished at least 6 hours in a 24-hour period) in the drift gillnet fishery, observations were made of 744 sets and/or hauls of 102 different vessels for a total of 845 hours observation time. In 256 net-days within the set gillnet fishery, 1,450 observations were made of soaks and/or hauls of 275 different vessels, totaling 1,545 hours of observation time.

Marine mammals were observed within 300 m of a net by observers 43 times (about 6 percent of the observations) for drift gillnet sets, and 107 times (about 7 percent of the observations) for set gillnet effort. Of these, only three sightings were of beluga whales, each from an observer at a set gillnet sight in upper Cook Inlet. The beluga whales were not observed within 10 m of any net (i.e., within a distance categorized as an ''interaction'') in the drift (35 individual marine mammals observed) or set (78 individual marine mammals observed) gillnet fisheries. Three marine mammals were observed entangled in nets, none of which were beluga whales.

Personal-use gillnet fisheries also occur in Cook Inlet, and have been subjected to many changes since 1978 (Ruesch and Fox, 1999), as summarized in Brannian and Fox (1996). The most consistent personal-use fishery is the use of single 10-fathom gill nets for salmon in the Tyonek Subdistrict of the Northern District (Ruesch and Fox, 1999). Personal-use gill nets have also been allowed within waters approximately 1.5 miles (2.4 km) of the Kasilof River. In 1995, personal-use gill nets were allowed in most areas open to commercial salmon set gillnet fishing. Most of this area was closed to personal gill net use in 1996. Personal-use salmon set gillnet fisheries are also found in the Port Graham subdistrict of lower Cook Inlet. NMFS is unaware of any beluga whales injured or killed in the Cook Inlet personal use/subsistence gillnet fisheries.

In summary, beluga whales apparently were caught in fishing nets from 1979 to 1983. None have been included in fisher self-reports since the late 1980s. Furthermore, in the fisheries in which observers were placed since 1990 (including those for which mortality was reported in the early 1980s), no beluga whales have been observed entangled in nets or close enough to a net to be described as an interaction. NMFS considers that the set and drift gillnet fisheries may occasionally cause mortality and serious injury of marine mammals; however, there is a remote likelihood that other fisheries operating in CI will kill or seriously injure a marine mammal incidental to their operations. Because no CI beluga have been reported or observed to have been killed or seriously injured incidental to the gillnet fisheries, the working estimate for mortality incidental to fishing operations would be that no beluga have been killed in CI since 1990. None of the more than 590 beluga whales that have stranded in CI were entangled in fishing gear; therefore, the stranding data support the working estimate of no incidental mortality. Therefore, based upon the best available information, NMFS does not believe that mortality incidental to commercial fishing operations is having, or has had, a significant impact on the CI beluga whale stock.

Oil Spills: Oil production, refining, and shipping occur in Cook Inlet. Therefore, oil and other hazardous substances may be spilled and, thus, impact the CI beluga whale stock. The Outer Continental Shelf Environmental Assessment Program estimated that 21,000 barrels of oil were spilled in the Inlet between 1965 and 1975, and 10,000 barrels were spilled from 1976 to 1979 (MMS, 1996). In July, 1987, the tanker *Glacier Bay* struck an unchartered rock near Nikiski, Alaska, discharging an estimated 1,350 to 3,800 barrels of crude oil into the inlet (USCG, 1988). Beluga whales are commonly found in the area of this spill.

There are no data available that describe behavioral observations or deleterious effect of these spills on beluga whales nor that accurately predict the effects of an oil spill on beluga whales. Some generalizations, however, can be made regarding impacts of oil on individual whales based on present knowledge.

An oil spill could result in a beluga whale contacting or ingesting the oil or suffering respiratory distress from hydrocarbon vapors. The spill may also contaminate food sources or displace the whales from feeding areas. Whales could be affected through residual oil from a spill even if they were not present during the oil spill. The most likely effects of oil would be irritation of the respiratory membranes and

absorption of hydrocarbons into the bloodstream (Geraci, 1990).

If an oil spill were concentrated in open water (e.g. within tide rips), a beluga whale might inhale enough vapors from a fresh spill to affect its health. No reliable data exist on the effects of petroleum vapor inhalation on cetaceans; however, inhalation of vapors in excess of 10,000 ppm is fatal to humans (Ainsworth, 1960; Wang and Irons, 1961). Inhalation of petroleum vapors can cause pneumonia in humans and animals due to large amounts of foreign material (vapors) entering the lungs (Lipscomb et al., 1994). Although pneumonia was not found in sea otters that died after the *Exxon Valdez* oil spill, inhalation of vapors was suspected to have caused interstitial pulmonary emphysema (accumulation of bubbles of air within connective tissues of the lungs). Crude oil evaporation rates are greatest during the first few days after an oil spill (Meilke, 1990).

Whales may also contact oil as they surface to breathe, but the effects of oil contacting skin are largely speculative. Experiments in which bottlenose dolphins were exposed to petroleum products showed transient damage to epidermal cells, and that cetacean skin presents a formidable barrier to the toxic effects of petroleum (Bratton et al., 1993). Geraci and St. Aubin's (1985) investigations found that exposure to petroleum did not make a cetacean vulnerable to disease by altering skin microflora or by removing inhibitory substances from the epidermis.

Geraci (1990) reviewed a number of studies pertaining to the physiologic and toxic impacts of oil on whales and concluded no evidence exists that oil contamination had been responsible for the death of a cetacean. Cetaceans observed during the *Exxon Valdez* oil spill in Prince William Sound made no effort to alter their behavior in the presence of oil (Harvey and Dahlheim, 1994; Loughlin, 1994).

Following the *Exxon Valdez* oil spill, daily vessel surveys of Prince William Sound were conducted from April 1 through April 9, 1989, to determine the abundance and behavior of cetaceans in response to the oil spill (Harvey and Dahlheim, 1994). During the nine surveys, 80 Dall's porpoise, 18 killer whales, and two harbor porpoise were observed. Oil was observed on only one individual, which had oil on the dorsal half of its body and appeared stressed due to its labored breathing pattern. A total of 37 cetaceans were found dead during and after the oil spill, but cause of death could not be linked to exposure to oil (Loughlin, 1994). Dalheim and Matkin (1994) reported 14 killer whales missing from a resident Prince William Sound pod over a period coincident with the *Exxon Valdez* oil spill. They noted that nearly all resident killer whales likely swam through heavily oiled sections of the sound and that the magnitude of that loss was unprecedented. Dalheim and Matkin concluded a correlation existed between the loss of these whales and the spill, but they could not identify a cause-and-effect relationship.

Toxicity of crude oil decreases with time as the lighter, more harmful, aromatic hydrocarbons, such as benzene, evaporate. Acute chemical toxicity (lethal effects) of the oil is greatest during the first month following a spill. Sublethal effects may be observed in surviving birds, mammals, and fish for years after the spill. Sublethal and chronic effects include reduced reproductive success, blood chemistry alteration, and weakened immunity to disease and infections (Spies et al., 1996).

Contaminated food sources and displacement from feeding areas may also occur as a result of an oil spill. Over a 3-month period, Caldwell and Caldwell (1982) fed 335 ml of hydraulic oil to bottlenose dolphins. The dolphins did not reject the fish containing oil capsules. They were necropsied after the experiment, and no lesions attributable to oil were detected.

These studies indicate that an oil spill could have an effect on beluga whales if one were to occur. However, no significant impact on beluga whales can be attributed to oil spills or production in CI despite high levels of oil production, refining, and transport within the inlet and its watershed. Therefore, at current levels of activity, oil and gas exploration and development are not expected to have a significant impact on the CI beluga stock.

The oil and gas industry has a history of compliance with the MMPA and ESA for their operations in Alaska, and the MMPA provides a regulatory regime to ensure that the taking of marine mammals incidental to commercial activity would have no more than a negligible impact on marine mammals. Furthermore, the MMPA provisions that establish this regime include a requirement that the activity must not have an unmitigable adverse impact on the availability of marine mammals for subsistence uses. Consequently, there is an adequate regulatory mechanism to address future expansion of the oil and gas industry in Cook Inlet.

Other Pollutants: The principle sources of pollution in the marine environment are (1) discharges from municipal waste-water treatment systems; (2) discharges from industrial activities that do not enter municipal treatment systems (petroleum and seafood processing); (3) runoff from urban, mining, and agricultural areas; and (4) accidental spills or discharges of petroleum and other products. Natural and man-made pollutants entering the inlet are diluted and dispersed by the currents associated with the tides, estuarine circulation, wind-driven waves and currents (MMS,1996).

Pollutants may be classified as chemical, physical, and biological. Chemical pollutants include organic and inorganic substances. The decomposition of organic substances uses oxygen and, if enough organic material is present, the concentration of oxygen could be reduced to levels that would threaten or harm oxygen-using inhabitants of the water column.

The discharge of soluble inorganic substances may change the pH or the concentration of trace metals in the water, and these changes may be toxic to some marine plants and animals. Physical pollutants include suspended solids, foam, and radioactive substances. Suspended solids may inhibit photosynthesis, decrease benthic activity, and interfere with fish respiration. Foam results from surface active agents and may cause a reduction in the rate of oxygen-gas transfer from the atmosphere into the water. Biological pollutants may promote waterborne disease by adding pathogens to the receiving waters or may stimulate excessive biological growth.

i. Produced Waters: Produced waters constitute the largest source of man-made substances discharged into the waters of Cook Inlet. The characteristics of the produced waters, as well as other discharges, except drilling muds and cuttings described in this section, are based on information obtained during the Cook Inlet Discharge Monitoring Study, conducted between April 10, 1988, and April 10, 1989 (EBASCO Environmental, 1990a; 1990b). These waters are part of the oil/gas/water mixture produced from the wells and contain a variety of dissolved substances. Also, chemicals are added to the fluids as part of various activities including water-flooding; well work-over, completion, and treatment; and the oil/water-separation process. Before being discharged into Cook Inlet, produced waters pass through separators to remove oil and gas. The treatment process removes suspended oil particles from the waters, but the effluent contains dissolved hydrocarbons or those held in colloidal

suspension (Neff and Douglas, 1994). Although the discharge of produced waters is an issue of concern, the toxicity of produced waters, as indicated in the monitoring study, ranged from only slightly toxic to practically nontoxic (to shrimp) and would not, therefore, be expected to impact beluga whales.

ii. Drilling Muds and Cuttings: A general permit issued by the Environmental Protection Agency (EPA) authorizes the discharge of approved generic drilling muds and additives into waters of Cook Inlet. Drilling muds consist of water and a variety of additives; 75 to 85 percent of the volume of most drilling muds currently used in Cook Inlet is water (Neff, 1991).

When released into the water column, the drilling muds and cuttings discharges tend to separate into upper and lower plumes (Menzie, 1982). The upper plume contains the solids and water-soluble components that separate from the material of the lower plume and are kept in suspension by turbulence.

The discharge of drilling muds at surface ensures dispersion and limits the duration and amount of exposure to organisms (NRC, 1983). Most of the solids in the discharge, >90 percent, descend rapidly to the sea floor in the lower plume. The sea floor area in which the discharged materials are deposited depends on the water depth, currents, and material particle size and density (NRC, 1983). In most Outer Continental Shelf areas, the particles are deposited within 500 ft below the discharge site; however in Cook Inlet, which is considered to be a high-energy environment, the particles are deposited in an area that is >500 ft below the discharge site (NRC, 1983). Small particles of drilling mud (several centimeters in diameter) also may settle to the sea floor immediately following a discharge but would disperse within a day.

Since 1962, 546 wells have been drilled in Cook Inlet. One Continental Offshore Stratigraphic Test well and 11 exploration wells were drilled in Federal waters and 75 exploration and 459 development and service wells were drilled in State waters, mainly in upper Cook Inlet (State of Alaska, AOGCC, 1993). From 1962 through 1970, 292 wells were drilled, including 62 for exploration and 230 for development and service (State of Alaska, AOGCC, 1993). From 1971 through 1993, the number of wells drilled per year has ranged from 3 to 20, with an annual average of about 11.

The toxicity of the muds used to drill 39 production wells in Cook Inlet between August 1987 and February 1991 ranged from 1,955 to >1,000,000 ppm for a marine shrimp (Neff, 1991). Concentration levels >10,000 ppm are considered practically nontoxic and between 1,000 and 10,000 ppm are slightly toxic. The percentages of the wells with toxicities >10,000 ppm was 89 percent of the total number. Therefore, 89 percent of the muds from this production were considered non-toxic to shrimp. Given the results of this study, the toxicity levels of production muds do not likely impact beluga whales.

iii. Heavy Metals and Organic Compounds: NMFS has obtained biological samples from CI beluga whales under protocols developed for the Alaska Marine Mammal Tissue Archival Project. From these collections, selected tissues have been analyzed for PCBs and trace elements, including heavy metals in liver and kidneys. As has been found for beluga whales from other regions in Alaska, Canada, and Greenland, the CI beluga whales were found to have relatively high concentrations of mercury, selenium, and silver in their livers. These levels are much higher than one finds in ringed seals, harbor seals, bowhead whales, and walrus in Alaska. However, as compared to other Alaskan beluga whale stocks (Eastern Chukchi Sea and Eastern Beaufort Sea), the levels of these three metals, as well as cadmium, were much lower in the Cook Inlet animals (Becker et al., in press). These elements accumulate in liver tissue and increase with age of the animal. The uptake and bioaccumulation of these elements are determined by many factors, and the diet of the animal plays a major role (Becker et al., In press).

Concentrations of PCBs and chlorinated pesticides were found to be lower in the blubber of beluga whales from CI than from beluga whales from Point Lay (Eastern Chukchi Sea stock) and Point Hope (Eastern Beaufort Sea stock), Alaska. Generally, CI beluga whales are ''cleaner'' than other beluga whale populations throughout the Arctic and the eastern United States. A comparison of tissue concentrations of persistent organic contaminants, heavy metals, and other elements between CI beluga whales and other beluga whales in North America confirms that the CI animals are distinct from other populations and stocks of this species. The CI animals had much lower concentrations of PCBs and chlorinated pesticides than those which have been reported from the Eastern Beaufort Sea and Eastern Chukchi Sea stocks. Due to the lower concentrations of PCBs and chlorinated pesticides in CI beluga whales, their effects on the animals' health may be less significant for CI animals than for the other beluga whale stocks.

iv. Municipal Wastes and Urban Runoff: Ten communities currently discharge treated municipal wastes into Cook Inlet. Wastewater entering these plants may contain a variety of organic and inorganic pollutants, metals, nutrients, sediments, and bacteria and viruses. Of these, the Municipality of Anchorage's John M. Asplund Treatment Center, English Bay, Port Graham, Seldovia, and Tyonek use only primary treatment, and Eagle River, Girdwood, Homer, Kenai, and Palmer use secondary treatment. The maximum permitted wastewater discharge for Anchorage is 44 million gallons per day (GPD), and that for other communities ranges from 10 thousand to 1.6 million GPD. The EPA is currently in the process of re-issuing the Asplund facility discharge permit.

For Anchorage, the effluent limitations requested for the daily discharge of organic material, such as sewage (often reported as Biological Oxygen Demand (BOD)), and total suspended solids in the wastewater are 90,100 pounds per day (lb/d) and 57,000 lb/d, respectively. Based on the daily maximums presently permitted for these ten communities, they could release about 16.38 million pounds of BOD and 13.82 million pounds of suspended solids into CI annually.

Determining the impact of municipal discharges on the beluga whale stock is not possible. The rivers entering Knik Arm alone carry an estimated 20 million tons of sediment annually (Gatto, 1976). Therefore, the suspended loading that naturally occurs in the extreme upper inlet parallels that discharged by the Municipality of Anchorage. The impact of the sediment loading by discharges on beluga whales is not known. Given the relatively low levels of contaminants found in CI beluga whale tissues, municipal discharge levels are not believed to be having a significant impact on the beluga whale population.

Noise: Upper Cook Inlet is one of the most industrialized and urbanized regions of Alaska. As such, noise levels may be high. The petitioners recognized this as a factor that might cause beluga whales in Cook Inlet to avoid using parts of their available habitat due to noise levels. The common types of noises in upper Cook Inlet include sounds from vessels, aircraft, construction equipment (e.g., diesel generators, bulldozers, and compressors) and from activities such as pile-driving.

Any sound signal in the ocean is detectable by marine mammals only if the received level of the sound exceeds a certain detection threshold (Richardson et al., 1995). If the sound signal reaching a marine mammal is weaker than the background noise level, it may not be detected. This concept is important in understanding the effects of noise on whales in at least two areas: (1) The audibility of an industrial noise is dependent in part on the background (ambient) noise levels, and (2) as industrial noises add to the level of background noise, they may prevent or diminish the effectiveness of communication among whales or between whales and their environment.

Considering the depth of the animal being exposed to noise is also important. The noise level from a source when measured within 3 ft (1 m) of the surface is significantly lower than the noise level when measured at depths of 16 to 33 ft (5 to 10 m). For example, a marine mammal at the surface will experience a received-noise level approximately 30 dB less than the level for an animal at the same distance from the source, but at a depth of 33 ft (10 m).

A noise of sufficient intensity must also be in the range of frequencies that beluga whales can hear. Their peak hearing is within the range of about 10,000 to 90,000 Hz (Richardson et al., 1995). Noises outside, but near, this range can be heard but not as well as those within the range.

i. Aircraft Noise: Richardson et al., (1995) and Richardson and Malme (1993) provided summaries on aircraft sound in water. The surface area of sound transmission from air to water is described by a cone where the apex of the cone is the aircraft, and the cone has an aperture of 26 degrees. In general, underwater noise from aircraft is loudest directly beneath the aircraft and just below the water's surface, and sound levels from the same aircraft are much lower underwater than the sound levels in air. The duration of the noise is short because noise is generally reflected off the water surface at angles greater than 13 degrees from vertical. Helicopters tend to be noisier than fixed-wing aircraft. The amount of noise entering the water depends primarily on aircraft altitude, sea surface conditions, water depth, and bottom conditions (Richardson et al., 1995).

Monitoring results of aircraft noise levels are complicated due to variables that are inherent in such analyses, including monitoring equipment averaging times, aircraft types and operations (i.e., power setting, propeller pitch, altitude changes), meteorological conditions, and aircraft altitude. There are no data on the level of received sound that disturb or do not disturb toothed whales (Richardson et al., 1995). The response of beluga whales to airplanes and helicopters varies with social context, distance from the aircraft, and aircraft altitudes. Because the underwater noise generated by an aircraft is greatest within the 26 degree cone directly beneath the craft, whales often react to an aircraft as though startled, turning or diving abruptly when the aircraft is directly overhead. Richardson et al., (1995) reports beluga whales not reacting to aircraft flying at 500 m, but, when the aircraft was at lower altitudes (150–200 m) the whales dove for longer periods and sometimes swam away. Feeding beluga whales were less prone to disturbance. NMFS aerial surveys are normally flown at an altitude of 150 m, using fixed-wing single- and twin-engine aircrafts. Beluga whales are rarely observed to react to even repeated overflights at this altitude.

The main approaches to the Anchorage International Airport, Elmendorf Air Force Base, and Merrill Field are at least partially over the upper Inlet, including Knik Arm. Commercial and military jet airplanes often fly over these waters at relatively low altitudes. Despite this traffic, beluga whales are common to these same waters and are often observed directly under the approach corridors off the north end of International Airport and the west end of Elmendorf Air Force Base.

ii. Ship and Boat Noise: Ships and boats create high levels of noise both in frequency content and intensity level, and this noise can be detected at great distances. High-speed vessels tend to be much noisier than slow-speed vessels. Small commercial ships are generally diesel-driven, and the highest 1/3-octave band is in the 500 to 2,000 Hz range. Tugs can emit high levels of underwater noise at low frequencies. Small outboard motors, such as those commonly used for recreation in the upper Inlet, typically produce noise at much higher frequencies (e.g. 6300 Hz) and may have the highest potential to interfere with beluga whales.

iii. Noise from Offshore Drilling and Production: Sound produced by oil and gas drilling and production in Cook Inlet may be a significant component of the noise in the local marine environment. Gales (1982) summarized noise from eleven production platforms. The strongest tones from four production platforms were at very low frequencies (between 4 and 38 Hz).

Various studies and observations suggest that beluga whales are relatively unaffected by these activities. Belugas are regularly seen near drill sites in Cook Inlet (Richardson et al., 1995:282; McCarty 1981). Stewart et al., (1982) reported that beluga whales in Snake River, Alaska, did not appear to react strongly to play-backs of oil industry-related noise at levels up to 60 dB above ambient. Stewart, Awbrey, and Evans (1983) conducted similar playback experiments in Nushagak Bay, Alaska, in 1983 and found that beluga whale movement and general activity were not greatly affected, especially when the source of the noise was constant.

Beluga whales did swim faster and respiration rates sometimes increased within 1.5 km of the sound projector. During playback experiments in the Beaufort Sea, migrating beluga whales approached the sound projector and showed no overt reactions until within 200–400 meters, even though the noise was detectable by hydrophone up to 5km away (Richardson et al., 1990, 1991). Richardson et al. (1995) observed these results may be an example of the degree to which beluga whales can adapt to repeated or on-going man-made noise when it is not associated with perceived negative consequences.

iv. Noise from Seismic Geophysical Exploration: Geophysical exploration in CI for oil and gas deposits is often accomplished using boat-based seismic survey. Seismic surveys produce some of the loudest noises in the marine environment. These surveys use compressed air to generate short, intense bursts of underwater energy that may propagate for great distances. The noise produced by these surveys is at very low frequencies, often less than 100 Hz, which is below the optimum hearing range of beluga whales.

Higher frequencies are absorbed in water more than lower frequencies. Seismic sound propagation is also dependent on bottom structure, and soft substrates such as those found in the upper inlet absorb sound better than hard, reflective material. Finally, seismic sound is poorly transmitted through shallow waters, such as exists near the mouths of the Susitna River. Therefore, seismic exploration in the upper inlet may be poorly transmitted through the water and may have little direct impact on beluga whales. However, seismic sound may be very loud, with some sound energy at higher frequencies that overlap the peak auditory range of the beluga whale. Beluga whales would likely hear, and may react to, an active seismic vessel in certain areas and under certain conditions. Presently, no data exist to

characterize the noise from seismic exploration in Cook Inlet. NMFS observed beluga whales in Cook Inlet approximately 20 nmi from an active seismic vessel in June 1995, and reported no reactions (Moore et al., In press).

v. Summary of the Impacts of Noise on CI Beluga Whales: Because sound is a critical sense to beluga whales, high levels of noise may have significant and adverse effects. However, evaluation and prediction of human-made noise impacts on marine mammals is difficult. Estimating acoustic environmental impact on animals requires interpretation and integration of results from many disciplines including, but not limited to, the study of how sound waves interact with the environment (physical acoustics), how animals hear sounds (anatomy and physiology), and how animals use sounds for behaviors such as communicating, navigating, and finding food (bio-acoustics and behavioral ecology).

One of the most obvious behavioral responses to industrial noise is to avoid the area by swimming away from or detouring around the noise source. Two other behavioral responses, habituation and sensitization, also are important when discussing the potential reactions of beluga whales to multiple exposures to a noise stimulus.

Habituation refers to the condition in which repeated experiences with a stimulus that has no important consequence for the animal leads to a gradual decrease in response. Richardson et al., (1995) provided examples of beluga whales becoming habituated to noise from frequent vessel traffic in the St. Lawrence River and to salmon fishing boats in Bristol Bay. Elsewhere, beluga whales have been observed to tolerate large vessel traffic (e.g., in the St. Lawrence River), and intensive commercial fishing vessel activity (in Bristol Bay). Beluga whales are commonly found immediately adjacent to the Port of Anchorage during summer months, often very near containerships and tugs which are docking, maneuvering, or underway.

Sensitization refers to the situation in which the animal shows an increased behavioral response over time to a stimulus associated with something that has an important consequence for the animal. Although whales tend to show little response to vessels that move slowly and are not heading toward them (Richardson et al., 1995), beluga whales will often leave an area in which vessel noise is related to hunting (Sergeant and Brodie 1975; Huntington, 1999). Native hunters in Cook Inlet have also reported that beluga whales actively avoid approaching skiffs powered by outboard motors, particularly during the summer and fall. Many researchers report that beluga whales commonly flee from fast and erratically moving small boats.

The variable response that beluga whales show to vessels indicates that these whales (1) are not disturbed by such activity, (2) habituate to such activity, (3) or (from Blane, 1990) continue to use some areas for feeding and traveling because these areas are critical to their survival. If the last alternative is actually the case, then the whales' lack of avoiding areas where vessel traffic routinely occurs should not be interpreted as the whales being undisturbed.

Beluga whales did not abandon an area within upper Cook Inlet even when they were being hunted and pursued (Shelden, 1995). A large group of beluga whales remained in or near the mouth of the Little Susitna River for several weeks during June of 1999. During this period, many small motor boats sport fishing for chinook salmon moved between Anchorage and the Little Susitna river.

CI beluga whales appear to display a strong fidelity to certain sites. They are similar in this respect to the Bristol Bay stock of beluga whales. It is generally believed in western and northern Alaska, however, that modernization of coastal communities, with its associated noise, is causing beluga whales to pass farther from shore and to abandon traditional sites (Burns and Seaman, 1986).

To what extent, if any, noise in the Cook Inlet area has had an effect on the current distribution or trends of these animals is not clear. Over the long-term, disturbance from noise, if it keeps belugas from foraging sites, could have an effect which would be expressed as a lower productivity rate due to low level, or chronic, stress symptoms that would inhibit successful foraging. However, no indication exists that this is happening. Given the fidelity of these whales to specific foraging sites in the upper inlet, the need to prey on available forage is apparently stronger than the impacts of potential disturbance from noise, or other factors, in those locations. Such site fidelity has also been witnessed in other whale populations.

Commercial Harvest: Klinkhart (1966) reported that a commercial harvest for beluga whales occurred in Cook Inlet in the 1930s. This harvest took about 100 beluga whales. These whales were netted in the Beluga River, and used for meat and oil. Guided sport hunting for CI beluga whales was also popular during the 1960s (Anchorage Daily Times, 1965); however, there is no information on the level of this harvest. These activities have not had an impact on CI beluga whales in recent decades.

Ship Strikes: The presence of beluga whales in and near river mouths entering upper Cook Inlet predisposes them to strikes by high speed watercraft associated with sport and commercial fishing and general recreation. The mouths of the Susitna and Little Susitna River in particular are areas where such vessel traffic and whales commonly occur. NMFS enforcement agents investigated a report of a jet skier approaching and striking belugas in Knik Arm in 1994. A stranded beluga whale examined in 1999 had an injury consistent with an old propeller injury (Burek, 1999b). Data are not available to quantify the impact of vessel strikes on the CI stock of beluga whales, but vessel strikes are not believed to have a significant impact on the population.

Tourism: Tourism is a growing component of the state and regional economies, and wildlife viewing is an important component of this activity. Many tour buses routinely stop at several wayside sites along Turnagain Arm in the summer, where beluga whales are often seen.

Presently no vessel-based commercial whale watching ventures operate in upper Cook Inlet. However, the popularity of whale watching and the close proximity of the activity, and beluga whales, to Anchorage suggests such operations may begin in the near future. Should whale watching operations develop in CI, NMFS plans to monitor them.

Prey Availability: Beluga whales actively feed in the upper inlet where prey species concentrate. The arrival of beluga whales into the northern Inlet coincides with the eulachon migration. Soon after the eulachon migration, salmon out-migrations and the first chinook salmon spawning runs begin.

NMFS biologists sampled stomachs from subsistence-harvested whales and found that many contain salmon and eulachon. Native hunters' observations indicate that the whales' distribution in Cook Inlet is dependent upon fish runs.

NMFS placed a radio transmitter on an adult beluga whale in 1999, and this animal remained in or near the mouth of the Little Susitna River for several weeks between May and June in 1999. This whale was observed swimming among a group of approximately 90 beluga whales. This group moved into the central region of the upper Inlet and into Knik Arm during the times coho salmon were returning to the Little Susitna River.

Several commenters stated their belief that fish runs have declined dramatically within Cook Inlet during the last decade, and that this decline has caused fewer beluga whales to visit the upper Inlet. Native observations (Huntington, 1999) also suggest that severe declines in fish runs have occurred in Cook Inlet during the past few years. Huntington reported that these changes resulted in a redistribution of the beluga whales and the subsequent decline of beluga whales in Cook Inlet. The available evidence, however, shows little trend in the size of fish runs and, in some cases, contradicts these observations.

Several waterways entering CI are monitored for anadromous fish migrations by the Alaska Department of Fish and Game (ADFG), and NMFS reviewed salmon escapement for selected species for three such index streams, the Yentna, Little Susitna, and Kenai Rivers (Fox and Shields, 2000).

Sockeye returns to the Yentna River fluctuate from 1981 through 1999, but no trend is apparent. The returns for 1997 through 1999 are above average for the entire period, but decline from a peak in 1997 to lower levels in 1998 and 1999.

Sockeye returns to the Kenai River are relatively consistent from 1978 through 1999, with the later years having slightly larger runs than early in the reporting period. Returns showed peaks in 1987 and 1989, which were much higher than any other year in the reporting period. The harvest of sockeye salmon in the last 10 years has exceeded the 44-year average harvest.

Coho returns to the Little Susitna River show an increasing trend from 1986 through 1991 and a decline from 1993 through 1999. The escapements in 1998 and 1999 were higher than in 1986 and 1987.

Other prey species may be important to CI beluga whale, but there are little quantitative data to evaluate stock abundance and trends. Herring occur in concentrations and are rich in lipids (high caloric value). During a study of salmon smolts within the upper Inlet, juvenile herring (ages 0 and 1) were the most consistently caught species, and were second in abundance of all species encountered (Moulton, 1994). Historically, the herring run along the western side of lower CI has supported a local commercial fishery for herring roe. In 1999, the roe fishery was closed due to declining herring biomass, which ADFG estimated as 6,000 to 13,000 tons (ADFG, 1999b).

Eulachon also migrate into rivers within CI. A commercial venture to harvest eulachon in the lower Susitna River operated in 1999. The fishery was limited to 50 tons (ADFG, 1999a) and achieved this level of harvest rapidly.

The available information does not provide a clear quantitative assessment on trends of fish stocks in CI. However, observations by NMFS scientists and Alaska Natives provide some indication of the abundance and availability of food to CI beluga whales. From records on stranded whales, NMFS scientists have noted a large proportion of gray (juvenile) beluga whales in the stock. Huntington (1999) reported that Alaska Native hunters and elders also stated that the majority of whales are gray and that CI beluga whales are becoming sexually mature when gray, which is not the normal pattern.

If the population were food-stressed, the expected population response would be for calf survival to be decreased and for the age of sexual maturity to be delayed. The higher proportion of juvenile whales and the decreased age of first reproduction, as indicated by the observation that gray beluga whales are producing calves, suggest that nutrition is not limiting the population.

Discussion

The ESA instructs the Federal government to conduct a review of the status of the species and include efforts by any state or foreign nation to protect such species within any area under its jurisdiction or the high seas. NMFS conducted such a status review of CI beluga whales to determine whether the population should be listed as threatened or endangered under the ESA or designated as depleted under the MMPA.

NMFS conducted annual surveys of the Cook Inlet beluga whale between 1994 and 1998. The results show a sharp decline in estimated abundance, with the 1998 estimate (347 animals) nearly 50 percent lower than the 1994 estimate (653 animals).

The mean subsistence harvest level of CI beluga whales from 1995 through 1998 was 77 whales per year. There was no harvest in 1999, and NMFS is working with CIMMC to authorize the harvest of one whale in 2000. The harvest, which has been identified as the only factor that can account for the observed decline of the CI beluga stock, is being controlled through Pub. L. 106–31 and will be controlled through regulatory mechanisms that are available under the MMPA. The Pub. L. 106–31 will expire on October 1, 2000, and the protection will stop unless the legislation is extended or NMFS issues regulations that provide a long-term limitation on the harvest to promote recovery of the stock.

In simulation modeling efforts, NMFS scientists have demonstrated that the stock is not likely to continue to decline if the harvest is controlled. Breiwick and DeMaster (1999) showed that a stock with at least 300 individuals and a positive intrinsic growth rate, like that of beluga whales, would not go extinct due to stochastic events.

Using a logistic model with productivity values taken from the current CI beluga stock assessment report and an assumed carrying capacity of 1,300 whales, NMFS compared the rates of population growth using no harvest and a harvest of 2 whales per year. The no-harvest model indicated that the stock would be expected to double in about 2 decades. The latter model predicted that the harvest of 2 whales per year would have a negligible impact on the stock (i.e., such a harvest regime would not cause a significant delay in recovery compared to the no-harvest model).

The habitat of the stock has not been, nor is it likely to be, destroyed, modified or curtailed in sufficient extent to cause the stock to be in danger of extinction. The stock has not been overutilized for commercial, recreational, scientific or educational purposes. The effects of disease or predation are not well documented but are believed to be minimal. There is an adequate regulatory mechanism to control the subsistence harvest, which is the only factor that can account for the observed decline, through October 1, 2000. In addition, the MMPA provides an adequate mechanism to ensure that future commercial activity in CI would have no more than a negligible impact on the stock. Other natural or manmade factors (subsistence harvest) have affected the stock's continued existence; however, the current (since 1999) level of harvest would not have a significant adverse impact on the continued existence of CI beluga whales.

Determination

Based on the best available scientific information, NMFS has determined that the CI beluga whale population has declined to a level that is considered depleted under the MMPA. However, after taking into account the information summarized above, NMFS has determined that the stock is not in danger of extinction nor is it likely to become so in the foreseeable future. Therefore, NMFS has determined that listing CI beluga whales under the ESA is not warranted at this time.

NMFS remains concerned about the status of the CI beluga population and

will continue to include the population on the list of candidate species under the ESA. Furthermore, NMFS will continue to monitor the abundance and population trend of the stock and will re-evaluate its status as needed.

References

A complete list of all cited references is available upon request (see **FOR FURTHER INFORMATION CONTACT**).

Classification

National Environmental Policy Act

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation* v. *Andrus*, 675 F. 2d 825 (6th Cir. 1981), NMFS has concluded that ESA listing actions are not subject to the environmental assessment requirements of NEPA. See NOAA Administrative Order 216–6.

Executive Order 12866 and Regulatory Flexibility Act

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act are not applicable to the listing process. In addition, this final action is exempt from review under Executive Order 12866.

Executive Order 13132—Federalism

In keeping with the intent of the Administration and Congress to provide continuing and meaningful dialogue on issues of mutual State and Federal interest, NMFS has conferred with State and local government agencies in the course of assessing the status of CI beluga whales. State and local governments have expressed support for the conservation of this stock of beluga whales. Dialogue with State and local agencies included an exchange and discussion of scientific information regarding beluga whales, factors that may be affecting them, and their status under the ESA and MMPA.

Executive Order 13084—Consultation and Coordination with Indian Tribal Governments

E.O. 13084 requires that if NMFS issues a regulation that significantly or uniquely affects the communities of Indian tribal governments and imposes substantial direct compliance costs on those communities, NMFS must consult with those governments, or the Federal government must provide the funds necessary to pay the direct compliance costs incurred by the tribal governments. This action does not impose substantial direct compliance costs on the communities of Indian tribal governments. Accordingly, the requirements of section 3(b) of E.O. 13084 do not apply to this action.

Nonetheless, NMFS took several steps to inform affected tribal governments and solicit their input during development of this determination and addressed their input within announcement of the determination. One tribal government and CIMMC, an ANO representing several tribes within Cook Inlet, formally commented on the status review. NMFS discussed the status of the CI beluga whale stock with CIMMC and other tribally-authorized ANOs prior to and during the status review and plans to continue working with local tribally-authorized ANOs to develop and implement an effective program to control the harvest of CI beluga whales and promote recovery of the stock.

Dated: June 15, 2000.

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[FR Doc. 00–15666 Filed 6–21–00; 8:45 am]

BILLING CODE 3510–22–F