Environmental Assessment
on
Effects of Issuing Marine Mammal Scientific Research Permit No. 15750

{November 2011}

Lead Agency:	USDOC National Oceanic and Atmospheric Administration National Marine Fisheries Service, Office of Protected Resources
Responsible Official:	James H. Lecky, Director, Office of Protected Resources
For Further Information Contact:	Office of Protected Resources National Marine Fisheries Service 1315 East West Highway Silver Spring, MD 20910 (301) 713-2289
Location:	Coastal waters along the western shore of Cook Inlet, Alaska, between Bruin Bay and southern Chinitna Bay, excluding the area from Oil Bay to the eastern edge of Chinitna Bay, and including Iniskin, Illiamna, Chinitna and Kamishak Bays

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue Scientific Research Permit No. 15750, pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq*.), and the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.). The permit would be valid for five years from the date of issuance. The permit would authorize takes by harassment of endangered Steller sea lions, Cook Inlet beluga whales, humpback whales, and fin whales, as well as seven species of marine mammals not listed under the ESA.

CONTENTS

1.0	**Purpose of and Need for Action**	**3**
2.0	**Alternative Including the Proposed Action**	**5**
3.0	**Affected Environment**	**7**
4.0	**Environmental Consequences**	**10**
5.0	**Mitigation Measures**	**14**
6.0	**List of Preparers and Agencies Consulted**	**14**

1.0 PURPOSE OF AND NEED FOR ACTION

Proposed Action: NMFS proposes to issue a permit in response to an application (File No. 15750) from ABR, Inc., Environmental Research and Services, Fairbanks, Alaska, submitted pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq*.), and the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.). The permit would exempt the holder from statutory take prohibitions during conduct of research that is consistent with the purposes and policies of the MMPA and ESA and applicable permit issuance criteria.

The objective of the applicant's research is to document seasonal distribution and abundance of marine mammals in western lower Cook Inlet, Alaska through aerial surveys in Iniskin, Chinitna, and Kamishak Bays. The marine mammal species that are the focus of the proposed permit are:

- Harbor seal (*Phoca vitulina*), Gulf of Alaska Stock
- Harbor porpoise (*Phocoena phocoena*), Gulf of Alaska Stock
- Dall's porpoise (*Phocoenoides dalli*), Alaska Stock
- Minke whale (*Balaenoptera acutorostrata*), Alaska Stock
- Gray whale (*Eschrichtius robustus*), Eastern North Pacific Stock
- Killer whale (*Orcinus orca*), various resident and transient stocks in Alaska
- Northern fur seal (*Callorhinus ursinus*), Eastern Pacific Stock
- Endangered Cook Inlet Distinct Population Segment beluga whale (*Delphinapterus leucus*)
- Endangered humpback whale (*Megaptera novaeangliae*)
- Endangered fin whales (*Balaenoptera physalus*)
- Endangered Western Distinct Population Segment Steller sea lion (*Eumetopias jubatus*)

Purpose and Need: The primary purpose of the permit is to provide an exemption from the take prohibitions under the MMPA and ESA to allow "takes" by harassment (including level A and level B harassment as defined under the MMPA) of marine mammals, including endangered species, for bona fide scientific research. The need for issuance of the permit is related to NMFS's mandates under the MMPA and ESA. Specifically, NMFS has a responsibility to implement both the MMPA and the ESA to protect, conserve, and recover marine mammals and threatened and endangered species under its jurisdiction. The MMPA and ESA prohibit takes of marine mammals and threatened and endangered species, respectively, with only a few very specific exceptions, including for scientific research and enhancement purposes.

Scope of Environmental Assessment: This EA focuses primarily on effects on endangered humpback whales, fin whales, and the Cook Inlet Distinct Population Segment (DPS) of beluga whales.

In 2007, NMFS prepared a programmatic Environmental Impact Statement (EIS) for Research on Steller Sea Lions and Northern Fur Seals. The takes of northern fur seals and endangered Western DPS Steller sea lions proposed in the permit application are consistent with the preferred alternative evaluated in the PEIS. In the PEIS analysis, NMFS found that aerial surveys over water for these species of marine mammals may result in short-term minor disruptions in behavioral patterns and that these disruptions are not life-threatening or otherwise biologically significant to the individual, stock, population, or species. The PEIS analysis is

incorporated by reference and this EA does not re-evaluate effects on those species as there is no new information to suggest such an analysis is warranted.

The National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6; 1999) lists issuance of permits for research on marine mammals and threatened and endangered species as categories of actions that "do not individually or cumulatively have a significant effect on the human environment…" and which therefore do not require preparation of an environmental assessment (EA) or environmental impact statement (EIS). A possible exception to the use of these categorical exclusions is when the action may adversely affect species listed as threatened or endangered under the ESA (NAO 216-6 Section 5.05c).

The other marine mammal species and stocks that are the subject of the permit application are not listed under the ESA. There is no evidence from prior analyses[1] of the effects of permit issuance, or from monitoring reports submitted by permit holders[2], that issuance of research permits for take of marine mammals listed under the ESA results in adverse effects on stocks or species. Nevertheless, NMFS has prepared this EA, with a more detailed analysis of the potential for adverse impacts on endangered species resulting from takes of a specified number of individual beluga whales, humpback whales, and fin whales, to assist in documenting the decision about permit issuance under the MMPA and ESA.

The applicant has been conducting this research on the non-ESA listed species since February 13, 2009, under a Letter of Confirmation (LOC) for the MMPA's General Authorization for Scientific Research. Issuance of the LOC was found consistent with a class of categorical exclusion (CE) in NOAA's Administrative Order 216-6. An analysis of the applicability of the CE was documented in a memorandum for the record on February 13, 2009. That analysis concluded that issuance of the LOC for takes of the above listed marine mammal species and stocks would not result in significant adverse effects, individually or cumulatively, on the human environment, and that the action may appropriately be categorically excluded from the requirement to prepare either an environmental assessment or environmental impact statement in accordance with Section 6.03f.2(a) of NAO 216-6.

[1] Since 2005, NMFS has prepared over 100 EAs for issuance of permits under the MMPA and ESA. In every case, the EA supported a finding of no significant impact regardless of the nature of the permitted take or the status of the species that were the subject of the permit. These EAs were accompanied by Biological Opinions prepared pursuant to interagency consultation under section 7 of the ESA and further document that such permits are not likely to adversely affect listed species. A listing of recently completed EAs is provided in Attachment 1.

[2] All NMFS permits for research on marine mammals require submission of annual reports, which include information on responses of animals to the permitted takes.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternative 1 - No Action: Under the No Action alternative, no permit would be issued for the activities proposed by the applicant and takes of ESA-listed marine mammals by harassment from aerial surveys conducted by the applicant would not be exempt from statutory prohibitions and moratoriums.

The applicant has a Letter of Confirmation (LOC File No. 14227) under the MMPA General Authorization for Scientific Research that exempts harassment of the following species and stocks of marine mammals for these surveys:

Species	Stock	ESA-listed
Harbor seal	Gulf of Alaska Stock	no
Harbor porpoise	Gulf of Alaska Stock	no
Dall's porpoise	Alaska Stock	no
Minke whale	Alaska Stock	no
Gray whale	Eastern North Pacific Stock	no
Killer whale	various resident and transient stocks (excluding endangered stocks)	no

> Methods: Aerial surveys are conducted via helicopter. The helicopter flies along the shoreline, approximately 50 to 100 meters from shore, at an altitude of 100 meters and airspeed of 80-130 km/hour. Each monthly survey consists of two replicate transects, flown on consecutive days when possible. Researchers may also conduct surveys using a twin-engine airplane flying at an altitude of 100 to 150 meters and within the 100-m isobath between Chinitna Bay and Cape Douglas.
>
> To avoid flying over non-target marine mammals, the forward observer and pilot search ahead of the aircraft for marine mammals in the flight path and divert from the survey path or increase altitude, or both, consistent with safe operation of the aircraft, if non-target marine mammals are sighted.

The applicant may continue to conduct the surveys authorized in the LOC through its expiration on February 17, 2014. However, they do not have equivalent permission under the ESA for the four species of endangered marine mammal that are occasionally sighted along the survey route: Western Distinct Population Segment (DPS) Steller sea lions, Cook Inlet DPS beluga whales, humpback whales, and fin whales.

If the permit is not issued, researchers may continue to conduct the surveys but will need to exercise avoidance measures such as increasing survey altitude to at least 1000 feet when any ESA listed marine mammals are sighted. This would interfere with the applicant's ability to conduct a thorough assessment of the distribution and abundance of marine mammals in the survey area.

The applicant has a permit issued by the U.S. Fish and Wildlife Service for takes of sea otters, which are also a subject of the surveys, and a primary reason for the low altitude of the surveys.

Sea otters are much smaller and more difficult to detect at higher altitudes than the other marine mammal species. If the researchers increase their survey altitude to avoid harassment of ESA-listed marine mammals, it may adversely impact their ability to accurately survey sea otters.

Alternative 2 - Proposed Permit: Under the Proposed Action alternative, a permit would be issued for activities as proposed by the applicant, with the permit terms and conditions standard to such permits as issued by NMFS.

Target species and stocks: The research is directed at 11 species of marine mammals, including the six listed in the No Action alternative.

Species	Stock	ESA-listed
Harbor seal	Gulf of Alaska Stock	no
Harbor porpoise	Gulf of Alaska Stock	no
Dall's porpoise	Alaska Stock	no
Minke whale	Alaska Stock	no
Gray whale	Eastern North Pacific Stock	no
Killer whale	various resident and transient stocks (excluding endangered stocks)	no
Northern fur seal	Eastern Pacific Stock	no
Beluga whales	Cook Inlet DPS	endangered
Humpback whale	Western North Pacific and Central North Pacific Stocks	endangered
Fin whale	Alaska (Northeast Pacific) Stock	endangered
Steller sea lion	Western DPS	endangered

Duration and frequency: The permit would be valid for five years from the date of issuance, consistent with the limitation in NMFS regulations at 50 CFR 216. Aerial surveys by helicopter would be conducted approximately twice/month in Iniskin, Illiamna, and Chinitna bays during the spring and fall and once/month during May, June, December, and January. No surveys would be conducted 15 May-15 June, during peak pupping of harbor seals. Helicopter surveys would be conducted near high tide to minimize disturbance to hauled-out harbor seals and during mid-day (approximately 11:30 AM–3:00 PM). The conditions for optimal survey timing occur approximately 4–9 days every two weeks. Sixteen to 20 visits with two replicate surveys/visit are planned each year. Visits (1–2 replicate surveys/visit) typically occur over a 1–2 day period. Beginning in 2011, additional aerial surveys via fixed-wing aircraft in Kamishak Bay are planned once/month (~1 day/survey) without regard to tide level.

Methods: The research protocols are described in detail in the application on file for this action and are briefly summarized here. Surveys would be flown at 90–150 m altitude in helicopters (at 80–130 km/h) and fixed-wing aircraft (185–205 km/h). During the surveys, researchers fly over nearshore waters, following the shoreline about 250 m from shore (or within the 50-m isobaths), searching for marine mammals and birds. Observers in the survey craft count and map the locations of animals and, for larger groups, take photographs with a digital camera. To minimize disturbance of pinnipeds, researchers maintain a distance of at least 800 m from known pinniped haulouts to avoid disturbing resting marine mammals, avoid surveys during low tides (when

more pinnipeds are hauled out) and suspend survey efforts during the pupping period of harbor seals (~15 May to ~15 June).

3.0 AFFECTED ENVIRONMENT

Location

Research would occur along the western shore of Cook Inlet, Alaska, between Bruin Bay and southern Chinitna Bay, excluding the area from Oil Bay to the eastern edge of Chinitna Bay, and including Iniskin, Illiamna, Chinitna and Kamishak Bays. The action area extends from the shoreline to about 250 m from shore (or within the 50-m isobaths).

The permitted takes of marine mammals do not affect other components of the environment. Thus, the action area is effectively limited to the locations where the research occurs, or, more specifically, to where the marine mammals are at the time they are surveyed.

Status of Affected Species

Non-ESA listed marine mammals: The subject stocks of harbor seals, northern fur seals, harbor porpoise, Dall's porpoise, minke whale, gray whale, and killer whales are not listed as threatened or endangered under the ESA, or as depleted under the MMPA, or proposed for any such listings. The most current estimates of abundance, productivity, and human-caused mortality for these stocks are available in NMFS Stock Assessment reports, which are available at http://www.nmfs.noaa.gov/pr/sars/species.htm#.

Humpback whales: Humpback whales are listed under the ESA as a single species. However, for management purposes, NMFS recognizes three breeding populations in the North Pacific, also designated as "stocks" under the MMPA. The Western North Pacific (WNP) stock (one of three breeding populations in the North Pacific), consists of winter/spring populations off Asia that migrate primarily to Russia and the Bering Sea/Aleutian Islands. The Central North Pacific (CNP) stock consists of winter/spring populations off the Hawaiian Islands that migrate primarily to northern British Columbia/Southeast Alaska, the Gulf of Alaska, and the Bering Sea/Aleutian Islands. The Eastern North Pacific (ENP) stock consists of winter/spring populations in coastal Central America and coastal Mexico that migrate to the coast of California to southern British Columbia in summer/fall.

NMFS recognizes two other stocks of humpback whales: the American Samoa stock in the South Pacific and the Gulf of Maine stock in the Atlantic. Whales from these two stocks would not be affected by the research, which does not occur within the ranges of these populations. Based on the latitudes at which the research would occur, the action would mostly affect whales from the WNP and CNP breeding populations or stocks, although whales from the ENP may also be encountered.

Humpback whales in the high latitudes of the North Pacific are seasonal migrants that feed on euphausiids and small schooling fishes. The summer feeding range of humpback whales in the North Pacific encompasses coastal and inland waters around the Pacific Rim from Point Conception, California, north to the Gulf of Alaska and the Bering Sea, and west along the

Aleutian Islands to the Kamchatka Peninsula and into the Sea of Okhotsk and north of the Bering Strait.

Given the relatively small size of the WNP stock, WNP whales probably represent a small fraction of all the whales found in the Aleutian Islands, Bering Sea, and Gulf of Alaska, which are primarily whales from Hawaii (CNP stock) and the Revillagigedos (ENP stock). Humpback whales from the Western and Central North Pacific stocks mix to a limited extent on summer feeding grounds ranging from British Columbia through the central Gulf of Alaska and up to the Bering Sea.

The abundance estimate for humpback whales in the North Pacific is approximately 20,000 whales. The minimum abundance estimates for the North Pacific stocks are: 732 for WNP, 1250 for ENP, and 5883 for CNP.

Fin Whales: Fin whales are listed under the ESA as a single species and are found throughout all oceans and seas of the world, from tropical to polar latitudes. However, for management purposes, NMFS recognizes four populations of fin whales in U.S. waters, which are also designated as "stocks" under the MMPA. These stocks are (1) Western North Atlantic, (2) Alaska (Northeast Pacific), (3) Hawaii, and (4) California/Washington/Oregon.

Whales from the Western North Atlantic stock are not found in the action area. The minimum population estimate for the western North Atlantic fin whale is 1,678. Within the U.S. waters in the Pacific, fin whales are found seasonally off the coast of North America and in the Bering Sea during the summer. It is assumed whales from the California/Washington/Oregon stock and Hawaii stock do not travel to the action area. There are no reliable estimates of current or historical abundance for the entire Northeast Pacific fin whale stock. The minimum population estimates for the three Pacific stocks are: 5,700 for the Northeast Pacific; 2,316 for California/Washington/Oregon; and 101 for Hawaii.

Cook Inlet Beluga Whales: The Cook Inlet Distinct Population Segment of beluga whales is listed as endangered. Beluga whales generally occur in shallow, coastal waters, and some populations make long seasonal migrations. Although the exact winter distribution of the Cook Inlet DPS is unknown, there is evidence that some, if not all, of this population inhabit Cook Inlet year-round. During spring and summer months, beluga whales in Cook Inlet are typically concentrated near river mouths in the northern Inlet. The current abundance estimate for this population is 375 animals, with an average rate of decline of 1.45% (SE = 0.014) per year.

The known and possible natural factors influencing the population status of Cook Inlet beluga whales include predation, parasitism and disease, and environmental change, and well as human-induced factors such as subsistence harvest, poaching, fishing, pollution, vessel traffic, tourism and whale watching, coastal development, noise, oil and gas activities, and scientific research. The documented decline of the Cook Inlet beluga whale population during the mid-1990s could be explained by subsistence harvest removals at a level that this small population could not sustain. Cooperative efforts between NMFS and subsistence users have dramatically reduced subsistence harvests, which should have allowed the Cook Inlet beluga population to recover had subsistence harvests been the only factor limiting the population. More recent abundance data

indicate that the population is not increasing as expected. The specific factor or combination of factors that continue to limit this population's growth are unknown.

Because of its very restricted range, the Cook Inlet beluga whale population can be assumed to be vulnerable to human-induced or natural perturbations within their habitat. Although the best available information indicated that human activities, including oil and gas development, had not caused the stock to be in danger of extinction as of 2000 (65 FR 38778; 22 June 2000), potential effects of human activities on recovery remain a concern (73 FR 62919, 22 October 2008).

Additional factors with the potential to impact this stock or its habitat include changes in prey availability due to climate changes; competition with fisheries for available prey; contaminants and sounds associated with oil and gas exploration; vessel traffic; waste management and urban runoff; and physical habitat modifications that may occur as upper Cook Inlet becomes increasingly urbanized. Projects planned that may alter the physical habitat include a highway bridge across Knik Arm, ferry operations in lower Knik Arm, construction and operation of a coal mine near Chuitna, and improvements to the Port of Anchorage.

Critical habitat has been designated for Cook Inlet DPS beluga whales and comprises 3,016 square miles (7,809 square kilometers) of marine and estuarine environments considered essential for the whales' survival. These areas include important biological and physical features such as feeding areas near the mouths of salmon streams. Activities that may affect this critical habitat include coastal development; pollutant discharge; navigational projects (dredging); bridge construction; marine tidal generation projects; marine geophysical research; oil and gas exploration, development, and production; Department of Defense activities; and hydroelectric development.

Non-target species

In addition to the marine mammal species that are the target of the proposed permit, the action area is home to sea otters, a variety of sea birds, and numerous fish species. The harassment of sea otters is covered by a permit issued to the applicant by the U.S. Fish and Wildlife Service. The harassment of marine mammals that may result from the proposed permit would not affect sea birds, fish, or other non-target animals. Thus, effects on species that are not the subject of the permit will not be considered further.

Biodiversity and Ecosystem Function

The proposed action does not interfere with benthic productivity, predator-prey interactions or other biodiversity or ecosystem functions. Marine mammals will not be removed from the ecosystem or displaced from habitat, nor will the permitted research affect their diet or foraging patterns. Further, the proposed action does not involve activities known or likely to result in the introduction or spread of nonindigenous species, such as ballast water exchange or movement of vessels among water bodies. Thus, effects on biodiversity and ecosystem function will not be considered further.

Ocean and Coastal Habitats
The proposed action does not affect habitat. It does not involve alteration of substrate, movement of water or air masses, or other interactions with physical features of ocean and coastal habitat. Thus, effects on habitat will not be considered further.

Unique Areas
There are no historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas within the action area, which is limited to coastal and open waters in which no such areas occur. An exception is essential fish habitat (EFH) designated in pelagic waters for several species of groundfish and bottom substrates for several invertebrates. The proposed action does not alter or affect unique areas, including any components of EFH. There is no designated critical habitat for humpback or fin whales in the action area. There is designated critical habitat for beluga whales in the action area. However, the proposed permit is not for any of the types of activities known or believed to adversely affect any elements of this habitat. Thus, effects on such unique areas will not be considered further.

Historic Places, Scientific, Cultural, and Historical Resources
There are no districts, sites, highways or structures listed in or eligible for listing in the National Register of Historic Places in the action area. The proposed action represents non-consumptive use of marine mammals and does not preclude their availability for other scientific, cultural, or historic uses, including subsistence harvest by Alaskan Natives. Thus, effects on such resources will not be considered further.

Social and Economic Resources
The proposed action does not affect distribution of environmental burdens, access to natural or depletable resources or other social or economic concerns. It does not affect traffic and transportation patterns, risk of exposure to hazardous materials or wastes, risk of contracting disease, risk of damages from natural disasters, food safety, or other aspects of public health and safety. Thus, effects on such resources will not be considered further.

4.0 ENVIRONMENTAL CONSEQUENCES

Effects of the No Action Alternative
The effects of the No Action Alternative, in which NMFS does not issue the permit, are the same as the effects of issuing the LOC in 2009. The LOC includes takes of pinnipeds, toothed and baleen whales by the same methods proposed for the permit, in the same locations, at the same times of year, and same frequency.

While there may be adverse effects on individual marine mammals exposed to the survey aircraft, the research is not likely to result in adverse effects on the stocks or populations. The number of marine mammals affected represents a small portion of the individual stocks and populations and the effects are expected to be minor and short-term.

The mitigation measures incorporated into the methods are intended to minimize the potential for adverse impacts and mitigate the extent of any unavoidable adverse impacts. Researchers are required to submit annual reports in which they must provide an accounting of the numbers of

marine mammals encountered and observed effects of the research. NMFS can revoke, suspend or modify the LOC if there is reason to believe the research is having or has the potential to have an adverse effect on a stock or species.

For issuance of the LOC, NMFS determined that the take of marine mammals results in transitory and recoverable adverse effects on individual marine mammals targeted by the research. Those effects on individual animals, because they are temporary and not biologically significant, do not result in adverse effects on marine mammal stocks, populations, or species. Further, authorizing such take of marine mammals does not adversely affect other aspects of the human environment, including land, air, or water resources.

Effects of the Proposed Action Alternative

The nature of the effects of the Proposed Action Alternative, in which NMFS would issue a permit to allow the applicant to take five species of marine mammal in addition to those covered by the LOC described in the No Action Alternative, including four species listed as endangered under the ESA, are effectively the same as the effects of the No Action alternative. This is primarily because the effects of permitted harassment by aerial survey on marine mammals and the environment in general are the same regardless of the status of the species under the ESA. While the proposed permit would be valid for longer than the existing LOC, the effects of the action are so minimal and transitory that there would be no measurable difference in impacts.

The effects of harassment on individual marine mammals are dependent on the responses of the animals to exposure to the survey activity and are constrained by the species' behavioral repertoires and physiology. Physiology and basic behavioral responses are not influenced by a species' listing status under the MMPA. A beluga whale that is part of the Cook Inlet DPS is not likely to respond differently to harassment than a beluga whale from another stock simply because it belongs to a collective designated by a federal agency as "endangered" under a federal statute.

In general, there is the potential for an ESA-listed species to be affected differentially by a human activity compared to an analogous non-ESA listed species, if, for example, the effects on the individual resulted in decreased fitness, reproductive success, or survival, <u>and</u> the number of individuals thusly affected relative to the size of the species was sufficiently large to cause a reduction in the overall reproductive capacity of the species that in turn affects the predicted probability of extinction or recovery.

However, for this action, there is no information to suggest that harassment from aerial surveys under the proposed permit would affect individual animals of any species in this way, regardless of their ESA-listing status. At most, the harassment would result in temporary changes in behaviors that are not life-threatening and that are entirely recoverable within the intervals proposed for the surveys.

The effects of the research are related to the responses of the marine mammals and the impacts such responses have on survival and reproduction. The most obvious or easily observed responses are behavioral, although there can be physiological responses as well. Physiological

responses, such as increased heart rate or elevated levels of stress hormones, are not visible and are not detectable without causing further impacts on the animal.

In general, the behavioral responses of marine mammals to close approaches by researchers have ranged from no detectable change in behavior to behaviors characteristic of avoidance or escape, such as sudden changes in swim speed or direction, or increased dive duration. Marine mammals that attempt to avoid or escape the researchers will temporarily cease behaviors such as feeding, resting, or mating.

The consequence of stopping these behaviors is a function of how long it lasts and whether the marine mammal is able to recover from the lapse. For example, if a whale ceases to feed for an hour as a result of being disturbed by the survey aircraft, it will not suffer a long-term adverse consequence unless the loss of that feeding time adversely impacts its energy needs <u>and</u> it is unable to make up for the lost feeding time. Similarly, if a whale ceases to engage in mating behavior for a day as a result of being disturbed by the research, this does not represent a lost reproductive opportunity for that season unless the whale fails to successfully mate prior or subsequent to the disturbance.

Although the research may take place "year-round" this does not mean it will occur every day, or that the same whales will be encountered more than once in a season or year, or even be encountered more than once over the life of the permit. The research area is relatively small geographically, but also small relative to the range of humpback and fin whales, which are migratory between their feeding and breeding grounds, and also move around within seasons. Cook Inlet DPS beluga whales have a smaller geographic range which overlaps extensively with the action area.

To the extent that whales exposed to the research have been previously exposed to aircraft, individual animals may be acclimated to approaches or they may be sensitized to it. It is also possible some animals are naïve to approach of the sort used for this research, but likely all have encountered aircraft of some kind. It is not possible to predict which type of animals is likely to be exposed to the research: naïve, sensitive, or acclimated.

Conservatively, we could assume all animals are sensitized, or naïve to approaches and predict that their responses would be "extreme" in that the animals would exhibit the maximum flight or fight response within their behavioral repertoire. That response is likely to be analogous to their response to a predator, which for most whales is to initiate an immediate dive and travel underwater the maximum distance away before needing to surface to breathe.

Females with young calves are a probable exception, and are likely to remain at or near the surface and in close proximity to their calf, which cannot swim as quickly, dive as deeply or breathe-hold as long as an adult. However, the research does not target calves or females with calves, and researchers would not attempt to approach such animals.

The research protocols and the permit would limit the number of times a whale is closely approached, both in absolute numbers of approaches and based on assessment of risk associated

with the type of response. A whale that took the extreme response of diving and swimming as far away from the research activity as possible would not likely be approached again that day.

In no case is a marine mammal expected to die or be seriously or permanently injured as a result of their response to the research.

While there may be minor short-term adverse effects on individual marine mammals, the research is not likely to result in adverse effects on the stocks, populations, or species. The effects on individuals are expected to be transitory and recoverable. No biologically significant impacts are likely for stocks or species.

Further, the mitigation measures in the permit are intended to minimize the potential for adverse impacts and mitigate the extent of any unavoidable adverse impacts. Researchers would be required to submit annual reports in which they must provide an accounting of the numbers of marine mammals encountered and observed effects of the research. NMFS can revoke, suspend or modify the permit if there is reason to believe the research is having or has the potential to have an adverse effect on a stock or species.

There is no evidence from monitoring reports for other permits covering these types of research activities that the effects of permit issuance and associated takes of marine mammals have deviated from what has been predicted and considered.

Cumulative Impacts

The stocks and populations of whales that are the subject of the permit are exposed to a variety of human activities including harvest of beluga whales in Alaska, entanglement in fishing gear, and harassment from oil and gas development.

The levels of harvest are managed under various federal and international laws and treaties and are not believed to have had an adverse impact on the status of the species. Entanglement is not believed to be a significant source of mortality for any of these species. The harassment from oil and gas development is authorized pursuant to Section 101(a)(5) of the MMPA and has been found to have a negligible impact on the stocks.

The frequency and duration of the surveys under the proposed permit would allow adequate time for animals to recover from adverse effects such that additive or cumulative effects of the research on its own are not expected.

These stocks and populations of whales are the subject of other research permits issued by NMFS, each of which was subject to analysis under NEPA and found to have no significant adverse impacts. The combined effects of the total amount of permits relative to the status of the populations were considered. Further, the take numbers in the proposed permit are conservative estimates of the potential maximum numbers of animals that may be present during a survey and they assume that 100% of animals taken are affected, which may not be the case.

Researchers working under NMFS permits are required to notify the appropriate NMFS Regional Office in advance of field work. The Alaska Regional Office is tasked with coordinating activities under multiple permits for Alaska to ensure there is not unnecessary duplication.

No measurable effects on population demographics are anticipated because any sub-lethal (disturbance) effects are likely to be short-term, with the animals recovering within hours to days and the proposed action is not expected to result in mortality of any endangered whales.

5.0 Mitigation Measures

There are no additional mitigation measures beyond those that are part of the applicant's protocols or standard conditions that would be required by permit.

Given that the research is directed at the whales, mitigation measures that avoid or reduce their exposure to the research in general are not appropriate. It is necessary for researchers to closely approach the whales to collect tissue samples and attach instruments. However, researchers only approach as closely as necessary to achieve these ends. The MMPA requires the research methods to be humane, resulting in the least possible degree of pain and suffering practicable to the animal involved. The permit mitigation measures are consistent with best practices for humane research on wildlife.

Review of monitoring reports of previous permits for the same or similar research protocols indicate that these types of mitigation measures are effective at minimizing stress, pain, injury, and mortality.

6.0 List of Preparers and Agencies Consulted

Prepared by: Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, Silver Spring, MD

No other persons or agencies were consulted in the preparation of this document.