MARINE MAMMAL COMMISSION

3 December 2013

Mr. Michael S. Rolland
Chief, Leasing Section
Bureau of Ocean Energy Management
3801 Centerpoint Drive, Suite 500
Anchorage, AK 99503-5823

Dear Mr. Rolland:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Bureau of Ocean Energy Management's (BOEM) Call for Information notices regarding the Chukchi Sea Lease Sale 237, scheduled to be held in 2016 (78 Fed. Reg. 59715, 78 Fed. Reg. 60892, and 78 Fed. Reg. 68471). The Commission provides the following recommendations and rationale regarding the environmentally sensitive areas in the Chukchi Sea that BOEM should evaluate and consider eliminating from the lease sale.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the Bureau of Ocean Energy Management—

- continue to restrict exploration activities to the open-water season (1 July to 31 October), and, should production activities be approved outside of the open-water season, impose additional spatial/temporal restrictions as appropriate to avoid disturbance of ice-dependent marine mammals;
- continue to exclude the specified coastal buffer zone to minimize interactions with marine mammal coastal haul-outs and feeding areas and reduce interference with subsistence activities;
- expand the coastal buffer zone off Kasegaluk Lagoon and Point Hope from 46 km to at least 64 km (i.e., from 25 nmi to at least 35 nmi);
- prohibit future lease sales from occurring on Hanna Shoal (defined by the 40-m isobath);
- prohibit the sale or development of oil and gas leases within a buffer zone established beyond the 40-m isobath;
- consult with scientists that have appropriate expertise and knowledge regarding the physical and biological processes of the Hanna Shoal area to support decision-making on the size of the buffer zone that should extend beyond the 40-m isobath; in lieu of that process, BOEM should establish a buffer zone of at least 93 km (50 nmi) from the boundaries of the shoal;
- expand the coastal buffer zone off Barrow to include Barrow Canyon and the waters north and west from there to Hanna Shoal;
- prohibit future lease sales in waters north of 72° N; and
- continue to support and expand research on (1) site-specific and cumulative effects of oil and gas development on marine mammals and on access to marine mammals by Alaskan Native hunters and (2) improved technologies and capabilities to prevent and minimize harm

from oil spills and from routine oil and gas-support activities such as increased ship traffic and associated collision and pollution exposure risk.

BACKGROUND

The Chukchi Sea is an area of significant biological productivity with an abundance of marine mammals and other marine life. As such, it provides important subsistence and cultural resources for Native communities of western and northern Alaska. Expansion of oil and gas activities in the Chukchi Sea and the potential effects of that expansion therefore are of particular concern. To inform decision making regarding the development of oil and gas resources in Alaska offshore waters, BOEM, the National Oceanic and Atmospheric Administration, Fish and Wildlife Service (FWS), U.S. Geological Survey, state of Alaska, North Slope Borough, oil and gas industry, and others recently have made significant investments in research to better characterize the physical and biological processes of the Chukchi Sea and to monitor the changes occurring as seasonal sea ice declines and ocean temperatures increase. Nevertheless, considerable uncertainties remain regarding how best to manage potential short-term, long-term, and cumulative impacts of oil and gas development on marine mammals and Alaska coastal communities (Holland-Bartels and Pierce 2011, Clement et al. 2013).

In light of the uncertainties, and in recognition of the importance of the Chukchi Sea ecosystem, the Commission supports BOEM's approach of conducting lease sales there that are geographically targeted in scope, as opposed to the area-wide leasing approach that has been followed in the Gulf of Mexico. It is important to identify and evaluate environmentally sensitive areas where oil and gas development has the potential to affect both marine mammals and the Alaska Native communities that depend on them for subsistence, and to exclude such areas from the lease sales.

RATIONALE

The Commission has reviewed the results of research in the Chukchi Sea conducted by academic, government, and industry scientists, and considered the efforts taken to reduce the impacts of previously approved oil and gas activities in the Chukchi Sea to develop the following recommendations.

Seasonal restrictions on oil and gas activities

In light of the temporal restrictions on exploration activities (seismic and drilling) in the Chukchi Sea currently imposed by FWS, the National Marine Fisheries Service (NMFS), and BOEM, the Commission's review considers primarily the movements, distribution, and behavior of marine mammals and associated subsistence activities that are expected to occur during the open-water season (1 July to 31 October). FWS has restricted exploration activities in the Chukchi Sea prior to 1 July "to allow walruses the opportunity to disperse from the confines of the spring lead system and minimize interactions with subsistence walrus hunters" (78 Fed. Reg. 35423). Similarly, NMFS has restricted the entry of operational and support vessels into the Chukchi Sea prior to 1 July, which is considered the end of the period of spring bowhead whale migration (77 Fed. Reg. 27354). NMFS also is proposing to require, as an additional mitigation measure for all exploration activities, "no transit of exploration vessels into the Chukchi Sea prior to July 15 or until the beluga

hunt is completed at Point Lay" (NMFS 2013). During the 2012 season, BOEM prohibited drilling into any hydrocarbon zones in the Chukchi Sea within 38 days of the expected date of first ice encroachment over the drill site (which for 2012 was 24 September); all other support activities had to be completed by 31 October (BOEM 2011). Given the basis of recent restrictions on exploration activities to reduce interactions with migrating marine mammals, subsistence hunters, or encroaching sea ice, the Commission does not anticipate approval would be given for a significant level of oil and gas exploration activities to occur from November through June. However, it is unclear whether future oil and gas production activities would be similarly restricted. In light of previous federal decisions on seasonal oil and gas activities in the Chukchi Sea, the Commission recommends that BOEM continue to restrict exploration activities to the open-water season (1 July to 31 October), and, should production activities be approved outside of the open-water season, impose additional spatial/temporal restrictions as appropriate to avoid disturbance of ice-dependent marine mammals.

Continued exclusion and expansion of coastal buffer zone

BOEM has excluded from the Chukchi Sea planning area a coastal buffer zone that extends 46 km (25 nmi) off the northwest coast of Alaska and 93 km (50 nmi) off Point Barrow. BOEM intends that this buffer zone would eliminate potential environmental impacts on coastal resources from water and gaseous discharges, bottom disturbances, and anthropogenic sound (BOEM 2012a). The buffer zone also would minimize disturbance of marine mammals and other fauna found close to shore and reduce interference with subsistence activities (BOEM 2012a). With respect to marine mammals, the buffer zone includes haul-outs and nearshore feeding areas of bearded seals, ringed seals, spotted seals, and walruses (Smith 2010, 2011) and much of the barrier island critical habitat of polar bears (75 Fed. Reg. 76086). The 93-km (50-nmi) buffer zone north and west of Point Barrow has particular significance to Alaska Native communities for subsistence hunting of bowhead whales, bearded and ringed seals, and walruses (Braund and Associates 2010). The nearshore waters are also used by beluga whales in the early summer and gray whales and walruses in the summer and fall for transit and feeding (Smith 2010, 2011). The Commission therefore recommends that BOEM continue to exclude the specified coastal buffer zone to minimize interactions with marine mammal coastal haul-outs and feeding areas and reduce interference with subsistence activities.

The coastal buffer zone includes a 46-km (25-nmi) area west of Kasegaluk Lagoon and Point Hope, but the Commission is concerned that this may be insufficient. Kasegaluk Lagoon is used by belugas in the early summer and by spotted seals throughout the summer and fall. Large groups of belugas come into the lagoon area in June and July and consequently are an important subsistence and cultural resource for Point Lay and other Alaska Native communities (Suydam et al. 2005; Huntington et al. 1999). During that time, the whales feed at Omalik Lagoon, south of Kasegaluk Lagoon, and also in adjacent offshore waters (Frost et al. 1993, Huntington et al. 1999). Spotted seals are found in large concentrations on haul-outs throughout the lagoon in late summer, especially at Utukok Pass, Akoliakatat Pass, and Avak Inlet, and they feed offshore at mean distances greater than 47 km (Lowry et al. 1998). In aerial surveys conducted from 2008 to 2010, gray whales were seen consistently in coastal waters off Point Hope throughout the open-water season from the eastern to the western border of the planning area (Clarke et al. 2011). The number of observations of gray whale calves in nearshore waters has recently increased, although the locations of such observations were not specified (Clarke et al. 2011).

FWS, in its regulations authorizing the taking of marine mammals incidental to oil and gas exploration activities in the Chukchi Sea, has specified that no offshore exploration activities shall be conducted within a 64-km (35-nmi) radius of the communities of Barrow, Wainwright, Point Lay, or Point Hope (78 Fed. Reg. 35423). That requirement is intended to minimize interactions with subsistence hunters during the open-water season. The buffer zone specified by BOEM would not provide adequate protections for subsistence communities adjacent to the planning area. Consistent with FWS regulations and to provide additional protection for marine mammals that feed in or migrate through those areas, the Commission recommends that BOEM expand the coastal buffer zone off Kasegaluk Lagoon and Point Hope from 46 km to at least 64 km (i.e., from 25 nmi to at least 35 nmi).

Exclusion of Hanna Shoal and adjacent shelf area

Hanna Shoal is a shallow area of the Chukchi Sea outer continental shelf approximately 125 km off the northwestern coast of Alaska. Hanna Shoal and surrounding areas are subject to a seasonal high-volume influx of water from the south, known as the Central Channel (Weingartner et al. 2005, 2013), which provides significant quantities of nutrients and particulates (Dunton 2012). The chlorophyll and nutrients that the Central Channel provides to benthic sediments result in high levels of benthic productivity over the entire region (Dunton 2012). In a sea characterized by significant spring and summer biological productivity and a rich benthic invertebrate fauna (Dunton 2012, Day et al. 2013), Hanna Shoal represents an important area that supports a significant diversity of marine mammals and other fauna (Smith 2010, Codispoti et al. 2013). The persistence of sea ice over Hanna Shoal into late summer, when other parts of the Chukchi Sea are typically ice-free, contributes to its importance as a feeding and haul-out area for benthic feeders such as walruses and bearded seals (Jay et al. 2012; Smith 2010 and 2011). Other species typically found on or migrating across Hanna Shoal and adjacent continental shelf areas north of the shoal during the open-water season include ringed and ribbon seals, polar bears, and beluga, bowhead, and gray whales (Smith 2010 and 2011).

Recent tagging data show that a significant portion of the Pacific walrus population in the eastern Chukchi Sea uses Hanna Shoal and the Chukchi lead system for feeding and resting when sea ice is present, generally through August and to a lesser degree into September (Jay et al. 2012). Females, calves, and sub-adult walruses form large herds that haul out to rest on sea ice when it is available above shallow-water—typically less than 80 m—feeding areas (Fay and Burns 1988). Therefore, walrus distribution within the Chukchi Sea in any given year is highly dependent on the location and presence of sea ice and its persistence over shallow feeding areas such as Hanna Shoal (Garlich-Miller et al. 2011).

In recent years, declines in sea ice over Hanna Shoal during the late summer have been associated with the development of large walrus haul-outs on the barrier islands near Point Lay (Huntington et al. 2012, Jay et al. 2012). Benthic productivity in adjacent nearshore waters off Point Lay is more variable and suboptimal for feeding compared to offshore areas of the Chukchi Sea near Hanna Shoal (Dunston 2012). In 2011 some tagged walruses traveled back and forth between coastal haul-outs and the Hanna Shoal area (Jay et al. 2012), presumably to exploit the denser concentrations of preferred benthic prey associated with the shoal. Movement back and forth between coastal haul-outs and offshore feeding areas increases the energy costs associated with feeding and also can expose walruses to vessel traffic and aircraft operations associated with oil and

gas activities and other human activities in nearshore and offshore areas. The recent coastal haul-outs present an onshore risk as well. Disturbances can cause walruses to stampede, crushing calves and yearlings, potentially leading to population-level consequences (Udevitz et al. 2013). Fortunately nearby communities have implemented measures to avoid disturbing hauled-out walruses when they are present (Huntington et al. 2012). If seasonal sea ice continues to decline in the Chukchi Sea, walruses could continue to use the coastal haul-outs near Point Lay, with its associated risks. Alternatively, continued sea-ice declines could cause a long-term shift of the population to other sea-ice associated feeding areas to the northeast, in the Canadian Arctic, or to the northwest, in the Siberian-Laptev Seas (MacCracken 2012). How walruses will respond to continued declines in seasonal sea ice in the Chukchi Sea over the long-term, and resulting effects on the population, will be difficult to predict. However, for the short-term, management actions in the Chukchi Sea planning area that reduce impacts on preferred benthic feeding areas and decrease disturbance at coastal haul-out areas will be key (McCracken 2012).

The Chukchi Sea also provides important summer sea-ice habitat for threatened bearded and ringed seals (77 Fed. Reg. 76706, 77 Fed. Reg. 76740). Both species tend to concentrate over Hanna Shoal and adjacent areas in the summer months (July to September, Smith 2010), although bearded seals appear to be less dependent on sea ice for hauling out than walruses and ringed seals (Cameron et al. 2010). Bearded seals can dive deeper than walruses but prefer to feed in relatively shallow water (less than 200 m) on benthic invertebrates and demersal fish (Lowry et al. 1980, Cameron et al. 2010, Quakenbush 2011). Ringed seals use more varied feeding habitat, with a diet of ice-associated pelagic and demersal fish and crustaceans (Kelly et al. 2010). Both bearded and ringed seals range farther north (and east) in the U.S. Chukchi Sea during the open-water season than walruses (Cameron et al 2010, Smith 2010).

Both FWS and NMFS have identified Hanna Shoal as an area of biological significance for several marine mammal species. FWS has identified the Hanna Shoal Walrus Use Area as an area of high use for Pacific walruses, and has issued regulations that may restrict oil and gas exploration and vessel activities in the area from July through September (78 FR 35364). NMFS has identified Hanna Shoal as an important feeding area for walruses and bearded seals and restrictions on oil and gas exploration activities in this area from 1 July through 30 August are among the alternatives being considered for the issuance of incidental take authorizations (NMFS 2013). However, FWS and NMFS define the boundaries of Hanna Shoal slightly differently, as a consequence of the distribution of the species for which each has management responsibility (see Figure 3, 78 Fed. Reg 35424 for FWS boundaries and Figure 3.2-26, NMFS 2013 for NMFS boundaries). Smith (2011) defines Hanna Shoal as having a maximum depth of 40 m and the Commission concurs with the use of the 40-m isobath as the boundary that encompasses the unique resources of Hanna Shoal as documented by research.

The importance of Hanna Shoal and its surrounding areas as a biological "hot spot" dictates a conservative approach to oil and gas development in this portion of the U.S. Arctic. As such, the Commission recommends that BOEM prohibit future lease sales from occurring on Hanna Shoal (defined by the 40-m isobath). The Commission further recommends that BOEM prohibit the sale or development of oil and gas leases within a buffer zone established beyond the 40-m isobath. The Commission believes, based on information currently available, that a buffer zone of at least 93 km (50 nmi) is necessary to protect the rich biodiversity of the Hanna Shoal area. However, BOEM would benefit from an open and deliberative process that considers all available information to

determine an appropriately-sized buffer zone for the Hanna Shoal area that would provide sufficient protection for marine mammals and other shoal-associated fauna. Therefore, the Commission recommends that BOEM consult with scientists that have appropriate expertise and knowledge regarding the physical and biological processes of the Hanna Shoal area to support decision-making on the size of the buffer zone that should extend beyond the 40-m isobath; in lieu of that process, BOEM should establish a buffer zone of at least 93 km (50 nmi) from the boundaries of the shoal.

Exclusion of Barrow Canyon

Barrow Canyon is an area used frequently and intensively during the open-water season by marine mammals, including bowhead, beluga, and gray whales, polar bears, bearded seals, and walruses (Quakenbush et al. 2010a, Clarke et al. 2011, Smith 2010 and 2011). Alaska Natives hunt in this area in the spring, early summer, and fall (Braund and Associates 2010). Seismic surveys for oil and gas conducted in this area have indicated that the petroleum potential is low compared to that of offshore areas south of Hanna Shoal (BOEM 2012b). To reduce interference with marine mammals, minimize interactions with subsistence hunters, and ensure consistent protection of biological resources across the central Chukchi Sea, the Commission recommends that BOEM expand the coastal buffer zone off Barrow to include Barrow Canyon and the waters north and west from there to Hanna Shoal.

Exclusion of continental shelf and slope areas north of Hanna Shoal

The Chukchi Sea planning area extends north to 75° N latitude, including a relatively narrow strip of continental shelf north of Hanna Shoal, the steep continental slope, and Arctic Basin waters up to 4,000 m in depth. Although recent survey data are limited to areas south of 72° N latitude (Clarke et al. 2011), past surveys combined with more recent tagging and acoustic studies indicate that the continental shelf area extending to at least 73° N latitude is used by bearded seals, ringed seals, walruses, polar bears, and beluga and bowhead whales (Smith 2010 and 2011). Those species are all important components of the Chukchi Sea ecosystem and important subsistence and cultural resources for Alaska Natives.

Less is known regarding the seasonal presence and distribution of marine mammals north of 73° N latitude, but the continental slope and Arctic Basin areas are likely inhabited by bowhead whales, belugas, polar bears, and bearded, ribbon, and ringed seals (Smith 2010 and 2011, Moore et al. 2012a). Due to their distance from shore, these areas are not important for subsistence use. However, the paucity of information on marine mammal use and movements to and from these areas warrants a precautionary approach to oil and gas leasing.

In addition, little information exists regarding oil and gas reserves north of Hanna Shoal. Few seismic surveys have been conducted there (NMFS 2013), and the information that is available indicates low petroleum potential compared to offshore areas south of Hanna Shoal (BOEM 2012b). Higher-latitude shelf, slope, and basin waters have a higher probability of persistent sea ice throughout the open-water season, even in years of minimal ice cover (Smith 2010 and 2011), which would make exploration activities all the more challenging and potentially dangerous (if even feasible). For these reasons, the Commission recommends that BOEM prohibit future lease sales in waters north of 72° N latitude.

Management of oil and gas activities south of Hanna Shoal

Lease sale 193 resulted in 460 active oil and gas leases spanning more than 2.6 million acres (10,522 km^2) of the Chukchi Sea. Lease sale 237 has the potential to increase the area of active leases significantly in the Chukchi Sea. The Commission has recommended previously that BOEM adopt a slow, phased approach to development of oil and gas reserves to (1) allow BOEM, industry, and other responsible parties to demonstrate the ability to conduct oil and gas operations safely in this region; (2) develop, test, and demonstrate the means, both in technological capacity and human readiness, to respond to oil spills in icy or ice-covered waters; and (3) collect needed baseline information on the marine wildlife and habitats that are risk from such operations (see the Commission's 6 December 2010 letter).

Assuming lease sale 237 will be limited to areas south of Hanna Shoal and west of the coastal buffer zone, as recommended herein by the Commission, considerable risk of harm to marine mammals from oil and gas development is still possible. The greatest risk of acute harm to marine mammals comes from exposure to oil from a spill or other large discharge event (defined generally as greater than or equal to 1,000 barrels). The nature and severity of injury to marine mammals depends on a variety of factors, including the chemical composition of the oil (or other toxin), the amount and duration of exposure, the exposure pathway (e.g., inhalation, ingestion), and the physical characteristics of the animals exposed (i.e., whether they have fur, baleen, etc.). Research on the effects of oil on marine mammals is limited but provides ample evidence that exposure can cause significant harm (MMC 2011). Large-scale ocean circulation patterns in the central portion of the northeastern Chukchi Sea are such that any discharge in that area would likely be transported north to sensitive habitat on and around Hanna Shoal (Weingartner et al. 2005). Water properties and local circulation patterns change throughout the open-water season and between years depending on factors such as sea-ice cover and ocean temperature (Weingartner et al. 2013). Therefore, oil spill risk analyses need to account for such variability to ensure that response preparation and implementation will be most effective (Samuels et al. 2011).

Routine oil and gas activities—which generate sound from seismic surveys, drilling, and support activities, and discharge drilling muds, cuttings, and contaminated water into the marine environment—also can have a harmful effect on marine mammals (Richardson et al. 1995, Clark and Gagnon 2006, Robertson et al. 2013, Blanchard et al. 2014). The severity of effects associated with sound-producing activities is highly variable and context-specific (e.g., responses may depend on the activity in which the animal is engaged, such as feeding or migrating, the presence of other animals in the vicinity, ocean conditions, water depth, etc.; Robertson et al. 2013). More research is needed to understand and mitigate such effects. The cumulative effects of multiple sound sources on individual animals, and the population as a whole, are not well understood and hence inadequate to guide management (Moore et al. 2012b). Uncertainties regarding the effects of oil and gas activities must be addressed transparently, with an emphasis on participatory decision making that includes affected communities and constituencies in the development of precautionary mitigation measures (Blanchard et al. 2014).

For these reasons, the Commission recommends that BOEM continue to support and expand research on (1) site-specific and cumulative effects of oil and gas development on marine mammals and on access to marine mammals by Alaskan Native hunters and (2) improved technologies and capabilities to prevent and minimize harm from oil spills and from routine oil and

gas-support activities such as increased ship traffic and associated collision and pollution exposure risk.

The Commission hopes that you find these recommendations and comments helpful. Please contact me if you have questions or if the Commission can assist you as you consider these matters.

Sincerely,

Rebecca J. Lent, Ph.D.
Executive Director

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