

EXECUTIVE SUMMARY

ES.1 Description of the Proposed Action

The National Marine Fisheries Service (NMFS) proposes to authorize subsistence harvests of the Western Arctic stock of bowhead whales for the years 2008 through 2012, under the Whaling Convention Act, and a cooperative agreement with the Alaska Eskimo Whaling Commission (AEWC). Under the International Convention for the Regulation of Whaling, the International Whaling Commission (IWC) approves overall five-year subsistence catch limits for the Western Arctic stock of bowhead whales based upon the needs of Native hunters in Alaskan villages and in Russian villages along the Chukotka Peninsula. On an annual basis, NMFS can issue the AEWC the Alaskan share of this quota by regulation. The subsequent hunt is managed under the Whaling Convention Act, cooperatively by NMFS and the AEWC.

The purpose of this action is twofold: to manage the conservation and subsistence utilization of the Western Arctic stock of bowhead whales (as required under the Marine Mammal Protection Act [MMPA], the Whaling Convention Act, and other applicable laws) and to fulfill the Federal Government's trust responsibility to recognize the cultural and subsistence needs of Alaska Natives.

The IWC conducted its 59th Annual Meeting, May 28-31, 2007 in Anchorage, Alaska, and, based on the management advice of the IWC Scientific Committee, adopted a catch limit for 2008 through 2012 identical to that of the previous five-year period. Alternative 3 corresponds to the IWC action, and is the preferred alternative, as noted below. For additional information on the legal context and regulatory history of the proposed action, see Sections 1.1 and 1.2.

ES.2 Status of the Western Arctic Stock of Bowhead Whales

The Western Arctic bowhead whale is listed as "endangered" under the Endangered Species Act and designated as "depleted" under the MMPA. However, the stock has been increasing in recent years. The current estimate of 10,545 whales is between 46% and 101% of the estimated pre-exploitation abundance (10,400-23,000). Some analyses suggest that the population may be approaching carrying capacity, though there is no sign of slowing in the population growth rate. The average annual level of human-caused mortality and serious injury is estimated to be 41 whales, which exceeds neither the Potential Biological Removal level, as discussed in Section 1.1.3 and Section 3.2 (95 whales) nor the IWC's annual catch limit (67 strikes per year, and not to exceed 255 whales landed for five years).

ES.3 Subsistence Hunting of Bowhead Whales

Most of the Western Arctic bowhead whales migrate annually from wintering areas in the northern Bering Sea, through the Chukchi Sea in the spring, and into the Beaufort Sea where they spend the summer. In the autumn they return to the Bering Sea to overwinter. Ten Alaskan coastal villages along this migratory route participate in traditional subsistence hunts of these whales: Gambell, Savoonga, Little Diomedea, and Wales (on the Bering Sea coast); Kivalina, Point Hope, Wainwright, and Barrow (on the coast of the Chukchi Sea); and Nuiqsut and Kaktovik (on the coast of the Beaufort Sea).

The bowhead whale hunt constitutes an important subsistence activity for these communities, providing substantial quantities of food, as well as reinforcing the traditional skills and social structure of local Alaska Native culture. Such hunts have been regulated by a quota system under the authority of the IWC since 1977, with Alaska Native subsistence hunters from northern Alaskan communities taking less than one percent of the stock of bowhead whales per year.

Additional information on the cultural traditions of Alaska Native bowhead whaling is found in Section 3.5, while Section 3.6 describes the co-management role of the AEWc.

ES.4 Alternatives

This Environmental Impact Statement (EIS), prepared pursuant to the National Environmental Policy Act (NEPA, 42 USC 4321 et seq.), considers four alternatives for this proposed action. Additional information on the alternatives is found in Section 2.

Under the IWC policies, the limits on aboriginal subsistence whaling consist of two components. No more than 255 bowhead whales may be landed during the period 2008 through 2012. In addition, no more than 67 bowhead whales may be struck per year, with provision for a carry-over of up to 15 unused strikes from one year to the subsequent year, as detailed below in Alternative 3. The strike limit is larger than the landed limit, to take into account that in some cases, whalers may strike, or harpoon a whale, and then not be able to land the whale.

For the three action alternatives (Alternative 2, Alternative 3, and Alternative 4), bowhead subsistence quotas are set annually by NMFS through regulations. The regulations are good for one year, so they must be re-issued every year. NMFS meets annually with the AEWc to review the stock status and results of the previous year's hunt. If it is determined that a hunt can proceed, NMFS issues regulations setting the quota for the year.

ES.5 Alternative 1 (No Action) – Do not grant the AEWc a quota.

Under this alternative, NMFS would not issue the AEWc a subsistence whaling quota for cultural and nutritional purposes. This could occur if NMFS chose not to issue an annual quota because of environmental concerns.

ES.6 Alternative 2 – Grant the AEWc an annual strike quota of 67 bowhead whales, not to exceed a total of 255 landed whales over the five years 2008 through 2012, with no unused strikes added to the annual quota.

Under this alternative, NMFS would (through regulations) grant the AEWc an annual strike quota of 67 bowhead whales, subject to a total of 255 landed whales over the five years 2008 through 2012. A 'strike' is defined as hitting a whale with a lance, harpoon or explosive device while 'landing' means bringing a whale or any parts thereof onto the ice or land in the course of a whaling operation (50 CFR 230.2). The quota for 255 landed whales represents the U.S. portion of the total allocation of 280 landed whales granted by the IWC to aboriginal whalers. The actual allocation of strikes between Alaska Eskimos and Russian Chukotkan Natives is determined on an annual basis through a bilateral agreement between the U.S. and Russian governments. Under this alternative, no unused strikes from a previous year would be added to the quota for a subsequent year, notwithstanding the IWC's approval of a carry-over of unused strikes in the bowhead subsistence quota.

ES.7 Alternative 3 – Grant the AEW C an annual strike quota of 67 bowhead whales, not to exceed a total of 255 landed whales over the five years 2008 through 2012, with no more than 15 unused strikes from the previous year added to the annual strike quota. This alternative would continue management as in the recent past, and as adopted in action by the IWC in late May 2007. This is the agency's preliminary preferred alternative.

Under this alternative (the proposed action), NMFS would (through regulations) grant the AEW C an annual strike quota of 67 bowhead whales (plus carry-over), not to exceed a total of 255 landed whales over the five years 2008 through 2012. This alternative differs from Alternative 2, by allowing 15 unused strikes from a previous year to be added to the quota for a subsequent year, consistent with the IWC catch limit. A carry-over of 15 unused strikes was approved by the IWC, and allows for variability in hunting conditions from one year to the next within limits that conserve the Western Arctic bowhead stock.

ES.8 Alternative 4 – Grant the AEW C an annual strike quota of 67 bowhead whales, not to exceed a total of 255 landed whales over the five years 2008 through 2012, where, for unused strikes, up to 50 percent of the annual strike limit is added to the strike quota for a subsequent year.

Under this alternative, NMFS would (through annual regulations) grant the AEW C an annual strike quota of 67 bowhead whales per year (plus carry-over), not to exceed a total of 255 landed whales over the five years 2008 through 2012. This alternative differs from Alternative 3 by allowing up to 50 percent of the unused annual strike limit from a previous year to be added to the quota for a subsequent year.

ES.9 Summary of Effects

In the sections that follow, the analysis of the biological effects of the alternatives on the Western Arctic bowhead whale stock focuses on the strike quota (i.e. 67 per year, with carry-over in some alternatives), rather than a quota for landed whales (255 for the period 2008 through 2012). There is no definitive data on the fate of whales struck and not landed, also referred to as struck and lost. Some of the struck and lost whales are likely to die as a result of the strike. As a precautionary measure, the analysis here estimates maximum mortality, and thus assumes for analytic purposes that all whale strikes result in mortality.

ES.9.1 Alternative 1–Direct and Indirect Effects on the Western Arctic Bowhead Whale Stock

Alternative 1 would eliminate the quota for subsistence taking of bowhead whales and result in the elimination of authorized subsistence whaling activities and harvest. No bowhead whales would be taken in subsistence harvests. The magnitude, extent, and duration of direct mortality under this alternative are therefore considered negligible to the population of bowheads. Human activities associated with subsistence whaling would be sharply reduced under this alternative, so that the amount of noise and disturbance from subsistence whaling would also be considered negligible. For additional information on the effects of this alternative, see Section 4.4.

ES.9.2 Alternative 2–Direct and Indirect Effects on the Western Arctic Bowhead Whale Stock

Under Alternative 2 the maximum annual mortality would be 67 bowhead whales, based on a strike limit of 67, and assuming that every strike may result in mortality. The subsistence harvest is further subject to a limit that no more than 255 bowhead whales may be landed during the five-year period. Under this alternative, total maximum mortality would be 335 (5x 67) whales. Given the current abundance and growth trends, a total annual mortality of 67 bowhead whales under this alternative is unlikely to cause the population to decline or slow its rate of recovery. The magnitude, geographic extent, and duration of this level of mortality are therefore considered negligible for the bowhead population. Human activities associated with subsistence whaling under Alternative 2 would vary from year to year and place to place depending on whale movements, weather, ice characteristics, and social factors. Effects of human activities are localized and coincide with the presence of whales during their spring and autumn migrations. Disturbance to the Western Arctic bowhead whale stock from subsistence whaling activities under Alternative 2 would be localized and short-term and would be considered a minor impact level to the stock. For additional information on the effects of this alternative, see Section 4.4.

ES.9.3 Alternative 3–Direct and Indirect Effects on the Western Arctic Bowhead Whale Stock

Alternative 3 would authorize a maximum mortality of 82 bowheads in a single year, if the authorized carry-over of 15 unused strikes were to occur. The subsistence harvest is also subject to the limit that no more than 255 bowhead whales may be landed over the five-year period 2008 through 2012. Over the five-year period the total maximum mortality could be 350 whales (5x67, plus 15 carried over) or an average of 70 bowhead whales per year. This level of mortality is considered negligible in magnitude for the bowhead population, in light of current abundance and growth trends. The extent and duration of the effects under this alternative are the same as those for Alternative 2, so the overall impact is rated as negligible. The effects of human activities associated with subsistence whaling under Alternative 3 would be similar to those described for Alternative 2, with disturbance at a minor impact level for the Western Arctic bowhead whale stock. For additional information on the effects of this alternative, see Section 4.4.

ES.9.4 Alternative 4–Direct and Indirect Effects on the Western Arctic Bowhead Whale Stock

Alternative 4 would authorize a maximum mortality of 100 bowheads in a single year, if the authorized carry-over of 33 unused strikes were to occur. The subsistence harvest is also subject to the limit that no more than 255 bowhead whales may be landed over the five-year period 2008 through 2012. Assuming that each strike were to result in mortality, over the five-year period the total mortality could be 368 whales (5x67, plus 33 carried over strikes), or an average of 74 bowheads per year. This level of mortality is still considered negligible in magnitude at the current population level for bowheads, in light of current abundance and growth trends. The extent and duration of the effects under this alternative are the same as those for Alternative 2, so the overall impact is rated negligible. While the direct biological impact may be rated as negligible, the carry-over provision of this alternative would exceed that authorized by the IWC in the May 2007 meeting. The effects of human activities associated with subsistence whaling

under Alternative 4 would be similar to those described for Alternative 2, with disturbance at a minor impact level for the Western Arctic bowhead whale stock. For additional information on the effects of this alternative, see Section 4.4.

ES.9.5 Effects of the Alternatives on Individual Whales

In addition to the effects of harvest on the Western Arctic bowhead whale stock, there are indirect disturbance effects on individual bowhead whales, not subject to the harvest. These impacts will be negligible in magnitude, extent, and duration under Alternative 1, since under this alternative no subsistence whaling would occur. Under Alternatives 2, 3, and 4, subsistence whaling would occur, and as described in the effects analysis in Section 4.4, the magnitude, extent and duration of the associated disturbance effects would be minor for the individual bowhead whales not subject to harvest. For additional information on the effects of the alternatives on individual whales, see Section 4.5.

ES.9.6 Effects of the Alternatives on Other Wildlife

In the absence of bowhead whaling under Alternative 1, subsistence hunting would be redirected to other species (especially seals, walrus, and caribou), resulting in minor, localized effects in terms of mortality. For species that often congregate in numbers, like walrus and caribou, disturbance could affect numerous animals for each hunting event, and the effects would be considered moderate. For species that are primarily dispersed, like seals and polar bears, few animals would be disturbed and the effects would be considered minor. Alternatives 2, 3, and 4 would have no more than negligible or minor effects on other wildlife species. For additional information see Section 4.7.

ES.9.7 Socio-cultural Effects of the Alternatives

Alternative 1 would result in major adverse impacts to the communities that rely heavily on subsistence hunts of bowheads for nutritional and cultural sustenance. This alternative would raise Environmental Justice concerns, since it would result in disproportionate adverse impacts to the predominantly minority and low income populations of the AEWCM member communities. Alternative 1 would also likely be viewed as a failure on the part of NMFS to exercise its trust responsibility with respect to Alaska Eskimos and, possibly, to Native Americans in general. Alternatives 2, 3, and 4 would provide for continuation of subsistence bowhead whaling, with many beneficial effects of major magnitude, extent, and duration. For further information see Section 4.8.

ES.9.8 Cumulative Effects of the Alternatives

This EIS analyzes the cumulative effects of the alternatives when taken together with impacts from other activities and phenomena, such as oil exploration and climate change. The analysis of cumulative effects on the Western Arctic bowhead whale stock, found in Section 4.6, concludes that none of the alternatives, when ongoing mitigation measures are taken into consideration, would result in major adverse impacts on the bowhead whale population.

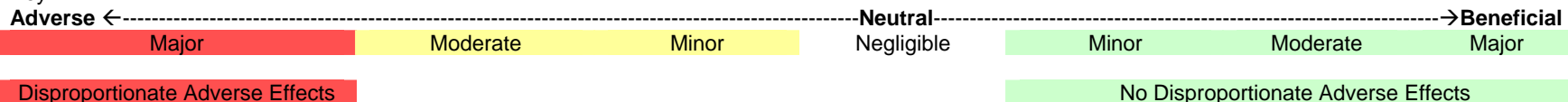
The following tables reproduced from Chapter 4 of this EIS summarize the direct, indirect, and cumulative effects under each alternative for all resources where environmental consequences were evaluated.

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**Table ES-1
Bowhead Whale Subsistence Harvest EIS Effects at a Glance**

Effect Type	Alternative 1 No Action	Alternative 2 Allocate 67 Strikes, No Carry-over	Alternative 3 Allocate 67 Strikes, Carry-over up to 15	Alternative 4 Allocate 67 Strikes, Carry-over up to 50% (34)
Effect Type	Alternative 1 No Action	Alternative 2 Allocate 67 Strikes, No Carry-over	Alternative 3 Allocate 67 Strikes, Carry-over up to 15	Alternative 4 Allocate 67 Strikes, Carry-over up to 50% (34)
Direct and Indirect Effects on Whale Population - Mortality (Section 4.4)	Negligible	Negligible	Negligible	Negligible
Direct and Indirect Effects Whale Population - Disturbance (Section 4.4)	Negligible	Minor Adverse	Minor Adverse	Minor Adverse
Direct and Indirect Effects on Individual Whales (Section 4.5)	Disturbance - Negligible	Disturbance - Minor Adverse	Disturbance - Minor Adverse	Disturbance - Minor Adverse
Cumulative Effects on Whale Stock (Section 4.6)	Mortality - Negligible Disturbance - Minor Adverse	Mortality - Negligible Disturbance - Minor Adverse	Mortality - Negligible Disturbance - Minor Adverse	Mortality - Negligible Disturbance - Minor Adverse
Effects on other Wildlife (Section 4.7)	Minor Adverse to Moderate Adverse	Negligible to Minor Adverse	Negligible to Minor Adverse	Negligible to Minor Adverse
Effects on Subsistence Patterns (Section 4.8.1)	Major Adverse	Major Beneficial	Major Beneficial	Major Beneficial
Effects on Health (Section 4.8.2)	Major Adverse	Major Beneficial	Major Beneficial	Major Beneficial
Effects on Public Safety (Section 4.8.2)	Minor Beneficial	Minor Adverse	Minor Adverse	Minor Adverse
Effects on Other Tribes (Section 4.8.3)	Moderate Adverse to Major Adverse	Negligible	Negligible	Negligible
Effects on the General Public (Section 4.8.4)	Anti-whaling public – Moderate Beneficial Pro-indigenous rights public – Moderate Adverse	Anti-whaling public – Minor Adverse Pro-indigenous rights public – Minor Beneficial	Anti-whaling public – Minor Adverse Pro-indigenous rights public – Minor Beneficial	Anti-whaling public – Minor Adverse Pro-indigenous rights public – Minor Beneficial
Effects on Environmental Justice (Section 4.8.5)	Major Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects

Key:



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**Table ES-2
Summary of Direct, Indirect, and Cumulative Effects on Bowhead Whales**

Effect		Alternative 1 No Action: Do Not Grant AEWC a Quota	Alternative 2 Grant AEWC Annual Quotas (67 Strikes) with No Unused Strikes Carried Over	Alternative 3 (Preliminary Preferred Alternative) Grant AEWC Annual Quotas (67 Strikes) with No More Than 15 Unused Strikes Carried Over Any One Year	Alternative 4 Grant AEWC Annual Quotas (67 Strikes) with Up to 50% of Unused Strikes Carried Over Any One Year
Direct and Indirect Effects	Mortality	Because this alternative would result in no authorized subsistence whaling, no direct or indirect mortality is likely. The magnitude, extent and duration of effects are considered negligible to the population of bowheads.	This alternative would authorize a continuing level of direct subsistence harvests comparable to the previous five years. Given the current level of bowhead abundance, the magnitude, extent, and duration of direct mortality under this alternative is considered negligible to the population of bowheads.	Bowhead whales - (Same as Alternative 2)	Bowhead whales - (Same as Alternative 2)
	Disturbance	The noise and disturbance to bowheads under this alternative, with no subsistence whaling, would be considered negligible in magnitude, extent, and duration.	For the bowhead population, the direct and indirect effects of noise and disturbance under this alternative would be minor in magnitude, extent, and duration.	Bowhead whales - (Same as Alternative 2)	Bowhead whales - (Same as Alternative 2)
Cumulative Effects		For bowhead whales, this alternative would contribute a negligible amount of mortality and disturbance to the cumulative effects on bowheads. Overall cumulative effects, taking into account other human activities and natural factors in the project area, are considered negligible in magnitude, extent and duration in regard to mortality. In regard to disturbance, the cumulative effects are considered minor in magnitude, extent, and duration, at the population level.	For bowhead whales, this alternative would contribute a negligible amount of mortality and disturbance to the cumulative effects on bowheads. Overall cumulative effects, taking into account other human activities and natural factors in the project area, are considered negligible in magnitude, extent and duration in regard to mortality. In regard to disturbance, the cumulative effects are considered minor in magnitude, extent, and duration, at the population level.	Bowhead whales - (Same as Alternative 2)	Bowhead whales - (Same as Alternative 2)

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**Table ES-3
Summary of Direct, Indirect, and Cumulative Effects – Other Wildlife**

Effect		Alternative 1 No Action: Do Not Grant AEWC a Quota	Alternative 2 Grant AEWC Annual Quotas (67 Strikes) with No Unused Strikes Carried Over	Alternative 3 (Preliminary Preferred Alternative) Grant AEWC Annual Quotas (67 Strikes) with No More Than 15 Unused Strikes Carried Over Any One Year	Alternative 4 Grant AEWC Annual Quotas (67 Strikes) with Up to 50% of Unused Strikes Carried Over Any One Year
Direct and Indirect Effects	Mortality	For other species (especially seals, walrus, and caribou), hunting pressure would increase to compensate in part for the loss of whale harvest and could lead to reductions in game populations around the whaling villages. In magnitude, extent, and duration, these effects are considered minor to moderate, depending on the importance of the species as a subsistence resource.	For ice-dependant species, this alternative would have negligible to minor direct and indirect effects, depending on the species. For other wildlife species, this alternative would have negligible to minor direct and indirect effects, depending on the species.	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)
	Disturbance	Increased hunting efforts on subsistence species other than bowheads would cause noise and disturbance to other wildlife in many areas around the whaling communities and would be considered minor to moderate, depending on the social structure of the species (aggregated or dispersed).	For ice-dependant species, this alternative would have negligible to minor direct/indirect effects, depending on the species. For other wildlife (including threatened or endangered species), this alternative would have negligible to minor direct/indirect effects, depending on the species.	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)
Cumulative Effects		To partially compensate for the loss of bowhead hunting under Alternative 1, increased harvest of other species would contribute to the adverse effects of climate change on ice-dependent species and add to the difficulty of managing other game populations, especially with the uncertainty of how climate change will affect different species.	For ice-dependent species, cumulative effects are likely to be dominated by the effects of climate change and the contribution of the alternatives is considered negligible to minor. For other wildlife species (including threatened and endangered species) - cumulative effects are likely to be dominated by conservation issues independent of whaling activities. The contribution of the alternatives to the cumulative effects on these species is considered negligible.	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)	Ice-dependent species – (Same as Alternative 2) Other wildlife species (including threatened and endangered species) - (Same as Alternative 2)

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**Table ES-4
Summary of Direct, Indirect, and Cumulative Effects – Socio-cultural**

Effect		Alternative 1 No Action: Do Not Grant AEWQ a Quota	Alternative 2 Grant AEWQ Annual Quotas (67 Strikes) with No Unused Strikes Carried Over	Alternative 3 (Preliminary Preferred Alternative) Grant AEWQ Annual Quotas (67 Strikes) with No More Than 15 Unused Strikes Carried Over Any One Year	Alternative 4 Grant AEWQ Annual Quotas (67 Strikes) with Up to 50% of Unused Strikes Carried Over Any One Year
Direct and Indirect Effects	Effects on Subsistence	<p>Direct effects include:</p> <ul style="list-style-type: none"> loss of an annual average of one million pounds of bowhead <i>maktak</i> and meat, a highly valued food, diminished social cohesion occasioned by the shared work among whaling crews and others cooperating in the year round work of preparation for whaling, disruption in the bonds established through food sharing, and diminished opportunity for young people to continue to learn the knowledge, practice, and beliefs associated with this central cultural institution. <p>Indirect effects include:</p> <ul style="list-style-type: none"> redirection of subsistence harvest effort to other subsistence resources, and greater recourse to purchased food, with adverse nutritional and economic implications, would result. <p>These direct and indirect effects are adverse and of major magnitude and extent, but of unknown duration.</p>	<p>Direct effects include continuation of existing subsistence practices such as:</p> <ul style="list-style-type: none"> the subsistence food contribution of bowhead whales, the cooperative work and food sharing practices, and the crucial cultural learning opportunities for young people. <p>Indirect effects include:</p> <ul style="list-style-type: none"> continuation of the current levels of diversity in subsistence resource uses, and continuing levels of reliance on subsistence foods, supplemented by purchased foods. <p>These direct and indirect effects are positive and major in magnitude, extent, and duration.</p>	(Same as Alternative 2)	(Same as Alternative 2)
	Effects on public health and safety	<p>Direct and indirect effects include:</p> <ul style="list-style-type: none"> elimination of exposure to very low levels of contaminants in bowhead whale foods, adverse effects on diet and health as nutritious bowhead foods are replaced to some extent by less nutritious purchased foods, and elimination of exposure to the safety risks associated with whaling, but increased exposure to risks in hunting of other subsistence resources, such as seals and walrus. <p>These direct and indirect effects of this alternative on health are adverse and major in magnitude and extent, but of unknown duration. The effects on safety would be minor.</p>	<p>Direct and indirect effects include:</p> <ul style="list-style-type: none"> continued high levels of reliance on nutritious bowhead whale foods, and continued exposure to the current levels of risk inherent in bowhead whaling and other subsistence pursuits. <p>Taken together, the highly beneficial nutritional effects outweigh the infrequent and therefore minor safety risks. This alternative has positive effects of major magnitude, extent, and duration.</p>	(Same as Alternative 2)	(Same as Alternative 2)
Cumulative Effects		<p>Given the important nutritional and cultural role of bowhead whale foods, under this alternative, in magnitude, extent, and duration, the cumulative effects on subsistence practices and nutrition and health would be adverse and major. This alternative would make a major contribution to overall cumulative adverse effects on subsistence practices, when considered alongside other activities in the project area.</p> <p>Cumulative effects of climate change are increasing the risks associated with weather, open water, and unstable, unpredictable ice. Subsistence harvest effort redirected to other resources would involve similar risks on the ice and open water, though not through the use of harpoon guns and large block and tackle equipment. This alternative makes a minor contribution to the cumulative adverse effects on public safety which overall would be minor to moderate.</p>	<p>For spring whaling, the cumulative effects of other activities, notably those associated with oil and gas exploration and development would be rated as adverse and minor. For fall whaling, the likely magnitude of impacts from these activities is less certain, because it turns on the timing, location and extent of oil and gas related activities and on the effectiveness of mitigative measures. Taking into account magnitude and likelihood, these impacts would be adverse and could be moderate, based on the effectiveness of current mitigation measures.</p> <p>The beneficial contribution of the proposed activities to cumulative effects, in authorizing the subsistence whale hunt, would be a greater proportion of overall cumulative effects than the contribution of noise from oil and gas exploration and development. Overall, cumulative effects on subsistence patterns would be positive and minor to moderate.</p>	(Same as Alternative 2)	(Same as Alternative 2)

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