

3.13 ENVIRONMENTAL JUSTICE

EO 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” requires that federal agencies consider as a part of their action any disproportionately high and adverse human health or environmental effects to minority and low-income populations. Agencies are required to ensure that these potential effects are identified and addressed.

The EPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” The goal of “fair treatment” is not to shift risks among populations, but to identify potential disproportionately high adverse impacts on minority and low-income communities and identify alternatives to mitigate any adverse impacts. For the purposes of assessing environmental justice under NEPA, the CEQ defines a minority population as one in which the percentage of minorities exceeds 50 percent or is substantially higher than the percentage of minorities in the general population or other appropriate unit of geographic analysis (CEQ, 1997a). Low-income populations are defined as households with incomes below the Federal poverty level.

3.13.1 Affected Environment

The majority of the impacts identified in this Final PEIS are to the aquatic environment, and as such, the environmental justice analysis considers potential disproportionate impacts on minority and low-income populations that utilize resources from the ocean. The analysis focuses on those minority and low-income populations that hunt marine mammals and fish for subsistence uses. While some communities described below also engage in subsistence hunting of terrestrial species, these species are not discussed in this section since NOS activities occur in aquatic environments; thus, the focus is on species hunted on sea ice, in coastal waters, and in the open ocean. Potential impacts to these communities would be considered disproportionate not only because subsistence hunting/fishing is essential for their survival, but also because these activities help to maintain and preserve their culture and tradition, play a key role in their local economies, and foster their overall physical and mental well-being. The cultural, spiritual, nutritional, and economic importance of each marine species to various Alaska Native populations as well as other indigenous tribes in the U.S. is described. The cultural, spiritual, nutritional, and economic importance of subsistence fishing in various regions of the U.S. is also described. This section also discusses how, when, and where each species is hunted for subsistence use.

3.13.1.1 Subsistence Hunting and Fishing

Subsistence uses are defined as “customary and traditional” uses of wild resources for food, shelter, fuel, clothing, tools, transportation, handicrafts, barter, and customary trade (ADF&G, 2017a). Subsistence hunting is central to the customs and traditions of many Alaska Native populations as well as other indigenous tribes in the U.S. In Alaska, 11 cultures can be distinguished geographically: the Eyak, Tlingit, Haida, and Tsimshian peoples live in the Southeast; the Inupiaq and St. Lawrence Island Yupik live in the north and northwest parts of Alaska; the Athabaskan peoples live in Alaska’s interior; and the south-central Alaska and the Aleutian Islands are home to the Alutiiq (Sugpiaq) and Unangax peoples (AFN, No Date). A majority of these communities rely on harvests of whales, seals, sea lions, and other marine mammals, as well as fish species such as salmon, halibut, and cod for their nutritional, religious, and cultural needs. Other indigenous tribes in the U.S., such as the Chippewa and Ojibwe tribes inhabiting the Great Lakes region, fish for catfish, trout, and whitefish for subsistence needs.

While the MMPA prohibits the take (i.e., hunting, killing, capture, and/or harassment) of marine mammals, Section 101(b) of the MMPA allows Alaska Natives to take marine mammals for subsistence purposes and/or for materials to create authentic articles of handicraft or clothing, provided taking is not done in a wasteful manner. The federal government cannot regulate the Alaska Native take unless the population being harvested is declared to be depleted (NSB, No Date-a). Furthermore, Section 119 of the MMPA allows Alaska Native Organizations (ANOs) to enter into cooperative agreements with NMFS or the USFWS to co-manage Alaska Native marine mammal harvests. This exception to the marine mammal take prohibition does not currently extend to the continental U.S., but members of the Makah Tribe in the northwestern tip of Washington State (on the Olympic Peninsula), who have traditionally hunted whales for subsistence, have requested authorization to hunt eastern North Pacific gray whales. The Tribe's proposal to NMFS for the issuance of a waiver of the MMPA take prohibition is described below in Section 3.13.1.2, Gray Whales (NMFS, No Date-f).

The following sections provide a background on the subsistence hunting and fishing practices of Alaska Native communities and other indigenous tribes in the U.S. and a description of species that are hunted or fished. This discussion is organized by species, since many tribes hunt and fish the same species. Information on geographic distribution and migration patterns of marine mammals and fish species is included in Section 3.5, Marine Mammals and Section 3.7, Fish, respectively.

3.13.1.2 Bowhead Whale (*Baleana mysticetus*)

The bowhead whale is one of the most culturally important resources harvested by Alaska Natives. The Inupiat and Siberian Yupik Alaska Natives have hunted the bowhead whale for thousands of years and knowledge of subsistence whaling continues to be taught to their children beginning at an early age (Brower and Hepa, 1998). Prior to the arrival of the whales during each migration, ritual ceremonies are performed in special houses known as “karigi” to ensure a hunt and to honor the whale (NOAA, 2018b). The Inupiat community celebrates the harvest of bowhead whales each June during the summer festival called Nalukataq. The community engages in singing, dancing, and blanket tossing, as well as solemn moments of prayer and reflection. Fried whale blubber or “muktuk” and other traditional foods are eaten. People of every age and gender participate to show their appreciation for the hard work that got them through the frigid winter (Dunn, 2016).

The Inupiat and Siberian Yupik people, who inhabit 11 bowhead whaling villages along the western and northern coasts of Alaska, as shown in **Figure 3.13-1**, regulate their bowhead whale subsistence activities via the Alaska Eskimo Whaling Commission (AEWC) (IWC, No Date-a). The AEWC communities hunt bowheads for the nutritious food that they provide and use their baleen and large bones to make handicrafts (NOAA, 2018b).



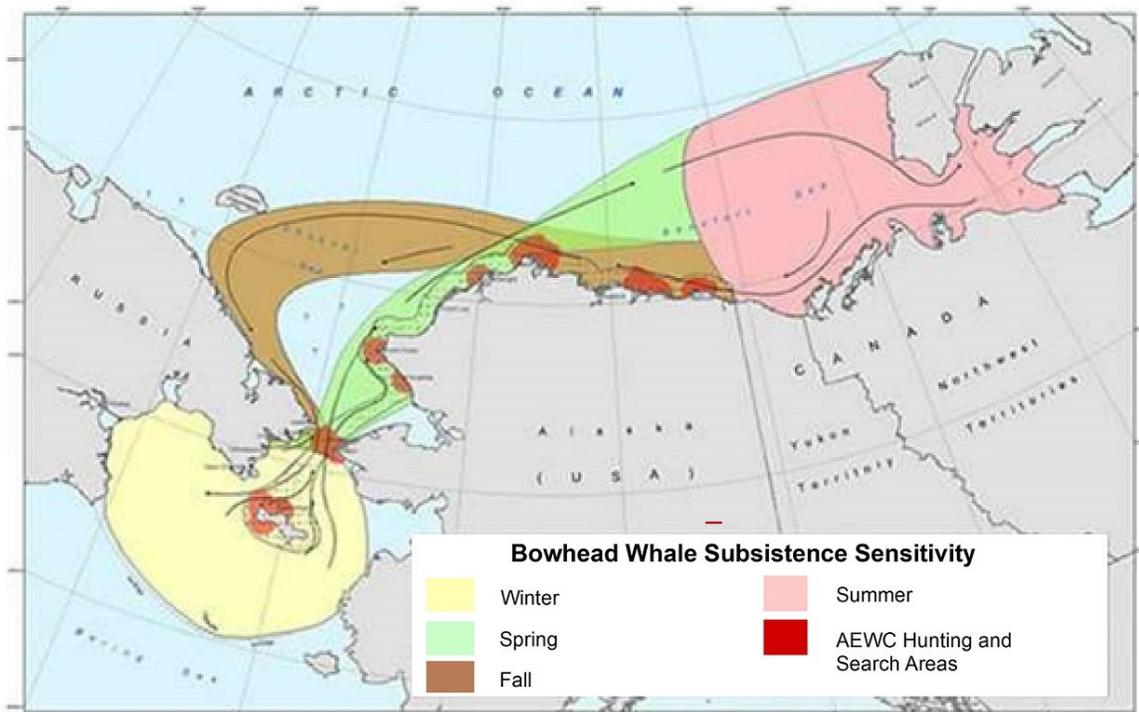
Source: IWC, No Date-a

Figure 3.13-1. Alaska Bowhead Whaling Communities

The AEWC conducts subsistence harvest in accordance with a cooperative agreement with NMFS, which is responsible for the implementation of the International Whaling Commission (IWC) strike quota in the U.S. (NMFS, 1999). The term ‘strike quota’ refers to the limitation on the number of whales that may be struck by hunters, and is the sum total of the whales that are successfully and unsuccessfully landed. Recently, the IWC set a 7-year block catch limit of 392 bowhead whales landed for the years 2019 through 2025 for four of its member countries (Denmark [Greenland], Russia [Chukotka], St. Vincent and the Grenadines [Bequia] and the U.S. [Alaska]), with an annual strike quota of 67 whales. In 2018, NOAA released a Final EIS to issue annual catch limits of bowhead whales to the AEWC for the years 2019 and beyond. Under the preferred alternative identified in that EIS, NMFS would assign AEWC an annual strike quota of 67 bowhead whales. AEWC would not be allowed to exceed their total of 336 landed whales over any six-year period. Additionally, unused strikes from previous years may be carried forward and added to the annual strike quota of subsequent years, to allow for variability in hunting conditions from one year to the next. (NOAA, 2018b).

Figure 3.13-2 shows the AEWC bowhead hunting and search areas across all seasons in red. The spring hunting season extends from March to May and the fall season starts in August and ends in October. The westerly AEWC communities engage in bowhead hunting during the species’ spring migrations whereas

the villages of Nuiqsut and Kaktovik participate in fall hunts (NOAA, 2018b). For selected communities, such as the Saint Lawrence Island communities of Gambell and Savoonga in the northern Bering Sea, winter harvest of whales is common (i.e., in December and January) (IWC, No Date-b). Hunters engage in whale-watching on the ice near the water to spot whales migrating north from the Bering Sea. When one is spotted, the team pushes an *umiak*, or a seal skin boat, onto the water to commence hunting. Seal skin boats are used due to their light weight, durability, and silence in the water (NOAA, 2018b). Bowhead hunters use traditional weapons such as harpoons to hunt the whales while sitting in their umiak (Stone, 2018). Lances made from stone, ivory, and bone may also be used. Over the years, bowhead hunters have adapted their hunting techniques per mandates issued by IWC. For example, slight modifications to instruments have been in use since the 19th century (e.g., darting guns and shoulder guns) (NOAA, 2018b).



Source: NSB, No Date-a

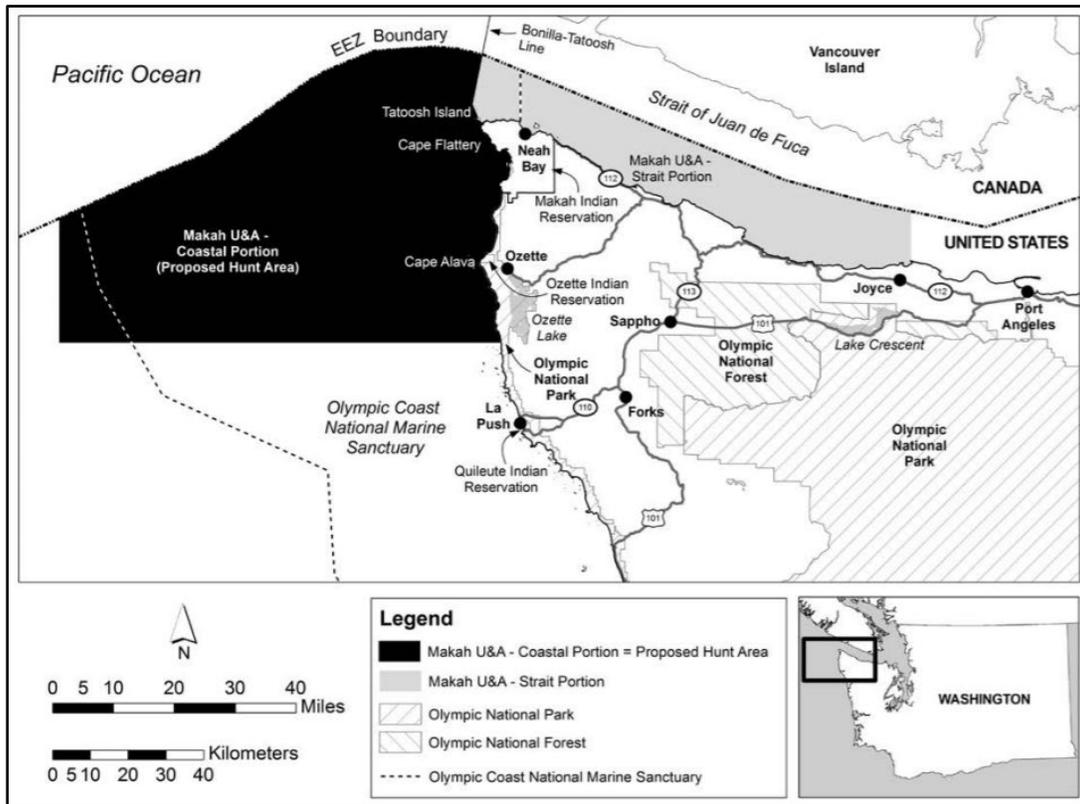
Figure 3.13-2. Bowhead Whale Hunting Areas

3.13.1.3 Gray Whale (*Eschrichtius robustus*)

As stated in Section 3.13.1, the MMPA prohibits the take of marine mammals, including gray whales, by any group other than the Alaska Natives. Thus, while members of the Makah Tribe in the state of Washington are currently not authorized to hunt for gray whales, they have requested NMFS to waive the MMPA take moratorium on the species so that their tradition of whale hunting could continue. This section details the proposal put forth by the Tribe to NMFS.

Since the 1990s, the Tribe has sought to exercise their right to whale, as established under the Treaty of Neah Bay. In 2002, a federal court determined that the Tribe must first apply for a waiver of the MMPA take moratorium, which the Tribe submitted in 2005. NOAA responded by announcing a hearing on August 12, 2019 to consider the issuance of a waiver of the take moratorium and the regulations (NMFS, 2022). If approved, the waiver could enable the Tribe to conduct ceremonial and subsistence hunting of eastern

North Pacific gray whales in Pacific Ocean waters near its reservation on the northwestern tip of Washington’s Olympic Peninsula, as shown in **Figure 3.13-3** below (NMFS, 2015c). Since a decision on this issue is currently pending, subsistence hunting of gray whales is not discussed in detail. If the Makah tribe is granted the right to hunt gray whales before the release of the Final EIS, this section would be developed further.



Source: NMFS, 2015c

Figure 3.13-3. Proposed Gray Whale Hunting Area

3.13.1.4 Beluga Whale (*Delphinapterus leucas*)

For Alaska Natives, subsistence hunting of belugas encompasses social and religious values and is tied to custom and tradition. The native village of Tyonek, for example, has a close cultural tie to beluga whales. Tyonek is located in upper Cook Inlet (southwest of Anchorage), and is accessible only by boat or plane. The Alutiiq Eskimos and Dena’ina Athabascans of Tyonek have occupied the Cook Inlet area for several hundred years, and the village is home to approximately 200 residents who participate in traditional subsistence hunting of belugas. Without it, the community faces economic stress because they cannot rely on the beluga oil, blubber, and meat (Boelens, 2013). Belugas are principally used for human consumption, either as meat or “maktak,” which consists of skin and the outer layer of blubber. The oil derived from the blubber is used for cooking and for fuel. The meat may also be used as dog food. Beluga bones are sometimes used in crafts (ADF&G, No Date-b). Apart from being an important food source, beluga hunting also provides the community with a way to pass on skills to younger generations, strengthen cultural identity through participation in a traditional activity, and unite the community (Boelens, 2013).

Belugas are harvested by Alaska Natives living in coastal villages from Tyonek in Cook Inlet to Kaktovik in the Beaufort Sea¹². Hunting is done in the spring as whales travel northward through leads in the ice, as well as during the summer and autumn when they are in the open water (ADF&G, No Date-b).

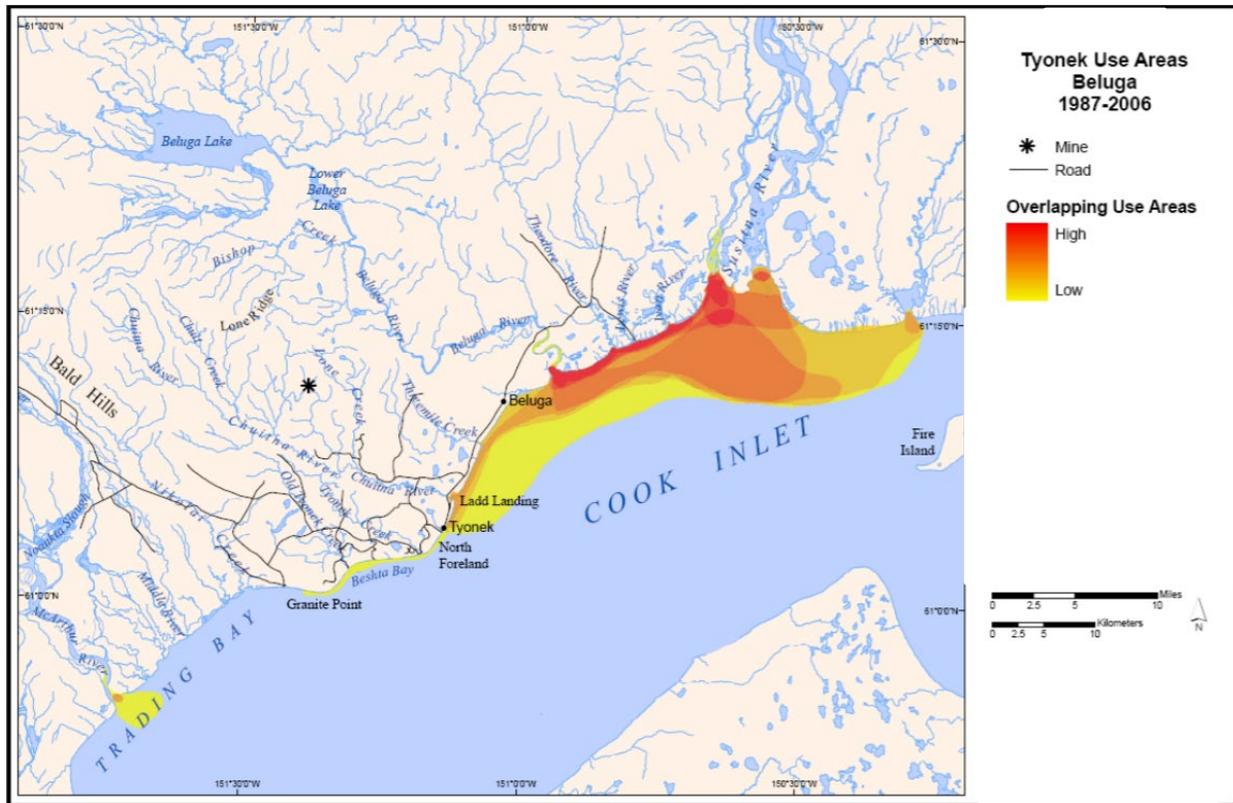
All beluga whale populations are protected under the MMPA. Harvests are considered sustainable for the Beaufort Sea, Bristol Bay, eastern Bering Sea, and eastern Chukchi Sea stocks; the IWC does not currently set a take limit on these four stocks of belugas, since the federal government does not have the authority to regulate the Alaska Native take unless the population being harvested is declared depleted under the MMPA (NSB, No Date-b). The Cook Inlet DPS is listed as endangered under ESA and depleted under MMPA (NMFS, No Date-a).

In 2008, NMFS issued final regulations to establish long-term limits on the maximum number of Cook Inlet beluga whales that may be taken by Alaska Natives for subsistence and handicraft purposes. The final rule established a harvest level for a five-year period based on the average abundance of beluga whales in the previous five-year period and the growth rate during the previous 10-year period. A harvest is not allowed if the previous five-year average abundance is less than 350 beluga whales (Muto et al., 2018). For example, if the beluga whale population averages 350-399 for a five-year block and their growth rate is determined to be high, then the harvest limit would be set at eight strikes for the next five-year hunting period (NOAA, 2008a). No beluga whales from the Cook Inlet stock have been harvested since 2005 since their average abundance has consistently numbered below 350 (Muto et al., 2018).

The primary beluga whale hunting areas are located within upper Cook Inlet, off the mouths of the Chuitna and Susitna River systems, among others, as shown in **Figure 3.13-4** below. Native hunting camps are located on two islands in the Susitna River delta. Hunting begins in April when hunters launch motorboats from Anchorage to access these camps and hunt in or near the river mouths. A common hunting technique involves isolating a whale from a group and pursuing it into shallow waters. The whales are shot with high-powered rifles and harpooned to help with their retrieval (NOAA, 2008a).

¹² The following Alaska Native communities harvest beluga whales from sustainable stocks (NSB, No Date-b):

- Beaufort Sea Stock: Barrow, Diomedea, Kaktovik, Kivalina, Nuiqsut, Point Hope
- Eastern Chukchi Sea Stock: Wainwright, Point Lay
- Eastern Bering Sea Stock: Norton Sound (Elim, Golovin, Nome/Council, Saint Michael, Shaktoolik, Unalakleet, White Mountain); Yukon (Alakanuk, Chevak, Emmonak, Hooper Bay, Kotlik, Marshall, Mountain Village, Nunam Iqua, Pilot Station, Pitka's Point, Saint Mary's, Scammon Bay)
- Bristol Bay Stock: Aleknagek, Clarke's Point, Dillingham, Egegik, Igiugig, Iliamna, Levelock, Manokotak, Naknek
- Cook Inlet Stock: Tyonek



Source: NOAA, 2008a

Figure 3.13-4. Beluga Hunting Areas (Cook Inlet stock)

3.13.1.5 Northern Fur Seal (*Callorhinus ursinus*)

The Alaska Native residents of St. Paul and St. George Islands (two principal islands of the Pribilof Islands), called the Aleut or Unangan people, have historically relied upon northern fur seal harvests as a major food source and cornerstone of their culture (NMFS, 2019c).

Northern fur seals are protected under the MMPA. The Pribilof Islands/eastern Pacific stock is listed as depleted under the MMPA (NMFS, No Date-a). Any taking of adult fur seals or pups, or the intentional taking of sub-adult female fur seals is prohibited (50 CFR § 216.72). And while the taking of northern fur seals is prohibited under the Fur Seal Act (FSA) of 1966, certain provisions under this Act authorize Pribilovians to take fur seals on the Pribilof Islands if such taking is for subsistence uses and is not accomplished in a wasteful manner.

The residents of St. George Island are currently authorized under Section 105 of the FSA to harvest sub-adult male fur seals¹³ 124.5 cm (49 in) long or less for subsistence uses. The annual harvest occurs from June 23 until August 8 and uses traditional methods, which include the use of harpoons, bow and arrow, or stunning followed immediately by exsanguination. Additionally, annual harvest of young, male fur seals¹⁴ on St. George Island occurs between September 16 and November 30, with a harvest limit of 150.

¹³ A sub-adult fur seal is a fur seal between 2-5 years old and less than 124.5 cm (49 in) long (NMFS, 2017f).

¹⁴ Young, male fur seals refer to pups, or a fur seal less than a year old and dependent on its mother for food (NMFS, 2017f).

Pribilovians on St. George Island are authorized to harvest up to a total of 500 male fur seals per year over the course of both the sub-adult male harvest and the young, male harvest (50 CFR § 216.72).

In response to a petition from the Aleut Community of St. Paul Island (ACSPI), NMFS issued a final rule on October 2, 2019 to change the management of the subsistence use of the eastern Pacific stock of the northern fur seals. The rule allows Pribilovians on St. Paul Island greater flexibility to meet their subsistence needs by hunting fur seals throughout the year. Aside from maintaining the annual upper take limit of 2,000 sub-adult male fur seals, the rule allows the take of female seals incidental to the hunt and harvest of male seals up to 1 percent of the upper limit. The first season would occur from January 1 to May 31, during which juvenile male fur seals could be taken by hunters using firearms; and the second season would occur from June 23 to December 31, during which pups and juvenile¹⁵ male fur seals could be harvested using alternative hunting methods (NMFS, 2019c).

3.13.1.6 Steller Sea Lion (*Eumetopias jubatus*)

The Stellar sea lion is an important subsistence resource for Alaska Natives, who hunt them primarily for food (Loughlin, 2009). Other than for consumptive uses, stellar sea lions are harvested for their oil and blubber – primarily by the Aleut of the Aleutian and Pribilof Islands and the Alutiiq in certain communities of Kodiak Island and the Gulf of Alaska. They may also be used occasionally by Tlingit, Haida, Tsimshian, and Yupik groups (ADF&G, 2013a).

The species is protected under MMPA throughout its range. The western DPS is listed as depleted under MMPA and endangered under ESA. The eastern DPS was delisted from ESA following an increase in its stock (NMFS, No Date-a).

Prior to 1992, no comprehensive program estimated the level of subsistence harvest of sea lions in Alaska. However, available information indicates that sea lions were being harvested in at least 60 coastal communities on the Bering Sea, in the Aleutian Islands, and on the Gulf of Alaska (NOAA, 2008b). Steller sea lions are reportedly taken during spring (March – April) and fall (September – November) (ADF&G, 2013a). Results show the annual take decreasing substantially from about 550 sea lions in 1992; to about 200 in 1996; to between 165 and 215 from 1997 to 2004. Available evidence indicates that the current take level of subsistence harvest of Steller sea lions does not substantially reduce the expected recovery rate of Steller sea lions (NOAA, 2008b). Consequently, NOAA has not issued Steller sea lion take limits and this species continues to be harvested in coastal communities on the Bering Sea, in the Aleutian Islands, and on the Gulf of Alaska. In November 2006, an agreement was signed between the Aleut Marine Mammal Commission (AMMC) and NMFS to co-manage Steller sea lions (both eastern and western DPSs) and monitor the harvest of this species for subsistence use (NOAA, 2017).

3.13.1.7 Harbor Seal (*Phoca vitulina*)

Harbor seals are vital to traditional and subsistence use for many Alaska Natives, including the Aleut of the Aleutian Islands; the Alutiiq and Eyak of the Pacific Gulf Coast; the Tlingit, Haida, and Tsimshian of the Southeast archipelago; and the Yup'ik of the Southwest Alaska. The Dena'ina of Cook Inlet occasionally hunt harbor seals (ADF&G, 2013a). The meat, organs, and oil from the harbor seal's blubber are important parts of the diet of many Alaska Natives; and the hide is used to make clothing and handicrafts (ADF&G, No Date-c).

¹⁵ Juvenile male fur seals are defined as male seals up to 7 years, excluding pups (NMFS, 2019c). Male pups are the fur seals less than one year old (NMFS, 2017f).

Traditionally, harbor seals were hunted using tools such as harpoons, spears, clubs, bows and arrows, nets, and in later times, rifles. The seasonal patterning of harbor seal takes generally shows two distinct hunting peaks: the first during spring, and a second during fall-early winter, with a low point in June. The geographic distribution of harbor seal takes indicates highest harvest numbers in the Southeast region by the Tlingit and Haida people, followed by the North Pacific Rim and Kodiak Islands (ADF&G, 2009a, 2009b).

The harbor seal is protected under MMPA throughout its range (NMFS, No Date-a). As with Steller sea lions described in the previous section, the harbor seal subsistence harvest is co-managed by AMMC and NMFS. In 2012, an estimated 595 harbor seals were hunted by Southeastern Alaska Native communities. Substantially more adult harbor seals were harvested than juveniles or pups. Seal takes generally peaked in March, May, and October, and were lowest in December, January, April, and June (ADF&G, 2013a).

3.13.1.8 Ice Seals (*Erignathus barbatus*, *Pusa hispida*, *Phoca largha*, and *Histiophoca fasciata*)

Ice seals include bearded, ringed, spotted, and ribbon seals. They are vital to Alaska Natives and are hunted by 64 communities across five geographic regions delineated by regional native governments and corporations: Yukon-Kuskokwim Delta (Association of Village Council Presidents), Bristol Bay (Bristol Bay Native Association), Bering Strait (Kawerek, Inc.), Northwest Arctic (Maniilaq Association), and North Slope (North Slope Borough). Ice seals are an important component in maintaining Alaska Native subsistence culture because seals are a source of food; their skins are a source for clothes, boats, and crafts (Nelson et al., 2019; ISC, 2019).

The Okhotsk (foreign) and Beringia (U.S.) DPSs of bearded seals are listed as threatened under ESA and depleted under MMPA (NMFS, No Date-a). Domestic ringed seal subspecies are listed as threatened and foreign subspecies are listed as endangered under ESA; all are considered depleted under MMPA (NMFS, No Date-a). The only recognized stock of spotted seals in the U.S., the Alaska stock, is listed as threatened under the ESA and depleted under MMPA (NMFS, No Date-a). Ribbon seals are protected under the MMPA and are included in NMFS's Species of Concern list (NMFS, No Date-a).

Hunting implements used today include harpoons and rifles, in combination with boats and snow machines, as well as radios and GPS. Ice seals are hunted on open waters, on sandy or rocky shores, and from ice or floe edges according to region and season (ADF&G, 2007). They are hunted in varying seasons or year-round depending on ice and weather conditions in the region, though most hunting occurs in spring and fall (Nelson et al., 2019; ISC, 2019). Ice seals are broadly hunted along the coast from approximately Kaktovik on the Beaufort Sea in the north to Clark's Point on Kvichak Bay in the south and along Nunivak and Saint Lawrence Islands (Nelson et al., 2019).

In 2003, the Ice Seal Committee and NMFS entered into an agreement to co-manage Alaska Ice Seal populations, in part to protect the culture and way of life of Alaska Natives who rely on the harvest of ice seals for subsistence uses (NSB, No Date-c). NMFS does not currently impose limits on the take of ice seals by Alaska Natives for subsistence use since harvest is considered sustainable (Nelson et al., 2019).

3.13.1.9 Northern Sea Otter (*Enhydra lutris kenyoni*)

Northern sea otters (particularly the Alaskan Southeast and Southcentral stocks) are primarily hunted by the Tlingit and Haida people inhabiting southeastern Alaska. Sea otters are hunted for their furs, and the handicrafts and clothing made from sea otter fur are generally sold or traded for subsistence purposes

(USFWS, 2007). Only Alaska Natives (Indians, Aleuts, and Eskimos) of at least one-fourth Alaska Native blood who reside in Alaska and who dwell on the coast of the North Pacific Ocean or the Arctic Ocean are allowed to harvest sea otters, provided the harvest is not wasteful (50 CFR Part 18).

Of the three stocks of sea otters occurring in Alaska, only the Southwest Alaska DPS is listed as threatened under ESA and depleted under MMPA. There is no harvest limit or permit needed for hunting sea otters, but hunters are required to have their raw sea otter hides and skulls tagged by a USFWS tagger within 30 days of harvest per MMPA's Marking, Tagging, and Reporting Program (MTRP)¹⁶ (USFWS, No Date-e). Sea otters may be harvested any time during the year (USFWS, 2007); however, the peak hunting season commonly occurs during fall (ADF&G, 2013b). Although MMPA does not limit the areas of Alaska where sea otters may be harvested, there may be some areas with hunting or access restrictions, such as national parks, state game sanctuaries, or private land. There are no federal restrictions on the methods in which sea otters may be taken (USFWS, No Date-f). Usually, hunters fly or boat to the hunting areas and use modern weapons such as rifles to hunt the otters (Vox, 2014; The Guardian, 2015).

The ADF&G has reported a rise in sea otter hunting activities between 2010–2014 compared to previous years. The year 2013 yielded the biggest reported harvest on record for sea otters with 2,044 otters harvested across the state. This number dipped to 1,237 in 2014 (USFWS, 2014f).

3.13.1.10 Polar Bear (*Ursus maritimus*)

Polar bears have played an important role in indigenous Arctic cultures for millennia. In parts of the Arctic, the Inuit and other cultures hunt polar bear as part of a subsistence lifestyle and ancient cultural traditions. The Inuit believe that 'Nanuq', or polar bear is a wise and powerful creature. Of all the animals they traditionally hunted, polar bears were the most prized. Hunters paid respect to Nanuq's spirit by hanging its skin in an honored place in their home for several days. For a male bear the hunters would offer the bear's spirit knives and bow-drills; if female, they would offer knives, skin-scrapers, and needle cases (PBI, No Date). Polar bears are hunted for their meat, and their fur is used for clothing and blankets. Parts of the bear are also used for handicrafts (ADF&G, No Date-d).

The polar bear is designated as threatened under ESA. Two stocks of polar bears occur in Alaska: the SBS stock and the CBS stock. Management of both populations are shared with other nations. In 1988, the North Slope Borough Department of Wildlife Management (representing Alaska Natives) and the Inuvialuit Game Council (representing Canadians) signed an agreement to coordinate management of the SBS stock. The Inuvialuit-Inupiat Polar Bear Commission, as established under this agreement, set a harvest quota of 70 bears: 35 bears for the U.S. and 35 bears for Canada. In 2007, a bilateral agreement between the U.S. and Russia was ratified and established a process to maintain the subsistence use by the Native peoples of both countries and the conservation of the CBS population (ADF&G, 2008). In 2018, the total possible annual harvest of CBS bears set by the U.S.-Russia Polar Bear Commission was increased from 58 to 85 (The Seattle Times, 2018).

Figure 3.13-5 shows the Alaska Native communities that hunt the CBS stock of polar bears for subsistence use. The exact timing of polar bear hunting varies by village and depends on the community's social calendar and the timing of other subsistence activities. However, they are primarily hunted between November and April; hunters prefer to catch them in late fall and early winter because the bears are

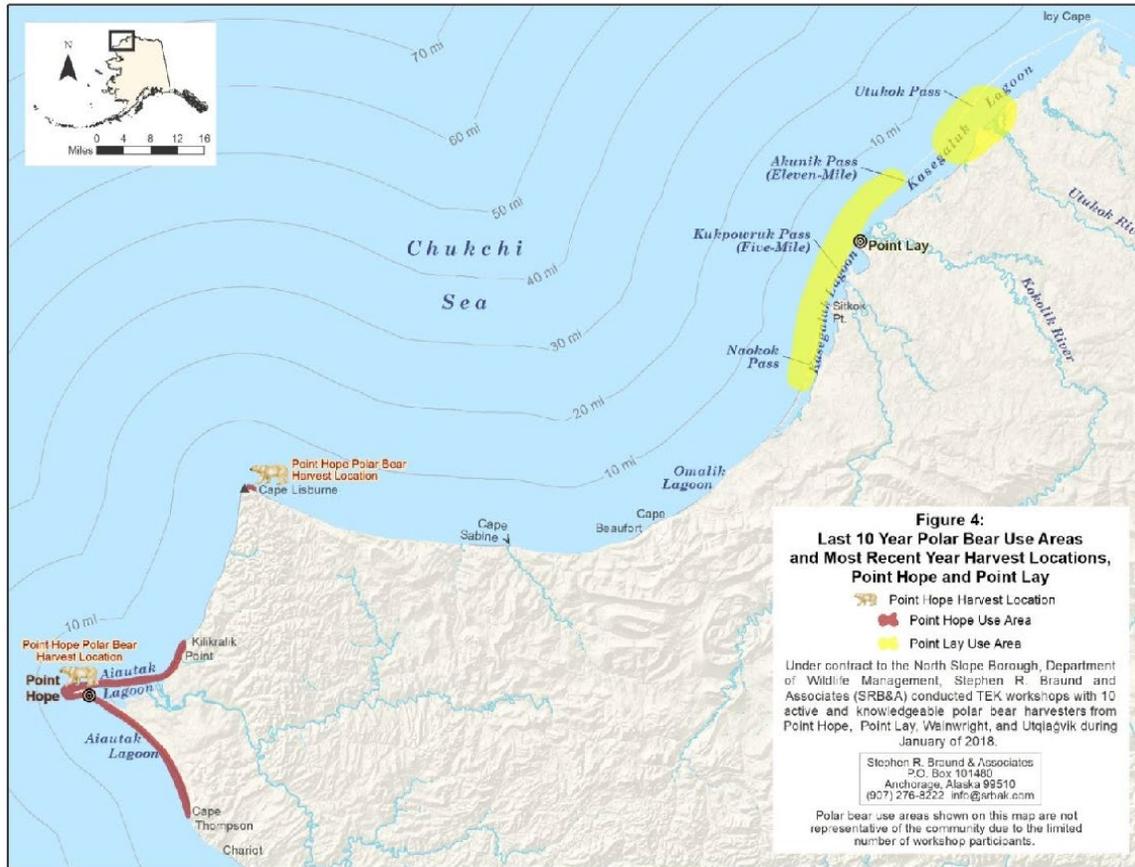
¹⁶ The MMPA requires that all sea otter and polar bear hides and skulls, and all walrus tusks be tagged by a representative of the USFWS. This program is implemented through resident MTRP taggers located in coastal villages and communities throughout Alaska (USFWS, No Date-e).

healthier at that time (Voorhees et al., 2014). In general, hunting areas are confined to locations 5-8 km (3-5 mi) offshore along the ice leads and areas with barrier islands, as shown in **Figure 3.13-6** for Point Lay and Point Hope hunting communities (NSB, 2018). Bears are hunted using snow machines, all-terrain vehicles, boats, and on foot, depending on the season and condition of the sea ice (Voorhees et al., 2014).



Source: Voorhees et al., 2014

Figure 3.13-5. Alaska Native Communities Engaged in Polar Bear Subsistence Hunting



Source: NBS, 2018

Figure 3.13-6. Polar Bear Hunting Areas for the CBS Stock in Point Hope and Point Lay Communities

3.13.1.11 Pacific Walrus (*Odobenus rosemarus divergens*)

Walrus are an essential cultural and natural subsistence resource to the Alaskan coastal Yupik and Inupiaq communities, and have sustained these communities and culture for millennia (EWC, No Date). The meat, blubber, skin, and organs provide a healthy and rich source of food; the hides can be processed into rope or used to cover boats; and the stomach lining is used to make traditional drums for Eskimo dances. The ivory tusks are used for jewelry, artwork, and other handicrafts (ADF&G, No Date-e).

Walrus hunting was an opportunity for the elders to pass on their traditional values across generations. Young men had to earn the respect of the senior hunters and the right to lead hunts themselves by demonstrating their knowledge of the rules. Hunting was a highly organized activity since it was essential that the walrus be treated in a proper manner, called cakarpeknaki, or 'with respect and without waste'. Only the most experienced hunters were allowed to harpoon or shoot walrus. Walrus were swiftly taken with a thrust or shot near the back of the head. As technology advanced, skin boats, harpoons, and spears were replaced by wooden boats, outboard motors, and rifles on the Round Island. Historically, Qayassiq, or Round Island, was an important spot for walrus hunting as it was accessible in good weather and had an abundance of walrus during the preferred fall hunt. The capacity of the boats used to transport the carcasses back to mainland villages determined the harvest limits. Walrus hunting continues to be integral

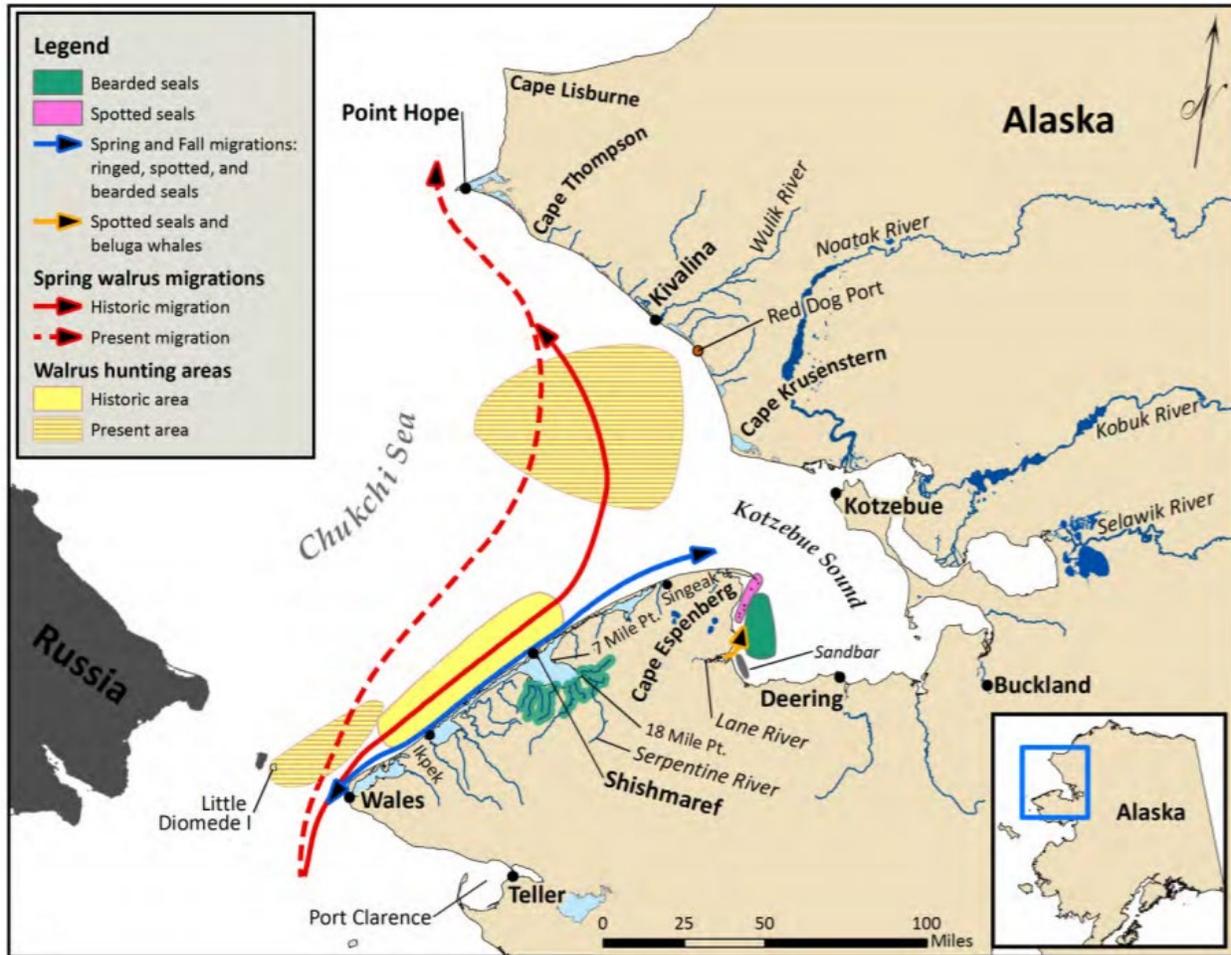
to maintaining the cultural identity and upholding the traditions of the Yupik and Inupiaq communities (Fall and Chythlook, 1998).

Since the Pacific walrus is not listed as depleted or endangered, the agreement between USFWS and the Eskimo Walrus Commission (EWC) for the co-management of the species¹⁷ does not limit the areas of Alaska where it may be harvested and imposes no restrictions on the methods in which walruses may be taken. There is no harvest limit for Pacific walruses, provided that harvest does not occur in a wasteful manner (USFWS, No Date-g). In Little Diomedea for example, walruses are important year-round food sources and are primarily hunted during their spring migration. Hunting may also occur to a limited extent during summer and fall seasons when walruses feed and haul out in the area. Many hunters travel 64-81 km (40-50 mi) out during the spring hunting season to find walruses in open water. Environmental conditions such as winds, currents, and ice conditions determine the geographic extent of hunting areas. The prime hunting area for this region is within the 16-32-km (10-20-mi) radius of Little Diomedea Island. During summer, hunters may only travel 8-16 km (5-10 mi) out and in fall, this distance is reduced to 5-6 km (3-4 mi) (Kawerak Inc., 2013).

Walrus hunting on the Round Island within the Walrus Island State Game Sanctuary is an exception where a season and a quota have been established through a co-management agreement with the Qayassig Walrus Commission, USFWS, and ADF&G (USFWS, No Date-g)¹⁸. Alaska Natives are permitted to hunt walruses from September 10 through October 20 annually, with the harvest limit set at 20 walruses (ADF&G, 2017b). **Figure 3.13-7** shows the historical and present-day walrus hunting areas in Northwestern Alaska in the Chukchi Sea.

¹⁷ The co-management agreement between USFWS and EWC covers the Pacific walrus hunting practices of the St. Lawrence Island Yupik, Central Yupik, and Inupiat Alaska Natives across 19 villages: Utkiagvik, Wainwright, Point Lay, Point Hope, Kivalina, Kotzebue, Shishmaref, Little Diomedea, Wales, Brevig Mission, King Island, Nome, Gambell, Savoonga, Unalakleet, Stebbins, Mekoryuk, Kwigillingok, and Manokotac.

¹⁸ This agreement covers the Yupik hunting practices across nine villages: Togiak, Twin Hills, Manokotak, Aleknagik, Dillingham, Clark's Point, Ekuk, Ekwok, and New Stuyahok.



Source: ADF&G, 2016a

Figure 3.13-7. Historical and Present-Day Walrus Hunting Areas

Several thousand walrus are legally harvested in Alaska and Russia every year. In the U.S. between 2006 and 2010, subsistence harvest mortality levels have ranged from 3,828 to 6,119 animals per year (USFWS, 2014g). The annual harvest in Alaska is monitored by the USFWS.

Table 3.13-1 summarizes the subsistence hunting information related to each of the species of marine mammals describes in this section.

Table 3.13-1. Summary of Subsistence Hunting of Marine Mammals

Species	Communities engaged in subsistence hunting	Hunting Season	Hunting Areas	Harvest limits
Bowhead Whale	Iñupiat and Siberian Yup'ik people across 11 whaling villages: Gambell, Savoonga, Wales, Little Diomed, Kivalina, Point Hope, Point Lay, Wainwright, Utqiagvik, Utqiagvik, Nuiqsut, and Kaktovik.	Typically occurs during spring (March through May) and autumn (August through October). Hunters on Saint Lawrence Island communities of Gambell and Savoogna may harvest whales during the winter (December and January) as well.	As shown in Figure 3.13-2. Only the Western Arctic bowhead stock is hunted for subsistence.	For each of the years 2019 through 2025, the number of bowhead whales struck may not exceed 67, with unused strikes from the three prior quota blocks carried forward and added to the annual strike quota of subsequent years, provided that no more than 50 percent of the annual strike limit is added to the strike quota for any one year. The combined strike quota set by the IWC for 2019 is 100 (67 + 33).
Beluga Whale	Beaufort Sea, Bristol Bay, eastern Bering Sea, and eastern Chukchi Sea stocks: Alaska Native across 6 regions comprising 34 villages - North Slope: Utqiagvik, Point Hope, Point Lay, Wainwright Kotzebue Sound: Buckland, Deering, Kivalina, Kotzebue, Noatak Norton Sound: Council/Nome, Elim, Koyuk, Shaktoolik, Saint Michael, Stebbins, Unalakleet Yukon Delta: Alakanuk, Emmonak, Hooper Bay, Kotlik, Mountain Village, Nunam Iqua, Pilot Station, Pitka's Point,	Spring, and summer and autumn open water period	As shown in Figure 3.13-4 for the Cook Inlet stock. Primary hunting areas are within upper Cook Inlet. Native hunting camps exist on two islands in Susitna River delta.	No harvest limits on the Beaufort Sea, Bristol Bay, eastern Bering Sea, and eastern Chukchi Sea stocks. For the Cook Inlet stock, harvest limits vary by year.

Species	Communities engaged in subsistence hunting	Hunting Season	Hunting Areas	Harvest limits
	<p>Saint Mary's, Scammon Bay</p> <p>Kuskokwim: AVCP/Bethel, Platinum, Toksook Bay</p> <p>Bristol Bay: Aleknagik, Dillingham, Levelock, Manokotak, South Naknek</p> <p>Cook Inlet stock: Primarily, the Alutiiq Eskimos and Dena'ina Athabascan of Tyonek village</p>			
Northern Fur Seal	Unangans of St. Paul and St. George Islands	<p>St. Paul Island: January 1 to May 31; June 23 to December 31</p> <p>St. George Island: June 23 to August 8; September 16 through November 30</p>	St. Paul and St. George Islands of the Pribilof Islands	<p>St. Paul Island: Up to 2,000 juvenile male fur seals annually. A maximum of 20 mortalities of female fur seals associated with subsistence reasons are authorized.</p> <p>St. George Island: Up to a total of 500 male fur seals per year over the course of both the sub-adult male harvest and the male young of the year harvest. Pribilovians may harvest up to 150 male fur seal young annually. Up to three mortalities of female fur seals are authorized each year for subsistence reasons.</p>
Steller Sea Lion	Aleut Hunters in the Aleutian and Pribilof Islands and 16 communities in Alaska that hunt the eastern DPS.	Year-round with harvest quantities varying seasonally. Peak harvest months are in spring (March – April) and fall (September – November).	Range of Western and Eastern DPS	No harvest limits

Species	Communities engaged in subsistence hunting	Hunting Season	Hunting Areas	Harvest limits
Harbor Seal	Aleut of the Aleutian Islands; the Alutiiq and Eyak of the Pacific Gulf Coast; the Tlingit, Haida, and Tsimshian of the Southeast archipelago; the Yup'ik of Southwest Alaska; and the Dena'ina of Cook Inlet	Varies by region and species abundance. Seal takes generally peak in March, May, and October, and are lowest in December, January, April, and June.	Aleutian Islands, Pribilof Islands, Bristol Bay, North Kodiak, South Kodiak, Prince William Sound, Cook Inlet/Shelikof Strait, Glacier Bay/Icy Strait, Lynn Canal/Stephens Passage, 30 50 Sitka/Chatham Strait, Dixon/Cape Decision, Clarence Strait	No harvest limits
Ice Seals	Approximately 64 coastal communities harvest ice seals in western and northern Alaska.	Varies by region	Broadly hunted along the coast from approximately Kaktovik on the Beaufort Sea in the north to Clark's Point on Kvichak Bay in the south and along Nunivak and Saint Lawrence Islands.	No harvest limits
Northern Sea otter	Tlingit and Haida people inhabiting southeastern Alaska.	Year-round; peak hunting season commonly occurs during fall.	MMPA does not limit the areas of Alaska where sea otters may be harvested.	No harvest limits
Polar Bear	Iñupiat and Siberian Yup'ik Alaska Natives across 15 villages: Kaktovik, Nuiqsut, Utqiagvik, Wainwright, Point Lay, Point Hope, Kivalina, Kotzebue, Shishmaref, Diomedea, Wales, Brevig Mission, King Island, Gambell, Savoonga	Varies by region. Majority of the bears are harvested between November and April.	The MMPA does not limit the areas in Alaska where polar bears may be harvested. There may be some hunting or access restrictions, such as on national parks or private land.	Southern Beaufort Sea stock: 35 bears for the U.S. annually (voluntary quota) Chukchi/Bering Seas stock: U.S./Russia combined quota of 85 bears annually
Pacific Walrus	St. Lawrence Island Yup'ik, Central Yup'ik, and Iñupiat people across 19 villages: Utkiagvik, Wainwright, Point Lay, Point Hope, Kivalina, Kotzebue,	Year-round, though the prime hunting season is in the spring (mid-April to early June). September 10 - October 20 for	The MMPA does not limit the areas of Alaska where Pacific walrus may be harvested. However, areas such as National Parks, state game sanctuaries, or	This species is not listed as depleted under the MMPA and is not designated as threatened or endangered under the ESA. No harvest limits are currently imposed

Species	Communities engaged in subsistence hunting	Hunting Season	Hunting Areas	Harvest limits
	<p>Shishmaref, Little Diomedes, Wales, Brevig Mission, King Island, Nome, Gambell, Savoonga, Unalakleet, Stebbins, Mekoryuk, Kwigillingok, and Manokotac</p> <p>Additionally, the Yup'ik people authorized to hunt Pacific walrus on Round Island inhabit 9 villages: Togiak, Twin Hills, Manokotak, Aleknagik, Dillingham, Clark's Point, Ekuak, Ekwok, and New Stuyahok</p>	<p>subsistence hunting at Round Island.</p>	<p>private lands may have hunting or access restrictions</p> <p>Round Island waters and beaches within 5 km (3 mi) of Round Island.</p>	<p>for subsistence purpose.</p> <p>Round Island sets a harvest limit of 20 walrus (including struck and lost animals).</p>

3.13.1.12 Subsistence Fishing

For numerous minority and low-income communities across the U.S., subsistence fisheries play an important role in ensuring a secure supply of food and strengthening the cultural and traditional aspects of community life. Subsistence fishing for finfish (such as salmon, halibut, herring, bottomfish, smelt, etc.) and shellfish (such as Dungeness crab, king crab, Tanner crab, shrimp, clams, abalone, etc.) is common throughout Alaska and is an important element of the state’s social and cultural heritage, as well as a crucial component of the subsistence sector of Alaska’s economy (ADF&G, 2020). Similarly, indigenous tribes on the West Coast retain strong spiritual and cultural ties to various species of fish based on thousands of years of use for tribal religious/cultural ceremonies, subsistence, and commerce. Some commonly fished species include steelhead, halibut, whiting, sturgeon, lamprey, etc. Many Pacific Northwest Indian tribes reserve the right to fish in the “Usual and Accustomed” fishing places and are co-managers of the fisheries with the states and federal government (NMFS, No Date-g).

This section provides a description of some of the important fish species used for subsistence purposes by Alaska Natives, indigenous tribes, and other minority and low-income communities; the cultural importance of these species; the common fishing practices and methods; and the established fishing seasons and areas, as applicable.

3.13.1.12.1 Pacific Salmon

Salmon¹⁹ are important to the diets, economies, cultures, and identities of many Alaska Native and tribal communities of the Pacific Northwest. For Alaska Natives, salmon accounts for 32 percent of the wild

¹⁹ The section provides a combined narrative for all five species of Pacific salmon hunted for subsistence, namely Chinook (king), Chum (dog), Coho (silver), Pink (humpback), and Sockeye (red).

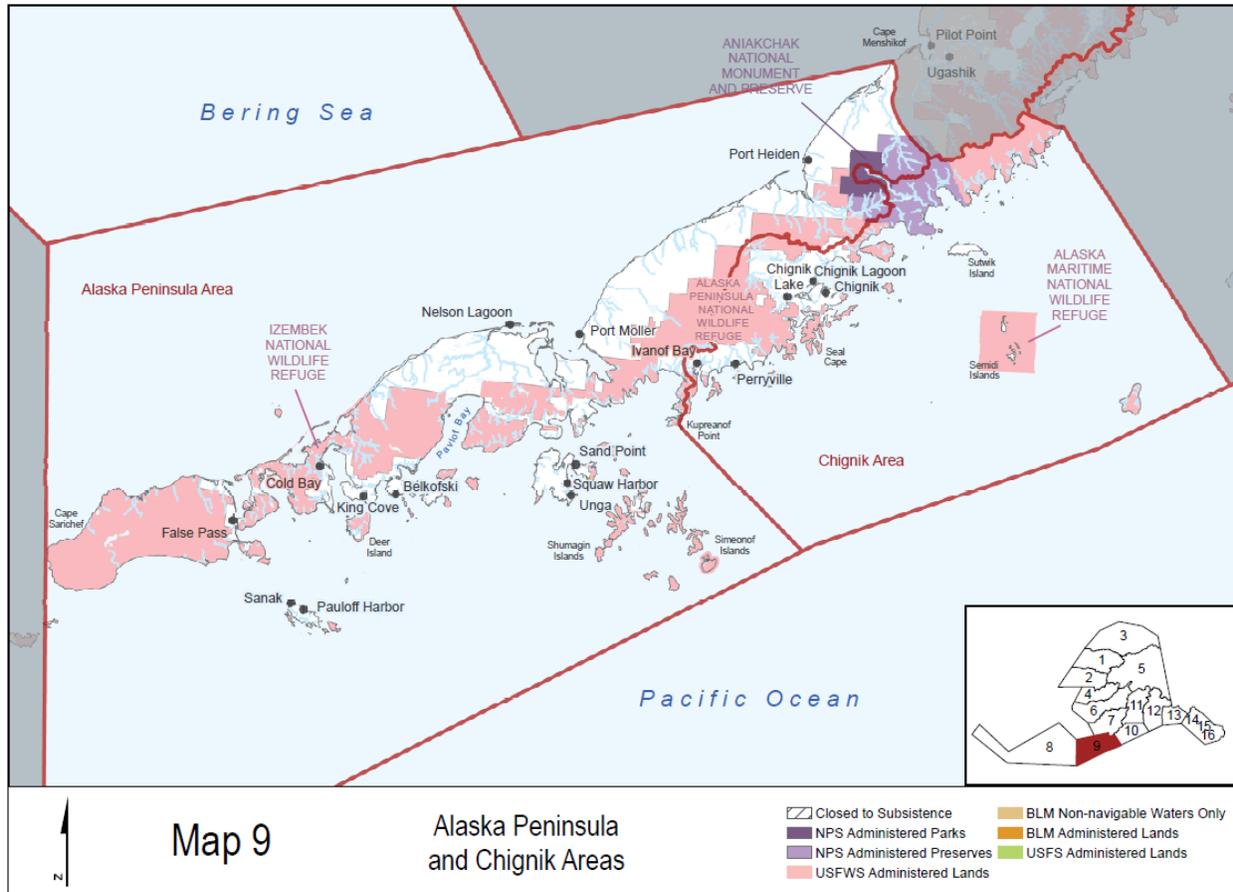
foods annually harvested for subsistence purposes in rural communities and constitutes a major portion of their food supply (ADF&G, 2019). To honor the fish that is a critical part of the Alaskan identity, the governor of Alaska signed into law a House Bill in 2016 establishing August 10th of each year as 'Alaska Wild Salmon Day' (ADF&G, 2016b). In many Native American cultures, salmon holds a special position of honor and respect and is often used as a symbol of determination, renewal, and prosperity in their artwork and literature (NLA, No Date-a). For example, Columbia River Basin salmon have long been the symbol and lifeblood of the Yakama, Umatilla, Warm Springs, and Nez Perce tribes. Salmon influences culture and intertribal interactions and is an important part of the economies of the region. It is used for religious services by numerous longhouses and churches on the reservation and annual salmon returns are widely celebrated by tribes to assure the renewal and continuation of human and all other life (CRITFC, No Date).

In Alaska, the state subsistence fisheries are managed by the Division of Commercial Fisheries, ADF&G, whereas the federal subsistence fisheries are regulated by the Federal Subsistence Board comprising five federal agencies: USFWS; National Park Service (NPS); Bureau of Land Management; Bureau of Indian Affairs; and U.S. Forest Service. Often, the state and federal subsistence fisheries occur in the same area. These entities administer regulations outlining salmon fishing seasons, acceptable fishing gear, and annual harvest limits to manage subsistence salmon harvests for different regions²⁰ within the state (DOI, 2021).

To qualify to fish under the federal subsistence regulations, one must have their primary place of residence in a rural area or must have lived in Alaska for the previous 12 months. While no licenses are required to take fish or shellfish for subsistence uses, state or federal subsistence fishing permits may be required for a particular fishery management area (see **Figure 3.13-8**). The permit designates the harvest limits and seasons, fishing areas, and the types and amount of fishing gear permitted. These specifications vary by region and may be modified annually.

For subsistence salmon fishing in the U.S. EEZ off Washington, Oregon, and California, PFMC is the central fishery management authority (PFMC, No Date-a). It primarily manages chinook and coho salmon fishing for different regions and groups, including for tribal ceremonial and subsistence purposes in Puget Sound, Washington coastal rivers and bays, Columbia River and its tributaries, and Klamath River and Trinity River (PFMC, No Date-b). In May 2019, NMFS established fishery management measures for the 2019 ocean salmon fisheries off Washington, Oregon, and California and the 2020 salmon seasons opening earlier than May 1, 2020. These measures outline the salmon fishing season, size requirements, gear restrictions, as well as harvest quotas for the S'Klallam, Makah, Quileute, Hoh, and Quinault tribes. For example, the Chinook harvest quota for the May 1 – June 30 fishing season is 17,500 and 17,500 for the July 1 – September 15 fishing season. Single point, single shank, and/or barbless hooks are required in the fisheries and no more than eight lines are allowed per boat (84 FR 19729, May 6, 2019).

²⁰ Alaska is divided into fishery management areas to implement subsistence fishing regulations for finfish, including salmon and halibut. These regions are: Kotzebue Area, Norton Sound-Port Clarence Area, Yukon-Northern Area, Kuskokwim Area, Bristol Bay Area, Aleutian Islands Area, Chignik Area, Kodiak Area, Cook Inlet Area, Prince William Sound Area, Yakutat Area, Southeastern Area.



Source: DOI, 2021

Figure 3.13-8. Subsistence Fishing in Alaska Peninsula and Chignik Areas

3.13.1.12.2 Pacific Halibut

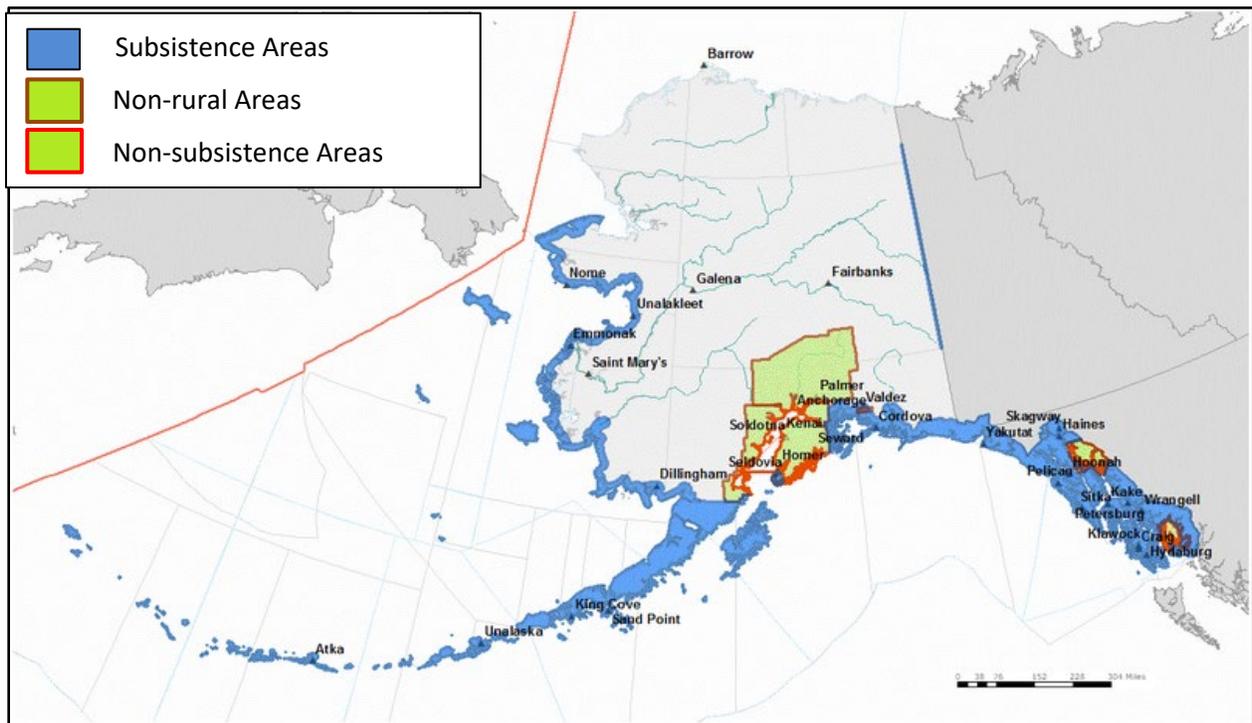
Halibut are mythologically important to many tribes in the Pacific Northwest. It is used as a clan crest in some Northwest Coast tribes and can sometimes be found carved on totem poles and potlatch dishes. The creation myths of some Kwakiutl tribes hold that their first ancestors were transformed from a halibut into a man. The halibut is a symbol of prosperity for the Haida people. Some Native Alaskan fishermen make special offering of the first halibut they catch each season (NLA, No Date-b).

Historically, Pacific halibut were fished by the indigenous people inhabiting the lands bordering the eastern North Pacific Ocean, and was an essential part of the diet of many groups who conducted their fishery by hook and line from large canoes. Today, in addition to providing recreational fisheries opportunities to indigenous groups, Pacific halibut continues to be an important subsistence and ceremonial fish. It is used to feed people at culturally important events like weddings, funerals, and naming ceremonies (IPHC, No Date).

The U.S. and Canada participate in the International Pacific Halibut Commission (IPHC) and enforce regulations governing the Pacific halibut fishery under the authority of the Northern Pacific Halibut Act of 1982 (Halibut Act) (NMFS, 2015d). Each year, the IPHC sets the total allowable catch (TAC) for halibut that will be caught in the U.S. and Canadian waters in the northeastern Pacific Ocean, and NMFS establishes regulations for U.S. waters off the coasts of Washington, Oregon, and California (Area 2A) (NMFS, No

Date-a). Thirteen western Washington tribes²¹ possess treaty fishing rights to halibut. Most tribes fish inside Puget Sound. Tribal allocations include a year-round ceremonial and subsistence (C&S) component (83 FR 13080, March 26, 2018). Under the 2019 Pacific Halibut Catch Sharing Plan for Area 2A, 35 percent of the area 2A TAC is allocated to the 13 treaty Indian tribes in subarea 2A-1²². Tribal C&S fishery begins on January 1 and continues through December 31. No harvest limits apply to this fishery, except that when the commercial fishery is closed, treaty Indians may take and retain not more than two halibut per day per person for subsistence purposes (84 FR 9243, March 14, 2019).

Before fishing under the subsistence halibut regulations, fishermen must obtain a Subsistence Halibut Registration Certificate (SHARC). Special permits for community harvest, ceremonial, and educational purposes are also available to qualified Alaska communities and Alaska Native Tribes. Fish harvest limits and fishing seasons vary by region and depend on the type of permit issued. For example, in regulatory area 2C (Sitka Sound), SHARC permits allow fishermen to take 10 halibut per day per vessel from September 1 through May 31 using a maximum of 30 hooks per vessel, and five halibut per day per vessel from June 1 through August 31 with a maximum of 15 hooks per vessel. No power hauling equipment is allowed (NMFS, No Date-h). **Figure 3.13-9** shows a map of subsistence halibut fishing areas around Alaska.



Source: NOAA, No Date-g

Figure 3.13-9. Halibut Subsistence Fishing Areas

²¹ The 13 treaty Indian tribes are: Hoh, Jamestown S’Klallam, Lower Elwha S’Klallam, Lummi, Makah, Nooksack, Port Gamble S’Klallam, Quileute, Quinault, Skokomish, Suquamish, Swinomish, and Tulalip (50 CFR § 300.64).

²² Subarea 2A-1 includes: all waters off the coast of Washington that are north of the Quinault River (47°21.00’ north latitude) and east of 125°44.00’ west longitude; all waters off the coast of Washington that are between the Quinault River (47°21.00’ north latitude) and Point Chehalis (46°53.30’ north latitude), and east of 125°08.50’ west longitude; and all inland marine waters of Washington.

Table 3.13-2 summarizes the subsistence fishing information related to salmon and halibut described in Sections 3.13.1.11.1 and 2.13.1.11.2.

Table 3.13-2. Summary of Subsistence Fishing of Salmon and Halibut

Species	Communities engaged in subsistence fishing	Hunting Season	Hunting Areas	Harvest limits
Salmon	Effectively all Alaskan Native and indigenous communities inhabiting coastal and riverine areas of the Pacific Northwest.	Varies by region.	Coastal waters and rivers of Alaska and the Pacific Northwest.	Varies by region and permit.
Halibut	North Pacific Halibut Act of 1982 identifies over 120 Alaska Native communities eligible to harvest subsistence halibut. Additionally, 13 western Washington tribes possess treaty fishing rights to halibut.	Generally year-round, though limits may vary by season in certain regulatory areas.	North Pacific Halibut Act of 1982 designates specific areas for the 13 treaty tribes.	Varies by regulatory area and permit type.

3.13.1.12.3 Other Fish Species

For numerous Native American tribes that reside within the U.S. portion of the Great Lakes Basin, Upper Mississippi River Basin, and Ohio River Basin, fishing for subsistence is an important element of their traditional way of life. Sixteen of the 37 federally recognized tribes that occupy these lands have retained their right to hunt, fish, and gather under several treaties signed with the federal government (referred to as “treaty tribes”)²³ and continue subsistence harvesting in the Great Lakes and Upper Mississippi River Basins (see **Figure 3.13-10**). Although the communities that engage in subsistence activities and the harvests associated with these activities are small, the activities play a crucial role in the tribes’ cultural identities. For example, the Chippewa or Ojibwe conduct species ceremonies at the beginning and

²³ The 16 federally recognized treaty tribes in the Great Lakes region are as follows: Grand Portage Band of Lake Superior Chippewa Indians (Wisconsin [WI]), Fond du Lac Band of Lake Superior Chippewa Indians (Minnesota [MN]), Mille Lacs Band of Ojibwe (MN), St. Croix Chippewa Indians of Wisconsin (WI), Lac Courte Oreilles Band of Ojibwe (WI), Lac du Flambeau Band of Lake Superior Chippewa Indians (WI), Lac Vieux Desert Band of Lake Superior Chippewa Indians (Michigan [MI]), Bad River Band of Lake Superior Chippewa Tribe (WI), Red Cliff Band of Lake Superior Chippewa Indians (WI), Keweenaw Bay Indian Community (MI), Sokaogon Chippewa Community (WI), Sault Ste. Marie Tribe of Chippewa Indians (MI), Bay Mills Indian Community (MI), Little Traverse Bay Bands of Odawa Indians (MI), Little River Band of Ottawa Indians (MI), and Grand Traverse Band of Ottawa and Chippewa Indians (MI).

towards the end of each fishing season. Generally, only a few tribal members engage in subsistence harvesting, but their harvest is shared with family, friends, and those in the community unable to fish. Subsistence harvesting is at the core of the tribes' cultural identity and is an indication of their status as sovereign entities. It is an activity cherished by all, even those members of the community who are not presently engaged in the practice (USACE, 2012b).



Source: USACE, 2012b

Figure 3.13-10. Federally Recognized Tribes in and Around the Great Lakes Basin

Historically, traditional subsistence resources utilized by the tribes varied with the season and local environment. Though fishing was conducted year-round, Chippewa men would travel to and camp out at productive fishing sites during the summer and fall seasons. Traditional methods included the use of nets, weirs and traps, fish spears, angling, poisons, bows and arrows, and fishing lures. Some of the fish species historically harvested by the Great Lakes tribes included catfish, freshwater cod, char/lake trout, smelt, grayling, and whitefish (USACE, 2012b).

Present-day subsistence fishing practices have continued the use of traditional methods of harvesting such as gill nets, seine nets, spear fishing, angling, and catching by hand. These methods are regulated by individual tribes and inter-tribal organizations, such as the Chippewa Ottawa Resource Authority (CORA) and the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), due to their potential to capture many fish at once and potentially deplete their numbers. The fish species that are regulated are monitored closely by these organizations due to their popularity with subsistence fishers and the risk of overfishing. **Table 3.13-3** provides an overview of the species of fish harvested and the fishing methodologies employed by the tribes regulated by CORA and GLIFWC.

Table 3.13-3. Subsistence Fishing in the Great Lakes Basin*

Regulatory Authority	Member Tribes	Fish Species Harvested	Harvest Limits
Chippewa Ottawa Resource Authority	Bay Mills Indian Community	Bass, catfish, common carp, lake sturgeon, salmon (coho, chinook), smelt, trout (brown, brook, lake, rainbow), lake whitefish, yellow perch	No more than 45 kgs (100 lbs.) of all species in possession
	Grand Traverse Band of Ottawa and Chippewa Indians		
	Little River Band of Ottawa Indians		
	Little Traverse Bay Bands of Odawa Indians		
	Sault Ste. Marie Tribe of Chippewa Indians of Michigan		
Great Lakes Indian Fish and Wildlife Commission	Bay Mills Indian Community	Walleye, muskellunge, largemouth bass, smallmouth bass, northern pike, lake sturgeon, burbot	Varies per species and tribe
	Keweenaw Bay Indian Community		
	Lac Vieux Desert Band of Lake Superior Chippewa Indians		
	Bad River Band of Lake Superior Chippewa Tribe		
	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin		
	Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin		
	Lac Courte Oreilles Band of Ojibwe		
	Sokaogon Chippewa Community		
	St. Croix Chippewa Indians of Wisconsin		
	Mille Lacs Band of Ojibwe		
	Fond du Lac Band of Lake Superior Chippewa Indians		

Source: USACE, 2012b

*Table 3.13-3 is not a comprehensive table of all tribes that practice subsistence fishing and all the fish species that they harvest.

For several Native American tribes living in the Gulf Coast area of the U.S., fishing for subsistence is a crucial component of their daily livelihood. For example, the Miccosukee Tribe inhabiting the Everglades National Park in Florida rely on native fish species such as red ear, largemouth bass, and blue gill for subsistence, recreational, and cultural uses (Miccosukee Tribe of Indians, 2010). Under Florida state law, members of the Miccosukee and Seminole Tribes are authorized to take fish for subsistence purposes at any time within the boundaries of their respective reservations and can exercise their fishing rights within the Big Cypress Preserve (Florida Statute § 285.09). Similarly, the Mississippi Band of Choctaw Indians can legally engage in subsistence fishing year-round within the exterior boundaries without obtaining any Tribal or state license or permit. Other Native American tribes located in the Gulf Coast region that engage in subsistence fishing activities include the Chitimacha, Tunica-Biloxi, Coushatta, Houma, and Jena Band of Choctaws (MMS, 2002).

Several distinct ethnic, cultural, and low-income groups that inhabit the Gulf Coast are dependent on the natural resources provided by its marshes, barrier islands, coastal beaches, and wetlands (BOEM, 2012).

Low incomes tend to coincide with concentrations of minority populations across all of the Gulf Coastal States: African-American, Hispanic, and/or Asian-Americans (MMS, 2002). Coastal minority communities and low-income groups rely heavily on Gulf Coast fisheries and other traditional fishing activities to supplement their diet. Subsistence fishing in these regions is poorly documented and a comprehensive account of this activity is not available (BOEM, 2012).

Hawaiian fishing communities are also dependent on or engaged in recreational, subsistence, and traditional fishing practices. Fish species such as blue marlin, mahimahi, goatfishes, trevallies and other jacks, scad, skipjack tuna, smallmouth bonefish, snappers, wahoo, and yellowfish tuna are most commonly harvested. Charter fishing and related forms of recreation contribute to the state's tourism economy. Non-commercial fishing is an important part of the Hawaiian culture, and sharing of seafood among family and friends are particularly important local traditions (NMFS, 2015d).

In other territories in the Pacific Islands region, such as American Samoa, nearshore fishing is undertaken largely for purposes of subsistence. Extensive fish and shellfish are harvested by residents from reef areas adjacent to the island villages. In the Commonwealth of the Northern Mariana Islands, reef-associated fish, shallow-water bottomfish, and reef invertebrates such as shellfish and crabs are consumed by anglers, their immediate family, extended family, and friends. Fishing primarily occurs for social and cultural purposes, rather than economic. Similarly, the people of Guam, including various immigrant communities, continue to depend on fishing and locally caught seafood to reinforce and perpetuate cultural traditions such as community sharing of food (NMFS, 2015d).

3.13.2 Environmental Consequences for Environmental Justice

This section discusses potential impacts of the activities associated with Alternatives A, B, and C on Alaska Natives, indigenous tribes, and other minority and low-income communities (collectively referred to as "EJ communities" throughout this section) who hunt marine mammals and/or fish primarily for their subsistence, as well as for cultural and recreational purposes.

3.13.2.1 Methodology

The causes from NOS project activities that may impact marine mammals and fish hunted for subsistence or other purposes described in the affected environment section in the action area include: (1) active underwater acoustic sources (i.e., from echo sounders, ADCPs, and acoustic communication systems); (2) vessel and equipment sounds - underwater and airborne (i.e., from surface vessels; ROVs and autonomous systems; low-flying aircraft); (3) vessel presence, including equipment in the water (i.e., visual and physical disturbance to and risk of collisions with marine mammals); (4) human activity (i.e., onboard vessels, on land during tide gauge and GPS reference station installation, and underwater during SCUBA operations); (5) accidental leakage or spillage of oil, fuel, and chemicals into surrounding waters (i.e., from vessel operations); (6) trash and debris (i.e., potential for entanglement and ingestion); and (7) air emissions (i.e., from smokestacks and outboard motors). Potential impacts on marine mammals and fish are discussed in Sections 3.5 and 3.7, respectively, and are referenced throughout this section as it relates to the ability of EJ communities to hunt or fish for subsistence or other purposes.

NOS projects may also indirectly benefit EJ communities with the availability of new mapping and charting information. Economic benefits are discussed in Section 3.12, Socioeconomics. The associated potential benefits on EJ communities are discussed below.

As discussed in Section 3.2.2, significance criteria were developed for each resource analyzed in this PEIS to provide a structured framework for assessing impacts from the Proposed Action and the significance of the impacts. The significance criteria for environmental justice are shown in **Table 3.13-4**.

Table 3.13-4. Significance Criteria for the Analysis of Impacts to Environmental Justice

Impact Descriptor	Context and Intensity	Significance Conclusion
Negligible	No observable decrease in the total annual subsistence catch numbers of a species hunted by low-income or minority communities. No observable increase in the time required and the distance traveled to catch or harvest the same amount compared to previous years in which NOS projects did not occur. Impacts from any given project would be temporary (lasting the duration of and immediately after NOS projects and activities).	Insignificant
Minor	A detectable decrease in the total annual subsistence catch numbers of a species hunted by minority or low-income communities, or a detectable increase in time needed and the distance traveled to harvest or catch the same amount compared to previous years in which NOS projects did not occur. Impacts from any given project would be temporary or short-term (lasting beyond NOS activities, up to 1 year).	
Moderate	A notable decrease in the total annual subsistence catch numbers of a species hunted by minority or low-income communities, or a notable increase in the time needed and the distance traveled to harvest or catch the same amount compared to previous years in which NOS projects did not occur. Impacts would be short-term.	
Major	Disproportionally high and adverse impacts on minority or low-income populations' continued ability to subsistence hunt. A substantial decrease in the total annual subsistence catch numbers of a species hunted by minority or low-income communities, or a substantial increase in the time needed and distance traveled to harvest or catch the same amount compared to previous years in which NOS projects did not occur. Impacts would be long-term (lasting longer than 1 year).	Significant

3.13.2.2 Alternative A: No Action - Conduct Surveys and Mapping for Coastal and Marine Data Collection with Current Technology and Methods, at Current Funding Levels

Impacts of Alternative A are discussed by impact causing factors for marine mammals and fish species harvested for subsistence by EJ communities. As indicated in **Table 3.4-4**, survey efforts under Alternative A would vary by year. Although the greatest number of nautical miles surveyed for proposed activities over the five-year period would be in the Southeast Region (over 50 percent), the only impacts on

subsistence hunting of marine mammals are expected to occur in the Alaska Region. Any impacts on gray whales would have no effect on the subsistence activities of the Makah Tribe residing in Washington state since there is currently a moratorium on gray whale hunting in the continental U.S. The greatest overall impacts on subsistence fishing are expected to occur in the Alaska Region, West Coast Region (particularly the Pacific Northwest), Great Lakes Region, and the Pacific Islands Region due to the prevalence of Alaska Natives, indigenous tribes, and other minority and low-income communities that engage in subsistence fishing activities in these regions. Since subsistence hunting and/or fishing activities in the Greater Atlantic and Southeast regions are not well documented, the scope of discussion of the potential impacts of the project in these regions is limited.

Under each impact causing factor, only the marine mammal and/or fish species that would be impacted by that factor is discussed. For example, since those cetaceans hunted for subsistence purposes (bowhead, gray, and beluga whales) live primarily underwater, the impact of air emissions on these species is not considered. This is followed by an analysis of these impacts on the subsistence hunting and fishing activities of the EJ communities.

3.13.2.2.1 Active Underwater Acoustic Sources

Sections 3.5.2.3 and 3.7.2.2 detail the adverse impacts of noise from active underwater acoustic sources on cetaceans, pinnipeds, fissipeds, and fish. As shown in the tables listing the total injury and behavioral disruption exposure estimates in Section 3.5.2.3, cetaceans, pinnipeds, and fissipeds important to the subsistence of Alaska Natives would only be subject to behavioral disruption exposures. The impacts to fish species would primarily be behavioral and may result in their temporary migration away from the sound sources affecting them. Such disturbances would be limited to the relatively small portion of a population that may be located near the active sound source.

Potential adverse impacts to subsistence activities as they relate to EJ communities primarily include behavioral disruptions in individual animals. The disturbance from underwater active acoustic sources could cause the species movements to be deflected farther offshore, causing them to temporarily abandon areas where hunting and harvesting habitually occur. Displaced individuals could exhibit more wary or skittish behavior, making them harder to strike/catch (BOEM, 2018a). Hunting/fishing crews could be required to travel greater distances from shore to the new hunting areas, which could lead to increased expenditure on gas, additional travel time, and potential increased risk to crews from adverse weather, depending upon the time of the year. Greater hunting distances would also mean longer distances to tow the harvested animal to shore, during which time it may spoil (NMFS, 2016b). This could lead to a decrease in the number of species successfully harvested by subsistence hunters/fishers.

The magnitude of the impacts would depend on the degree of overlap between the hunting season and the activities, with greater adverse impacts on EJ communities that rely on species that are only hunted during specific seasons to account for animal migration patterns and seasonal changes in weather and ice, as described in Section 3.13.1. Survey and whaling seasons are bound to overlap due to safety and weather considerations, therefore it would not be practicable for NOS to avoid surveying activities during all subsistence hunting seasons. For species with designated hunting seasons, increased hunting time could potentially decrease harvest numbers. Since surveys would occur in the spring/summer months in Alaska, the spring bowhead whale harvest of the Iñupiat and Siberian Yup'ik people, the spring and summer beluga harvest, and the spring and summer northern fur seal harvest of the Unangans of St. Paul

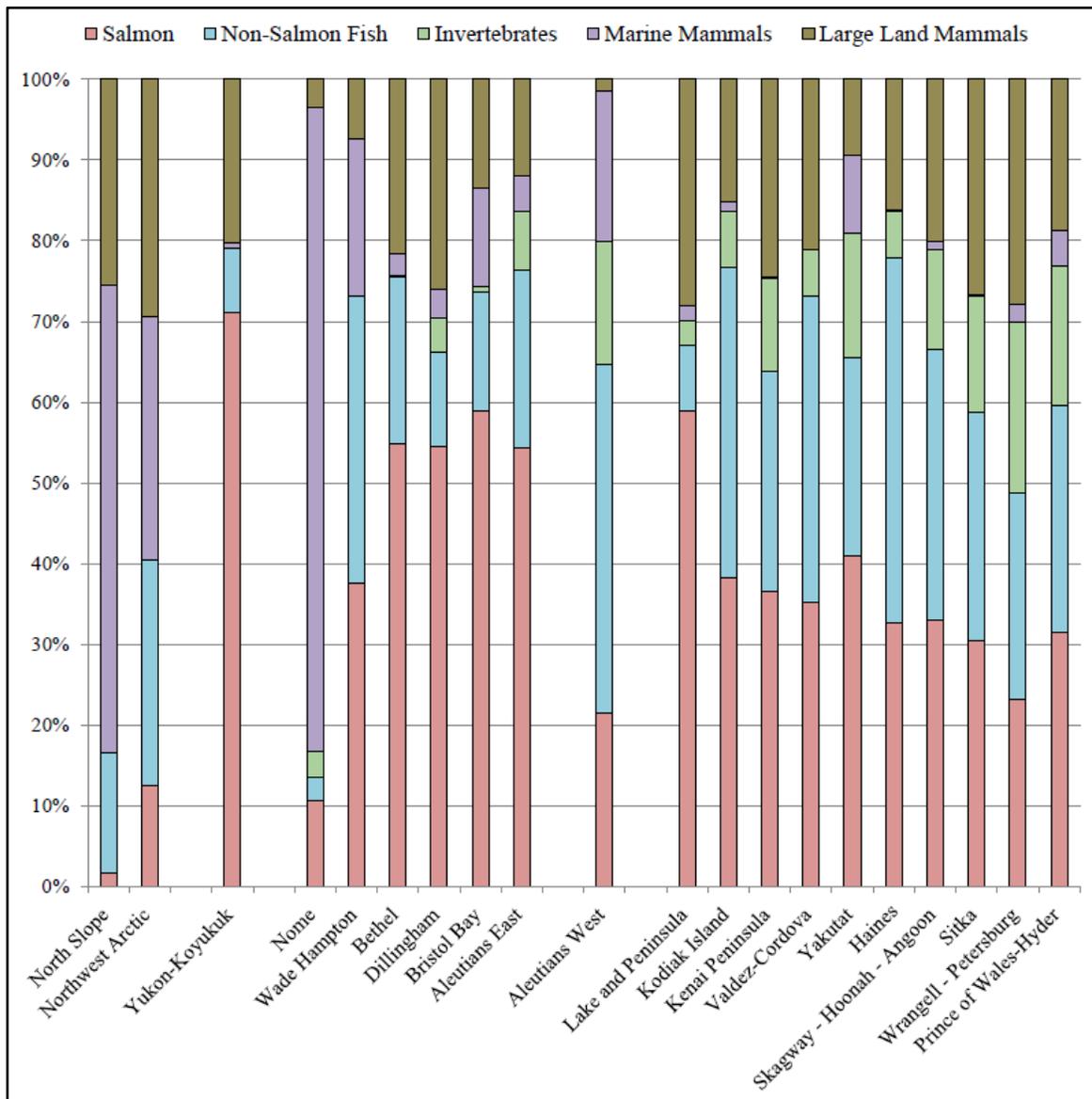
and St. George Islands could be particularly impacted²⁴. Impacts on the harvest limits of other species of marine mammals and fish would be relatively less pronounced due to year-round hunting provisions.

For some subsistence communities, the decrease in harvest numbers of marine mammals could have adverse economic impacts. The Iñupiat and Siberian Yup'ik people inhabiting remote areas in the northern and western coasts of Alaska primarily rely on the harvest of bowhead whale for subsistence. Food available for purchase in the village grocery stores is often expensive. A pound of beef, for example, could cost anywhere between \$10 - \$20. Harvesting whale brings an average of approximately 1.1 million to 2 million pounds of food per year, which is shared among members of Alaska's Native subsistence communities. Replacing the food derived from whale with beef would cost the subsistence communities approximately \$11 - \$30 million per year (IWC, No Date-a). However, these communities do not entirely rely on a single species to meet their subsistence requirements. In addition to whales, seals, fish, and other marine species, terrestrial resources such as caribou, moose, small game, and edible roots and berries are also commonly harvested by the residents of northern and western Alaskan villages (BOEM, 2018a).

Most EJ communities across all five geographic regions rely on the harvest of fish for subsistence purposes. **Figure 3.13-11** shows the dependence of Alaskan communities on salmon and non-salmon fish species compared to other resources for subsistence. Similarly, many minority and low-income communities, especially in the Pacific Northwest, Great Lakes, Gulf of Mexico, and Pacific Islands regions engage in subsistence fishing for their dietary requirements. These communities could be adversely affected due to the behavioral disruptions experienced by fish species exposed to underwater acoustic sources. However, given the small spatial extent of no more than a few project vessels operating at any one time relative to the generally large-scale distribution of fish populations, the impacts would be minimal.

As described in Section 3.13.1, since most marine mammals and fish species harvested for subsistence are also crucial to the traditions and customs of Alaska's Native subsistence communities, decreased harvest or catches could also have an adverse cultural impact on these communities. A loss of sociocultural values can occur with a loss of eating and sharing traditional subsistence foods since this activity is a substantial contributor to cultural identity, tradition, and social bonds in Alaskan communities. Harvest loss, if sustained, could result in disruptions of food sharing patterns, which could diminish general health, nutritional health, and well-being of affected individuals (BOEM, 2018a).

²⁴ "Designated hunting seasons" refer to hunts that are limited to specific seasons due to animal migration patterns and seasonal changes due to weather and ice. These are described in detail in Section 3.13.1. The Proposed Action would not place any additional restrictions on the bowhead whale quota allocated by IWC or during hunting seasons. NOS acknowledges the importance of Alaska Native subsistence resources. Therefore, NOS is committed to ongoing communication with Alaskan communities to avoid impacts that could directly or indirectly affect subsistence resources.



Source: NMFS, 2016c

Figure 3.13-11. Proportions of Major Subsistence Species Groups Harvested in Alaska Communities

NOS program offices routinely communicate their project plans through designated NOAA representatives to Alaska Native and Pacific Northwest tribal communities through outreach letters and/or at established meetings. Typically, NOS conducts initial coordination in an informal fashion, such as via emails, to determine the need for a more formal consultation process in the future. These letters/meetings are used to inform the tribal or subsistence communities of upcoming NOS plans for or updates to projects that overlap areas designated as fishing or hunting grounds. NOS would attend meetings to provide a platform for Alaska Native and Pacific Northwest tribal communities to voice any of their thoughts or concerns, particularly those pertaining to treaty or subsistence hunting and fishing activities. NOS would work closely with tribal or subsistence communities to ensure concerns related to projects in areas designated as fishing or hunting grounds for ceremonial or subsistence species, especially during crucial fishing or hunting seasons, are addressed as appropriate. Through this

communication strategy, NOS would minimize the potential for adverse impacts on Alaska and the Pacific Northwest communities.

Subsistence species would only be subject to behavioral disruption exposures and would primarily experience behavioral disruptions. The amount of time individuals may exceed behavioral thresholds would on average be for less than 2-3 minutes. These disturbances are expected to be transient and surveys, once completed in a given area, would not generally be repeated for years, thus limiting an individual's behavioral disruption to a few minutes. However, the number of individual animals impacted over the five-year project period would be much greater than the number that is actually harvested and consumed by EJ communities in Alaska. Therefore, the overall effects of active underwater acoustic sources on subsistence hunting activities of marine mammals would continue to be **adverse** and **moderate**. Impacts to subsistence fishing communities would continue to be **adverse** and **minor**. Overall, it is unlikely that these activities would generate sounds loud enough to cause direct mortality; therefore, a reduction in the population abundance of subsistence species is not anticipated. Since subsistence communities rely on the harvest of multiple species of marine mammals and fish, as well as terrestrial resources to fulfill their subsistence, economic, and cultural needs, adverse effects would continue to be **insignificant**.

3.13.2.2.2 Vessel and Equipment Sounds

As described in Sections 3.5.2.3 and 3.7.2.2, all cetaceans, pinnipeds, fissipeds, and fish species crucial for subsistence could be adversely impacted due to changes in behavioral patterns caused by sounds generated by surface vessels, ROVs, autonomous systems, and low-flying aircraft.

The impact of primary concern to EJ communities is the behavioral disturbance to subsistence species, including displacement of species from their current hunting grounds, evasive maneuvers, and avoidance behaviors. Hunting areas generally tend not to have fixed geographic locations and may vary slightly from year to year (move closer to or further away from the shore), a phenomenon that hunting/fishing crews are generally accustomed to. However, if the species migrate too far outside of these areas, in response to vessel and equipment sounds, it could lead to adverse impacts on EJ communities. Hunting/fishing crews would be required to travel greater distances from shore to the new hunting areas, increasing gas expenditures, adding travel time, and potentially putting the crew at greater risk for adverse weather, depending upon the time of the year. Greater hunting distances would also mean longer distances to tow the harvest to shore, during which time it may spoil (NMFS, 2016d). This could lead to a decrease in the number of species successfully harvested by subsistence hunters/fishers.

The magnitude of impact would vary based on the degree of behavioral disruption caused by factors such as vessel speed, size, location, frequency, pattern of travel, as well as timing of the activities. Since most surveys in the Alaska Region would occur in spring/summer seasons, impacts would be greater on the communities engaged in subsistence hunting/fishing activities during this time. These include bowhead whales harvested by the Iñupiat and Siberian Yup'ik people, beluga whales harvested by Alaska Natives across 34 villages, as well as northern fur seals harvested by the Unangans of St. Paul and St. George Islands.

Since cetaceans, certain pinnipeds, and fish species are less responsive to aircraft in comparison to vessels in water, the sound emitted by aircraft overflights and their visual presence is not expected to make these species unavailable to, or more difficult to harvest by subsistence hunters/fishers. Aircraft disturbances would have a greater impact on walruses and polar bears. Overall, potential adverse impacts from aircraft

would be minimal considering the relatively low level of aircraft activity that would occur (once or twice a year) along with the short duration of exposure to sound and visual disturbance.

Adverse impacts to subsistence fishing communities, particularly in the Pacific Northwest, Great Lakes, and Gulf of Mexico regions could occur from vessel sound disturbances, resulting in the displacement of fish from areas where they are harvested. However, these impacts would be temporary. No impacts to fish are expected from the sound and visual disturbance generated by aircraft.

Most marine mammals and fish species harvested for subsistence are also crucial to the traditions and customs of Alaska's Native subsistence communities, and decreased harvest could also have an adverse cultural impact on these communities. A loss of sociocultural values can occur with a loss of eating and sharing traditional subsistence foods since this activity is a substantial contributor to cultural identity, tradition, and social bonds in Alaskan communities. Harvest loss, if sustained, could result in disruptions of food sharing patterns, which could diminish general health, nutritional health, and well-being of affected individuals (BOEM, 2018a).

As mentioned above, NOS routinely communicates project plans to Alaska Native and Pacific Northwest tribal communities either formally or informally. NOS would continue to attend meetings to provide a platform for Alaska Native and Pacific Northwest tribal communities to voice their thoughts or concerns, particularly those pertaining to treaty or subsistence hunting and fishing activities. NOS would work closely with tribal or subsistence communities to ensure that concerns related to projects in areas designated as fishing or hunting grounds for ceremonial or subsistence species, especially during crucial fishing or hunting seasons, are addressed as appropriate. Through this communication strategy, NOS would minimize the potential for adverse impacts on Alaska and the Pacific Northwest communities.

Overall, the effects of vessel and equipment sounds on subsistence hunting of marine mammals would continue to be **adverse** and **minor**, whereas the impacts to subsistence fishing communities would continue to be **adverse** and **negligible**. Since vessel sounds are currently a prevalent source of ambient underwater sound, vessel sounds would not be at levels expected to cause anything more than possible temporary or short-term behavioral changes and would cause minimal impacts on subsistence harvests. Multiple activities occurring simultaneously in the Alaska Region could lead to greater magnitudes. However, since subsistence communities rely on the harvest of multiple species of marine mammals and fish to fulfil their subsistence and cultural needs, adverse effects would continue to be **insignificant**.

3.13.2.2.3 Vessel Presence, Traffic, and Movement of Equipment in Water

As summarized in Sections 3.5.2.3 and 3.7.2.2, the impacts on cetaceans, pinnipeds, fissipeds, and fish from vessel presence, traffic, and movement of equipment in water of primary concern to subsistence EJ communities include temporary displacement a short distance from preferred habitats, and the possibility of reduced harvest numbers due to the potential of marine mammal vessel strikes resulting in death.

The presence of vessels in water and the underwater movement of equipment would cause species to scatter from their preferred habitats and therefore be less readily available for subsistence hunting/fishing activities. Entanglement with ropes and wires attached to the equipment could trap an individual and adversely impact harvest quantities. Species could also be indirectly impacted from these activities due to disturbance caused to the species on which they prey, which could result in the migration of the subsistence species in search of areas with a greater prey supply. Displaced species are expected to return to their preferred habitats and resume normal activities once the vessel leaves the area. In the event that the species stray too far away from their usual hunting grounds, there would be adverse impacts to the

subsistence communities from increased travel time, and additional expenditure on gas (as discussed above under Vessel and Equipment Sounds). Mortality of subsistence species as a result of their collision with vessels could potentially reduce the number of marine mammals available for harvest, which would adversely impact subsistence hunting activities. However, the likelihood of a vessel strike would be very low.

The magnitude of impact would vary based on the degree of behavioral disruption caused by factors such as vessel speed, size, location, frequency, and pattern of travel, as well as the timing of the activities. Since most surveys in the Alaska Region would occur in spring/summer seasons, impacts would be greater on the communities engaged in subsistence hunting/fishing activities during this time. These include bowhead whales harvested by the Iñupiat and Siberian Yup'ik people, beluga whales harvested by Alaska Natives across 34 villages, and northern fur seals harvested by the Unangans of St. Paul and St. George Islands.

Adverse impacts to subsistence fishing communities, particularly in the Pacific Northwest, Great Lakes, and Gulf of Mexico regions, could occur from vessel wake and underwater turbulence, resulting in the displacement of fish from areas where they are harvested. However, these impacts would be temporary. Fish are expected to return to the area and resume normal activities once the vessel departs or the turbulence ceases.

Most marine mammals and fish species harvested for subsistence are also crucial to the traditions and customs of Alaska's Native subsistence communities, and decreased harvest could also have an adverse cultural impact on these communities. A loss of sociocultural values can occur with a loss of eating and sharing traditional subsistence foods since this activity is a substantial contributor to cultural identity, tradition, and social bonds in Alaskan communities. Harvest loss, if sustained, could result in disruptions of food sharing patterns, which could diminish general health, nutritional health, and well-being of affected individuals (BOEM, 2018a).

NOS routinely communicates its project plans through designated NOAA representatives to Alaska Native and Pacific Northwest tribal communities through outreach letters and/or at established meetings. Typically, NOS conducts initial coordination in an informal fashion, such as via emails, to determine the need for a more formal consultation process in the future. These letters/meetings are used to inform the tribal or subsistence communities of upcoming NOS plans for or updates to projects that overlap areas designated as fishing or hunting grounds. NOS would attend meetings to provide a platform for Alaska Native and Pacific Northwest tribal communities to voice any of their thoughts or concerns, particularly those pertaining to treaty or subsistence hunting and fishing activities. NOS would work closely with tribal or subsistence communities to ensure concerns related to projects in areas designated as fishing or hunting grounds for ceremonial or subsistence species, especially during crucial fishing or hunting seasons, are addressed as appropriate. Through this communication strategy, NOS would minimize the potential for adverse impacts on Alaskan and Pacific Northwest EJ communities.

Although vessel traffic is considered a common source of disturbance and the presence of survey vessels is expected to cause only temporary disturbances, subsistence hunters tend to have a great sensitivity to vessel presence and traffic while hunting for marine mammals. Additionally, the likelihood of animal mortality due to vessel strikes would continue to cause **adverse** and **moderate** impacts to subsistence hunting of marine mammals. Impacts to subsistence hunting communities across all five geographic regions would continue to be **adverse** and **negligible**. Since survey efforts would be dispersed across five

geographic regions over a period of five years, and surveys would likely not be repeated in the same area, adverse effects would continue to be **insignificant**.

3.13.2.2.4 Human Activity

As mentioned in Sections 3.5.2.3 and 3.7.2.2, human activity on vessels above the surface of the water would not be expected to have any effects on cetaceans or fish underwater, and would therefore have no impacts on whale hunters and fishers. Pinnipeds and fissipeds that are on land or ice could be affected by the sound from human activity onboard vessels; however, the sounds and presence from the vessels themselves would likely be greater. The impacts from vessel sounds and presence on EJ communities are discussed above.

During SCUBA operations, the presence of divers could temporarily disturb the marine mammals and fish in the vicinity but is not expected to make the species unavailable for or more difficult to harvest by subsistence hunters/fishers.

Disturbance caused by onshore human activity during tide gauge installation and maintenance, as well as installation of shore-based GPS reference stations, could affect pinnipeds and polar bears, if such activities occur near pinniped haul out areas or close to polar bear habitats. This could temporarily displace the species from their hunting areas, which would adversely impact subsistence hunting activities resulting in increased travel time and additional expenditure on gas (as discussed above under Vessel and Equipment Sounds). Although very rare, disturbance from onshore human activities could cause female polar bears in maternity dens to abandon their cubs, resulting in mortality of the cubs. Human-bear interactions during tide gauge and GPS reference system installation could result in injury or mortality of both bears and humans. This could have adverse impacts on EJ communities, particularly the Iñupiat and Siberian Yup'ik people of Alaska, by decreasing the number of polar bears available to hunt. However, since disturbances from human activity would only occur temporarily, impacts would be minimal.

To minimize impacts on subsistence hunting/fishing activities, NOS routinely communicates project plans to Alaska Native and Pacific Northwest tribal communities either formally or informally. NOS would attend meetings to provide a platform for Alaska Native and Pacific Northwest tribal communities to voice any of their thoughts or concerns, particularly those pertaining to treaty or subsistence hunting and fishing activities. NOS would work closely with tribal or subsistence communities to ensure concerns related to projects in areas designated as fishing or hunting grounds for ceremonial or subsistence species, especially during crucial fishing or hunting seasons, are addressed as appropriate.

The effects of human activities on subsistence hunting/fishing activities would continue to be **adverse** and **minor** and would primarily impact subsistence hunting of pinnipeds and fissipeds. Multiple activities occurring simultaneously in the Alaska Region could lead to larger magnitudes and more widespread impacts. Since these subsistence communities rely on the harvest of multiple species of marine mammals and fish to fulfill their subsistence and cultural needs, adverse effects are expected to continue to be **insignificant**.

3.13.2.2.5 Accidental Leakage or Spillage of Oil, Fuel, and Chemicals into Surrounding Waters

The effects of accidental leakage or spillage of oil, fuel, and chemicals on subsistence hunting/fishing activities would continue to be **adverse** and **minor**. Impacts would be greater if accidental leakages or spills occurred within or adjacent to hunting areas, or if they adversely impacted prey species. Species would try to avoid such areas or migrate to areas with a greater supply of prey, making them less available

to, or more difficult to harvest by subsistence hunters/fishers. Additionally, if marine mammals/fish contaminated with oil, fuel, and/or chemicals are harvested and consumed by subsistence communities, public health could be adversely impacted due to the potential for bioaccumulation of these substances. Overall, impacts to subsistence hunting/fishing activities resulting from accidental leaks or spills would be minimal; therefore, adverse effects are expected to continue to be **insignificant**.

3.13.2.2.6 Trash and Debris

Effects of marine trash and debris on subsistence hunting/fishing activities would continue to be **adverse** and **negligible**. These impacts would occur for several reasons. Species could become accidentally entangled with cables, lines, nets, or other objects which have detached from vessels and become suspended in the water column. This could have the effect of rendering an entangled animal easier to capture during subsistence hunting. Although it is possible that lines, cables, nets, and other objects could detach from a vessel used by NOS and become debris in which marine mammals could get entangled, it is not very likely.

Species are not expected to be displaced from their habitats, thus no impacts associated with the abandonment of hunting areas are expected to be caused by trash and debris. Adverse impacts could result from the ingestion of trash or debris by individuals. Consumption of meat contaminated from ingestion of pollutants could have indirect adverse impacts on the health of subsistence communities; however, impacts from ingestion are expected to be minimal and would only occur accidentally. Additionally, vessel operators would be required to comply with USCG and EPA regulations to minimize adverse impacts from discarded trash and debris in hunting areas. Overall, impacts to subsistence hunting/fishing activities resulting from marine trash and debris would be minimal, and adverse effects are expected to continue to be **insignificant**.

3.13.2.2.7 Air Emissions

Effects of air emissions on subsistence hunting/fishing activities would continue to be **adverse** and **negligible** and would primarily impact subsistence hunting of pinnipeds and fissipeds and subsistence fishing activities. Pinnipeds and fissipeds could be exposed to air pollutants emitted by survey vessels; however, such emissions would be temporary and ephemeral and dissipate rapidly into the air. Emissions may not reach animals on land or ice as vessels would maintain a required distance away. Smokestack and motor emissions from project vessels could adversely affect fish habitat by increasing water acidity. Overall, impacts to subsistence hunting/fishing activities resulting from effects to air quality would be minimal, as discussed in Section 3.15; therefore, the adverse effects are expected to continue to be **insignificant**.

3.13.2.2.8 Availability of New Mapping and Charting Information

Hydrographic surveys conducted by NOS would provide valuable information about essential habitat for species of fish and marine mammals harvested for subsistence in the form of topographic maps of the seafloor, and in the form of fishery and marine mammal distribution maps. Scientists use estimates of biomass and population from these surveys to conduct annual stock assessments of various species to improve understanding of the species' life history, and the ecological and physical factors affecting their distribution and abundance. This information, in combination with data collected from mapping the sea ice and vessel traffic, could contribute to the economic stability of subsistence communities. Consequently, this could help ensure a stable supply of food, and help preserve a traditional culture based on subsistence harvesting that has continued for centuries (NOAA, No Date-a).

As reported by NOAA in 2018, Alaskan and Arctic waters, where a majority of subsistence hunting and fishing occurs, are largely uncharted with modern surveys, and many areas that have soundings were surveyed using older, outdated technology. In addition to providing information about fish and marine mammal habitats, benefits from surveying would include safer navigation, availability of weather and tsunami forecasts and storm surge events that affect local communities, and identification of the location of historic wrecks (NOAA, 2018b).

3.13.2.2.9 Conclusion

Since the effects of impact causing factors on EJ communities range from none to moderate, the overall impact of Alternative A on the subsistence hunting and fishing, local economy, and culture of EJ communities would continue to be **adverse** and **minor** to **moderate**; thus, impacts of Alternative A would continue to be **insignificant**. The mapping and charting information generated by Alternative A would continue to yield **beneficial** effects for EJ communities.

3.13.2.3 Alternative B: Conduct Surveys and Mapping for Coastal and Marine Data Collection with Equipment Upgrades, Improved Hydroacoustic Devices, and New Tide Stations

The same impact causing factors for marine mammals and fish, and therefore for EJ communities that hunt and/or fish for subsistence, considered under Alternative A are considered under Alternative B. Under Alternative B, all of the activities and equipment operations proposed in Alternative A would continue but at a higher level of effort, although the percentage of nautical miles covered by the project in each region would be the same as under Alternative A. Thus, as stated under Alternative A, the only impacts on subsistence hunting of marine mammals are expected to occur in the Alaska Region. Any impacts on gray whales would have no effect on the subsistence activities of the Makah Tribe residing in Washington state since there is currently a moratorium on gray whale hunting in the continental U.S. The greatest overall impacts to subsistence fishing are expected to occur in the Alaska Region, West Coast Region (particularly the Pacific Northwest), Great Lakes Region, and the Gulf of Mexico due to the prevalence of Alaska Natives, indigenous tribes, and other minority and low-income communities that engage in subsistence fishing activities.

Projects under Alternative B would take place in the same geographic areas and timeframes as under Alternative A; however, Alternative B would include more projects and activities, and thus more nautical miles traveled, than Alternative A. Overall, NOS survey effort would cover an additional 264,796 nm (490,402 km) under Alternative B (see **Table 3.4-5**) as compared to Alternative A (2,647,958 nm [4,904,017 km] total) across all regions over the five-year period. The types and mechanisms of impacts would remain the same in Alternative B as discussed for Alternative A. Therefore, the difference between the two alternatives is a matter of scale with an increased activity level, although distributed unevenly among the different types of activities, leading to a corresponding, incremental increase in effects under Alternative B as compared to Alternative A.

As discussed in Sections 3.5.2.4 and 3.7.2.3, impacts of Alternative B on cetaceans, pinnipeds, and fissipeds would be the same or slightly, but not appreciably, larger as those under Alternative A for the following impact causing factors: vessel and equipment sounds; vessel presence, traffic and movement of equipment in water; human activity; accidental leakage or spillage of oil, fuel, and chemicals into surrounding waters; trash and debris; and air emissions. Consequently, for these six factors, the impacts of Alternative B on Alaska Natives primarily engaged in subsistence hunting of marine mammals (and who may or may not fish for subsistence), would be the same, or slightly greater as compared to Alternative

A. For fish species, the effects of all seven impact causing factors under Alternative B, including active underwater acoustic sources, would be the same or slightly, but not appreciably, greater than those discussed under Alternative A. Thus, the corresponding impacts of Alternative B on EJ communities involved only in subsistence fishing (such as the indigenous tribes of the Pacific Northwest, the Great Lakes region, and the Gulf of Mexico) would be the same or slightly, but not appreciably, greater as those under Alternative A for all seven impact causing factors.

As shown in the tables listing the total behavioral disruption exposure estimates in Section 3.5.2.4, active underwater acoustic sources would lead to behavioral disruption exposure of cetaceans, pinnipeds, and fissipeds important to the subsistence of Alaska Natives. Since behavioral disruption exposure of individual animals would be somewhat higher under Alternative B, the impact on subsistence hunting activities of Native Alaskans would be slightly, but not appreciably, larger than those discussed under Alternative A.

3.13.2.3.1 Conclusion

The additional projects and nautical miles traveled under Alternative B across five regions would result in greater impacts on subsistence hunting and fishing activities of EJ communities overall, compared to Alternative A, but not so great that the magnitude of a particular impact causing factor would increase. Therefore, the impacts of Alternative B on Environmental Justice would be **adverse, minor to moderate, and insignificant**. The mapping and charting information generated by Alternative B would yield slightly greater **beneficial** effects for EJ communities than would occur under Alternative A.

3.13.2.4 Alternative C: Upgrades and Improvements with Greater Funding Support

The same impact causing factors for marine mammals and fish, and therefore for EJ communities that hunt and/or fish for subsistence, considered under Alternatives A and B are considered under Alternative C. Under Alternative C, all of the activities and equipment operation proposed in Alternative A would continue but at a higher level of effort, although the percentage of nautical miles in each region would be the same as under Alternative A. In addition, there would be an overall funding increase of 20 percent relative to Alternative B, thus the level of survey activity would increase further. The only impacts on subsistence hunting of marine mammals are expected to occur in the Alaska Region. Any impacts on gray whales would have no effect on the subsistence activities of the Makah Tribe residing in Washington state due to the moratorium on gray whale hunting in the continental U.S. The greatest overall impacts on subsistence fishing are expected to occur in the Alaska Region, West Coast Region (particularly the Pacific Northwest), the Great Lakes Region, and the Gulf of Mexico due to the prevalence of Alaska Natives, indigenous tribes, and other minority and low-income communities that engage in subsistence fishing activities in these regions.

Projects under Alternative C would take place in the same geographic areas and timeframes as under Alternatives A and B; however, Alternative C would include more projects and activities, and thus more nautical miles traveled, than Alternatives A and B. Overall, there would be an additional 264,796 nm (490,402 km) of survey effort under Alternative C (see **Table 3.4-6**) as compared to Alternative B (2,912,753 nm [5,394,419 km] total), and an additional 529,592 nm (980,803 km) as compared to Alternative A (2,647,958 nm [4,904,017 km] total) across all regions over the five-year period. The types and mechanisms of impacts would remain the same in Alternative C as discussed for Alternatives A and B. Therefore, the difference between the two alternatives is a matter of scale with an increased activity level, although distributed unevenly among the different types of activities, leading to a corresponding, incremental increase in effects under Alternative C as compared to Alternatives A and B.

As discussed in Sections 3.5.2.5 and 3.7.2.4, impacts of Alternative C on cetaceans, pinnipeds, and fissipeds would be the same or slightly, but not appreciably, greater than those under Alternatives A and B for the following impact causing factors: vessel and equipment sounds; vessel presence, traffic and movement of equipment in water; human activity; accidental leakage or spillage of oil, fuel, and chemicals into surrounding waters; trash and debris; and air emissions. Consequently, for these six factors, the impacts of Alternative C on Alaska Natives primarily engaged in subsistence hunting of marine mammals (and who may or may not fish for subsistence), would be the same as, or slightly larger, compared to Alternative A and B. For fish species, the effects of all seven impact causing factors under Alternative C, including active underwater acoustic sound sources, would be the same or slightly, but not appreciably, greater than those discussed under Alternatives A and B. Thus, the corresponding impacts of Alternative C on EJ communities involved only in subsistence fishing (such as the indigenous tribes of the Pacific Northwest and the Great Lakes region) would be the same or slightly, but not appreciably, greater as those under Alternative A and B for all seven impact causing factors.

As shown in the tables listing the total behavioral disruption exposure estimates in Section 3.5.2.5, active underwater acoustic sources would lead to behavioral disruption exposure of cetaceans, pinnipeds, and fissipeds important to the subsistence of Alaska Natives. Since behavioral disruption exposure of individual animals would be somewhat higher under Alternative C compared to Alternatives A and B, the impact on subsistence hunting activities of Native Alaskans would be slightly, but not appreciably, larger than those discussed under Alternatives A and B.

3.13.2.4.1 Conclusion

The additional projects and nautical miles traveled under Alternative C across five regions would result in greater impacts on subsistence hunting and fishing activities of EJ communities overall than would occur under Alternatives A and B; however, impacts would not be so great that the magnitude of a particular impact causing factor would increase. Therefore, the impacts of Alternative C on environmental justice would be **adverse, minor to moderate, and insignificant**. The mapping and charting information generated by Alternative C would yield incrementally greater **beneficial** effects for EJ communities than Alternatives A and B.