

***47 ALASKA TRIBES' MELTING SUBSISTENCE RIGHTS**

INTRODUCTION¹

Subsistence foods are distinct from those that line grocery stores' shelves throughout the United States. Mother Nature offers no guarantee that a particular kind of food will be available on demand. The Food and Drug Administration does not provide quality assurance.² To procure, protect, and store subsistence foods throughout the year, Alaska Native subsistence users must use their traditional knowledge.³

When the Alaska Native Claims Settlement Act (ANCSA)⁴ was enacted by the United States Congress in 1971, many Alaska Natives saw it as an encroachment on their subsistence rights. Over the last few decades, another threat to the ability of Alaska Natives to meet their subsistence needs has emerged--climate change. Climate change impacts the availability and safety of subsistence foods, the costs and risks of subsistence activities, and *48 the very knowledge on which subsistence depends.⁵ While there are laws and programs in place to address some of the environmental and health impacts related to climate change, there is little to ensure that Alaska Natives will be able to continue their traditional subsistence lifestyles.

This article suggests that climate change impacts subsistence-dependent Alaska Natives more than the Lower 48 Natives and other United States populations. The first part of the article discusses research and observations from the 2000s, suggesting that climate change affects the Alaskan environment more than that of any other state. It also considers how climate change affects subsistence and Alaska Natives' control over their subsistence activities. The second part of the article considers how the legal and political framework unique to Alaska limits the ability of Alaska tribes to control land and resources needed for subsistence. Finally, the article considers whether any non-tribal entity will be able to protect Alaska Natives' subsistence interests in the face of escalating climate change.

There are a number of caveats regarding this article's analysis of climate change. First, it is based on the premise that the earth has embarked on a period of overall warming, exacerbated by anthropogenic greenhouse gas emissions.⁶ There are still a large number of Americans who disagree with this premise.⁷ Second, many of the observations included in the article are based on weather changes, and the distinction between weather change and climate change is not always clear.⁸ Publicity surrounding climate change may influence interpretation of weather observations, whether or not this is appropriate.⁹ Third, the impacts of climate change cannot be understood in isolation from other changes, particularly those associated with economic development and rapid social and cultural change.¹⁰ Finally, *49 there are 229 federally recognized tribes in Alaska.¹¹ Alaska tribes have different cultures and economic situations and may have different views on the impacts of climate change.¹²

A. The Nature of Subsistence

Alaska law defines "subsistence uses" as:

[T]he noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption.¹³

This definition does not convey the significance of subsistence to many Alaska Natives who value it as a fundamental part of their culture.¹⁴ Alaska Native culture has traditionally been based on communal sharing of subsistence foods to satisfy individual and community needs.¹⁵ Communities dependent on subsistence consider it a collective or *50 cultural right (and duty) rather than an individual right,¹⁶ since a limited number of individuals usually provide for a larger community.¹⁷

Economic development has allowed most Alaska Native communities to shift from a “pure” subsistence economy into a mixed economy, in which hunting is more efficient, comfortable, and humane.¹⁸ But subsistence has remained a critical part of Alaska Native culture, and persists even in communities with the financial means to exist in a pure market economy.¹⁹ For example, in the North Slope Borough,²⁰ where the average household income was \$55,793 in 2003,²¹ 56 percent of households reported that they obtained at least half of their food from subsistence sources.²² (The North Slope and other locations within *51 Alaska are displayed on the map located at the end of this article.) Most Iñupiat Eskimos²³ have expressed a preference for subsistence foods supplemented with store-bought food and regard a healthy lifestyle as one involving subsistence activities and foods.²⁴

B. The Changing Nature of Alaska and the Arctic

Climate change is more visible in the Arctic than anywhere else.²⁵ In the past two decades, Arctic ambient temperatures have warmed at twice the rate of the rest of the world.²⁶ Alaska, which contains all of the United States’ Arctic lands, has seen a rise in winter temperatures of six to eight degrees Fahrenheit over the last fifty years.²⁷ With this warming, Alaska is experiencing changes in ocean pH levels, thawing permafrost, reductions in sea ice, changes in precipitation, storm surges, flooding, erosion, biozone shifts, and increased *52 weather variability.²⁸ The following examples of these phenomena from recent studies and interviews with Alaska residents are meant to be illustrative rather than comprehensive.²⁹

i. Changes in Ocean pH Levels

Oceans have always absorbed carbon dioxide, but they have only recently had to withstand the twenty-two million tons released each day by human activity.³⁰ Increased levels of carbon dioxide in the air have resulted in increased levels of carbonic acid in the water and lower ocean pH levels.³¹ Waters in the vicinity of Alaska can hold more carbon dioxide than waters near the lower forty-eight, because more absorption takes place in colder waters, and because there is less mixing from deep ocean waters in the shallow waters of Alaska’s broad continental shelves.³²

The change in pH levels is a stressor for some Alaska crab and fish species³³ and for shellfish larvae.³⁴ A 2009 report found multiple sites in the Gulf of Alaska “where the concentrations of shell-building minerals were so low that shellfish and other organisms in the region would be unable to build strong shells.”³⁵

Changing ocean pH levels impact not only those subsistence users who depend on the animals that are directly harmed, but also those who depend on animals that are higher in the food chain. For example, the Iñupiat depend on bowhead whales, which feed on small crustaceans such as copepods³⁶ that are vulnerable to lower pH levels. An upset in the bowhead whales’ food supply could result in a decrease in the bowhead whale population, which would lead to reduced availability for subsistence and possibly a lowering of the Iñupiat subsistence whaling quota set by the International Whaling Commission. An upset in the bowhead whales’ food supply could result in a decrease in the bowhead whale population, which could result in the International Whaling Commission reducing the bowhead whale quota for the Iñupiat.

****53 ii. Thawing Permafrost***

Alaska is the only state in the Union with permafrost³⁷ throughout most of its territory.³⁸ Throughout much of subarctic

Alaska, there has been a general increase in permafrost temperatures during the last several decades.³⁹ Some models predict that the thirty-foot layer of permafrost closest to the surface will disappear from most of subarctic Alaska by 2100.⁴⁰

Thawing permafrost leads to landscape changes that can contribute to further climate change.⁴¹ Thermokarsts (uneven terrain resulting from thawing permafrost) are becoming more common, and providing niches for new plants and shrubs.⁴² This adds “to the ‘greening’ of the tundra and warming of the soil, which in turn favors more shrub growth.”⁴³ Thawing permafrost also releases greenhouse gases that contribute to further warming.⁴⁴ Finally, thawing permafrost can cause lakes and ponds to drain,⁴⁵ contributing to dry conditions in the vicinity and increasing the likelihood of tundra fires.⁴⁶ The abnormally high incidence of tundra fires upsets the tundra vegetation on which caribou (and in turn, subsistence hunters) depend.⁴⁷

***54 iii. Reductions in Sea Ice**

“Alaska is also the only state in which large portions of the coastline are affected by sea ice.”⁴⁸ Sea ice is usually present along or close to the northern coast for at least eight to ten months of the year.⁴⁹ But sea ice has been forming and attaching to the Beaufort and Chukchi Sea⁵⁰ coasts later in the year, and breaking up earlier, resulting in less overall ice coverage.⁵¹ The Arctic ice caps that formed in 2007, 2008, and 2009 were the smallest three in 30 years.⁵² In the summer of 2009, roughly 50 percent of the Arctic ice cap was just a year old.⁵³ (In the past, multi-year ice represented 75 percent of the ice cap.⁵⁴) It is possible that as early as 2015, the Arctic Ocean may be ice-free for part of the summer.⁵⁵ “This would mean the disappearance of multi-year ice, as no sea ice would survive the summer melt season.”⁵⁶ With less snow and ice to reflect sunlight, more heat is absorbed into the earth—driving more snow and ice to melt.⁵⁷

iv. Water in the Wrong Place

Sea ice along the shore has historically protected coastal villages from fall and winter storm surges.⁵⁸ Now, with little or no shore ice to stop them, storm waves can surge against the coast—eroding the shoreline and flooding the villages.⁵⁹ “[V]illages in low-lying areas *55 along riverbanks or in river deltas are [also] susceptible to flooding and erosion caused by ice jams, snow and glacial melts, rising sea levels, and heavy rainfall.”⁶⁰

The General Accounting Office (“GAO”) found that more than 86 percent of the two hundred Alaska Native villages are already subject to flooding and erosion.⁶¹ The villages of Kivalina, Koyukuk, Newtok, and Shishmaref are in imminent danger from flooding and erosion, and are planning to relocate.⁶² In the village of Point Hope, residents “estimate that between [five] to [eight] feet of land are lost to erosion annually” (although “a single storm could take as much as [twenty] feet”).⁶³ The United Nations Intergovernmental Panel on Climate Change (IPCC) has projected that infrastructure in the Alaskan villages of Shishmaref, Nome, and Barrow and that of the Alaska Dalton Highway will be at moderate to high hazard flood risk by the mid-twenty-first century.⁶⁴

Meanwhile, residents further inland from the coast have reported unusually dry conditions in recent years.⁶⁵ Plants and trees adapted to short, cool summers have grown more quickly with rising temperatures, but have then dried out before the end of the growing season.⁶⁶

A study of Alaska forest fires from 1959 to 1999 shows increased large fire activity co-related with drought during the fire season.⁶⁷ Fires are more intense, and intervals between fires are decreasing.⁶⁸ Drought at the end of the summer has extended fire season, sometimes until the snow falls in September.⁶⁹ Forests that burn may have a harder time regenerating in the increasingly warm and dry landscape.⁷⁰ This, in turn, reduces the habitat on which some species used for subsistence depend.

*56 Fires are rare events north of the Arctic Circle. But during the summer of 2007, high temperatures, low summer rainfall, ice retreat, and other factors created prime conditions for fires.⁷¹ Five lightning-induced fires burned more than 250,000 acres of Alaska’s North Slope.⁷²

v. Water Quality

Changes in water quantity may be accompanied by changes in water quality. Increased drought (or intense but infrequent rainstorms) can impact water sources by limiting groundwater restoration.⁷³ Flooding and salt-water intrusion⁷⁴ from rising

sea levels and increased precipitation can affect villages' clean water reserves and contribute to waterborne diseases.⁷⁵ The northward movement of wildlife can contribute to surface water contamination, as has been the case with beavers changing the course of streams and introducing *Giardia* to surface water supplies.⁷⁶ In Point Hope, "warming is contributing to changes in Seven Mile Lake, the community drinking water source."⁷⁷ "Temperature-influenced blooms of organic material have clogged water filters, adversely affecting water treatment."⁷⁸

Climate change may allow pollutants that have been stored in glaciers or along waterways to be released as glaciers melt and shorelines erode. This is already occurring in Alberta, Canada, where persistent organic pollutants that have been frozen in Bow Glacier *57 are being released into Bow Lake.⁷⁹ On the North Slope, some of the persistent organic pollutant-containing landfills associated with previous Distant Early Warning sites are now eroding into the ocean and waterways.⁸⁰

vi. Changes in the Weather

Alaska residents have reported increasing variability and unpredictability in the weather, particularly in the patterns of wind, temperature, ice, and currents.⁸¹ Seasons have become less consistent, and there have been more extreme weather events and sudden storms.⁸²

vii. Lack of Baseline Data

While there are historical weather records and traditional knowledge regarding climate conditions, overall, there are relatively few baseline measurements of Arctic environmental and climate conditions.⁸³ Gaps are apparent in the scientific data pertaining to the Arctic Ocean⁸⁴ and its surrounding seas,⁸⁵ migratory birds and marine mammals,⁸⁶ human health,⁸⁷ and air quality.⁸⁸

*58 This lack of baseline data makes it more difficult to assess the severity of climate change (and to respond to the change) in Alaska than in other parts of the United States. Projects that may worsen the impacts of climate change may be allowed to proceed without a full understanding of the implications.

C. Direct Impacts on Subsistence

i. Subsistence Animal Mortality and Morbidity

A 2004 study forecasts that by 2100, tundra will largely disappear from the Alaskan landscape, along with the related plants and animals that inhabit the area--plants and animals on which subsistence users depend.⁸⁹ Alaska residents have already noted changes in the location, characteristics, number, and health of plant and animal species in their areas.⁹⁰ The examples below relate to Brant,⁹¹ caribou, and walrus.

*59 The Alaska Science Center estimates that at least 30 percent of the Pacific Brant population is no longer migrating out of Alaska for the winter.⁹² The study cites climate change as the cause for the shift, and suggests that a severe cold snap could thin the already dwindling population of the birds.⁹³

During the winter, Alaska's caribou herds must dig through snow to find lichens to eat. When there is rain instead of snow, it can freeze into a nearly-impenetrable sheet of ice, and caribou may starve.⁹⁴ This was the case with the Western Arctic Herd in December 2005, when rain soaked the snow cover for two days.⁹⁵ Between 2003 and 2007, the Western Arctic Herd population dropped from 500,000 to about 377,000.⁹⁶

Arctic marine mammals adapted to spending most of their lives on sea ice may not be able to adapt to the rapid changes taking place to the sea ice.⁹⁷ Yupik Eskimos⁹⁸ have reported seeing thinner walrus and fewer and weaker seals.⁹⁹ In 2007, large numbers of *60 walrus were first seen gathered on shores (as opposed to sea ice).¹⁰⁰ In 2009, seventy-one walrus were found dead along the shore near Icy Cape.¹⁰¹ Scientists attributed the deaths to trampling as well as exhaustion from coming to shore after being out at sea a long time.¹⁰²

ii. Reduced Access

Subsistence resources are moving away.¹⁰³ As sea ice melts or moves away earlier in the year, ice-dependent marine mammals move with it--sometimes too far away to be safely hunted.¹⁰⁴ North Slope whalers have reported that they must now travel farther out to hunt.¹⁰⁵ Increased travel time and distances add to fuel and maintenance costs and increase the risk of an accident occurring far from home.¹⁰⁶

Changes in snow cover can make snow-machine travel difficult,¹⁰⁷ such that hunters may delay fall hunting until later in the season when there is more snow.¹⁰⁸ Summer hunting may be upset by drought-like conditions that reduce water levels and prevent boat access to hunting areas.¹⁰⁹ The result in both cases is a reduction in opportunities to hunt.

iii. Increased Risk and Reduced Efficiency

Less sea ice cover and more broken ice have made spring whaling more difficult for North Slope residents, as the water is rougher and more perilous to navigate.¹¹⁰ As ice gets thinner, it becomes too thin to support butchering. Iñupiat whalers explain that “at least six *61 feet of solid ice” are needed to bring a whale up onto the ice.¹¹¹ With thinner ice, there is a higher risk of ice breaking, causing injury or even death.¹¹² This has resulted in the harvest of smaller whales, as well as the loss of some whales that could not be brought up onto ice.¹¹³

More rapid ice recession and thinner ice conditions have also affected walrus hunting, such that hunters are more often butchering walrus in the water.¹¹⁴ These conditions are not as conducive for securing a carcass, or salvaging it as completely as possible, as when on ice.¹¹⁵

D. Indirect Impacts on Subsistence

i. Increased Ocean Traffic

Enough ice is melting to allow a new Arctic shipping route north of Alaska.¹¹⁶ In 2008, two German tourist ships passed through the area¹¹⁷ (one stopped in Barrow, Alaska).¹¹⁸ The *Northwest Passage* is expected to open to regular commercial shipping during summer, sometime between 2013 and 2050.¹¹⁹ The open water will not only provide for longer possible seasons of navigation, but will also likely result in increased interaction between migrating species and ships.¹²⁰

*62 Increased shipping activity may have a number of repercussions on marine mammals used for subsistence. Vessels may strike marine mammals or bring alien species (for example, through ballast exchange) into the environment.¹²¹ An increased volume of ocean traffic heightens the risk of oil releases through accidental or illegal discharge.¹²² Vessel noise (ranging from the low frequency sounds associated with their operation to sonar used in navigation¹²³) may impact marine mammals’ ability to feed, communicate, and reproduce.¹²⁴ Disturbance during feeding may deprive some animals of the food they need to breed, raise their young, and sustain themselves on their long migrations.¹²⁵ “In extreme cases, too much noise can lead to habitat avoidance or even death.”¹²⁶

Black carbon emissions from ships operating in the Arctic may have indirect impacts on the Arctic region by accelerating ice melt.¹²⁷ Ships may also emit oxides of nitrogen and sulfur, which may negatively impact air quality and human health.¹²⁸

ii. Effects of Oil and Gas Activity

The relation between oil and gas activity, climate change, and subsistence is complex and deserves more attention. While oil and gas activity on the North Slope serves as a source of revenue that indirectly funds subsistence activities, it has directly impacted subsistence activities by causing animal populations to relocate and precluding access to subsistence areas.¹²⁹ North Slope hunters interviewed in 2007 reported that climate change increases the cumulative impacts of oil and gas development.¹³⁰ Hunters attribute new species on the *63 North Slope and changes in species behavior to both climate changes and increasing development activities.¹³¹

Climate change may negatively impact onshore oil and gas activity by increasing damage to facilities and infrastructure (mainly due to melting permafrost).¹³² Climate change may also result in shorter, more hurried onshore winter drilling seasons, as there are fewer days during which tundra travel by ice road is possible.¹³³ Conversely, climate change is allowing increased access and exploitation of offshore oil areas, sustaining oil demand.¹³⁴

Reduced onshore activity may mitigate some of the impacts on subsistence use of caribou, birds, and other species, while increased offshore activity will likely exacerbate the impacts on marine mammals.

iii. Food Insecurity, Changes in Diet, and Related Health Problems

Climate change is resulting in reduced availability and access to subsistence foods. It may also interfere with food storage on the North Slope, where melting permafrost has made it more difficult to store food in traditional ice cellars.¹³⁵ As soil temperatures rise, the cellars are less likely to protect food from pathogens that cause foodborne illness.¹³⁶

Climate change may add to other factors that contribute to a reduction in the consumption of subsistence foods, and exacerbate the health problems associated with this *64 reduction.¹³⁷ It is true that store bought food can be an essential source of fresh vegetables and whole grains. But in remote grocery stores, these items are far more expensive than foods that are high in fat and sugar.¹³⁸ The increased use of less expensive and less healthy store-bought foods is linked with an increased rate of nutrition-related diseases in Alaska Natives.¹³⁹

Because subsistence plays such an important role in Alaska Native culture and society, a reduction (or even a perceived reduction)¹⁴⁰ in the availability of subsistence foods impact food security¹⁴¹ and contributes to social pathology.¹⁴² Impacts on food security may be aggravated by reports of pollutants being released into the environment and bioaccumulating in the food chain.¹⁴³

iv. Impacts on Traditional Knowledge

Subsistence activities require traditional knowledge based on the synthesis of observations and interpretations made over from past generations.¹⁴⁴ Particularly on the North Slope, knowledge of the environment and the ability to monitor and predict changes are critical to hunting success and safety.¹⁴⁵ As the world has focused more attention on climate change in the Arctic, there is recognition of the value of this traditional knowledge regarding the environment.¹⁴⁶

*65 With climate change, traditional knowledge (particularly that related to weather and ice) is becoming less reliable.¹⁴⁷ “[H]unters increasingly rely on FM radio broadcasts instead of traditional knowledge for weather forecasts and communication about dangerous conditions.”¹⁴⁸ The inability to forecast has caused limited mobility and increased anxiety.¹⁴⁹ Also, the skills of traditional weather forecasting are no longer passed on to younger generations.¹⁵⁰

v. Reduced Ability to Adapt

While Alaska Natives have a long tradition of adapting to changing conditions, the move from a pure subsistence economy to a mixed economy has complicated adaptation on some levels.¹⁵¹ Subsistence now requires funding, which requires a source of income. Many hunters take on wage-earning jobs unrelated to subsistence to earn this income.¹⁵² Almost all Alaska Natives live in permanent communities, which represent millions of dollars of infrastructure investment,¹⁵³ and which provide jobs and schools. In past centuries, many groups of Alaska Natives were nomadic.¹⁵⁴ The present legal system of private property *66 ownership, taxes, and required school attendance impedes a migratory existence. Thus, in the 21st century, adapting subsistence lifestyle to climate change may be more difficult.¹⁵⁵

A reduction in the availability and use of subsistence foods may lead more Alaska Natives in rural villages to move to cities, where there is better access to jobs, education, and lower energy costs and store bought food.¹⁵⁶ This would contribute to the general trend of rural residents migrating to urban centers.¹⁵⁷ Damage to coastal villages from flooding and erosion may also contribute to urban migration, as many villages may not have the resources to relocate inland.¹⁵⁸ This migration not only takes Alaska Natives away from customary hunting grounds; it relocates them to areas where subsistence is not protected.¹⁵⁹ (It also dilutes their legislative representation.¹⁶⁰) Adaptive capacity may be reduced even further as fewer people carry on

subsistence hunting practices and some traditional knowledge is lost.¹⁶¹

E. How the Current Legal Scheme Deprives Alaska Tribes of Control over Subsistence

The previous sections discussed how climate change impedes the ability of Alaska Natives to conduct subsistence activities. If Alaska tribes owned the land on which subsistence takes place, or if Alaska tribes were legally empowered to control subsistence resources, it would be easier for them to mitigate the impacts of climate change on their members. For example, tribes could adjust the timing of hunting seasons to match the times during which subsistence animals are now present. Additionally, they might consider modifying development to ensure access to areas that are important to subsistence.

***67** But for the past four decades, tribal control over land and resources needed for subsistence has been impeded by Alaska's legal and political framework. As climate change intensifies, it may aggravate this lack of control.

i. Loss of Direct Control over Subsistence

In the Lower 48, the hunting and fishing rights of many tribes are protected by treaties. In interpreting these treaties, courts have adopted Indian canons¹⁶² that recognize the trust relationship between the federal government and tribes.¹⁶³ Treaty provisions regarding fishing rights have been interpreted to guarantee access to tribes' customary fishing grounds;¹⁶⁴ allow tribal enforcement of tribal fishing regulations against tribal members off-reservation;¹⁶⁵ immunize tribes from the enforcement of State fishing regulations in most circumstances;¹⁶⁶ and ensure in-stream water flows adequate to support the fish upon which tribes rely.¹⁶⁷ Alaska Natives do not have treaties with the United States that protect their subsistence rights.¹⁶⁸ When the United States finally addressed the rights of ***68** Alaska Natives in ANCSA, it extinguished aboriginal hunting and fishing rights in the State of Alaska.¹⁶⁹ In *Iñupiat Community of the Arctic Slope v. United States*,¹⁷⁰ the Ninth Circuit extended the effect of ANCSA to the use of sea ice many miles from shore.¹⁷¹ In *Native Village of Eyak v. Trawler Diane Marie, Inc.*,¹⁷² the Ninth Circuit held that "the federal paramountcy doctrine" barred aboriginal claims to the outer continental shelf, including those for exclusive hunting and fishing rights.¹⁷³

Not only are Alaska tribes unable to assert treaty rights in order to meet their subsistence needs, they lack the benefit of Indian canons requiring interpretation favorable to tribes. While the Indian canons arguably apply to statutes as well as treaties,¹⁷⁴ courts have held that ANCSA diminished the applicability of the canons.¹⁷⁵ The concurring opinion in *Nenana Fuel Co., Inc. v. Native Village of Venetie*¹⁷⁶ interpreted ANCSA's legislative history to mean that "Congress intended that after ANCSA's enactment there was to be no trust ***69** relationship between the federal government and the Native groups of Alaska, as there is between the government and the Native tribes of other states."¹⁷⁷

Congress attempted to address ANCSA's impact on subsistence by passing the Alaska National Interest Lands Conservation Act (ANILCA) in 1980.¹⁷⁸ ANILCA established a priority for the taking of fish and wildlife on public lands for nonwasteful subsistence uses over other uses.¹⁷⁹ But the subsistence priority is based on a set of factors that includes rural residency but does not include Native status,¹⁸⁰ and it does not apply to Native Corporation-owned lands.¹⁸¹ When subsistence resources are too scarce to satisfy for all users, ANILCA provides for limitations on take based on "(1) customary and direct dependence upon the populations as the mainstay of livelihood; (2) local residency; and (3) the availability of alternative resources."¹⁸²

Ever since the Alaska Supreme Court determined that the rural preference violated the Alaska Constitution,¹⁸³ ANILCA has been applied only to federal public lands (about 67 percent of the State¹⁸⁴). State law governs subsistence on state and private lands, including those owned by Native Corporations.¹⁸⁵ While state law prioritizes subsistence over other uses in subsistence areas,¹⁸⁶ it does not distinguish between Natives and non-Natives or ***70** urban and rural residents.¹⁸⁷ In areas identified as "nonsubsistence areas" (generally urban areas), there is no subsistence priority at all.¹⁸⁸

The Endangered Species Act (ESA) (administered by the U.S. Fish and Wildlife Service (FWS)) and the Marine Mammal Protection Act (MMPA) (administered by the National Marine Fisheries Service) generally exempt Alaska Native subsistence hunting from prohibitions on take.¹⁸⁹ Likewise, the Migratory Bird Treaty Act¹⁹⁰ exempts Alaska Native subsistence hunting from a prohibition on the take of migratory birds during the spring and summer seasons.¹⁹¹

But, if the relevant agency finds that subsistence is "materially and negatively affect[ing] the threatened or endangered

species¹⁹² (including those protected by the Migratory Bird Treaty Act) or causing a “species or stock of marine mammal ... to be depleted,”¹⁹³ the agency may prescribe regulations restricting subsistence take.

As climate change intensifies, it is likely that more species will be listed as threatened or depleted.¹⁹⁴ North Slope tribes are concerned that listings may lead to federal ***71** determinations that subsistence take must be limited to ensure species survival, while the underlying reason for the listing--climate change--will not be addressed.¹⁹⁵ This concern is realistic, considering restrictions that Fish and Wildlife Service (FWS) implemented in 2009 for North Slope migratory bird subsistence take.¹⁹⁶ While the 2009 regulations were designed to protect the Steller’s eider (a sea duck listed as a threatened species under the ESA¹⁹⁷), North Slope hunters believe that FWS disregarded local knowledge regarding the actual population status.¹⁹⁸ To the extent the population of Steller’s eiders had changed, hunters attributed the decline to climate change and other non-hunting factors.¹⁹⁹ The regulations imposed hunting restrictions (such as hunting hours) on North Slope subsistence users without addressing issues that might have been more relevant to the conservation of Steller’s eiders.²⁰⁰

Neither the Endangered Species Act nor the Marine Mammal Protection Act accords tribes any role in the federal government’s determination of whether to limit their subsistence take.²⁰¹ Tribes have relied on tribal consultation requirements in executive orders as a means to provide input.²⁰²

***72** But agencies differ in their conception as to when tribal consultation is actually required.²⁰³ When new migratory bird regulations were proposed for the North Slope in 2009, North Slope tribes argued that the regulations effectively limited their subsistence take and thus required formal tribal consultation. FWS asserted that formal consultation was not required because the regulations would be issued pursuant to the Migratory Bird Treaty Act--an act that affects Natives and non-Natives alike.²⁰⁴ In fact, the Migratory Bird Treaty Act exempts “indigenous inhabitants of the State of Alaska” but does not define the term.²⁰⁵ FWS’s regulations define “indigenous inhabitant” as “a permanent resident of a village within a subsistence harvest area, regardless of race.”²⁰⁶ The Marine Mammal Protection Act is the only state or federal act that clearly distinguishes between subsistence protections for Natives and non-Natives.

Distinctions between Natives and non-Natives are relevant because Native hunting traditions have developed over thousands of years and are an integral part of Native culture and society. Alaska Natives believe that subsistence laws (particularly those of the State of Alaska²⁰⁷) fail to recognize the significance of Native hunting traditions; and at times tradition and law conflict.²⁰⁸

One conflict arises from hunting restrictions based on calendar dates rather than seasonal change. For instance, laws regulating the traditional migratory bird hunt, which takes place mostly in the spring and summer, close the subsistence season on September 1. At that time, subsistence hunters are treated like sport hunters and are subject to specific ***73** take limits.²⁰⁹ But subsistence hunting of migratory birds has traditionally continued past September 1 until the birds leave the North Slope.²¹⁰

With climate change, it is possible that the window for hunting migratory birds may become inconsistent with the periods during which the subsistence season is legally open.²¹¹ In a hearing on the North Slope migratory bird regulations, one hunter indicated that she used to hunt for Brant from June to August. Now, variable weather conditions can delay Brant hunting until August.²¹² But by this time, the season for Brant hunting is closed per the regulations.²¹³ And since the regulations limit hunting hours in August, there are fewer opportunities for hunting other birds.²¹⁴ Another hunter testified that changing ice conditions limited his ability to hunt Brant during the open season.²¹⁵

Faced with all of these restrictions on their ability to control subsistence, Alaska Natives have sought opportunities to co-manage resources with state and federal governments. The Alaska Eskimo Whaling Commission (AEWC) is one of the few entities that have been accorded a meaningful management role. With authority from five tribal governments²¹⁶ and the federal government,²¹⁷ AEWC governs bowhead whaling by ***74** Eskimos in ten Arctic villages. Each year, it enters into a conflict avoidance agreement with oil and gas companies to ensure that offshore activity does not interfere with whaling.²¹⁸

In 1994, an amendment to the Marine Mammals Protection Act provided for cooperative agreements between FWS and Alaska Native organizations to conserve marine mammals and provide for the co-management of subsistence use.²¹⁹ FWS has entered into agreements with various Native entities, including the Eskimo Walrus Commission (EWC) (which represents 19 villages).²²⁰ But while FWS has cooperated with EWC in terms of funding, monitoring, and outreach,²²¹ there has been no real transfer of authority to EWC. FWS continues to conduct its own law enforcement,²²² and the two entities have separate goals

regarding walrus conservation.²²³

Tribes that take part in the Alaska Migratory Bird Co-management Council (AMBCC) struggle with a similar lack of power. AMBCC is a statewide management body consisting of FWS, the Alaska Department of Fish and Game, and Alaska tribes. There are three votes allocated to members: one to FWS, one to the state, and one to the collective group of tribes. AMBCC's role is to "provide meaningful input in the development of recommendations on regulations for spring and summer harvest and conservation of migratory birds in Alaska."²²⁴ But AMBCC's recommendations are advisory only,²²⁵ and in 2008, AMBCC's recommendation not to impose additional restrictions on North Slope migratory bird subsistence hunting was disregarded.²²⁶

As climate change contributes to animal population declines and impedes subsistence access and use, tribes will want to attain more authority over subsistence *75 management. If the government responds to population declines by simply placing more restrictions on subsistence take, neither climate change nor subsistence needs will be adequately addressed. Co-management regimes that utilize subsistence users' traditional knowledge and experience (and accord tribes a meaningful management role) may be part of a larger strategy to respond to climate change.

ii. Loss of Direct Control Over Land and Development Decisions

Even if Alaska tribes lack control over subsistence management, having control over land use decisions may help tribes protect Alaska Natives' subsistence interests in the face of climate change. As discussed below however, Alaska tribes have no direct control over the land on which many of their members live and hunt.

While Alaska tribes retain some of the inherent sovereign powers held by all tribes,²²⁷ they lack jurisdiction over activities on what were once their lands.²²⁸ *Alaska v. Native Village of Venetie Tribal Government* suggests that, aside from the few reservations that remain in Alaska,²²⁹ the only "Indian country" over which Alaska tribes may have some *76 jurisdiction consists of those native allotments²³⁰ and townsites²³¹ that are still held in trust by the federal government.²³²

ANCSA provided for portions of the lands that tribes once controlled to be transferred to regional and village Native Corporations in fee simple.²³³ Native Corporation lands are not "Indian Country,"²³⁴ and are regulated in the same manner as almost any private land.²³⁵ Land is collectively owned by corporate officers and directors who are not necessarily tribal leaders.²³⁶ Tribal members' control over the land is limited to voting their shares for corporate resolutions and supporting management who share their views.²³⁷

ANCSA required that regional Native Corporations be for-profit entities under the laws of Alaska,²³⁸ although these corporations may express other purposes in their Articles of Incorporation.²³⁹ Village Native Corporations were allowed to incorporate as nonprofit institutions,²⁴⁰ but all chose to operate for profit.²⁴¹

*77 A number of law review articles discuss inconsistencies between indicators of corporate success (i.e., profits) and successful land stewardship.²⁴² This discussion is relevant to Alaska Native Corporations that were handed money and land (much of it in remote places) and mandated to be self-sustaining.²⁴³ The primary source of income for most of the successful corporations has been the development of nonrenewable natural resources on their land.²⁴⁴ Even the most responsible development has impacted subsistence habitat in Alaska to some degree.²⁴⁵ Meanwhile, corporations that are not financially successful may be more focused on trying to avoid bankruptcy than on land management and subsistence protection.²⁴⁶

*78 Resource development and market competition²⁴⁷ have occasionally pitted corporations against each other and against tribes on questions of land management. In some cases, corporations favor development of natural resources on corporate land, while tribes oppose it. One example is that of NANA Corporation, which owns the land on which Tech Resources' Red Dog Mine is located. The Corporation receives 25 percent of all profits from the mine's operation.²⁴⁸ In 2009, Tech Resources settled with residents of Kivalina (one of the region's villages) regarding claims that Red Dog Mine had contaminated Kivalina's drinking water supplies.²⁴⁹ In February 2010, Kivalina and Point Hope tribal councils and environmental groups appealed the reissuance of Red Dog's water discharge permits.²⁵⁰ The appeals have divided the community. At least nine organizations in the area have passed resolutions in support of new permits to allow Red Dog's expansion, including the Northwest Arctic Borough, and tribal governments in Noorvik, Kiana, Kotzebue and Deering.²⁵¹ Rosie Barr, NANA's resources manager, said the appeal is "a direct threat to the social, cultural, environmental, and economic benefits our

shareholders receive from the mine.”²⁵²

Another example concerns the impending development of the outer continental shelf (OCS) adjacent to the North Slope, which is becoming more accessible as more sea ice melts. While Native Corporations have no OCS ownership interests, they are in a good position to offer services to offshore oil companies. ASRC Energy Services, Inc., a subsidiary of the Arctic Slope Regional Corporation (ASRC) has worked closely with Shell Offshore, Inc. to assist in obtaining necessary federal permits.²⁵³ The same subsidiary plans *79 to conduct seismic testing in the Chukchi Sea.²⁵⁴ Olgoonik Corp., the Village Corporation for the Chukchi Sea coast village of Wainwright, and Ukpeagvik Iñupiat Corp. (UIC), the Village Corporation for Barrow, are partnering with Shell Offshore, Inc. to operate logistics bases in Wainwright and Barrow.²⁵⁵ Meanwhile, environmental and Alaska Native groups (including the Alaska Eskimo Whaling Commission, the Iñupiat Community of the Arctic Slope and the Native Village of Point Hope) have brought law suits to block lease sales and drilling plans from proceeding.²⁵⁶ In December 2009, these groups asked the Ninth Circuit Court of Appeals to overturn a federally approved plan that would allow Shell Offshore, Inc. to drill in the Beaufort Sea in 2010.²⁵⁷

That said, there are examples of Native Corporations acting to protect the subsistence values of tribes.²⁵⁸ For example, in December 2009, the Bristol Bay Native Corp. (a Regional Corporation) voted to oppose the Pebble Mine (located in the Bristol Bay region) due to concern about its impact on fish runs.²⁵⁹

Some Village Corporations (including UIC) have entered into Memoranda of Understanding with tribes regarding the use of the land.²⁶⁰ The agreement between UIC and the Native Village of Barrow recognizes that, “UIC and NVB have a mutual interest in assuring that hunting and fishing are managed on UIC’s lands for the mutual benefit of UIC, other ANCSA shareholders and NVB’s members so long as most of them are the same *80 people.”²⁶¹ The agreement gives NVB limited jurisdiction over UIC’s land for the purpose of implementing the agreement.²⁶² It sets forth hunting and fishing policies and requires non-ANCSA shareholders to obtain permits to hunt and fish on UIC land.²⁶³ UIC also cooperated with the Native Village of Barrow and the North Slope Borough to enter a Memorandum of Agreement with FWS regarding FWS’s implementation of its 2009 North Slope migratory bird hunting regulations.

iii. The Evolution of a Corporate Identity

When ANCSA was enacted, stock in regional Native Corporations was issued to each member of the indigenous population of Alaska.²⁶⁴ As of yet, no corporations have amended their articles of incorporation to allow stock to be transferred to non-Natives.²⁶⁵ Despite this, the corporations have nevertheless grown and evolved in ways that have separated them from the more subsistence-oriented tribes (and the people that are most likely to be negatively impacted by climate change).

Many corporations have created subsidiaries expressly for development purposes, adding another layer between tribal members and control of corporate activities. Unlike their parent companies, these development-oriented subsidiaries generally do not provide for the protection of culture and wellbeing in their articles of incorporation.²⁶⁶

Only a fraction of regional Native Corporation employees are shareholders,²⁶⁷ though this figure is higher for NANA and ASRC.²⁶⁸ In subsidiaries of Native Corporations located outside of Alaska, there are very few Alaska Native employees.²⁶⁹

*81 ASRC, along with NANA and Sealaska, amended their articles of incorporation in 1991 to allow descendents of original shareholders to become new shareholders.²⁷⁰ These new shareholders may grow up in urban areas (or outside of Alaska) and have limited subsistence experience and little identification with the lands once held by their tribes.²⁷¹

Previously, ASRC and UIC were headquartered on the North Slope, where their lands are located. ASRC, UIC and many of their subsidiaries now have their principal offices in Anchorage.²⁷² This has put more than 700 miles between North Slope subsistence users and corporate decision-makers. Also, the impacts of climate on subsistence are far less visible in urban Anchorage than on the North Slope.

When ASRC was formed, all of the senior managers were whaling captains with direct involvement in subsistence whaling.²⁷³ This is no longer the case. The offshore oil and gas activity ASRC and its subsidiaries now support is opposed by whaling captains, as evidenced by AEWC’s lawsuit against federal approvals of this activity.²⁷⁴ Thus, there is a split between those with traditional subsistence whaling values and corporate management.

***82 F. Protecting Tribes' Subsistence Interests--What is the Way Forward?**

Outside of federal grants, Alaska tribes have very few sources of funding.²⁷⁵ Most cannot afford to hire lobbyists to fight against the current legal scheme or address climate change.²⁷⁶ Although various entities have acted on behalf of tribes, none has interests that are completely aligned with those of the tribes.

i. The Inuit Circumpolar Conference

The Inuit Circumpolar Conference (ICC) was founded in 1977 by Eben Hopson of Barrow, Alaska (the first North Slope Borough mayor) to represent the Inuit of Alaska, Canada, Greenland, and Russia.²⁷⁷ In 2005, ICC Chairperson, Sheila Watt-Cloutier (a resident of Iqaluit, Nunavut, Canada), filed a petition to the Inter-American Commission on Human Rights, alleging that the United States violated international law by contributing to global warming.²⁷⁸ Alaska Native individuals from Barrow, Shishmaref, and Savoonga signed onto the petition.²⁷⁹ Although the Commission decided against hearing the petition,²⁸⁰ it invited Watt-Cloutier to testify at a hearing on climate change and human rights in March 2007.²⁸¹

***83** In 2009, Jimmy Stotts, a resident of Anchorage, Alaska (originally from Barrow) became the ICC chairperson.²⁸² At the December 2009 Copenhagen summit on climate change, Stotts said that that Inuit-owned oil, gas and mining projects should be exempted from any new global agreement on climate change.²⁸³ According to Aqqaluk Lyngø, the ICC vice-chair for Greenland, Stotts's statement does not represent the official ICC position.²⁸⁴ But Stott's statement reflects the reality that the issues of climate change, subsistence protection, oil and gas development, and the well-being of Alaska Natives have become thickly tangled in Alaska.

ii. The Role of Government

AEWC, discussed above as a rare case of post-ANCSA tribal subsistence management, is funded by a non-Native group, the North Slope Borough.²⁸⁵ The Borough, in turn, is funded by oil and gas development.²⁸⁶ Formed by Iñupiat Eskimo leaders to represent Iñupiat interests in light of the 1968 discovery of oil at Prudhoe Bay,²⁸⁷ the Borough has been able to contribute to a number of efforts to promote subsistence interests.²⁸⁸

But the Borough is a political subdivision of the State of Alaska, subject to state and federal laws and the vote of its inhabitants. Particularly in Barrow (the Borough seat), the ratio of non-Natives to Iñupiat is now far greater than it was before the Borough's ***84** formation.²⁸⁹ The Borough represents a wide variety of interests aside from subsistence protection, including those related to economic development.

While the Borough joined tribes and environmental groups in a 2007 lawsuit challenging the decision of the Minerals Management Service (MMS) not to prepare a supplemental environmental impact statement for a proposed offshore oil and gas lease sale,²⁹⁰ it did not join in a later suit for review of a MMS order approving a five-year program to expand offshore oil and gas leasing areas.²⁹¹ If federal law is changed to allow Alaska and its political subdivisions to share revenue from offshore drilling, the Borough's interests in economic viability may outweigh its opposition to offshore activity.²⁹²

The Borough has joined with ASRC in opposing polar bear critical habitat designations on grounds that they would impede economic development.²⁹³ The Borough's joint letter with ASRC argues that Iñupiat culture is more than just continuing subsistence hunting--it is now built on economic enterprises.²⁹⁴ As such, "[t]he existence of native culture and villages cannot now be severed from the economic solutions established in ANCSA."²⁹⁵

Like the Borough and some of the more successful Native Corporations, the State of Alaska is heavily dependent on oil and gas revenue.²⁹⁶ The State is unlikely to take an ***85** active role in working with tribes to mitigate the impacts of climate change on subsistence if this means curtailing oil and gas development.

In 2007, then-Governor Sarah Palin created a Climate Change Sub-Cabinet to develop "appropriate measures and policies to prepare communities in Alaska for the anticipated impacts from climate change" based on "the state's knowledge of the actual and foreseeable effects of climate warming in Alaska."²⁹⁷ But the measures and policies only pertain to emergency

preparedness, shoreline protection, and technical assistance and small grants to communities.²⁹⁸ They do not address the underlying causes of climate change or impacts on subsistence.

In August 2008, Palin filed suit to reverse the polar bear listing on the basis that models projecting future declines in sea ice were flawed.²⁹⁹ The State legislature appropriated money for the lawsuit and an additional \$2 million for a conference and a public relations campaign to debunk the federal government's scientific research on global warming.³⁰⁰ Legislative leaders stated that the polar bear listing would have troubling effects on Arctic oil development and the state's economic future.³⁰¹ In March 2010, the State moved to intervene in a lawsuit over the Environmental Protection Agency's (EPA) decision to regulate greenhouse gas emissions.³⁰² In short, while the State has acknowledged the existence of climate change, it seems unlikely to take a lead role in addressing its underlying causes.

iii. The Role of Environmental Groups

Alaska tribes have sometimes found allies in environmental groups opposed to oil and gas activity. In 2008, the Native Village of Kivalina joined with other tribes and environmental groups to file a lawsuit in the Northern District of California against oil, power and coal companies for their contribution to the damage wrought by climate change. The complaint sought the costs of relocating the village (which could range from \$100 *86 million to \$400 million).³⁰³ The case was dismissed,³⁰⁴ and is currently on appeal to the Ninth Circuit Court of Appeals.

While environmental groups working in Alaska generally support subsistence,³⁰⁵ the alliance may be tested as Arctic warming increases and more species are listed as "threatened" under the Endangered Species Act or "depleted" under the Marine Mammals Protection Act.³⁰⁶ The listing of the polar bear as a threatened species, prompted by a 2005 Center for Biological Diversity lawsuit, was one of the first listings based on climate change.³⁰⁷ The Center for Biological Diversity has identified 350 species at risk from climate change³⁰⁸ and has petitioned FWS to list and designate critical habitat for ringed, bearded, and spotted seals.³⁰⁹ This has troubled Iñupiat tribe members who rely on these animals as subsistence resources.³¹⁰

*87 Environmental groups could encourage federal and state agencies to enter into more meaningful co-management regimes with Alaska tribes. Such a move may build trust between environmentalists and tribes and, if successful, decrease the likelihood of restrictions on subsistence take based on government determinations that restrictions are necessary to stabilize declining populations of listed species.

iv. Roles for Native Corporations?

North Slope hunters, interviewed in 2007 regarding impacts on subsistence from development and climate change, suggest that more renewable energy sources should be used.³¹¹ While these sources can still impact wildlife and habitat,³¹² the impacts are localized and relatively mitigatable (unlike greenhouse gas emissions).³¹³

Although Alaska is the second-largest oil producing state in the country, it is already generating 24 percent of its electricity from renewable sources.³¹⁴ There is potential for much more development of wind and tidal energy.³¹⁵ There is also a great deal of potential funding available for such projects.³¹⁶

Native Corporations are in a good position to take advantage of alternative energy development opportunities on their land. As of March 2010, Native Corporations have no large scale renewable energy developments in production. But a number of corporations, *88 particularly Cook Inlet Region, Inc.,³¹⁷ have taken steps in this direction. The Department of Energy has funded renewable energy feasibility studies by the Bristol Bay Native Corporation, the Kenaitze Indian tribe, the Native Village of Venetie, the Sealaska Native Corporation, and the Yukon-Kuskokwim Health Corporation.³¹⁸ NANA Regional Corporation is collecting wind data and identifying potential geothermal sites in its region to assess the feasibility of wind and geothermal energy.³¹⁹ Sealaska Corporation is in the process of converting its corporate headquarters in Juneau to a wood-pellet-fired boiler system.³²⁰ Bering Straits Native Corporation has partnered with a village corporation to develop commercial renewable energy.³²¹

Projects such as these are necessary to reduce or eliminate greenhouse gas emissions. At the same time, the direct impacts of these projects on climate change are imperceptible. Even if humans could eliminate all greenhouse gas emissions

immediately, overall temperatures would likely continue to increase for some time,³²² and subsistence would continue to be impacted. A more direct measure would be for more Native Corporations (including subsidiaries) to enter into memoranda of agreement with tribal leaders regarding land use. While such memoranda could not alter Alaska corporate law, they *89 could provide for consultation with tribal governments on decisions that impact subsistence habitat and natural resource development.

Another approach may be for Native Corporations to set aside areas of their land that are important for habitat (i.e., breeding and feeding areas) and subsistence use. While this could also be accomplished through municipal zoning, corporate action could be quicker and provide for more flexibility. Flexibility may be important as environmental conditions change and areas of importance shift. Under this approach, corporations may continue to maintain full control over the land.

Native Corporations could also consider granting important habitat and subsistence areas to tribes in the form of a trust. A 1988 amendment³²³ to ANCSA allows a corporation to convey surface land and other assets to a settlement trust “to promote the health, education, and welfare of its beneficiaries and preserve the heritage and culture of Natives.”³²⁴ A settlement trust cannot operate as a business, alienate land, or convey timber resources (except to prevent fires and the spread of disease). As of 2008, about twenty-five settlement trusts had been established by Alaska Native corporations.³²⁵ But thus far, none have been enacted to protect land for subsistence or habitat purposes. The closest approximation is Haida Corporation’s settlement trust to hold cutover timberland in anticipation of the harvest of the second growth.³²⁶ Most of the settlement trusts currently in existence simply provide cash distributions to the beneficiaries on a pro rata basis.³²⁷

CONCLUSION

Climate change affects wildlife-dependent tribes more than it does the larger American society.³²⁸ Alaska tribes are particularly impacted by climate change because of their location in a biozone that is extremely sensitive to warming and because the current legal system deprives them of direct control over their land and natural resources. While Alaska tribes have benefitted from the assistance of government entities, environmental groups, and Native Corporations, none of these completely shares the tribes’ interest in subsistence protection or faces the same kind of threat to its well-being from climate change.

Native Corporations could empower tribes by entering into arrangements that allow tribal leaders to have greater roles in land and natural resource management. While Native Corporations cannot stop climate change simply by pursuing alternative energy sources *90 instead of developing oil and gas reserves, they can send a message that they are concerned about climate change. Native Corporations can act as leaders in what may be an inevitable shift to renewable energy.

TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT DISPLAYABLE

Footnotes

^{a1} Ms. Barrett Ristroph has worked as a North Slope Borough Assistant Attorney in Barrow, Alaska since November 2007. This article was not written on behalf of the North Slope Borough, and the views expressed are not necessarily those of the North Slope Borough.
The author would like to thank Johnny Aiken for his review of the article and Mickey Reed for creating the map that accompanies this article.

¹ Attempting to convey the magnitude of climate change and its effects on Alaska tribes in a single law review article takes a bit of hubris, especially when the author is a non-Native, non-hunting vegetarian. But here is a start.

² See James A. Fall, et al., *Walrus Hunting at Togiak, Bristol Bay, Southwest Alaska*, ALASKA DEP’T OF FISH & GAME, DIV. OF SUBSISTENCE, WALRUS HUNTING AT TOGIK BRISTOL BAY, SOUTHWEST ALASKA 24, (1991), available at <http://www.subsistence.adfg.state.ak.us/TechPap/tp212.pdf> (providing the example of subsistence use of a beached walrus carcass, where botulism is a concern). A subsistence user’s only mechanism of testing the freshness of the walrus is to slit the hide with a knife. *Id.* If oozing occurs, it means that the animal has deteriorated to a condition called “qallatek” and cannot be used. *Id.*

- ³ Migratory Bird Subsistence Harvest in Alaska: Harvest Regulations for Migratory Birds in Alaska During the 2009 Season, FISH & WILDLIFE SERV. (Mar. 18, 2009), *available at* <http://www.regulations.gov/search/Regs/home.html#docketDetail?R=090000648091dc77> (Wainwright, Alaska Public Meeting Transcripts) [hereinafter NSB's 2009 Comments to FWS] (North Slope Borough's comments to FWS on Proposed Harvest Regulations for Migratory Birds in Alaska during the 2009 Season).
- ⁴ Alaska Native Claims Settlement Act, 43 U.S.C. §§ 1601-1629a (2006).
- ⁵ *See infra* Parts III (Direct Impacts on Subsistence) and IV (Indirect Impacts on Subsistence).
- ⁶ *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT (2007), *available at* http://www.ipcc.ch/publications_and_data/ar4/syr/en/main.html; Richard A. Feely, Ocean Acidification, (Jan. 29, 2010) (on file with the author) (the atmospheric concentration of carbon dioxide is now higher than that experienced on Earth for at least the last 800,000 years, and is expected to continue to rise).
- ⁷ Richard Cowan, *More Americans Say Global Warming Exaggerated: Poll*, REUTERS (Mar. 11, 2010), <http://www.reuters.com/article/idUSTRE62A3TG20100311> ("A growing number of Americans, nearly half the country, think global warming worries are exaggerated and more people doubt that scientific warnings of severe environmental fallout will ever occur."); Judy Lin, *Palin Calls Global Warming Studies 'Snake Oil Science'*, ANCHORAGE DAILY NEWS (Feb. 9, 2010), *available at* <http://www.adn.com/2010/02/08/1130212/palin-calls-global-warming-studies.html>.
- ⁸ *See* Henry Huntington & Shari Fox, *The Changing Arctic: Indigenous Perspectives*, in ACIA SCIENTIFIC REPORT 62, 63 (2004), *available at* http://www.acia.uaf.edu/PDFs/ACIA_Science_Chapters_Final/ACIA_Ch03_Final.pdf.
- ⁹ *See id.* at 65.
- ¹⁰ *See* Mark Nuttall, *Hunting, Herding, Fishing, and Gathering: Indigenous Peoples and Renewable Resource Use in the Arctic*, in ACIA SCIENTIFIC REPORT 650, 685 (2004), *available at* http://www.acia.uaf.edu/PDFs/ACIA_Science_Chapters_Final/ACIA_Ch12_Final.pdf.
- ¹¹ *Alaska Region Overview*, U.S. DEP'T OF INTERIOR, INDIAN AFFAIRS, <http://www.bia.gov/WhoWeAre/RegionalOffices/Alaska/index.htm> (last updated Oct. 10, 2010).
- ¹² *See* Huntington & Fox, *supra* note 8, at 63 (noting that some communities, such as those in Greenland that fish for cod, may see benefits from climate change if fish stocks increase).
- ¹³ ALASKA STAT. § 16.05.940 (2009).
- ¹⁴ *See* URS CORP., NORTH SLOPE BOROUGH COMPREHENSIVE BACKGROUND REPORT, 3-73 (2005), *available at* http://www.north-slope.org/information/comp_plan/BackgroundReport06.pdf [hereinafter NSB COMPREHENSIVE PLAN] (citing the twelve Iñupiat values, including "HUNTING TRADITIONS--Reverence for the land, sea and animals is the foundation of our hunting traditions"); NATIVE VILLAGE OF PORT LIONS, <http://portlions.net/> (last visited Oct. 31, 2010) (values include "protected subsistence"); ALASKA COASTAL MGMT. PROGRAM, NORTH SLOPE BOROUGH COASTAL MANAGEMENT PLAN 74 (2007), *available at* http://alaskacoast.state.ak.us/District/FinalFinalPlans/NorthSlope/NSB_Chap_7_ResourceInventoryAnalysis.pdf. [hereinafter NSB ACMP PLAN] (quoting subsistence hunters in Kaktovik, Alaska: "In fact, the more we look at it, think about it, the more insult we feel by its application to our lives. We are not peasants. We do not subsist; we thrive here, live our lives with great relish.").
- ¹⁵ *See* Linda O. Smiddy, *Responding to Professor Janda--The U.S. Experience: The Alaska Native Claims Settlement Act (ANCSA) Regional Corporation as a Form of Social Enterprise*, 30 VT. L. REV. 823, 835 (2006). For a detailed discussion of the cultural

significance of subsistence, *see* Sophie Thériault, et al., *The Legal Protection of Subsistence: A Prerequisite of Food Security for the Inuit of Alaska*, 22 ALASKA L. REV. 35 (June 2005).

¹⁶ Telephone interview with Barrow subsistence hunters, in Barrow, Alaska (Mar. 20 & 24, 2010); Stephen Conn, *Response to the Three-Part Series, "Point Hope: Waste, Wounds and the Hunt for Truth,"* TALK OF THE TUNDRA (Oct. 26, 2009) <http://alaskadispatch.com/voices/tundra-talk/2622-aresponseto-the-three-part-series-point-hope-waste-wounds-and-the-hunt-for-truth>.

¹⁷ *See* JAMES S. MAGDANZ ET AL., ALASKA DEP'T OF FISH AND GAME, DIVISION OF SUBSISTENCE, THE PRODUCTION AND DISTRIBUTION OF WILD FOOD IN WALES AND DEERING, ALASKA 58 (2002), *available at* <http://www.subsistence.adfg.state.ak.us/techpap/tp259.pdf> (in a study on the production and distribution of wild food in the Iñupiat villages of Wales and Deering, researchers found that about 30% of the households accounted for 70% or more of the harvest, by weight). *See also* NSB ACMP PLAN, *supra* note 14, at 75-76.

¹⁸ *See, e.g.*, National Marine Fisheries Service, *Issuance of Annual Quotas Authorizing the Harvest of Bowhead Whales to the Alaska Eskimo Whaling Commission for the Period 2008 through 2012* (Jan. 2, 2008) (on file with the author) (describing the substitution of a penthrite projectile for black powder to improve bowhead whale strike efficiencies and the humaneness of killing techniques).

¹⁹ *See* THOMAS R. BERGER, VILLAGE JOURNEY: THE REPORT OF THE ALASKA NATIVE REVIEW COMMISSION 58 (Hill & Wang) (1985) (there is no cash cutoff point at which Alaska Native individuals or households stop harvesting fish and game).

²⁰ Alaska is divided into "boroughs" instead of counties, and The North Slope Borough, covering 89,000 square miles of the Arctic, is the largest borough and the largest municipality in the United States. NSB COMPREHENSIVE PLAN, *supra* note 14, at 3-75.

²¹ Although the median household income in Alaska is high compared to other states, there is a great income disparity between rural and urban communities. *See* Neal Fried and Brigitta Windisch-Cole, *Alaska: An Interesting Income Picture*, ALASKA ECON. TRENDS (Nov. 2005), *available at* <http://www.labor.state.ak.us/research/trends/nov05inc.pdf>. When the cost-of-living is considered, these disparities grow even larger. *Id.* North Slope Borough household incomes are relatively high compared to other rural areas, due to revenue generated from oil and gas production. This revenue allows the area's Native Regional Corporation (Arctic Slope Regional Corporation) to issue substantial dividends to its Native shareholders. It also creates a large tax base for the Borough, which is able to employ a large number of local residents. *North Slope Impacts*, ALASKA OIL & GAS ASS'N, <http://www.aoga.org/facts-and-figures/north-slope> (last visited Aug. 18, 2010) (North Slope Borough has 810 employees).

²² *North Slope Impacts*, *supra* note 21. The percentage of subsistence sources changes depending on whether a household is Native or non-Native. In Barrow, over ninety-one percent of the Iñupiat households that were interviewed participate in the local subsistence economy, while approximately two-thirds of non-Iñupiat households did not use wild resources obtained from hunting, fishing, or gathering. *Id.*; URS CORP., BARROW VILLAGE PROFILE 4.3-6 (2005), *available at* http://www.north-slope.org/information/comp_plan/BarrowVillageProfile06.pdf. *See also* Aaron Wernham, *Iñupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope*, 4 ECOHEALTH 500, 506 (2007) (North Slope villages harvest between 300 and 800 pounds of subsistence foods per capita annually, among the highest harvest figures in Alaska; the consumption of subsistence foods has been estimated to provide roughly 50% of caloric needs).

²³ NSB COMPREHENSIVE PLAN, *supra* note 14, at 3-61 (North Slope Borough is home to a "predominantly Iñupiat Eskimo population"; these Alaska Natives, a subset of the circumpolar Inuit, are known as both "Iñupiat" and "Eskimo").

²⁴ *See* Thériault, *supra* note 15, at 50; MILTON M.R. FREEMAN ET AL., INUIT, WHALING AND SUSTAINABILITY 36 (1998) (the Iñupiat generally believe that there are nutritional benefits to bowhead whale meat that cannot be acquired from other food sources); Telephone interview with Barrow subsistence hunter in Barrow, Alaska (Mar. 20, 2010).

- 25 See Andrew Davies et al., *Letter, Late Cretaceous Seasonal Ocean Variability from the Arctic*, 460 NATURE 254, 254 (2009); Jeremy J. Hess et al., *Climate Change: The Importance of Place*, 35 AM. J. PREVENTATIVE MED. 468, 474 (2008); Gordon McBean et al., *Arctic Climate: Past and Present*, in ACIA SCIENTIFIC REPORT 22-23 (2005), available at http://www.acia.uaf.edu/PDFs/ACIA_Science_Chapters_Final/ACIA_Ch02_Final.pdf.
- 26 See Allen J. Parkinson et al., *Potential Impact of Climate Change on Infectious Disease in the Arctic*, 64 INT'L J. CIRCUMPOLAR HEALTH 478, 479 (2005).
- 27 See JONATHAN HANNA, NATIVE COMMUNITIES AND CLIMATE CHANGE: PROTECTING TRIBAL RESOURCES AS PART OF NATIONAL CLIMATE POLICY 10 (2007), available at <http://www.colorado.edu/law/centers/nrlc/library/Publications/Research%20Reports/ClimateReportExecutiveSummary.pdf>; see also PowerPoint Presentation of Alaska Sub-Cabinet on Climate Change, in Copenhagen, Denmark (Dec. 15, 2009) <http://www.climatechange.alaska.gov> [hereinafter Alaska Copenhagen Presentation] (reporting a 3.1 degrees Fahrenheit change in mean annual temperatures throughout the state between 1949 and 2008).
- 28 See HANNA, *supra* note 27, at 10; John A. Warren et al., *Climate Change and Human Health: Infrastructure Impacts to Small Remote Communities in the North*, 64 INT'L J. CIRCUMPOLAR HEALTH 487, 487 (2005); Allen J. Parkinson, *The International Polar Year, 2007-2008, An Opportunity to Focus on Infectious Diseases in Arctic Regions*, 14 EMERGING INFECTIOUS DISEASES 1, 2 (2008).
- 29 For a comprehensive discussion, see Susan Joy Hassol, IMPACT OF A WARMING ARCTIC: ARCTIC CLIMATE IMPACT ASSESSMENT (Carolyn Symon, ed., Cambridge University Press 2004), <http://www.acia.uaf.edu/pages/scientific.html>.
- 30 Feely, *supra* note 6.
- 31 *Id.*
- 32 See Dan Joling, *Acidity in Alaska Ocean Waters Puts Fisheries at Risk*, ANCHORAGE DAILY NEWS (Aug. 24, 2009), <http://www.adn.com/2009/08/24/909455/acidity-in-alaska-oceanwaters.html>.
- 33 *See id.*
- 34 Feely, *supra* note 6.
- 35 Carin Stephens, *New Findings Show Increased Ocean Acidification in Alaska Waters*, UAF NEWSROOM (Aug. 11, 2009), http://www.uaf.edu/files/news/a_news/200090811160143.html.
- 36 *See Bowhead Whale*, ALASKA DEP'T OF FISH & GAME (2008), <http://www.adfg.state.ak.us/pubs/notebook/marine/bowhead.php>.
- 37 *Permafrost*, NATURAL RES. CAN., http://cgc.mcan.gc.ca/permafrost/whatis_e.php (last updated Dec. 21, 2007) (“Permafrost is defined on the basis of temperature, as soil or rock that remains below 0°C throughout the year, and forms when the ground cools sufficiently in winter to produce a frozen layer that persists throughout the following summer.”).
- 38 Troy Pewe, *Alpine Permafrost in the Contiguous United States*, 15 ARCTIC & ALPINE RES. 145 (1983) (“Permafrost exists in the high plateaus and high mountains of the contiguous United States.”).
- 39 V. Romanovsky, *Permafrost*, ARCTIC REPORT CARD (2009) <http://www.arctic.noaa.gov/reportcard/permafrost.html> (while

overall temperatures have increased, permafrost temperatures on the North Slope were relatively stable from 2000 to 2008).

40 Jeff Richardson, *Permafrost's Future in Alaska Looks Poor, but the Forecast Isn't All Bad*, FAIRBANKS DAILY NEWS MINER (Nov. 6 2009), http://newsminer.com/pages/full_story/push?articlePermafrost%E2%80%99s+future+in+Alaska+looks+poor+but+the+forecast+isn%E2%CC80%99t+all+bad%20&id=4354319Permafrost%E2%CC80%99s+future+in+Alaska+looks+poor+but+the+forecast+isn%E2%CC80%99t+all+bad&instance=home_lead_story.

41 Bob Reiss, *Barrow, Alaska: Ground Zero for Climate Change*, SMITHSONIAN MAGAZINE (Mar. 2010), available at <http://www.smithsonianmag.com/science-nature/Barrow-Alaska-Ground-ZeroforClimate-Change.html>.

42 Bill Sherwonit, *Arctic Tundra is Being Lost As Far North Quickly Warms*, ENV'T 360, Jan. 11, 2010, <http://e360.yale.edu/content/feature.msp?id=2229>.

43 *Id.*

44 *Id.*

45 Elizabeth Weise, *Alaska the 'Poster State' For Climate Concerns*, USA TODAY, May 29, 2006, available at http://www.usatoday.com/weather/climate/2006-05-29-alaska-globalwarming_x.htm.

46 *See* Sherwonit, *supra* note 42.

47 *See* Sherwonit, *supra*, note 42 (discussing impact of fires on lichens, which comprise most of the caribou diet).

48 *Sea Ice Project*, ALASKA CTR. FOR CLIMATE ASSESSMENT & POL'Y, http://ine.uaf.edu/accap/research/sea_ice_project.htm (last updated July 9, 2010).

49 *Id.*

50 The Beaufort and Chukchi Seas lie between the North Slope and the Arctic Ocean.

51 *See* Alaska Copenhagen Presentation, *supra* note 27 (comparing data from the 2000s with data from the 1970s).

52 Elizabeth Bluemink, *Sea Ice Melt Third Largest in Thirty Years*, ANCHORAGE DAILY NEWS, Sep. 17, 2009, available at <http://www.adn.com/2009/09/17/939372/sea-ice-melt-3rd-largest-in30.html>); *see also* ARCTIC COUNCIL, ARCTIC MARINE SHIPPING ASSESSMENT 2009 REPORT 26, http://www.pame.is/images/stories/PDF_Files/AMSA_2009_Report_2nd_print.pdf [hereinafter AMSA 2009 Report] (“[T]he five smallest September ice-covered areas for the Arctic Ocean during the modern satellite record (1979-2008) have occurred in the five most recent seasons (2004-2008).”).

53 *See* Bluemink, *supra* note 52.

54 *Id.*

55 *AMSA 2009 Report*, *supra* note 52, at 4.

56 *Id.*

57 *See* Weise, *supra* note 45.

58 Rachel D’Oro, *Eroding Village Appeals Suit Dismissal*, ANCHORAGE DAILY NEWS, Jan. 29, 2010, <http://www.adn.com/2010/01/28/1115618/eroding-village-appeals-suit-dismissal.html>; Huntington & Fox, *supra* note 8, at 76.

59 *Id.*; U.S. GEN. ACCOUNTING OFFICE, ALASKA NATIVE VILLAGES: MOST ARE AFFECTED BY FLOODING AND EROSION, BUT FEW QUALIFY FOR FEDERAL ASSISTANCE 3 (2003), *available at* <http://gao.gov/new.items/d04142.pdf> [hereinafter GAO Report]; CTR. FOR CLIMATE & HEALTH, ALASKA NATIVE TRIBAL HEALTH CONSORTIUM, CLIMATE CHANGE AND HEALTH IMPACTS, POINT HOPE, ALASKA, 22 (2009), *available at* <http://www.anthc.org/chs/ces/climate/upload/Point-HopeCCHIA-Draft-Final.pdf> [hereinafter POINT HOPE REPORT].

60 GAO Report, *supra* note 59.

61 *Id.* at 2-3.

62 *Id.* at 4.

63 *Id.* at 37.

64 INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 6, at 5.2 (Risks to unique and threatened systems); *see also* U.S. ARMY CORPS OF ENG’RS. ALASKA DIST., BARROW, ALASKA: COASTAL STORM DAMAGE REDUCTION DRAFT INTERIM FEASIBILITY REPORT, §§ 2.2.3.1, 5.1 (2008) (predicting the need to move or condemn 31 structures over the next 50 years due to the “very real threat of flooding and erosion”).

65 Piper Crowell, *Alaskan Thaw: Hannah Fears the Impact*, U.N. WORKS, <http://www.un.org/works/sub3.asp?lang=en&id=24> (last visited Nov. 6, 2010); Letter from Johnny Aiken, North Slope Borough, to Dick Mylius, Dep’t of Natural Res. (Apr. 7, 2008) (on file with the author).

66 *See* Weise, *supra* note 45.

67 *See* Jingfeng Xiao & Qianlai Zhuang, *Drought Effects On Large Fire Activity In Canadian and Alaskan Forests*, ENVTL. RES. LETTERS 2, (Nov. 27, 2007), *available at* http://iopscience.iop.org/1748-9326/2/4/044003/pdf/1748-9326_2_4_044003.pdf.

68 *See* Dan Joling, *Climate Change Adds to Alaska Woes*, ASSOCIATED PRESS, Apr. 15, 2006, http://www.trib.com/news/state-and-regional/article_d65b21ce-7b23-5fd9-b0f4-d94a56c21968.html.

69 *See id.*

70 *See* Weise, *supra* note 45.

71 *See* Sherwonit, *supra* note 42; *see also* Jeffrey G. Miller, *Remedying Our Fragmented Governmental Structures to Deal with Our Nation-on-Edge Problems*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10,187, 10,188 (Mar. 2008) (in summer 2004, forest fires in northern Alaska burned an area as large as the state of Connecticut).

- 72 See Sherwonit, *supra* note 42.
- 73 See Deborah P. Furth, *What's in the Water? Climate Change, Waterborne Pathogens, and the Safety of the Rural Alaskan Water Supply*, 16 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 251, 255 (Winter 2010); Warren, *supra* note 28, at 491.
- 74 Salt water intrusion is the mixing of saltwater with freshwater, occurring in either surface-water or groundwater bodies. *Glossary of Statistical Terms*, ORG. FOR ECON. CO-OPERATION & DEV., [http:// stats.oecd.org/glossary/detail.asp?ID=2371](http://stats.oecd.org/glossary/detail.asp?ID=2371) (last updated Nov. 22, 2001)
- 75 See Magdalena A.K. Muir, *Ocean and Fisheries Law: Ocean and Climate Change: Global and Arctic Perspectives*, 7 SUSTAINABLE DEV. L. & POL'Y 50, 50 (2006); Furth, *supra* note 73, at 255-56; see ANTHONY J. MCMICHAEL ET AL., CLIMATE CHANGE AND HUMAN HEALTH: RISKS AND RESPONSES (2003), available at <http://www.who.int/globalchange/publications/climchange.pdf>; Michael J. Beach et al., *The Changing Epidemiology of Waterborne Disease Outbreaks in the United States: Implications for Further System Infrastructure and Future Planning*, GLOBAL ISSUES IN WATER, SANITATION, & HEALTH: WORKSHOP SUMMARY 156 (2008), <http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=nap12658&part=ch3> (referring to the 2000 storm surge that spread sewage lagoon waste through Kipnuk; the 2004 saline intrusion after a storm surge in Nunam Iqua; the 2005 loss of community water sources in Kwigillingok; and flooding of Juneau's septic systems).
- 76 See Furth, *supra* note 73, at 256; Warren *supra* note 28, at 491.
- 77 POINT HOPE REPORT, *supra* note 59, at 2.
- 78 *Id.*
- 79 See Jules M. Blais et al., *Melting Glaciers: A Major Source of Persistent Organochlorides to Subalpine Bow Lake in Banff National Park, Canada*, 30 AMBIO 410, 410-15 (Nov. 2001) (study showed that melting glaciers supply 50 to 97% of the organochlorine inputs to a subalpine lake in Alberta, Canada, while contributing 73% of input water); Lori Verbrugge, PowerPoint presentation, *Traditional Foods in Alaska: Potential Threats from Contaminants and Climate Change* (Feb. 2010), available at [http:// www.climatechange.alaska.gov/docs/afe10/3_Verbrugge.pdf](http://www.climatechange.alaska.gov/docs/afe10/3_Verbrugge.pdf).
- 80 See North Slope Borough's Comments to the U.S. Army Corps of Engineers on the Proposed Amendment to the Record of Decision for Site LF007, Point Lonely (Jan. 22, 2009) (on file with the author); see generally David Carpenter et al., *Polychlorinated Biphenyls in Serum of the Siberian Yupik People from St. Lawrence Island, Alaska*, 64 INT. J. CIRCUMPOLAR HEALTH 322 (2005), available at http://jjch.fi/download.php?abstract_id=172&file_nro=1; see Comments from Edward S. Itta, Mayor of North Slope Borough, to the U.S. Army Corps of Engineers on Environmental Assessment and FONSI for HTRW Removal Action, Kogru Former Radar Station Landfill, ER 09-03 (Mar. 5, 2009) (on file with the author). Distant Early Warning radar stations were installed throughout Alaska and Canada during the Cold War era to detect and guard against Soviet strikes. Many are now considered contaminated sites. See *Contaminated Sites Program*, ALASKA DEP'T OF ENVTL. CONSERVATION, [http:// www.dec.state.ak.us/spar/csp/dod_sites.htm](http://www.dec.state.ak.us/spar/csp/dod_sites.htm) (last visited Sep. 21, 2010).
- 81 Huntington & Fox, *supra* note 8, at 74, 82; Nuttall, *supra* note 10, at 660-62; Petition to the Inter American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States, 40-42 (2005), available at [http:// www.earthjustice.org/library/legal_docs/petition-to-the-inter-american-commission-onhumanrights-on-behalf-of-the-inuit-circumpolar-conference.pdf](http://www.earthjustice.org/library/legal_docs/petition-to-the-inter-american-commission-onhumanrights-on-behalf-of-the-inuit-circumpolar-conference.pdf) [hereinafter IACHR Petition]; POINT HOPE REPORT, *supra* note 59, at 14.
- 82 POINT HOPE REPORT, *supra* note 59, at 14.
- 83 See GAO Report, *supra* note 59 ("Alaska has significant [environmental] data gaps," in part due to "a lack of monitoring equipment in remote locations."); See NSB ACMP PLAN, *supra* note 14, at 66, 147, 151; NSB COMPREHENSIVE PLAN, *supra*

note 14, at 3-1.

⁸⁴ See *AMSA 2009 Report*, *supra* note 52, at 16, 26 (“[T]he Arctic Ocean is the least sampled of the world’s oceans, and many areas remain where few, if any, soundings have been recorded.”).

⁸⁵ See *Ctr. for Biological Diversity v. U.S. Dep’t of Interior*, 563 F.3d 466, 480 (D.C. Cir. 2009) (regarding the Department of Interior’s admission of gaps in the baseline research for the Chukchi, Bering, and Beaufort Seas); *Alaska Wilderness League v. Kempthorne*, 548 F.3d 815, 831-832 (9th Cir. 2008) (the Minerals Management Service “notes the gaps in its data [on the impacts of development activity on fish] and the potential for serious consequences”).

⁸⁶ See generally *Beaufort Sea Areawide Oil and Gas Lease Sale: Final Finding of the Director*, Alaska Dep’t of Natural Res. (2009), http://www.dog.dnr.alaska.gov/oil/products/publications/beaufortsea/bsaw2009_final_finding.html (demonstrating a lack of understanding of North Slope wildlife: 4-17 (“Biology of common eiders is poorly understood.”); 4-21 (“[Steller’s eider] subpopulations are poorly understood.”); 4-22 (“Biology of king eiders is poorly understood.”); 4-26 (“Caribou populations appear to be cyclic, although the mechanisms, timing, and population size fluctuations are not well understood.”) 4-36 (“Density of ringed seals varies greatly depending on area and season and changes in seasonal distribution appear to be correlated with changes in sea ice characteristics but are poorly understood.”); 4-37 (“Behavior of ringed seals is poorly understood.”) 8-28 (“Response is variable, even to a particular noise source, and the reasons for this variability are not fully understood.”)).

⁸⁷ See Stephen R. Braund, *Impacts and Benefits of Oil and Gas Development to Barrow, Nuiqsut, Wainwright, and Atkasuk Harvesters* 118-19, 124 (2009) (on file with the author) (expressing need for baseline studies of wildlife and the human population to gauge cumulative impacts of oil and gas development).

⁸⁸ See 40 C.F.R. § 81.302 (2009) (showing that air quality in many areas of Alaska has yet to be classified under the National Ambient Air Quality Standards).

⁸⁹ See Dan Joling, *Global Warming Opens Up Arctic for Undersea Cable*, ANCHORAGE DAILY NEWS, Jan. 22, 2010, <http://www.adn.com/2010/01/21/1104957/global-warming-opens-uparctic.html>; see also HANNA, *supra* note 27, at 10; *Number of High Arctic Animals Declining*, CBC NEWS, Mar. 18, 2010, available at <http://www.cbc.ca/technology/story/2010/03/18/tech-arctic-animalsurvey.html> (circumpolar Biodiversity Monitoring Program report found that overall, the number of mammals, birds and fish in the Arctic has increased by sixteen percent since 1970).

⁹⁰ See IACHR Petition, *supra* note 81, at 67 (nothing that in Barrow, Alaska, residents are more frequently catching a species of fish not traditionally found in the area); Huntington & Fox, *supra* note 8, at 77 (Aleutian Islands residents have observed non-indigenous warmwater fish species coming farther north than ever before); Karen Brewster & Craig George, *Iñupiat Knowledge of Selected Subsistence Fish Near Barrow, Alaska*, 2008, at 63 (new species of fish in Barrow; spawning of white fish less predictable); Braund, *supra* note 87, at 141.

⁹¹ The term “Brant” refers to several species of goose used as subsistence food by some Alaska Natives.

⁹² See Mike Campbell, *Subarctic Goose Now Finds Alaska the Place to Winter Over*, ANCHORAGE DAILY NEWS, Sep. 10, 2009, available at <http://www.adn.com/2009/09/10/930591/subarctic-goosnowfinds-alaska.html> (as many as 40,000 Pacific Brant now winter in Alaska, compared with the 3,000 that wintered in the state before 1977).

⁹³ See *id.* C.f. Mark L. Mallory, et al., *Sources of Breeding Season Mortality in Canadian Arctic Seabirds*, 62 ARCTIC 333-41 (2009) (warmer temperatures are bringing more storm events, including incidents of heavy fog, rain, freezing rain, wet snow and stronger winds, that contribute to mortality rates for Arctic birds).

⁹⁴ See Brenda Hans, *Case Study, Peary Caribou: An Arctic Endangered Species*, PROJECT CARIBOU, AN EDUCATOR’S GUIDE TO WILD CARIBOU OF NORTH AMERICA, http://www.taiga.net/projectcaribou/pdf/casestudies/peary_study.pdf (last visited Mar. 15, 2010); Nuttall, *supra* note 10, at 668.

- ⁹⁵ See Sue Steinacher, *Census Shows Decline of the Western Arctic Caribou*, ALASKA FISH & WILDLIFE NEWS, July 2008, http://www.wildlifeneews.alaska.gov/index.cfm?adfg=wildlife_news.view_article&articles_id=385&issue_id=64. But die-offs did not occur after a similar warming event in January 2007, because high winds eliminated the snow cover and dried the surface vegetation. *Id.*
- ⁹⁶ Sherwonit, *supra* note 42.
- ⁹⁷ See M. Simpkins, *Marine Mammals*, ARCTIC REPORT CARD (Oct. 19, 2009), <http://www.arctic.noaa.gov/reportcard/marine-mammals.html>; Dan Joling, *Trampling Blamed for Alaska Walrus Deaths*, ANCHORAGE DAILY NEWS, Oct. 1, 2009, <http://www.adn.com/2009/10/01/956884/trampling-blamed-for-alaska-walrus.html> (in recent years sea ice has moved out to deep Arctic Ocean waters where it is too deep for walruses to dive to the ocean bottom).
- ⁹⁸ Yupik Eskimos live on the western and northwestern Alaska coast, St. Lawrence Island, and in Eastern Siberia.
- ⁹⁹ See *Regional Paper: Native Peoples and Native Homelands*, US NATIONAL ASSESSMENT OF THE POTENTIAL CONSEQUENCES OF CLIMATE VARIABILITY AND CHANGE, US GLOBAL CHANGE RESEARCH PROGRAM, <http://www.usgcrp.gov/usgcrp/nacc/education/native/native-edu-6.htm> (last modified Oct. 12, 2003).
- ¹⁰⁰ See Joling, *supra* note 97.
- ¹⁰¹ See *id.*
- ¹⁰² See *id.*
- ¹⁰³ See George Pletnikoff, *Compass: Other Points of View, Aleutian Tribes Feel Strain of Poor Fishery Management*, ANCHORAGE DAILY NEWS, Nov. 14, 2009, <http://www.adn.com/2009/11/14/1013293/aleutian-tribes-feel-strain-of.html>; Sarah Krakoff, *American Indians, Climate Change, and Ethics for a Warming World*, 85 DENV. U. L. REV. 865, 876 (2008) (discussing impacts of climate change on salmon); Crowell, *supra* note 65 (reporting that berries in the Kotzebue region are “disappearing”).
- ¹⁰⁴ GAO Report, *supra* note 59, at 8.
- ¹⁰⁵ Braund, *supra* note 87, at 32 (noting longer distances required to reach subsistence resources, although this may be related to impacts associated with increased oil and gas activity). *C.f.* *Regional Paper*, *supra* note 99 (Yupik Eskimos must travel longer distances to reach walruses).
- ¹⁰⁶ Nuttall, *supra* note 10, at 656.
- ¹⁰⁷ See *id.* at 660.
- ¹⁰⁸ See IACHR Petition, *supra* note 81, at 43-44.
- ¹⁰⁹ This was the case on the North Slope in 2007. See Letter from Johnny Aiken to Dick Mylius, *supra* note 65. See, e.g., Braund, *supra* note 87, at 137 (an Atkasuk hunter interviewed in 2007 reported having had difficulty since 2002 in traveling by boat to his cabin on Mead River).

- 110 See Huntington & Fox, *supra* note 8, at 68; Jacqueline P. Hand, *Global Climate Change: A Serious Threat to Native American Lands and Culture*, 38 ENVTL. L. REP. NEWS & ANALYSIS 10329, 10331 (May 2008). See Braund, *supra* note 87, at 143.
- 111 See IACHR Petition, *supra* note 81, at 40.
- 112 *Id.* at 39-41; Braund, *supra* note 87, at 142. See also POINT HOPE REPORT, *supra* note 59, at 2 (“In the spring of 2008, shore-fast ice broke free in the spring of 2008, casting Point Hope whaling crews and camps adrift, and requiring a helicopter rescue from Barrow.”).
- 113 Once a whale is killed, its body heat causes it to cook if it is not timely butchered. In spring 2009, one whale caught near Barrow that could not be pulled up onto the ice and could not be butchered properly went bad, and few parts were salvaged. (Based on the author’s personal knowledge.). See also POINT HOPE REPORT, *supra* note 59 (“The single bowhead harvested in Point Hope this spring had to be butchered in the water, a less efficient process.”).
- 114 See Vera Metcalf & Martin Robards, *Sustaining a Healthy Human-Walrus Relationship in a Dynamic Environment: Challenges for Comanagement*, 18 ECOLOGICAL APPLICATIONS S148, S152 (2008). See also Braund, *supra* note 87, at 143 (Wainwright hunter interviewed in 2005 explained the difficulty in getting walrus on ice); JESSICA CARDINAL, PACIFIC WALRUS MANAGEMENT IN A WORLD OF CHANGING CLIMATE: EXPERIENCES AND OBSERVATIONS FROM KING ISLAND WALRUS HUNTERS 21 (2004), http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/4255/Cardinal_ocr.pdf?sequence=1.
- 115 See Martin Robards & Julie Lurman Joly, *Interpretation of “Wasteful Manner” Within the Marine Mammal Protection Act and Its Role in Management of the Pacific Walrus*, 13 OCEAN & COASTAL L.J. 171, 209 (2008).
- 116 Also, open water will allow a project to lay underwater cable between Tokyo and London by way of the Northwest Passage to go forward. See Dan Joling, *Global Warming Opens Up Arctic for Undersea Cable*, *supra* note 89.
- 117 See Reiss, *supra* note 41.
- 118 See Kim Murphy, *Melting Ice Could Transform Alaska Economy*, L. A. TIMES, Oct. 18, 2009, available at http://articles.sfgate.com/2009-10-18/news/17185488_1_ships-cruise-ice.
- 119 See Reiss, *supra* note 41.
- 120 See AMSA 2009 Report, *supra* note 52, at 136 (“The migration corridors used by marine mammals and birds correspond broadly with the main shipping routes into and out of the Arctic.”).
- 121 *Id.* at 146, 149, 150-51.
- 122 *Id.* at 136, 138, 141.
- 123 *Id.* at 145.
- 124 *Id.*; LGL Ltd. & Greeneridge Sciences, Inc. *Responses of Bowhead Whales to an Offshore Drilling Operation in the Beaufort Sea* (Report for Shell Western E&P Inc.) (1987) (a “zone of avoidance” extended from 15 to 25 km around a drill ship); K.D. Brewer, et al., *Kuvlum #1 Exploration Prospect: Site Specific Monitoring Program, Final Report* (Report for ARCO Alaska, Inc.) (1993) (reporting that in Camden Bay, whales began to deflect away from a drill rid at about 32 km); J.R. Davies, *The Impact of an Offshore Drilling Platform on the Fall Migration Path of Bowhead Whales: a GIS-based Assessment*, (1997) (M.S. Thesis,

Western Washington University) (reporting that whales were nearly excluded from an area within 20 km of a drilling rig); Letter from Daniel W. Forster, North Slope Borough Director, to Nina Brudie, Alaska Dep't of Natural Resources, on Consistency with ACMP Enforceable Policies Shell Offshore, Inc. 2010 Outer Continental Shelf Lease Exploration Plan, Camden Bay Alaska (Nov. 9, 2009) (stating that whales deflect away from smells created by people); Marla M. Holt, Paper presented at the 17th Annual Endangered Species Act Seminar, Seattle, Wash.: *Marine Mammal Ecology* (Jan. 29, 2010) (on file with the author).

125 *AMSA 2009 Report*, *supra* note 52, at 134.

126 *Id.* at 145.

127 *Id.* at 142 (black carbon settles on ice and snow, increasing solar absorption and temperature of ice and snow).

128 *Id.* at 141; *International Maritime Organization Adopts Program to Control Air Emissions from Oceangoing Vessels*, EPA (2008) <http://www.epa.gov/oms/regs/nonroad/marine/ci/420f09029.htm>.

129 *See generally* Braund, *supra* note 87.

130 *Id.* at 145.

131 *Id.*

132 *Id.*

133 *See id.* at 140; *Tundra Travel Management Strategy*, ALASKA DEP'T OF NATURAL RES., (Dec. 2, 2004), http://dnr.alaska.gov/mlw/tundra/mgmt_strat.htm; Elizabeth Arnold, *Alaska Concludes Conference on Climate Costs*, NAT'L PUB. RADIO (Feb. 18, 2007), <http://www.npr.org/templates/story/story.php?storyId=7480109>.

134 *See* Jill Burke, *Melting Ice Could Mean New Riches*, ALASKA DISPATCH (Mar. 1, 2010), <http://www.alaskadispatch.com/dispatches/news/4250-melting-ice-could-mean-new-riches>; Stein Sandven, *Shrinking Sea Ice Could Benefit Arctic Exploration, OFFSHORE* (Sep. 1, 2007), <http://www.offshore-mag.com/index/article-display/306955/articles/offshore/volume-67/issue9/arctic-frontiers/shrinking-sea-ice-could-benefit-arctic-exploration.html>; Reid Magdanz, *Offshore Drilling Looms on the Arctic Horizon*, THE YALE GLOBALIST (Dec. 2009), <http://tyglobalist.org/index.php/20091230247/Focus/Offshore-Drilling-Looms-on-the-Arctic-Horizon.html> (reporting that as much as thirteen percent of the world's undiscovered oil and thirty percent of its undiscovered gas lie north of the Arctic Circle, much of it offshore); Wesley Loy, *Arctic Directory: 22 Percent of Undiscovered Oil In Arctic*, PETROLEUM NEWS (Mar. 21, 2010), <http://www.petroleumnews.com/pnads/397955058.shtml> (Arctic Alaska region is estimated to hold the largest undiscovered Arctic oil deposits, about 30 billion barrels).

135 *See* IACHR Petition, *supra* note 81, at 50; Reiss, *supra* note 41; POINT HOPE REPORT, *supra* note 59, at 2, 20-21 (reporting that in Point Hope, ice cellars are thawing as well as being washed in due to ocean erosion, "and there are currently no community alternatives for storage of whale meat and blubber.").

136 POINT HOPE REPORT, *supra* note 59, at 26.

137 *See* C. BALLEW ET AL., FINAL REPORT ON THE ALASKA TRADITIONAL DIET SURVEY 81 (2004), *available at* http://www.anthc.org/chs/epicenter/upload/traditional_diet.pdf (reporting that statewide dietary study documenting an Alaska Native trend toward increased use of market foods).

- 138 *See* Wernham, *supra* note 22, at 507.
- 139 *See* NSB ACMP PLAN, *supra* note 14, at 75; POINT HOPE REPORT, *supra* note 59, at 10-13; Wernham, *supra* note 22, at 503 (subsistence lifestyles and diets protect against diabetes).
- 140 Letter from Daniel W. Forster, North Slope Borough Director, to Cheryl Rosa, biologist, Barrow, Alaska (Jan. 15, 2009) (perceived contamination impacts food security); Letter from Daniel W. Forster, North Slope Borough Director, to Alaska Dep't of Natural Resources on ACMP Consistency of Shell Offshore, Inc. 2010 Outer Continental Shelf Lease Exploration Plan, Chukchi Sea (Air Quality Concerns) (Feb. 10, 2010) (on file with the author), at 5 (stating that animals may take up toxins directly or through the food chain, thereby affecting their suitability (or perceived suitability) for consumption).
- 141 *See Rome Declaration on World Food Security and World Food Summit Plan of Action*, WORLD FOOD SUMMIT (1996), available at <http://www.fao.org/docrep/003/w3613e/w3613e00.htm> ("Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.").
- 142 *See* Wernham, *supra* note 22, at 506 (providing example of community that could not harvest whale for two seasons in a row and experienced an increase in domestic violence and drug and alcohol abuse); Verbrugge, *supra* note 79 (referring to social, economic and health consequences from the breakdown of subsistence).
- 143 *See* Verbrugge, *supra* note 79 (discussing the impact of increased temperatures on bioaccumulation in the food chain).
- 144 *See Regional Paper*, *supra* note 99; Huntington & Fox, *supra* note 8, at 64-66.
- 145 *See* Nuttall, *supra* note 10, at 668.
- 146 *See* Hand, *supra* note 110, at 10,332; Huntington & Fox, *supra* note 8, at 64. In some cases, "Western" science is only now catching up to traditional knowledge. *See* Huntington & Fox, *supra* note 8, at 66; NSB ACMP PLAN, *supra* note 14, at 65 (referring to Iñupiaq indigenous knowledge of the habits of the bowhead whale).
- 147 *See* IACHR Petition, *supra* note 81, at 39-40, 67. *See also* Reiss, *supra* note 41 (stating that some elders report that conditions have changed so much that they have begun to doubt their ice knowledge).
- 148 *See* IACHR Petition, *supra* note 81, at 59.
- 149 *Id.* at 3; Nuttall, *supra* note 10, at 670.
- 150 *See* IACHR Petition, *supra* note 81, at 59.
- 151 Nuttall, *supra* note 10, at 664.
- 152 *See* Marine Mammal Protection Act, 16 U.S.C. § 1371(b) (2006) (allowing the sale of only "authentic Native articles of handicraft and clothing" to the general public, and raw marine mammal parts only between Alaska Natives), Lacey Act, 16 U.S.C. §§ 3371-3378 (2006); Convention on International Trade in Endangered Species of Wild Fauna and Flora app. III, July 1, 1975, 27 U.S.T. 1087; Alaska National Interest Lands Conservation Act, 16 U.S.C. § 3113 (2006) (defining subsistence) ALASKA STAT. § 16.05.940 (2009) (defining commercial fishing to exclude subsistence); 5 ALASKA ADMIN. CODE 5 ACC 77.001 (1982) (defining personal use fishery); Agreement Between the Government of Canada and the Government of The United States of America on the Conservation of the Porcupine Caribou Herd, July 18, 1987, T.I.A.S. No. 11259 (prohibiting the commercial

harvest and sale of Alaska's Porcupine Herd, but allowing commercial sales of some Canadian herds).

¹⁵³ See Nuttall, *supra* note 10, at 664.

¹⁵⁴ See, e.g., *Alaska Native and Rural Lifeways Prior to 1971*, NAT'L PARK SERVICE, http://www.nps.gov/history/history/online_books/norris1/chap1c.htm (last visited Nov. 6, 2010) (stating that the government used its trust responsibility toward Native tribes to convert them from a nomadic to an agricultural existence); ALASKA NATIVE HERITAGE CTR., CULTURAL DESCRIPTIONS OF ALASKA'S NATIVE PEOPLES 7, available at <http://www.alaskanative.net/data/ALASKANATIVE/Files/File/PDF/cgdescriptions.pdf> (last visited Sep. 21, 2010) (referring to nomadic hunting patterns of the Yupik).

¹⁵⁵ Laws governing subsistence generally prohibit the commercial sale of subsistence meat. See G.W. Wenzel, *Warming the Arctic: Environmentalism and Canadian Inuit*, in HUMAN ECOLOGY AND CLIMATE CHANGE: PEOPLE AND RESOURCES IN THE FAR NORTH (D.L. Peterson & D.R. Johnson eds., 1995) (describing the expansion of the predecessors to today's Inuit from western Alaska eastward to Greenland during the "Neo-Atlantic Optimum" (ca. A.D. 1000), when the Canadian Arctic passed through a warming period).

¹⁵⁶ See Kyle Hopkins, *Migration From Villages Played Small Role in Student Surge*, ANCHORAGE DAILY NEWS, Dec. 11, 2009, available at <http://www.adn.com/2009/12/10/1050542/migrationfromvillages-played.html> (citing overall trend of movement from rural to urban areas).

¹⁵⁷ Pat Forgey, *Natives Losing Political Influence*, JUNEAU EMPIRE (Mar. 24, 2010), http://juneauempire.com/stories/032410/sta_595649976.shtml (discussing how there are now more Alaska Natives in Anchorage than in any other location).

¹⁵⁸ GAO Report, *supra* note 59, at 3-5 (reporting that the villages of Kivalina, Koyukuk, Newtok, and Shishmaref are planning to relocate inland, but that many other Alaska villages needing to relocate will be ineligible for assistance).

¹⁵⁹ See discussion of State of Alaska laws on subsistence, *infra* Part V(A). There is no priority for subsistence hunting over other types of hunting on non-federal lands in and near urban areas. ALASKA STAT. § 16.05.258(c) (2009).

¹⁶⁰ Forgey, *supra* note 157 (discussing that, since statehood, there has been a shift of legislators from rural Alaska to the cities, based on the decennial census).

¹⁶¹ Huntington & Fox, *supra* note 8, at 92; IACHR Petition, *supra* note 81, at 48 (informing that Barrow hunters are spending less time hunting and therefore have fewer opportunities to learn hunting skills).

¹⁶² See *Worcester v. Georgia*, 31 U.S. 515, 582 (1832) (M'Lean, J., concurring) ("[T]he language used in treaties with the Indians should never be construed to their prejudice ... [.]" and "[h]ow the words of the treaty were understood by this unlettered people, rather than their critical meaning, should form the rule of construction"); *Choctaw Nation v. United States*, 318 U.S. 423, 431-32 (1943) (stating that Indian treaties are to be construed liberally in favor of Indians); *McClanahan v. State Tax Comm'n of Ariz.*, 411 U.S. 164, 174 (1973) (asserting that ambiguous expressions in Indian treaties must be resolved in favor of Indians); *Choctaw Nation v. Oklahoma*, 397 U.S. 620, 631 (1970) (stating that treaties must be construed as Indians would have understood them).

¹⁶³ See *Montana v. Blackfoot Tribe of Indians*, 471 U.S. 759, 766 (1985) (discussing Indian canons as being derived from the trust relationship).

¹⁶⁴ *United States v. Winans*, 198 U.S. 371 (1905); *United States v. Washington*, 157 F.3d 630 (9th Cir. 1998) (affirming the right of tribes to take shell fish from private tidelands and pass over uplands when necessary to reach the tidelands); *Muckleshoot Indian Tribe v. Hall*, 698 F. Supp. 1504, 1510-11 (W.D. Wash. 1989).

- ¹⁶⁵ Settler v. Lameer, 507 F.2d 231, 237-39 (9th Cir. 1974).
- ¹⁶⁶ Washington v. Wash. State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 682-83 (1979); United States v. Washington, 384 F. Supp. 312, 342 (W.D. Wash. 1974), *aff'd*, 520 F.2d 676 (9th Cir. 1975); Cheyenne-Arapaho Tribes v. Oklahoma, 618 F.2d 665, 668 (10th Cir. 1980) (affirming that state hunting and fishing laws do not apply on trust lands located within a disestablished reservation because "lands held in trust by the United States for the Tribes are Indian Country").
- ¹⁶⁷ Kittitas Reclamation Dist. v. Sunnyside Valley Irrigation Dist., 763 F.2d 1032 (9th Cir. 1985) (requiring the release of water in a stream from an irrigation facility in order to protect salmon); United States v. Adair, 723 F.2d 1394 (9th Cir. 1983) (affirming the right to sufficient water to protect fishing); Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977) (enjoining the United States from constructing a dam that would destroy a traditional Indian fishing site).
- ¹⁶⁸ The only applicable treaties are those which govern migratory bird hunting, but these are with other countries rather than with the tribes. Convention for the Protection of Migratory Birds, U.S.-Gr. Brit., Aug. 16, 1916, 39 Stat. 1702; Convention for the Protection of Migratory Birds and Game Mammals, U.S.-Mex., Feb. 7, 1936, 50 Stat. 1311; Convention Concerning the Conservation of Migratory Birds and Their Environment, U.S.-U.S.S.R., Nov. 19, 1976, 29 U.S.T. 4647; Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and Their Environment, U.S.-Japan, Mar. 4, 1972, 25 U.S.T. 3329 [hereinafter, collectively, Treaties].
- ¹⁶⁹ See 43 U.S.C. § 1603(b) (2006) ("All aboriginal titles, if any, and claims of aboriginal title in Alaska based on use and occupancy, including submerged land underneath all water areas, both inland and offshore, and including any aboriginal hunting or fishing rights that may exist, are hereby extinguished.").
- ¹⁷⁰ Iñupiat Cmty. of the Arctic Slope v. U.S., 746 F.2d 570 (9th Cir. 1984) (per curiam).
- ¹⁷¹ *Id.* at 571.
- ¹⁷² 154 F.3d 1090 (9th Cir. 1998), *cert denied*, 527 U.S. 1003 (1999).
- ¹⁷³ Native Vill. of Eyak v. Trawler Diane Marie, Inc., 154 F.3d 1090, 1096 (9th Cir. 1998).
- ¹⁷⁴ See County of Yakima v. Confederated Tribes & Bands of the Yakima Indian Nation, 502 U.S. 251, 269 (1992) ("When we are faced with ... two possible constructions, our choice between them must be dictated by a principle deeply rooted in this Court's Indian jurisprudence: '[S]tatutes are to be construed liberally in favor of the Indians, with ambiguous provisions interpreted to their benefit.'" (quoting Montana v. Blackfoot Tribe, 471 U.S. 759, 766 (1985))); United States v. Berrigan, 2 Alaska 442 (D. Alaska 1905) (referring to the trust protection between the federal government and Alaska Natives); Alaska Pac. Fisheries v. United States, 248 U.S. 78, 89 (1918) ("[S]tatutes passed for the benefit of dependent Indian tribes or communities are to be liberally construed, doubtful expressions being resolved in favor of the Indians").
- ¹⁷⁵ See United States v. Atl. Richfield Co., 612 F.2d 1132, 1139 (9th Cir. 1980) (finding that Congress's clear intent through ANCSA to extinguish all claims and litigation takes precedence over generalized rules of construction; noting that the rule of construction to avoid taking advantage of the disadvantaged was diminished because the Iñupiat were represented by competent counsel); Nenana Fuel Co., Inc. v. Native Village of Venetie, 834 P.2d 1229 (Alaska 1992); North Slope Borough v. Andrus, 642 F.2d 589, 612n.151, (D.C. Cir. 1980) *citing* Cape Fox Corp. v. U.S., 456 F.Supp. 784, 799 (D. Alaska 1978). See also Alaska v. Native Village of Venetie Tribal Government, 522 U.S. 520, 521-22 (1998) (extinguishing most of Alaska's Indian country and failing to address Indian canons, despite their importance to the decision in the court below, see 101 F.3d 1286, 1294-95 (9th Cir. 1996)); David M. Blurton, *Canons of Construction, Stare Decisis and Dependent Indian Communities: A Test of Judicial Integrity*, 16 ALASKA L. REV. 37 (June 1999).

176 834 P.2d 1229 (Alaska 1992).

177 *Id.* at 1238 referring to H.R. Rep. No. 746, 92d Cong., 1st Sess. 40, reprinted in 1971 U.S.C.C.A.N. 2192, 2253 (Congress intended that “lands granted to Natives under this Act [are not to be] considered ‘Indian reservation’ lands for purposes other than those specified in this Act. The lands granted by this Act are not ‘in trust’ and the Native villages are not Indian ‘reservations.’”).

178 16 U.S.C. § 3101, *et. seq.* (2006).

179 *Id.* at § 3114. ANILCA does not apply to marine mammals or migratory birds. *See id.* at § 3115(4) (1998).

180 *Id.* at §§ 3111, 3114.

181 *See* discussion on Native Corporations, *infra* Part V(B). Although ANILCA at Section 3111 (Findings) of Title VIII (Subsistence) declares that “the continuation of the opportunity for subsistence uses ... on the public lands and by Alaska Natives on Native lands is essential to Native physical, economic, traditional, and cultural existence,” Section 3114 grants the subsistence preference only on “public lands” (not “Native lands,” which Section 3102(11) defines as land owned or selected by a Native Corporation). 16 U.S.C. §§ 3102(11), 3111, 3114 (2006).

182 *Id.* at § 3114.

183 *See* McDowell v. State, 785 P.2d 1, 10-11 (Alaska 1989). *See also* Thériault, *supra* note 15, for a more detailed explanation of the State’s role in subsistence management.

184 Federal Land in the West, W. STATES TOURISM COUNCIL, <http://www.commerce.state.ak.us/wstpc/Publications/FedLandWest.htm> (last updated Sep. 16, 2009); *Comparison of Federally Owned Land with Total Acreage of States* (FY, 1994), U.S. GOV’T PRINTING OFFICE, available at <http://www.access.gpo.gov/blm/images/1-3-96.pdf>.

185 DAVID S. CASE & DAVID A. VOLUCK, ALASKA NATIVES AND AMERICAN LAWS at 301 (Univ. of Alaska Press, 2d. ed. 2002); State v. Morry, 836 P.2d 358, 368 (Alaska 1992). For a comparison between the state and federal regimes, *see* *Federal or State*, SUBSISTENCE MGMT. INFO., <http://www.subsistmginfo.org/fvss.htm> (last updated Jan. 30, 2007).

186 *See* ALASKA STAT. § 16.05.258 (1986).

187 *See id.* Article VIII of the Alaska Constitution precludes awarding preferences to a particular group of Alaskans. *See* ALASKA CONST. ART. VIII, § 3 (reserving naturally occurring fish, wildlife, and waters to the people for common use); *id.* at § 15 (prohibiting the creation of exclusive rights or access privileges to fisheries); *id.* at § 17 (governing the use or disposal of natural resources apply equally to all similarly situated persons); McDowell v. State, 785 P.2d 1, 10-11 (Alaska 1989). ALASKA STAT. § 16.05.258(b)(4) does distinguish among users in times of scarcity, using the same criteria established in ANILCA.

188 *See* ALASKA STAT. § 16.05.258(c); 5 ALASKA ADMIN. CODE 99.015 (2009) (establishing nonsubsistence areas).

189 *See* 16 U.S.C. § 1539(e) (2006) (exempting “(A) any Indian, Aleut, or Eskimo who is an Alaskan Native who resides in Alaska; or (B) any non-native permanent resident of an Alaskan native village; if such taking is primarily for subsistence purposes”); 16 U.S.C. § 1371(b) (2006) (exempting “any Indian, Aleut, or Eskimo who resides in Alaska and who dwells on the coast of the North Pacific Ocean or the Arctic Ocean”).

190 16 U.S.C. § 712 (2006) (permitting “indigenous inhabitants of the State of Alaska” to take birds “for their own nutritional and

other essential needs, as determined by the Secretary of the Interior.”).

¹⁹¹ U.S. treaties establish a closed spring and summer season for migratory bird hunting. *See* Treaties, *supra* note 168. The U.S.-Canada treaty was modified in 1995 to remove the ban on native subsistence hunting during the spring-summer season. *See* Protocol between the United States and Canada Amending the 1916 Convention for the Protection of Migratory Birds in Canada and the United States, Dec. 14, 1995, S. Treaty Doc. No. 104-28.

¹⁹² 16 U.S.C. § 1539(e)(4) (2006).

¹⁹³ 16 U.S.C. § 1371(b) (2006).

¹⁹⁴ Several listing determinations have already recognized the impact of climate change on population status. *See* Endangered and Threatened Species: Final Listing Determinations for Elkhorn Coral and Staghorn Coral, 71 Fed. Reg. 26,852 (May 9, 2006); Endangered and Threatened Wildlife and Plants; 12-Month Findings on Petitions To List Penguin Species as Threatened or Endangered Under the Endangered Species Act; Proposed Rules, 73 Fed. Reg. 77,263 (Dec. 18, 2008); Endangered and Threatened Wildlife and Plants: Proposed Threatened Status for Southern Distinct Population Segment of Eulachon, 74 Fed. Reg. 10,857 (Mar. 13, 2009); Endangered and Threatened Wildlife and Plants; Proposed Threatened and Not Warranted Status for Distinct Population Segments of the Spotted Seal Tuesday, 74 Fed. Reg. 53,683 (Oct. 20, 2009).

¹⁹⁵ *See* North Slope Borough’s Comments to Fish and Wildlife Service on Polar Bear Findings (Oct. 22 2007) (on file with the author).

¹⁹⁶ *See* Fish and Wildlife Service, Migratory Bird Subsistence Harvest in Alaska; Harvest Regulations for Migratory Birds in Alaska During the 2009 Season, Final Rule, 74 Fed. Reg. 23,336 (May 19, 2009) (imposing new restrictions on North Slope hunters to avoid finding the Steller’s eider to be in jeopardy under Section 7(b)(3)(A) of the Endangered Species Act, 16 U.S.C. §1536 (2006)).

¹⁹⁷ *See* Endangered and Threatened Wildlife and Plants; Threatened Status for the Alaska Breeding Population of the Steller’s Eider, 62 Fed. Reg. 31,748 (June 11, 1997).

¹⁹⁸ *See* NSB’s 2009 Comments to FWS, *supra* note 3, at 4.

¹⁹⁹ *Id.*

²⁰⁰ *C.f.* Campbell, *supra* note 92 (decline in Pacific Brant population linked to changes in food resources rather than hunting).

²⁰¹ Section 7 of the Endangered Species Act requires consultation between FWS or the National Marine Fisheries Service, as appropriate, and agencies authorizing, funding, or carrying out activities that may affect listed species, but it does not provide for consultation with potentially affected tribes. 16 U.S.C § 1536(a)(2) (2006).

²⁰² *See* NSB’s 2009 Comments to FWS, *supra* note 3, at 10. Executive Order 13,175, Consultation and Coordination with Indian Tribal Governments, 65 Fed. Reg. 67,249 (Nov. 9, 2000), superseding Executive Order No. 13084, at 3(c), requires FWS and NMFS to consult with tribes when “undertaking to formulate and implement policies that have tribal implications.” DEPARTMENTS OF THE INTERIOR & COMMERCE, SECRETARIAL ORDER 3206, AMERICAN INDIAN TRIBAL RIGHTS, FEDERAL TRIBAL TRUST RESPONSIBILITIES, AND THE ENDANGERED SPECIES ACT (1999), explains the responsibilities of the Departments of the Interior and Commerce when actions taken pursuant to the Endangered Species Act may affect the exercise of American Indian tribal rights. DEPARTMENT OF THE INTERIOR, SECRETARIAL ORDER 3225, ENDANGERED SPECIES ACT AND SUBSISTENCE USES IN ALASKA, clarifies the application of Secretarial Order No. 3206 to Alaska, and requires consultation as soon as any conservation concern arises regarding a species that is listed as endangered or threatened under the Endangered Species Act and also used for subsistence.

203 Understaffing of tribal government offices has resulted in some tribes being unable to take advantage of consultation even when it is offered.

204 Email from Larry Bell, Assistant Reg'l Dir., FWS to Barrett Ristroph, North Slope Borough (Feb. 2, 2009), citing Letter from David Verly, Acting Assistant Sec'y of the Interior, to Joe A. Garcia, President, Nat'l Cong. of Am. Indians (Sep. 14, 2007) (on file with the author).

205 16 U.S.C. § 712 (2006).

206 50 C.F.R. § 92.4 (2009).

207 While federal law provides for one hunter to transfer his hunting rights to another in some situations (*see, e.g.*, 50 C.F.R. § 100.10(d)(5)(ii), § 100.25(a)), state law does not. This conflicts with subsistence communities' view of subsistence as a community right linked to local group enforcement and web of rights and duties as tribal members. *See Conn, supra* note 16.

208 *See* Thériault, *supra* note 15; NSB's 2009 Comments to FWS, *supra* note 3, at 1 (describing the prohibition on picking up and using dead Steller's eiders as in conflict with the traditional custom of avoiding food waste); North Slope Borough Fish and Game Management Committee Resolution 2009-02, A Resolution Reaffirming Opposition to a Requirement for Duck Stamps, Licenses and Permits for Spring and Summer Subsistence Migratory Bird Hunting and Egg Gathering (Aug. 21, 2009) (on file with the author) (objecting to requirements to purchase licenses and duck stamps to continue an activity that Alaska Natives have undertaken for millennia).

209 *See* Alaska Migratory Bird Co-Management Council, White Paper on the Fall and Winter Subsistence Harvest of Migratory Birds (Fall 2009) (on file with the author).

210 *See id.*; Personal correspondence with Barrow subsistence hunter, Barrow, Alaska (Mar. 24, 2010) (migratory birds remain on the North Slope after September 1, sometimes until mid- to late-October).

211 Phone interview with Barrow subsistence hunters, Barrow, Alaska (Mar. 24, 2010) (if birds arrive on the North Slope earlier than usual, then they will leave earlier; if they arrive later, they leave later; it is not clear what will happen with climate change).

212 *See* North Slope Borough's comments to FWS on Proposed Harvest Regulations for Migratory Birds in Alaska during the 2010 Season, at 2-3 (Feb. 18, 2010), <http://www.regulations.gov/search/Regs/home.html#docketDetail?R=FWS-R7-MB-2009-0082> [hereinafter NSB's 2010 Comments to FWS].

213 *See id.*

214 *See id.*

215 *See id.*

216 *See* Concurrent Resolution of the Native Villages of Gambell, Kivalina, Savoonga, Wales, and the Iñupiat Community of the Arctic Slope (ICAS) (Mar. 20, 1978); ICAS Resolution 14, Delegation of Authority to AEWC on Whaling Matters (Feb. 15, 1978). ICAS is a federally recognized tribe and a tribal government that acts on behalf of eight North Slope villages. *See* Joint Comments of Alaska Eskimo Whaling Commission, Iñupiat Community of the Arctic Slope, and North Slope Borough to Environmental Protection Agency re Shell Gulf of Mexico/Shell Offshore Inc.'s Application for a Beaufort Sea Clean Air Act Permit (Mar. 22, 2010) (on file with the author); *Alaska Region Overview*, U.S. DEP'T OF INTERIOR, INDIAN AFFAIRS, <http://>

www.bia.gov/WhoWeAre/RegionalOffices/Alaska/index.htm (last updated Feb. 22, 2010).

217 AEWCC has a cooperative agreement with the National Ocean and Atmospheric Administration “to protect the bowhead whale and the Eskimo culture, to promote scientific investigation of the bowhead whale, and to effectuate the other purposes of the Marine Mammal Protection Act, the Whaling Convention Act, and the Endangered Species Act as these acts relate to aboriginal subsistence whaling.” Cooperative Agreement between the National Ocean and Atmospheric Administration and the Alaska Eskimo Whaling Commission, as amended 2008 (on file with the author).

218 *See, e.g.*, 2009 Open Water Season Programmatic Conflict Avoidance Agreement (on file with the author).

219 16 U.S.C. § 1388 (2006).

220 *See Cooperative Agreements*, U.S. FISH & WILDLIFE SERV., <http://alaska.fws.gov/fisheries/mmm/agreements.htm> (last updated Sep. 10, 2008). The 1997 agreement with EWC mainly provided for funding of the organization. *See* Cardinal, *supra* note 114, at 30. A 1998 Memorandum of Understanding between EWC, the Alaska Department of Fish & Game, and FWS allowed joint management of the Pacific Walrus Conservation Fund. *See* ESKIMO WALRUS COMMISSION, <http://www.kawerak.org/servicedivisions/nrd/ewc/index.html> (last updated Jan. 12, 2009).

221 *See id.*; Eskimo Walrus Commission and U.S. Fish and Wildlife Service, Walrus Harvest Guidelines (2004) (cooperatively developed guidelines to address waste), cited in Martin Robards & Julie Lurman Joly, *Interpretation of “Wasteful Manner” Within the Marine Mammal Protection Act and Its Role in Management of the Pacific Walrus*, 13 OCEAN & COASTAL L.J. 171, 189 (2008).

222 *See* Robards & Joly, *supra* note 221, at 223 (comparing EWC’s enforcement authority with that of AEWCC’s).

223 Cardinal, *supra* note 114, at 3.

224 *Establishment of Management Bodies in Alaska To Develop Recommendations Related to the Spring/Summer Subsistence Harvest of Migratory Birds*, 65 Fed. Reg. 16,408 (Mar. 28, 2000).

225 Personal correspondence with Donna Dewhurst, Wildlife Biologist for the Office of AMBCC in Anchorage, Alaska (Nov. 19, 2008).

226 *See* NSB’s 2010 Comments to FWS, *supra* note 212.

227 *See* 25 U.S.C. § 476 (h)(1) (2006) (“each Indian tribe shall retain inherent sovereign power to adopt governing documents under procedures other than those specified in this section”); Indian Tribal Justice Act, Pub. L. No. 103-176, 107 Stat. 2004 (1993) (codified at 25 U.S.C. §§ 3601 et seq. (2006)) (“Indian tribes possess the inherent authority to establish their own form of government, including tribal justice systems.”); *Delaware Indians v. Cherokee Nation*, 193 U.S. 127, 132 (1904) (“A tribe may determine who are to be considered members by written law, custom, intertribal agreement, or treaty with the United States.”); *Kimball v. Callahan*, 590 F.2d 768, 777-78 (9th Cir. 1979) (inherent power to determine membership does not depend on having a territorial base, so even tribes with no Indian country may retain this power); *John v. Baker*, 982 P.2d 738, 753 (Alaska 1999) (holding that ANCSA did not extinguish tribal sovereignty); 25 U.S.C. § 473a (2006) (amending the Indian Reorganization Act of 1934 to include Alaska Natives).

228 18 U.S.C. § 1162 (2006); 25 U.S.C. §§ 1321-1326 (2006); 28 U.S.C. § 1360 (2006) (transferring control of many aspects of tribal jurisdiction to the state and warrants discussion in a full analysis of Alaska tribal jurisdiction. It is not considered in this article because it exempts hunting, fishing, and trapping rights that are protected by treaty, agreement, or statute, and is thus less relevant to subsistence); Benjamin W. Thompson, *The De Facto Termination of Alaska Native Sovereignty: An Anomaly in an Era of Self-Determination*, 24 AM. INDIAN L. REV. 421, 444 (2000).

- 229 The only statutory reservation in Alaska is that established in 1891 for the Metlakatla Indians of the Annette Islands. 25 U.S.C. § 495 (2006). The Secretary of the Interior has established six more reservations under the authority of Indian Reorganization Act. 25 U.S.C. § 473(a) (2006) (Venetie, Karluck, Akutan, Diomedea, Unalakleet, and Wales).
- 230 See Alaska Native Allotment Act of 1906, Pub. L. No. 171, 34 Stat. 197 (1906), formerly codified at 43 U.S.C. §§ 270-1 through 210-3 (1970), repealed with a savings clause for pending applications by ANCSA, 43 U.S.C. § 1617.
- 231 See Alaska Native Townsite Act, Pub. L. No. 69-280, 44 Stat. 629, formerly codified at 43 U.S.C. § 733, *repealed by* Section 703(a) of the Federal Land Policy and Management Act (1976), 90 Stat. 2789.
- 232 See *Alaska v. Native Village of Venetie Tribal Gov't*, 522 U.S. 520, 527 n.2 (1998) (“Other Indian country [besides the Metlakatla Reservation] exists in Alaska post-ANCSA only if the land in question meets the requirements of a ‘dependant Indian community’ under our interpretation of § [18 U.S.C.] 1151(b), or constitutes allotments under 1151(c.)”); Case and Voluck, *supra* note 185, at 400.
- 233 43 U.S.C.A. §§ 1611, 1613, 1618 (West 2010).
- 234 State and local regulation of Indian country is limited. See 25 C.F.R. § 1.4 (2010); *State of South Dakota v. U.S. Dep’t. of Interior*, 401 F. Supp. 2d 1000, 1010 (D.S.D. 2005) (“State and local governments lack jurisdiction to enforce zoning regulations on trust land.”); *Santa Rosa Band of Indians v. Kings Cnty.*, 532 F.2d 655, 664 (9th Cir. 1976).
- 235 In some cases Native Corporation land is not subject to property tax. See 43 U.S.C.A. § 1620 (West 2010).
- 236 See ALASKA NATIVE OIL AND GAS WORKING GROUP, OIL AND THE ALASKA CLAIMS SETTLEMENT ACT, available at <http://www.treatycouncil.org/Alaska%20Native%20Cörking.pdf> (“ANCSA has successfully removed tribal people from control over their ancestral lands and destiny. Because our lands are run by corporate Indians and not our traditional leaders, we have lost our way and our wisdom. As long as ‘profit at all cost’ is the motto of these corporate entities, Alaska Natives are left to defend themselves—including their distinct culture—from corporate raiders, government and greed.”). See also Smiddy, *supra* note 15, at 836 (the Natives’ legal relationship to the land is at best once removed and operated through the corporate entity); Eric C. Chaffee, *Business Organizations and Tribal Self-Determination: A Critical Reexamination of the Alaska Native Claims Settlement Act*, 25 ALASKA L. REV. 107, 120-21 (2008).
- 237 See Chaffee, *supra* note 236, at 126-27, 129.
- 238 See 43 U.S.C.A. § 1606(d) (West 2010).
- 239 Arctic Slope Regional Corporation, which covers the North Slope region, includes as its purposes: “[T]o engage in all activities, whether economic, cultural, social or charitable to, protect and preserve the well-being of the Natives enrolled in tile Arctic Slope Region” Arctic Slope Regional Corp., Restated Certificate of Incorporation, at Art. III(3) (Filed Mar. 9, 1990 with the State of Alaska Department of Commerce), available at <https://myalaska.state.ak.us/business/soskb/Filings.asp?240260#>. Ukpeagvik Iñupiat Corporation (the Barrow village corporation) has similar language in its list of purposes: “To engage in all activities, whether economic, cultural, social, or charitable, to protect and preserve the well-being of the Natives residents of the Native village of Barrow, and to engage in and conduct any and all lawful activity necessary or convenient in furtherance thereof.” Ukpeagvik Iñupiat Corporation, Amended and Restated Articles of Incorporation at Art. III(3) (Filed May 1, 2006 with the State of Alaska Department of Commerce), <https://myalaska.state.ak.us/business/Imaging/20610011.pdf>. See also AHTNA, Inc., Articles of Incorporation of AHTNA, Inc. Art. III(C) (Filed June 23, 1972 with the State of Alaska Dep’t of Commerce) (describing the company’s purpose as “[t]o promote the economic, social, cultural and personal well-being of all Natives” in the region), available at <https://myalaska.state.ak.us/business/Imaging/20552946.pdf>.

- 240 See 43 U.S.C.A. § 1607 (West 2010).
- 241 See Ben Summit, *The Alaska Native Claims Settlement Act (ANCSA): Friend or Foe in the Struggle to Recover Alaska Native Heritage*, 14 T.M. COOLEY L. REV. 607, 616 (1997).
- 242 See Chaffee, *supra* note 236, at 133; Benedict Kingsbury, *First Amendment Liberalism as Global Legal Architecture: Ascriptive Groups and the Problems of the Liberal NGO Model of International Civil Society*, 3 CHI. J. INT'L L. 183, 190 (2002) (discussing the tensions created when aboriginal groups adopt or are forced to reorganize as corporations); Smiddy, *supra* note 15, at 836; BERGER, *supra* note 19, at 42 (“[C]orporate executives in the urban centers may be estranged from their shareholders in the villages.”); Monroe E. Price, *A Moment in History: The Alaska Native Claims Settlement Act*, 8 UCLA-ALASKA L. REV. 89, 95 (1979) (“The corporate executives will be those who are willing to forego subsistence activities, to place a higher priority on board meetings than on salmon fishing, and to spend time talking to lawyers and financiers and bankers rather than the people of the villages.”).
- 243 See 43 U.S.C. § 1601(b) (“[T]he settlement should be accomplished rapidly ... without establishing any permanent racially defined institutions, rights, privileges, or obligations, without creating a reservation system or lengthy wardship or trusteeship, and without adding to the categories of property and institutions enjoying special tax privileges or to the legislation establishing special relationships between the United States Government and the State of Alaska”).
- 244 See generally, Stephen Colt, *Alaska Natives and the “New Harpoon”: Economic Performance of the ANCSA Regional Corporations*, 25 J. LAND RESOURCES & ENVTL. L. 155 (2005).
- 245 See generally, Braund, *supra* note 87 (referring to displacement of caribou and bowhead, loss of fish and wildlife); THE WILDERNESS SOCIETY, *BROKEN PROMISES, THE REALITY OF OIL DEVELOPMENT IN AMERICA’S ARCTIC* (2d. ed. 2009), available at <http://wilderness.org/files/BrokenPromises-Report.pdf>.
- 246 See Chaffee, *supra* note 236, at 142-43 (describing the burden of complying with corporate laws, namely that, “Lawyers and corporate consultants have been major beneficiaries of an Act that was supposed to help Alaska Natives”); Jack F. Williams, *Integrating American Indian Law into the Commercial Law and Bankruptcy Curriculum*, 37 TUL. L. REV. 557, 567 (2001) (reporting that some Alaska Native corporations have experienced “severe financial difficulty” and have had to seek protection by declaring bankruptcy); Colt, *supra* note 244, at 160, 172, 173 (noting that regional corporations lost more than \$380 million in direct business operations from 1973 through 1993, although Cook Inlet and Arctic Slope (both of which profited from oil development) were exceptions; many corporations then began to improve, and between 1992 and 1998 regional corporations collectively earned \$710 million).
- 247 See Colt, *supra* note 244, at 164 (“In this ‘resource-limited’ world, the only ways for a Native group to prosper are either to discover and develop new resource extraction projects on their own lands or to usurp profits from existing markets by stealing market share from some other firm.”).
- 248 See *Our View: Red Dog, Take Two*, ANCHORAGE DAILY NEWS, Nov. 14, 2009, available at <http://www.adn.com/2009/11/14/1013389/our-view-red-dog-take-two.html>.
- 249 *Id.*
- 250 Elizabeth Bluemink, *Alaska’s Red Dog Mine Faces Uncertainty on Permit Appeal*, ANCHORAGE DAILY NEWS, Feb. 18, 2010, available at <http://www.adn.com/2010/02/17/1144100/states-red-dogminefaces-uncertainty.html>.
- 251 *Id.*
- 252 *Id.*

- 253 See ASRC Energy Service, Inc., Representatives, Hearings on Air Emissions Permits for Shell (Mar. 2008) (explaining their role in the permitting process); Letter from Mark Nelson, Pres./CEO, ASRC Energy Services, Inc., to Dan Mahar, Environmental Protection Agency (Apr. 1, 2008), [http://yosemite.epa.gov/R10/airpage.nsf/Permits/ocs_kulluk_terminated_ap/\\$FILE/ASRCEnergy+Comment+Letter.pdf](http://yosemite.epa.gov/R10/airpage.nsf/Permits/ocs_kulluk_terminated_ap/$FILE/ASRCEnergy+Comment+Letter.pdf).
- 254 Rob Stapleton, *ASRC Energy Services Proposes Seismic Activity in the Chukchi Sea*, ALASKA J. OF COMMERCE, Feb. 14, 2008, http://www.alaskajournal.com/stories/021408/hom_20080214001.shtml.
- 255 See *Shell, Native Corporations Team Up for Offshore Operations*, ANCHORAGE DAILY NEWS, Jan. 13, 2010, available at <http://www.adn.com/2010/01/13/1092280/shell-native-corporationsteam.html>.
- 256 See *Ctr. for Biological Diversity v. U.S. Dep't of Interior*, 563 F.3d 466, 480 (D.C. Cir. 2009) (vacating the Minerals Management Service's (MMS) 2002-2007 leasing program for the Alaska OCS); *Alaska Wilderness League v. Kempthorne*, 548 F.3d 815, 831-832 (9th Cir. 2008) (in approving the exploration plan for Shell Offshore, Inc., MMS failed to address subsistence impacts, such that a supplemental environmental impact statement would have to be prepared). See also Joint Comments of Alaska Eskimo Whaling Commission, Iñupiat Community of the Arctic Slope, and North Slope Borough to Environmental Protection Agency (Oct. 20, 2009) (on file with author).
- 257 See *Alaska Eskimo Whaling Comm'n v. Minerals Mgmt. Serv.*, 378 Fed. Appx. 747 (9th Cir. 2010). Brief for Petitioner, *Alaska Whaling Comm'n v. Minerals Mgmt.*, 378 Fed. Appx. 747 (Nos. 09-73942, 09-73944, 10-70166, 10-70368) 2010 WL 1219037.
- 258 See *Chenega Corp. v. Exxon Corp.*, 991 P.2d 769 (Alaska 1999) (native corporations have sought redress for Alaska Natives for natural resource damages caused by the Exxon-Valdez oil spill).
- 259 Elizabeth Bluemink, *Mine Opposition by Regional Corporation Induces Anger*, ANCHORAGE DAILY NEWS, Dec. 16, 2009, available at <http://www.adn.com/2009/12/15/1057498/mineoppositionby-regional-corporation.html>. The landowners adjacent to the prospect, Alaska Peninsula Corp. and Pedro Bay Corp. (both Village Corporations) condemned the vote. *Id.*
- 260 See, e.g., Memorandum of Agreement between Ukpeagvik Iñupiat Corporation and Native Village of Barrow (Aug. 29, 2008) (on file with the author).
- 261 *Id.* at 2.
- 262 *Id.*
- 263 *Id.*
- 264 See 43 U.S.C. § 1602(b) (2006) (“‘Native’ means a citizen of the United States who is a person of one-fourth degree or more Alaska Indian ... Eskimo, or Aleut blood, or combination thereof”).
- 265 See Budd Simpson, *Doing Business with Alaska Native Corporations*, 16 BUS. L. TODAY, July/Aug. 2007 <http://www.abanet.org/buslaw/blt/2007-07-08/simpson.shtml> (discussing the current status of the alienability restrictions placed upon the stock of Alaska Native corporations). Corporations are free to amend their articles of incorporation to lift the alienability restrictions on their stock, but this would mean that they would no longer be exempt from the provisions of federal security acts. See 43 U.S.C. § 1625 (2006) (exempting corporations from the Securities Act of 1933, the Securities Exchange Act of 1934, and the Investment Company Act of 1940).

- ²⁶⁶ See, e.g., UIC Oilfield Services, LLC (now UMIAQ, LLC), Articles of Organization, MYALASKA.STATE.AK.US (Aug. 15, 2006), available at [https:// myalaska.state.ak.us/business/Imaging/20636361.pdf](https://myalaska.state.ak.us/business/Imaging/20636361.pdf) (filed with the State of Alaska Department of Commerce).
- ²⁶⁷ See Smiddy, *supra* note 15, at 841; *Alaska's Native Corporations*, RESOURCE DEV. COUNCIL, <http://www.akrdc.org/issues/nativecorporations/overview.html> (last visited Oct. 22, 2010) (twelve regional corporations and three village corporations employ nearly 40,000 people worldwide, with about 15,467 of those jobs in Alaska); SENATE SUBCOMM. ON CONTRACTING OVERSIGHT STAFF, 11TH CONG., REP. ON NEW INFORMATION ABOUT CONTRACTING PREFERENCES FOR ALASKA NATIVE CORPORATIONS PART II 3 (Majority Staff Analysis Prepared for Chairman Claire McCaskill on July 15, 2009), <http://mccaskill.senate.gov/pdf/071509/ANC.pdf> (only five percent of Native Corporation employees are native shareholders and nearly seventy percent of top executives are nonnatives); Kimberly Palmer, *The Alaskan Edge*, GOVERNMENTEXECUTIVE.COM, July 15, 2005, available at [http:// www.govexec.com/features/0705-15/0705-15s2.htm](http://www.govexec.com/features/0705-15/0705-15s2.htm) (Native American Contracting Association survey found that in 2004, Alaska Native corporations employed 7747 Alaskans, 2116 of whom were tribal shareholders, out of a total of 27,800 employees).
- ²⁶⁸ See Colt, *supra* note 244, at 161.
- ²⁶⁹ See *New Information about Contracting Preferences for Alaska Native Corporations (Part II)*, *supra* note 267, at 9 (between 2000 and 2008, approximately 40% of all Native Corporation contract dollars was awarded to subsidiary companies located outside of Alaska; subsidiaries of the Chenega Corporation are located in Nevada, Virginia, South Dakota, and Florida; Alutiiq, a subsidiary of the Afognak Native Corporation, maintains offices in Virginia, Washington, DC, South Carolina, Alabama, California, Texas, Colorado, and Hawaii); Palmer, *The Alaskan Edge*, *supra* note 267 (Sealaska executive quoted as saying he wants to hire more Alaska Natives, but they aren't always willing to move to the Lower 48, where Sealaska has many of its operations.).
- ²⁷⁰ See Colt, *supra* note 244, at 170.
- ²⁷¹ *Glacier Bay Ecosystem Partnership Members*, INFORAIN.ORG, [http:// www.inforain.org/glacierbay/catalog/htm/partners.htm](http://www.inforain.org/glacierbay/catalog/htm/partners.htm) (last visited Oct. 22, 2010) (approximately 40% of Sealaska Corporation shareholders live outside the State of Alaska); *Shareholder Newsletters*, KONIAG, INC. (July 2008), available at http://www.koniag.com/uploads/file/newsletters/KNG_4625_july_NL_08.pdf (“Nearly half of Koniag Shareholders now live outside Alaska. A substantial number of us haven’t had a way to connect or identify with our Alutiiq heritage.”); H.R. Rep. No. 104-40 (1995) (twenty-five percent of Cook Inlet Regional Corporation shareholders live outside the State of Alaska).
- ²⁷² See *Alaska Corporations, Business, and Professional Licensing, Arctic Slope Regional Corporation*, MYALASKA.STATE.AK.US, [https:// myalaska.state.ak.us/business/soskb/Corp.asp?240260](https://myalaska.state.ak.us/business/soskb/Corp.asp?240260) (last visited Oct. 26, 2010); *Alaska Corporations, Business, and Professional Licensing, Arctic Slope Rgional Corporation*, MYALASKA.STATE.AK.US, [https:// myalaska.state.ak.us/business/soskb/Corp.asp?240422](https://myalaska.state.ak.us/business/soskb/Corp.asp?240422) (last visited Oct. 26, 2010). The current UIC president does spend about half of his time in Barrow, however.
- ²⁷³ See Colt, *supra* note 244, at 175.
- ²⁷⁴ See Brief of Petitioner-Appellant at 10-5, *Alaska Eskimo Whaling Comm’n v. Salazar*, Nos. 09-73942, 09-73944, 10-70166, 10-70368 (9th Cir. Filed Mar. 8, 2010) (describing impacts of offshore activity on bowhead whales).
- ²⁷⁵ Unlike their Lower 48 counterparts, Alaska tribes cannot set up casinos on Indian land. See Letter from Robert T. Anderson, Assoc. Solicitor, U.S. Dep’t of Interior Div. of Indian Affairs, to Michael K. Cox, General Counsel, National Indian Gaming Comm’n. (May 17, 1995), available at [http:// www.nigc.gov/LinkClick.aspx?link=NIGC+Uploads%2FIndianlands%2F32_ nativevillageofeklutna.pdf&tabid=120&mid=957](http://www.nigc.gov/LinkClick.aspx?link=NIGC+Uploads%2FIndianlands%2F32_nativevillageofeklutna.pdf&tabid=120&mid=957) (stating that a restricted allotment held by a member of the Native Village of Eklutna is not “Indian land” under the Indian Gaming Regulatory Act, such that the tribe could not conduct Class II and III gaming there).

- 276 They can, however, issue resolutions urging the federal government to enact legislation to reduce carbon dioxide emissions. Eighty-four Alaska Native tribes have done so. *See Tribal Resolutions on Global Warming From Alaska Native Tribes and Villages*, NATIVE AM. RIGHTS FUND, [http:// narf.org/nill/triballaw/climate](http://narf.org/nill/triballaw/climate) (last visited Oct. 25, 2010). At the time of this writing, no such legislation has been enacted into law. *See* H.R.2454, 111th Cong. (2009) (as passed by House, Jun. 26, 2009) (creating clean energy jobs, achieving energy independence, reducing global warming pollution and transitioning to a clean energy economy); S.1733, 111th Cong. (2009) (introduced in Senate Sep. 20, 3009) (creating clean energy jobs, promoting energy independence, reducing global warming pollution, and transitioning to a clean energy economy).
- 277 *See Inuit Circumpolar Council (ICC)*, INUIT CIRCUMPOLAR COUNCIL, http://inuitcircumpolar.com/index.php?auto_slide=&ID=16&Lang=En&Parent_ID=¤t_slide_num (last visited Oct. 22, 2010).
- 278 IACHR Petition, *supra* note 81, at 1, 5-7, 12.
- 279 *Id.* at 10-12.
- 280 *See* Jane George, *ICC Climate Change Petition Rejected*, NUNATSIAQ ONLINE (Dec. 17, 2006), http://www.nunatsiaqonline.ca/archives/61215/news/Nunavut/61215_02.html.
- 281 Rick Piltz, *Inter-American Commission on Human Rights to Fold March 1 Hearing on Global Warming*, CLIMATE SCIENCE WATCH (Feb. 26, 2007), <http://www.climatesciencewatch.org/index.php/csw/details/human-rights-commission-hearing>.
- 282 *See ICC*, *supra* note 277.
- 283 *See* Jane George, *Inuit Leaders At Odds Over Oil and Gas Emissions*, NUNATSIAQ ONLINE, Dec. 13, 2009, http://www.nunatsiaqonline.ca/stories/article/86455_inuit_leaders_at_odds_over_oil_and_gas_emissions.
- 284 *See id.*
- 285 *See* North Slope Borough, ALASKA STAT. § 2.36.180 (2010) (waiving competitive bidding and authorizing the mayor to approve a change order to NSB Standard Agreement No. 2010-081 with the Alaska Eskimo Whaling Commission and stating amounts budgeted for AEW).C).
- 286 NSB COMPREHENSIVE PLAN, *supra* note 14, at 3-76 (the oil and gas industry provides approximately ninety-seven percent of the Borough's property taxes, which comprise nearly seventy percent of the Borough's budget).
- 287 *See* Edward S. Itta, *From The Mayor*, NORTH SLOPE BOROUGH, <http://www.northslope.org> (last visited Oct. 22, 2010) ("The people of the Arctic have survived in one of the world's harshest climates through our ability to adapt. We adapted to the discovery of oil in our traditional homeland by forming the North Slope Borough.").
- 288 *See, e.g.*, Victoria Barber, *Coping with Extremes at the Top of the World*, THE ARCTIC SOUNDER (Dec. 28, 2009), http://www.thearcticsounder.com/article/0953coping_with_extremes_at_the_top_of_the_world. (after North Slope residents were charged with violating state game laws for wasting caribou that they believed unfit to eat, the North Slope Borough contributed \$56,000 to the residents' defense). The Borough has submitted joint comments with AEW and the Iñupiat Community of the Arctic Slope. *See Alaska Eskimo Whaling Commission, Iñupiat Community of the Arctic Slope, and North Slope Borough Comments re Shell Gulf of Mexico and Shell Offshore Inc.'s Application for an OCS PSD Permit Under the Clean Air Act for its Chukchi Sea Operations*, EPA (Oct. 20, 2009), available at http://www.epa.gov/region10/pdf/permits/shell/chukchi_aewc_icas_nsb_combined_102009.pdf.

289 In 1970, two years before the Borough incorporated, the North Slope was home to 2796 Iñupiat and 376 non-Iñupiat. Ten years later, the Iñupiat population had increased by fifteen percent while the non-Native population more than doubled. Non-native growth has slowed as oil production has declined. John Kruse, *The Alaska North Slope Iñupiat and Resource Development: Why the Apparent Success?*, INST. OF SOC. & ECON. RES. at 1, 16 (July 1991), <http://www.iser.uaa.alaska.edu/Publications/IñupiatSuccess.pdf>.

290 *See Alaska Wilderness League v. Kempthorne*, 548 F.3d 815, 831-32 (9th Cir. 2008).

291 *See Ctr. for Biological Diversity v. U.S. Dep't of Interior*, 563 F.3d 466, 480 (D.C. Cir. 2009).

292 *See* Rick Agnew, et al., *Alaska Energy and Environmental Policy Update*, VANNESS FELDMAN (July 30, 2009), <http://www.vnf.com/assets/attachments/513.pdf> (noting that Alaska Senator Lisa Murkowski introduced revenue-sharing legislation for offshore oil and gas development); Jeannette Lee, *Offshore Drilling Worries Iñupiat*, ANCHORAGE DAILY NEWS, May 19, 2008, <http://www.adn.com/2008/05/19/410465/offshore-drilling-worries-I~25nupiat.html> (indicating that the Borough mayor spoke with Alaska's congressional delegation about legislation that could divert more offshore revenue to the Borough).

293 *See* Joint comments submitted by Arctic Slope Regional Corporation and North Slope Borough to the U.S. Fish and Wildlife Service on the proposed designation of critical habitat for polar bears (Dec. 28, 2009), <http://www.regulations.gov/search/Regs/home.html#docketDetail?R=0900006480a726b5>.

294 *Id.* at 17.

295 *Id.* at 18.

296 Dan Joling, *Lawmakers Tone Down Effort to Overturn Polar Bear Listing*, ANCHORAGE DAILY NEWS, Mar. 1, 2010, <http://www.adn.com/2010/02/28/1161739/lawmakers-tone-down-effortto.html> (as much as ninety percent of Alaska's general fund revenue is generated by the petroleum industry).

297 State of Alaska Administrative Order 238 (Sept. 14, 2007), <http://www.gov.state.ak.us/admin-orders/238.html>.

298 *See* Alaska Copenhagen Presentation, *supra* note 27.

299 *See* State of Alaska v. Kempthorne, No. 08-01352 (D.D.C. complaint filed Aug. 4, 2008), at 10-12; *Alaska Again Seeks Delisting of Polar Bears as Threatened*, ANCHORAGE DAILY NEWS, Oct. 21, 2009, available at <http://www.adn.com/2009/10/21/982243/alaska-again-seeks-delisting-of.html>.

300 *See* Tom Kizzia, *Legislature Wants Polar Bear Study*, ANCHORAGE DAILY NEWS, May 4, 2008, <http://www.adn.com/2008/05/04/395540/legislature-wants-polar-bear-study.html>. Since that time, the Alaska Legislature has adjusted its plans. It has issued a request for proposals from public relations firms to conduct a conference assessing what the Endangered Species Act will cost Alaska, and whether a public relations campaign would be useful. *See* Joling, *Lawmakers Tone Down Effort to Overturn Polar Bear Listing*, *supra* note 296.

301 *See* Kizzia, *supra* note 300.

302 Motion for Leave to Intervene by the State of Alaska, Coalition for Responsible Regulation, Inc. v. EPA, No. 09-1322 (D.C. Cir. Mar. 15, 2010), available at http://gov.alaska.gov/parnell_media/documents/gov_MotionforLeavetoIntervene.pdf.

303 Complaint at 46, 67, Native Village of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863 (N.D. Cal. 2009) (No. 4:08CV01138),

available at <http://www.climatelaw.org/cases/country/us/kivalina/Kivalina%20Complaint.pdf>.

304 Native Village of Kivalina, 663 F. Supp. 2d at 882 (disagreeing with *Connecticut v. Am. Elec. Power Co., Inc.*, 582 F.3d 309 (2d Cir. 2009) and allowing a cause of action for public nuisance to go forward), *appeal docketed*, No. 09-17490 (9th Cir. Nov. 6, 2010). Just two weeks after the Kivalina decision, the Fifth Circuit issued a decision that, like the *Connecticut* decision, recognized a cause of action for public nuisance in relation to climate change. *Comer v. Murphy Oil USA*, 585 F.3d 855, 879-80 (5th Cir. 2009), *appeal dismissed*, *Comer v. Murphy Oil USA*, 607 F.3d 1049, 1055 (5th Cir. 2010) (en banc).

305 For instance, Earthjustice, an environmental law firm with an office in Juneau, has represented tribes in cases where development poses a threat to marine mammals. *See e.g.*, Press Release, Earthjustice, Alaska Natives Protest Drilling Plans in Beaufort Sea (Mar. 1, 2007), available at <http://www.earthjustice.org/news/press/007/earthjustice-alaska-natives-protest-drilling-plans-inbeaufortsea.html>; *see also* Doug Mellgren, *Norwegian Whalers Ask Government to Help Block U.S. Inuit Whaling in Protest*, ASSOCIATED PRESS, Oct. 8, 2002, <http://www.highbeam.com> (Greenpeace has voiced strong opposition to commercial whaling while supporting some subsistence hunting by native Alaskan Eskimos).

306 *See* 16 U.S.C.A. § 1539(e)(1) (West 2010); 16 U.S.C.A. § 1371(b) (West 2010).

307 *See* Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Proposed Rule To List the Polar Bear (*Ursus maritimus*) as Threatened Throughout Its Range, 72 Fed. Reg. 1,064 (proposed Oct. 5, 2007); Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range, 73 Fed. Reg. 28,212 (Dec. 16, 2008); 50 C.F.R. § 17.40(q) (2010).

308 Press Release, Center for Biological Diversity, Report Details 350 Species Threatened by Global Warming (Oct. 22, 2009), available at <http://www.commondreams.org/newswire/2009/10/22-3>.

309 Press Release, Center for Biological Diversity, Ice-dependent Arctic Seals Advance Toward Endangered Species Act Protection: Court Settlement Requires Agency to Make Listing Findings for Ringed, Bearded, and Spotted Seals, (Sept. 28, 2009), available at http://www.biologicaldiversity.org/news/press_releases/2009/ice-seals-09-28-2009.html.

310 *See* Email from George Edwardson, President, Iñupiat Community of the Arctic Slope, to Rebecca Noblin, Center for Biological Diversity (June 5, 2009) (on file with author) (“We as the Iñupiat people were never asked what we thought of this action.”); Interview with Noah Ashley, Biologist (May 28, 2008) (a sizable group of hunters in the North Slope villages still actively harvest polar bears for handicrafts, clothing, and food).

311 *See* Braund, *supra* note 87, at 144.

312 *See* Linda R. Larson, Presentation at 17th Annual ESA Conference: ESA and Alternative Energy Projects (Jan. 28, 2010) (on file with the author) (wind power plants can result in visual impacts, noise pollution, and wildlife impacts; tidal and wave energy projects have potential adverse impacts on marine ecosystems, fishery resources, and mammals; hydropower can have impacts on endangered aquatic species).

313 *See id.* (carbon dioxide emission controls are not available by any known energy technology, while renewable energy can avoid or reduce these carbon dioxide emissions, as well as reduce water consumption, thermal pollution, waste, noise, and adverse land-use impacts).

314 *Alaska Becoming Fertile Ground for Green Power*, ALTERNATIVE ENERGY (Feb. 25, 2009), <http://www.alternative-energy-news.info/alaska-becoming-fertile-ground-for-green-power>. *See also* Dan Joling, *Palin Unveils State Energy Goals*, ANCHORAGE DAILY NEWS, Jan. 16, 2009, available at <http://www.adn.com/2009/01/16/657216/palin-unveils-state-energy-goals.html>. Most of Alaska’s renewable energy comes from hydropower. *Id.*

- 315 See *Alaska Becoming Fertile Ground for Green Power*, *supra* note 314.
- 316 In 2009, Palin pledged to make \$300 million in the form of grants available to utilities, independent power producers and local governments for “clean energy” production. See Stefan Milkowski, *Alaska Is a Frontier for Green Power*, N.Y. TIMES, Feb. 17, 2009, available at <http://www.nytimes.com/2009/02/18/business/18alaska.html>; *Alaska Becoming Fertile Ground for Green Power*, *supra* note 314. The 2009 American Recovery and Reinvestment Act dedicated more than \$80 billion to “clean energy” investments, including \$6.3 billion for state and local renewable energy and energy efficiency efforts. *Progress Report: The Transformation to a Clean Energy Economy*, available at <http://www.whitehouse.gov/administration/vice-president-biden/reports/progress-reporttransformationclean-energy-economy>; *The Stimulus Plan: How to Spend \$787 Billion*, N.Y. TIMES, available at http://projects.nytimes.com/44th_president/stimulus (last visited Oct. 24, 2010).
- 317 Cook Inlet Region, Inc. (“CIRI”) has invested in Codexis, Inc., a private company that creates specialized enzymes and microbes that act as catalysts to increase the efficiency of chemical and biochemical manufacturing processes. *CIRI Invests for Strategic Growth*, CIRI, Jul. 7, 2009, available at <http://www.ciri.com/content/company/NewsDetails.aspx?ID=723>. The Westly Group is a venture capital fund that specializes in clean technology and government-related industries investments. *Id.* CIRI recently lost its key partner in the Fire Island wind project, but it plans to spend millions to get the wind farm built and generating electricity by the end of 2011. Elizabeth Bluemink, *Fire Island Wind Farm Still On Despite Loss of Partner*, ANCHORAGE DAILY NEWS, Nov. 23, 2009, available at <http://www.adn.com/2009/11/23/1025303/fire-island-wind-farm-still-on.html>.
- 318 Sandra Begay-Campbell, Principal Member of the Technical Staff, U.S. Dep’t of Energy, Presentation at the Arizona Governor’s Tribal Energy Meeting: Tribal Renewable Energy Opportunities, Aug. 5, 2005, (slideshow available at http://www.azcommerce.com/doclib/energy/energytribalmeeting_8.5.05_s.begay-campbell_2.pdf).
- 319 *NANA Regional Corporation Overview*, U.S. DEP’T OF ENERGY (Nov. 7, 2007), available at http://apps1.eere.energy.gov/tribalenergy/pdfs/0711review_nana.pdf.
- 320 Press Release, Sealaska, Sealaska to Convert Plaza to Biomass Fuel (Dec. 04, 2009), available at http://www.sealaska.com/object/io_1259970973175.html.
- 321 See Bering Straits Native Corporation, Presentation to Alaska Federation of Natives: Renewable Energy Projects (Oct. 2009) (slideshow available at http://www.legis.state.ak.us/basis/get_documents.asp?session=26&docid=4089). The corporation has installed solar panels in all its rental facilities and offices. *Id.*
- 322 See David Archer, *Fate of Fossil Fuel CO₂ in Geologic Time*, 110 J. GEOPHYSICAL RES. C09S05, 1 (2005) http://geosci.uchicago.edu/~archer/reprints/archer.2005.fate_co2.pdf (considering the lifecycle of carbon dioxide); Susan Solomon et al., *Irreversible Climate Change Due to Carbon Dioxide Emissions*, 106 PROC. NAT’L ACAD. SCIENCE, no. 6, 2009 at 1704, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2632717/pdf/zpq1704.pdf> (climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop).
- 323 See Act of Feb. 3, 1988, Pub. L. No. 100-241, § 39, 101 Stat. 1788 (codified as amended at 43 U.S.C.A. §1629e (West 2010)).
- 324 See *id.*
- 325 *About the TNC Distribution Trust*, TYONEK NATIVE CORP., 36 (Oct. 2008), available at <http://www.tyonek.com/forms/Settlement%20Trust%20Information.pdf>.
- 326 See *Alaska Native Resources*, TLINGIT & HAIDA TECHNICAL ASSISTANCE, http://alaskatribalbiz.org/old_site/AkNativeResLinkPage.htm (last visited Oct. 27, 2010); HAIDA CORP.,

<http://haidacorporation.com/index.html> (last visted Oct. 27, 2010).

³²⁷ *About the TNC Distribution Trust*, *supra* note 325, at 36.

³²⁸ For further discussion of likely impacts of climate change on tribes across the United States, see Daniel Cordalis & Dean B. Suagee, *The Effects of Climate Change on American Indian and Alaska Native Tribes*, 22 NAT. RESOURCES & ENV'T 45 (Winter 2008). *See also* Hand, *supra* note 110.

1 AZJELP 47

End of Document

© 2018 Thomson Reuters. No claim to original U.S. Government Works.