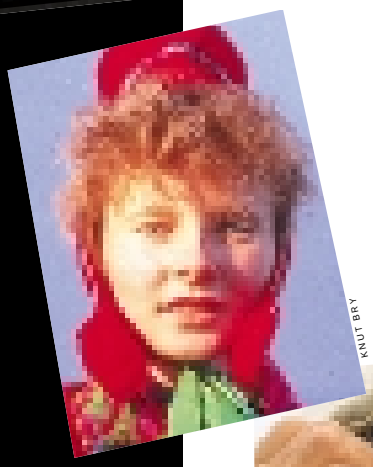
MAGNUS ELANDER



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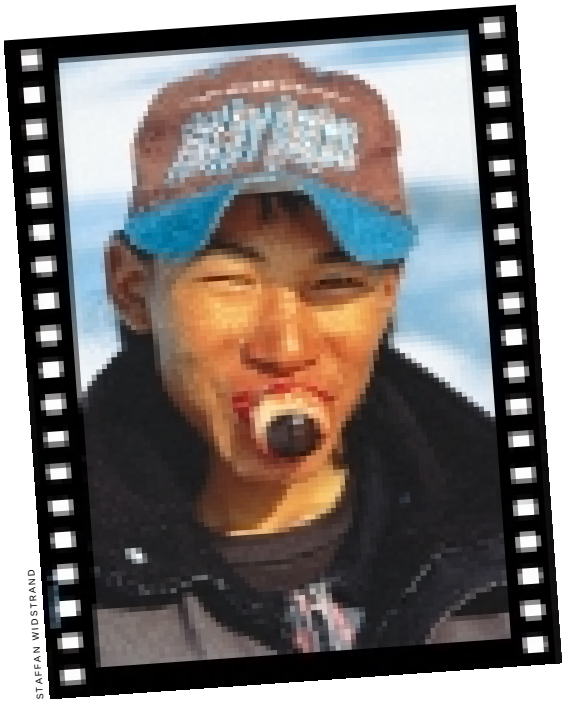


STAFFAN WIDSTRAND

MAGNUS ELANDER

STAFFAN WIDSTRAND

STAFFAN WIDSTRAND

KNUT BRY

STAFFAN WIDSTRAND

Peoples of the North

In mid-April, when the weather is warming and open leads are forming in the sea ice, the bowhead whales start to appear in the dark waters off the northern coast of Alaska. The Iñupiat whalers have been preparing for this since the previous summer, catching caribou, fish, seals, and birds for food, clothing, and the skin cover of the umiaq, the six-meter-long whaling boat. They have scouted the ice to gauge where the leads would form, prepared all their equipment, and headed out onto the floating sea ice to make a camp. Hiding behind blocks of snow, they look for the sleek black back of the bowhead and the puff of spray it exhales, waiting for one that swims close to the ice edge.

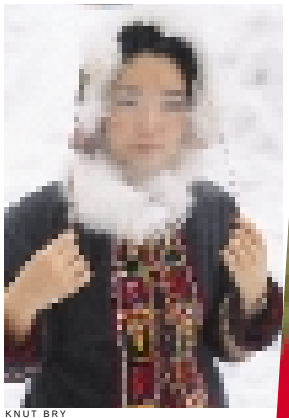
The hunt is successful today, and the crew can haul back a large whale, cut it up, and make piles of meat and maktak to be shared among all those who helped with the hunt. Women serve coffee, doughnuts, and boiled maktak to sustain the workers, and amid all the hard work is laughter and joy, the joy of being Iñupiat.

PAUL NICKLEN

Everything from the whale is brought back to the village, and the captain holds a feast in his house. Soon, he will be preparing for the large feast at the end of the season. He and his crew will serve hundreds of people, sharing the whale and its gifts, renewing communal ties, and dancing to show their gratitude to the whale.

These scenes from Alaska give a glimpse of the role of catching, preparing, and sharing food in one Arctic native community, but food is at the heart of people's lives everywhere. We eat to get energy and nourishment. We share our meals with family and friends to strengthen social ties. With food, we celebrate our cultures and reaffirm our sense of community.

In recent years, food has also become an issue in the discussion about contaminants. A crucial question for many Arctic peoples is whether their traditional foods are safe to eat. Public health officials struggle to weigh risks against benefits, whereas the communities themselves also see how environmental threats from an outside world may hasten the pace of cultural change. Therefore, an assessment of the impact of contaminants on Arctic environments must consider the context of northern cultures.



KNUT BRY

KNUT BRY

This chapter describes the people living in the Arctic, with a focus on indigenous populations. The goal is to provide information about the role of different foods, both as sources of nutrition and as cultural ties, and about other factors that are important for people's health. Together with data on the specific contaminants, this information will form a basis for the assessments made in the concluding chapter on human health. A second, equally important goal is to provide a brief description of how northern people live, because an accurate understanding of this is crucial when communicating information about contaminants in the Arctic.

United States: Alaska

Alaska is the northwestern-most of the United States and the only state that extends into the Arctic. Most of the state is included in the AMAP assessment, the exception being the southeastern 'panhandle.' It is a wider area than the US definition of Arctic Alaska; see the figure opposite.

There are three groups of Alaska Natives, commonly called Aleut, Inuit (or Eskimo), and Indian. About 73000 of them live in the area of AMAP's responsibility, where they make up about 15 percent of the population. In many rural areas, they are in the majority.

All native cultures of Alaska are in the midst of change as people are trying to adapt to a wide variety of modern influences. Politically, the Alaska Native Claims Settlement Act of 1971 established regional and village corporations. These corporations are to protect native interests and encourage economic, social, and political integration, but their success has been hotly debated. Several questions surrounding subsistence rights and traditional hunting practices are also unsettled.

Many people are moving from region to region and from villages to urban centers. However, traditional customs and activities remain a common tie and are important sources of identity, even for people who live outside the core areas described below.

Peoples of Alaska

Aleut

The Aleut inhabit the islands of the Aleutian chain, including the Kommandor Islands of Russia, the Pribilof Islands of the Bering Sea, and the Alaska Peninsula of the North American mainland. Primarily a sea-going people, the Aleut depend mostly on fish, marine mammals, and birds for food. Commercial fishing is the most important economic activity along the Aleutian chain. Military activity during and after World War II forced many Aleut villages to relocate, and it has also influenced the economy of the region.

Roasting caribou at hunting camp, Alaska.

HENRY HUNTINGTON

Alutiiq

The Alutiiq, or Sugpiaq, live in southwestern and south-central Alaska, on the Alaska Peninsula, Kodiak Island, the southern Kenai Peninsula, and the areas surrounding Prince William Sound. They share cultural attributes with both the Aleut and the Yup'ik. Alutiiq communities are situated along the coast. Fish (mainly salmon) and terrestrial animals (mainly caribou) are the most important food sources, but birds, plants, and marine mammals are also part of the diet. Commercial fishing is the primary economic activity.

Athabascan

The Athabascans live in the boreal forest of interior Alaska and parts of the Yukon Territory and the Northwest Territories of Canada. Traditional activities include salmon fishing, caribou and moose hunting, and trapping. Birds, other terrestrial mammals, and some plants are also taken, and coastal communities hunt marine mammals, such as beluga. Bartering with Iñupiat and Yup'ik neighbors has brought seal oil and other marine products to inland communities.

Central Yup'ik

The Central Yup'ik, also known as Yup'ik and including the Cup'ik, live on the coast and tundra of the Yukon-Kuskokwim Delta in southwest Alaska. They are the most numerous of Alaska's Inuit groups. Most children still speak the native language. Subsistence activities center on fish. Marine and terrestrial mammals, birds, bird eggs, and plants also play significant roles in the diet. The customs of Central Yup'ik remain strong in the villages of southwest Alaska, and include many traditions and beliefs around hunting and sharing.

Eyak

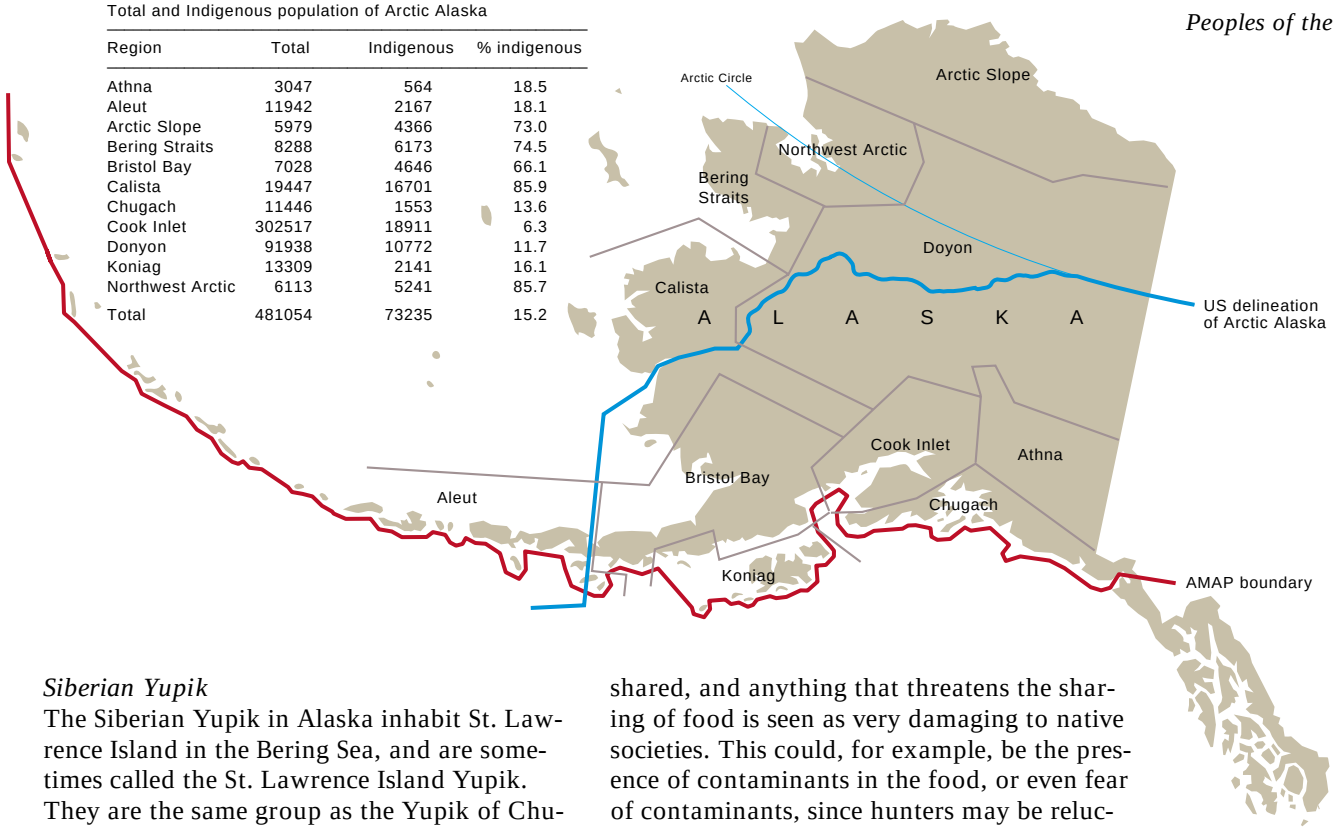
The Eyak are linguistic relatives of the Athabascans. They live on the southern coast of Alaska, to the east of Prince William Sound. Although Eyak are the least numerous of Alaska's indigenous groups and only one elder speaks the language, many Eyak are working to revive their culture.

Iñupiat

The Iñupiat live in the coastal and tundra regions of Alaska north of Norton Sound in the Bering Sea. Although their language is related to the Siberian Yupik and Central Yup'ik, the Iñupiat are more closely related to Inuvialuit, Inuit, and Kalaallit of Canada and Greenland. Coastal Iñupiat depend on marine mammals, caribou, birds, and fish, while the inland people concentrate on caribou, fish, and birds. Plants play a very minor role in the diet. Traditional trade and bartering extend hundreds of miles. This trade, like many other customs, remains strong today.

Total and Indigenous population of Arctic Alaska

Region	Total	Indigenous	% indigenous
Athna	3047	564	18.5
Aleut	11942	2167	18.1
Arctic Slope	5979	4366	73.0
Bering Straits	8288	6173	74.5
Bristol Bay	7028	4646	66.1
Calista	19447	16701	85.9
Chugach	11446	1553	13.6
Cook Inlet	302517	18911	6.3
Donyon	91938	10772	11.7
Koniag	13309	2141	16.1
Northwest Arctic	6113	5241	85.7
Total	481054	73235	15.2



Total and indigenous populations in Arctic Alaska by Native Corporation region.

Siberian Yupik

The Siberian Yupik in Alaska inhabit St. Lawrence Island in the Bering Sea, and are sometimes called the St. Lawrence Island Yupik. They are the same group as the Yupik of Chukotka, Russia, and share language, customs, and kinship ties across the international border. Today, the major subsistence resources are marine, primarily walrus and bowhead whale. Fish, shellfish, seals, and birds are also part of the diet. Plants play a minor role. Traditional customs remain strong on St. Lawrence Island, and the renewed ties to Chukotka have revived traditional trade and intermarriage.

> *The time is almost here.*
> *The season of the deep blue sea . . .*
> *Bring good things from the deep blue sea.*
> *Whale of distant ocean . . .*
> *May there be a whale.*
> *May it indeed come . . .*
> *Inside the waves.'*
>
> St. Lawrence Island Prayer Song

Non-indigenous residents of Alaska

The non-indigenous residents of Alaska are most likely to live in urban areas, of which Anchorage and Fairbanks are the largest. Most of them are new arrivals to the state. Hunting and fishing are popular activities, but in general these residents rely much less on country foods than most indigenous people.

Sharing resources links cultures together

Hunting, fishing, and gathering are deeply rooted sources of identity in all of the native cultures, but just as important are sharing and trading. They represent ways to establish and maintain family and community ties, as well as ties between communities. For certain game, customs dictate that the animal has to be shared, and anything that threatens the sharing of food is seen as very damaging to native societies. This could, for example, be the presence of contaminants in the food, or even fear of contaminants, since hunters may be reluctant to give away tainted meat.

Understanding the importance of sharing is also essential when looking at what people eat. Production numbers, showing how many animals have been killed or how many fish have been caught, might say more about the amount of certain foods that are available in the region than what people in a particular village might eat. For example, beluga harvests in Point Lay on the North Slope are high, but beluga is shared throughout the region, and might be exchanged for bowhead whale, which is not hunted at Point Lay. Inland communities may use furs and caribou to trade for marine products such as seal and whale. Nevertheless, production figures indicate which foods are the most important when looking at the impact of contaminants on people.

Fairbanks, Alaska.

GLENN SHAW

Fish and marine mammals are the most common foods

The left graph in the figure opposite shows the harvest of different subsistence foods for rural Alaska. Fish account for the largest share by weight, with salmon as the most important species. Whitefish, burbot, and trout are also caught.

The fish are typically caught by net, both in the ocean and in rivers and lakes. Families and extended families often spend several months at fishing camps, living in tents and wooden cabins.

For coastal communities, marine mammals are a highly valued resource, including bowhead whales, beluga, walrus, bearded seal, ringed seal, and polar bear. Often the communities are located in places that the animals pass on their migrations. In northern and northwest Alaska, marine mammals account for 42 percent of the subsistence harvest, or almost one hundred kilograms per person per year. The right graph opposite shows the catch by an average Iñupiat household in Barrow, Alaska. In southwestern Alaska and the Aleutian chain, the harvest of marine mammals is not as important by weight, but the hunting has great cultural significance. The most important species are walrus, harbor seal, bearded seal, sea lion, and fur seal.

Individual hunters and single boats can catch polar bear and sometimes beluga, while the hunting of large mammals is usually a cooperative effort. To catch bowhead whales, people establish camps on the sea ice or on the shore near open water. The crews often spend more than a month at these camps, living in tents on the ice or in small cabins. The animal is shared according to certain rituals. If the hunt is successful, there will be a festival celebration. The marine mammals thus become a cultural resource as well as an important part of the diet.

HENRY HUNTINGTON

Cutting bowhead-whale maktak for cooking. Point Barrow, Alaska.

HENRY HUNTINGTON

Maktak ready for cooking.

Caribou is the major food from the land

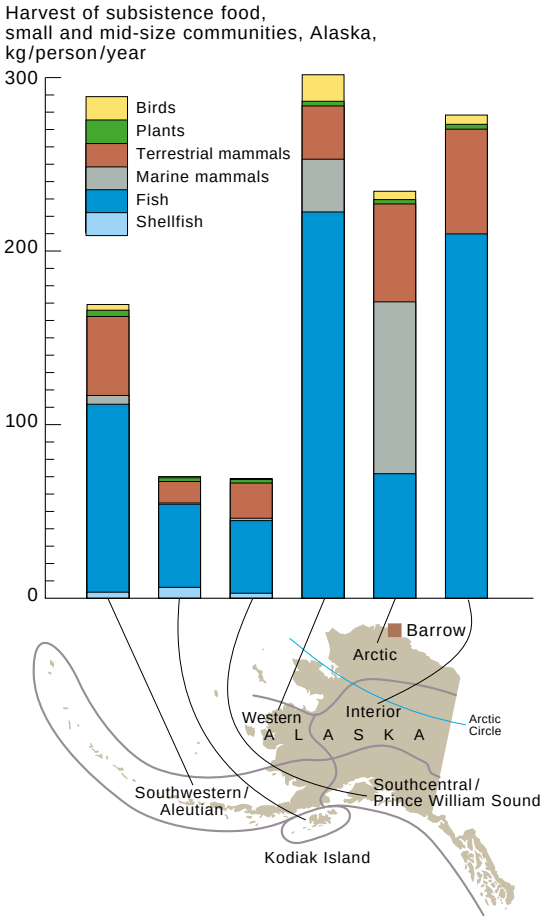
Both coastal and inland communities have terrestrial animals as part of their subsistence diet. Caribou is most important, but moose, Dall sheep, muskox, brown and black bear, and a variety of smaller animals are also taken. Reindeer herding, which was introduced in the early part of the century, continues in some parts of Alaska.

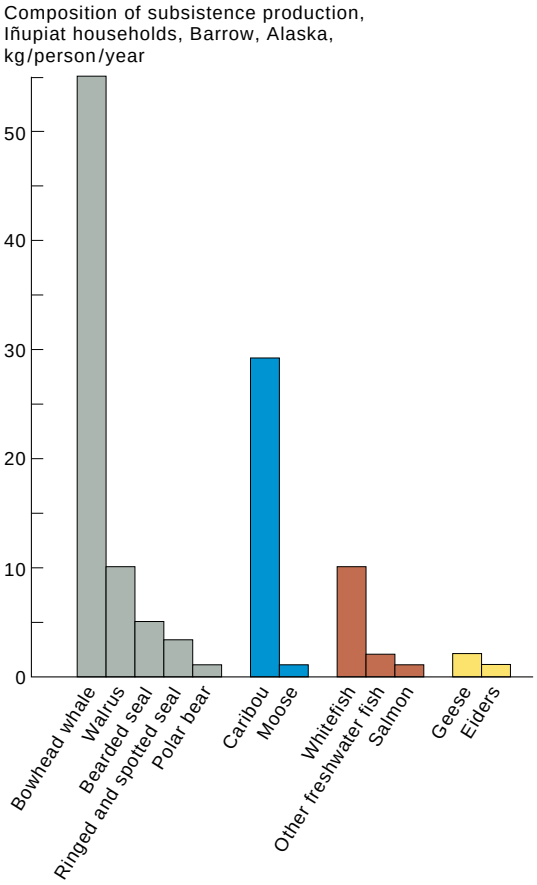
As with the marine mammals, there are cultural and religious customs surrounding the use of terrestrial animals. For example, a moose is an important part of Athabascan funeral potlatches.

Birds make up only a small part of the diet, but are significant in the seasonal hunting cycle. They are often the first source of fresh meat available after the winter.

HENRY HUNTINGTON

Serving maktak at whaling festival. Point Barrow, Alaska.





Left: Harvest of subsistence foods in small and mid-sized communities in Alaska.

Right: Subsistence production in Iñupiat households, Barrow, Alaska.

Traditionally, women and children gather berries, roots, and greens, both for food and for medicine. Berries are often combined with fat into 'akutuq' or Eskimo ice cream.

Smoking and poor medical care contribute to ill health

Subsistence foods are important sources of vitamins, minerals, and energy for Alaska Natives, and a shift away from traditions would probably be detrimental for people's social, spiritual, and physical health.

However, health involves many other factors than food, and there are several problems among native communities that contribute to high rates of disease and early death. One is poor housing, lacking both adequate insulation and plumbing. Poor sewage disposal and lack of access to clean drinking water are also common in rural villages. Alaska Natives smoke more than the population at large, and alcohol abuse is a significant risk factor.

Moreover, health care facilities are not adequate to meet peoples' needs. In 1993, the legislature of Alaska concluded that 'by all measures, the health status of Alaska Natives is significantly lower than other Alaskans. The health needs of Alaska Natives far outstrip the resources available . . . Many villages do not have basic water and sanitation services which are essential to the control of disease.'

Statistics support this conclusion. Among some groups of native people in Alaska, pneumonia is up to 60 times more common than for the United States population as a whole. In certain areas, botulism reaches its highest incidence worldwide. The age-adjusted mortality for some types of cancer is higher than for the United States population as a whole, even if

Making akutuq

Akutuq is an Inuit food made by warming fat, then whipping air in by hand so that it slowly cools into a foam. This recipe is from a detailed description in *Nauriat nigiñaqtuat. Plants we eat* by Anore Jones.

Of the usual ingredients, fat, oil, liquid, sweetener, and berries, only fat is essential. The type of fat determines how the akutuq will taste and feel, and each animal has a different type of fat. Iñupiat often prefer well-aged yellow fat which has more flavor and whips up fluffier than does fresh fat. Regarding the oil, some people think that seal oil ruins the flavor while others would not eat akutuq without it. The akutuq can be sweetened with sweetener or with fruits. Meat and fish akutuq are not usually sweetened.

1 pound of hard fat (qaunnaq, or back fat)
½ pound of soft fat (itchauraq, or belly fat)
1 cup seal oil. You can use vegetable oil, or less oil, but it helps hard fat soften while you mix
½ cup water or other liquid
4-12 cups berries, drained and at room temperature
¼-1 cup sweetening

Prepare the fat by trimming away all the bloody, dirty, tough and stringy parts. Chop fine on a heavy board, a small amount at a time. This cuts all the fibers. Pound with a rock or hammer on the board. As you pound each little pile of fat out flat and thin, fold it back over and pound again several times. Pounding breaks apart the fat globules. A meat grinder can also be used. Put fat in a large bowl and warm on low heat until it becomes a liquid. The fat should never get hotter than it is comfortable to your hand.

Add some seal oil, approximately ⅓ by volume. Keep mixing until it is all liquid. Remove from heat to a table or comfortable place where you can set the bowl while you stir the fat. Stir in big circles, not fast but briskly and steadily. Stirring is what making akutuq is all about and your arm must be strong to keep it up. Keep mixing and adding water, then oil, as the fat slowly cools and gets fluffy and white. Like some other fine things in the north, the success of akutuq depends on the sensitive manipulation of temperature, of the room, your hand, and what you add. Add berries after the akutuq is as white and fluffy as you can make it. Put it into the shape in which you want it to harden. Cover, and freeze or refrigerate.

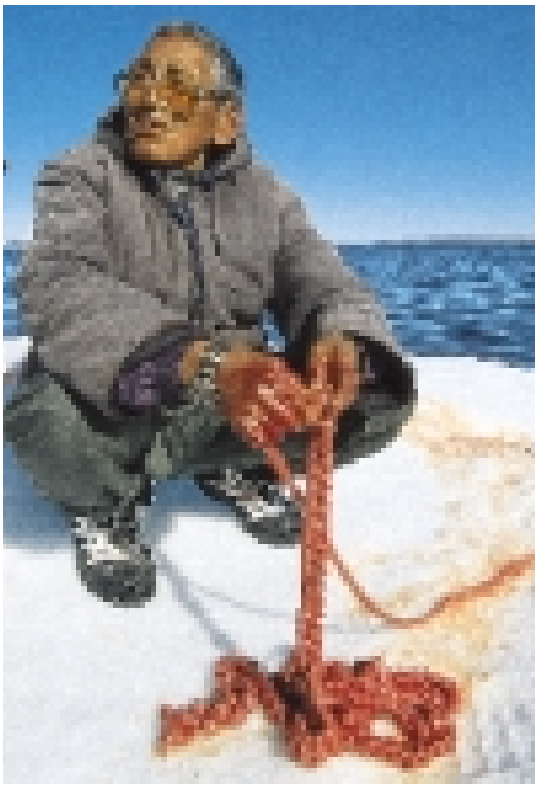
Eat it any time as a dessert, a meal, a snack or a spread. Traditionally it was made for funerals, potlatches, and when a boy got his first of any kind of animals and on other special occasions. Sometimes is was just made as a special food, or for traveling.

the incidence of cancer is comparable. Many cancer deaths are tobacco-related. The overall leading cause of death in Alaska is cancer followed by heart disease, unintentional injury, and suicide. Diabetes, breast cancer, suicide, chronic obstructive pulmonary disease, lung cancer, and neoplasms are increasing among native people.

In the midst of this worrying picture, there are also some positive developments. The overall death rate has been declining for some time and life expectancy for indigenous newborns increased from 46.84 years in 1950 to 66.60 years in 1980-84. Deaths from injuries, accidents, water/drowning, and homicide declined significantly between 1980 and 1990.

Canada

Arctic Canada includes the land north of 60°N plus the adjacent areas of Northern Quebec and Labrador and comprises about 40 percent of the land area of Canada; see figure below. The Canadian constitution recognizes three groups of indigenous peoples: the Inuit, the Métis, and the Indian, who in the Arctic include Dene and Yukon First Nations. Together, the indigenous groups make up 47 351 people or about half the population in the area.



PAUL NICKLEN

A Repulse Bay hunter braiding whale intestines into a rope.

Peoples of Canada

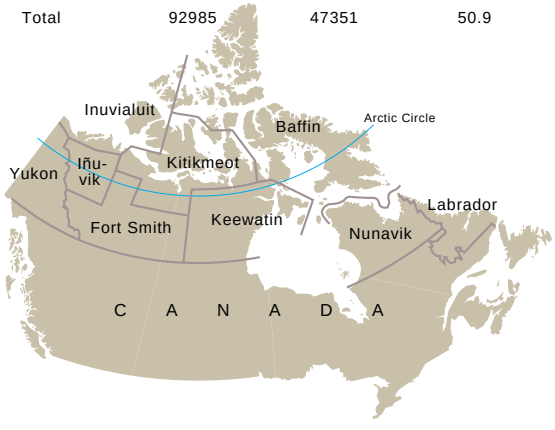
Inuit

The ancestors of present-day Inuit probably traveled from Eurasia eastwards across northern Canada to Greenland. Most, but not all, of today's Inuit communities are located on the tundra north of the treeline, and along the coast.

The Inuit of Canada reside in northern Labrador, Nunavik, and the Northwest Territories. A large portion of the present-day Northwest Territories will soon become a new political jurisdiction known as Nunavut. In this new territory, comprising the northern and eastern portion of the current Northwest Territories, Inuit will be in the majority and will have considerable autonomy over their affairs.

Total and Indigenous population of Arctic Canada

Region	Total	Indigenous	% indigenous
Labrador	2519	1860	73.8
Nunavik	7690	6825	88.8
Baffin	11139	8970	80.5
Keewatin	5832	5170	88.6
Kitikmeot	4018	3526	87.7
Inuvialuit	5666	3850	68.0
Fort Smith	26970	10262	38.1
Iñuvik	3127	2448	78.3
Yukon	26024	4440	17.6
Total	92985	47351	50.9



Total and indigenous populations in different regions of Arctic Canada.

Dene and Métis of Northwest Territories and Yukon First Nations

The Dene include several different groups with their own languages: Chipewyan, Tetlit Gwich'in, Dogrib, and a number of distinct Slavey groups. The Métis are descended from French fur traders and Indians.

The Dene and Métis communities are in the western region of the Northwest Territories, and within the northern extent of the treeline. The Dene make up 29 percent of the population in the western Northwest Territories and Métis 12 percent of the population in this region. The total number of indigenous residents is 12 780.

The indigenous peoples of the Yukon include fourteen First Nations, each with its designated historic and current harvesting territories.

Non-indigenous residents

The non-indigenous residents of Arctic Canada are more likely to live in territorial or regional centers, such as Yellowknife, Whitehorse, and Iqaluit.

Hunting and fishing are important for providing food

Hunting, fishing, and gathering are important activities in the economy of indigenous societies, but people also participate in the wage economy as opportunity arises. Harvesting

STAFFAN WIDSTRAND

Seal hunting, Canada.

practices are a mixture of traditional technologies, developed from what was available from the land, and new materials. Guns are used for hunting, for example, but so are harpoons and spears. In the eastern Arctic, the blinds that are used during seal hunts on the ice are now made of cloth instead of skins.

The harvests are shared among people on the basis of kinship and other ties, and sharing, gift-giving, and exchange are all elements of the country-food economy. Recently, there have also been efforts to commercialize specialty northern foods, such as Arctic char, outside the Arctic.

A wide range of plant and animal species are used in the Canadian Arctic. The figure right shows the harvest level in the different Inuit regions and in the Yukon Territory. In 1989, the total harvest in the Northwest Territories was estimated to be about 5 million kilograms, or 232 kilograms per person per year, excluding commercial fish catches.

There is very little information about the harvesting activities of the Dene and Métis communities, with the exception of fur-bearer species and commercially significant fish. The general picture is that marine mammals are less important in the Yukon and Dene/Métis regions and that people rely more on terrestrial mammals and freshwater and anadromous fish.

Employment figures indicate that subsistence activities are important, as almost 40 percent of the indigenous population in Dene communities were not part of the labor force according to a survey in 1991. Almost 38 percent of people over 15 years of age answered that they used non-cash activities to provide for their families. A slightly larger percentage said that they had lived on the land in the previous twelve months. An estimate of the per-capita harvest suggests that the communities are self-sufficient in their protein requirements.

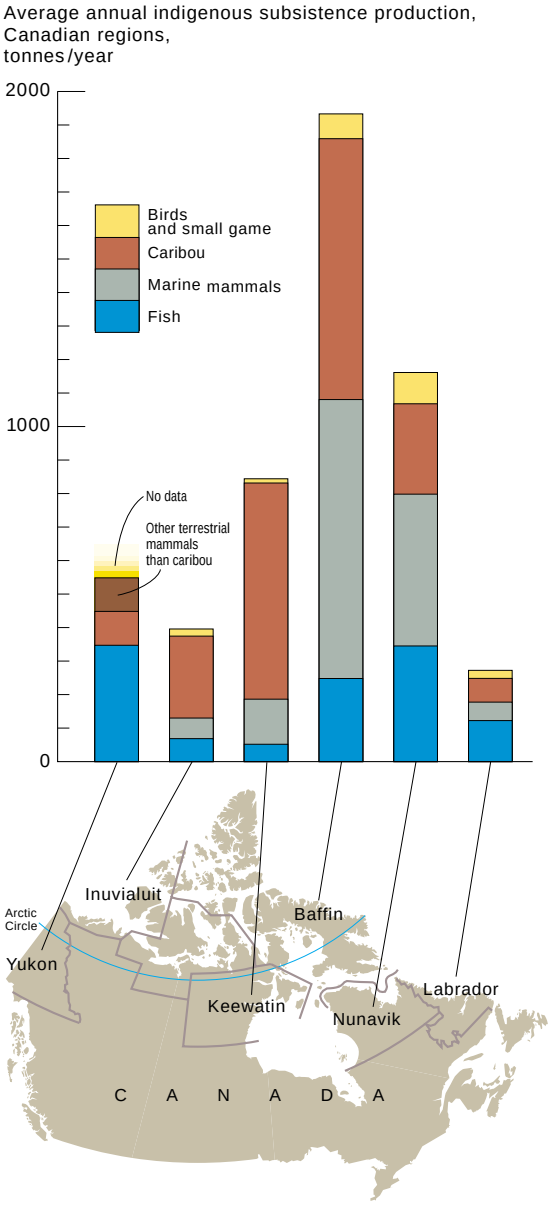
Yukon First Nations also rely heavily on subsistence activities. About one third of the people in the 1991 Aboriginal People's Survey said that they had lived on the land in the previous year and 30 percent support their families with activities that are not part of the cash economy.

Among non-indigenous residents of Arctic Canada, hunting and fishing are popular activities, but rarely as extensive as for the indigenous communities of the region

The diet includes a variety of country foods

Dietary studies support the picture of a high reliance on subsistence production. Even if store-bought foods are also common, country foods contribute a significant portion of the daily nutrient intake.

The traditional diets are more balanced than a diet of foods imported from southern



Average annual indigenous subsistence production in Arctic Canada.

Canada, which have higher levels of sugar and more saturated fats. Country foods are more economical than purchasing food in the store, which becomes especially important in communities where many people are not employed or have incomes below the poverty line. Country foods are also important for reinforcing social relationships that are central to culture and the subsistence economy.

STAFFAN WIDSTRAND

Seal dinner,
Baffin Island, Canada.

The diet varies between communities and between families, but detailed studies provide some examples of what people eat. In Aklavik in the Northwest Territories, more than half of the Inuit households consumed caribou, beluga, hare, muskrat, whitefish, cisco, burbot, inconnu, Arctic char, ducks, geese, cloud berries, cranberries, and blueberries. Caribou was the most common food.

HENRY HUNTINGTON

Drying fish.

The types of food eaten also depend the time of year. In Aklavik, fall is the season for hunting caribou, Dall sheep, and moose, as well as ducks and geese. Winter brings trapping of small fur bearers and fishing. When the ice breaks up in April, muskrat are caught for their pelts as well as their meat. The waterfowl return, and are used as food until they begin to nest. Fishing resumes after ice breakup. Spring is the time for gathering roots. Summer is whaling time, and people travel out to the Yukon coast to hunt beluga. Willow tops, bird eggs, and wild rhubarb supplement the diet. As fall approaches again, it is time to dry fish and caribou meat and to pick berries.

Among the Dene, a few diet studies have been done specifically to be able to estimate the load of contaminants. These surveys show, for example, that women in Fort Good Hope eat moose in summer, barrenland caribou in winter, and ducks in the spring. Other important foods are inconnu, whitefish, cisco, and blueberries. In the winter, moose, rabbit, whitefish, and loche were part of the diet, and in the spring woodland caribou. Men had similar eating habits, but with less seasonal variation.

Another studied community is Colville Lake. Women reported eating large quantities of whitefish, barrenland caribou, and ducks in the summer. Trout, barrenland caribou, duck, and loche were the typical spring foods. The Colville residents ate a much higher proportion of country foods than at Fort Good Hope. In general, men ate more country foods than women, and older people more than younger.

A third study, of the communities of Fort Smith, Northwest Territories, and Fort Chipewyan, Alberta, showed that people ate country foods six times per week and that animals from the land made up one-third of the diet.

Four Yukon First Nation communities have been studied extensively to look at what people eat: Haines Junction in the traditional territory of the Champagne-Aishihik First Nation, Old Crow, which is a remote community on the Porcupine River relying heavily on the caribou herds that migrate through their land, Teslin at Teslin Lake, and Whitehorse, which is the territorial capital with a more diverse population.

Virtually all households in the survey used moose and salmon, as well as berries and other plant foods. Many also used caribou, hare, ground squirrel, beaver, ducks, grouse, chinook salmon, sockeye salmon, coho salmon, whitefish, lake trout, and Labrador tea. In total, mammals accounted for about half of the traditional food, fish for one fifth, berries for one-fifth, other plants for one-tenth and birds for one-twentieth. People got most of their food from hunting and fishing.

Health is improving

Health conditions for Canadian Natives have improved dramatically in the past half a century, but mortality rates are still higher in the north than for Canada as a whole, and life expectancy is lower. For example, life expectancy among Inuit doubled between the early 1940s and the 1980s, when it reached 66 years. Life expectancy has continued to improve but is still four to five years lower than the Canadian average. In the Northwest Territories, infant mortality was 28 per thousand births in 1981-85 compared to 144 two decades earlier. However, infant mortality is still three times as high as for Canada as a whole. Major problems include poor water and sewage disposal systems and crowded housing.

One of the serious threats to health is the extremely high percentage of smokers. By age 19, 63 percent of Indians and Inuit smoke, compared with 43 percent for non-natives. Smoking is the most likely explanation for a recent increase in lung cancer among Inuit in the Northwest Territories.

The heavy reliance on country food seems to reduce the risk for certain health problems. Indigenous groups in the Canadian Arctic have among the lowest age-standardized prevalences of diabetes in the country. Diabetes is one of the most prominent health risks associated with changes to a more 'western' diet.

Much of the improvement in health has come with better health care, such as the nursing stations that are now available in many communities. Hospitals are centralized in major cities, but traveling clinics provide some specialty care that would otherwise not be locally available.

Denmark: Greenland

The Greenlandic name for Greenland is Kalaallit Nunaat, 'Land of the Greenlanders.' The first pre-Eskimo immigrants came to Greenland from North America approximately 4500 years ago. The last major Inuit immigration took place in the centuries after the first Nordic immigration came from Iceland in 982 ad.

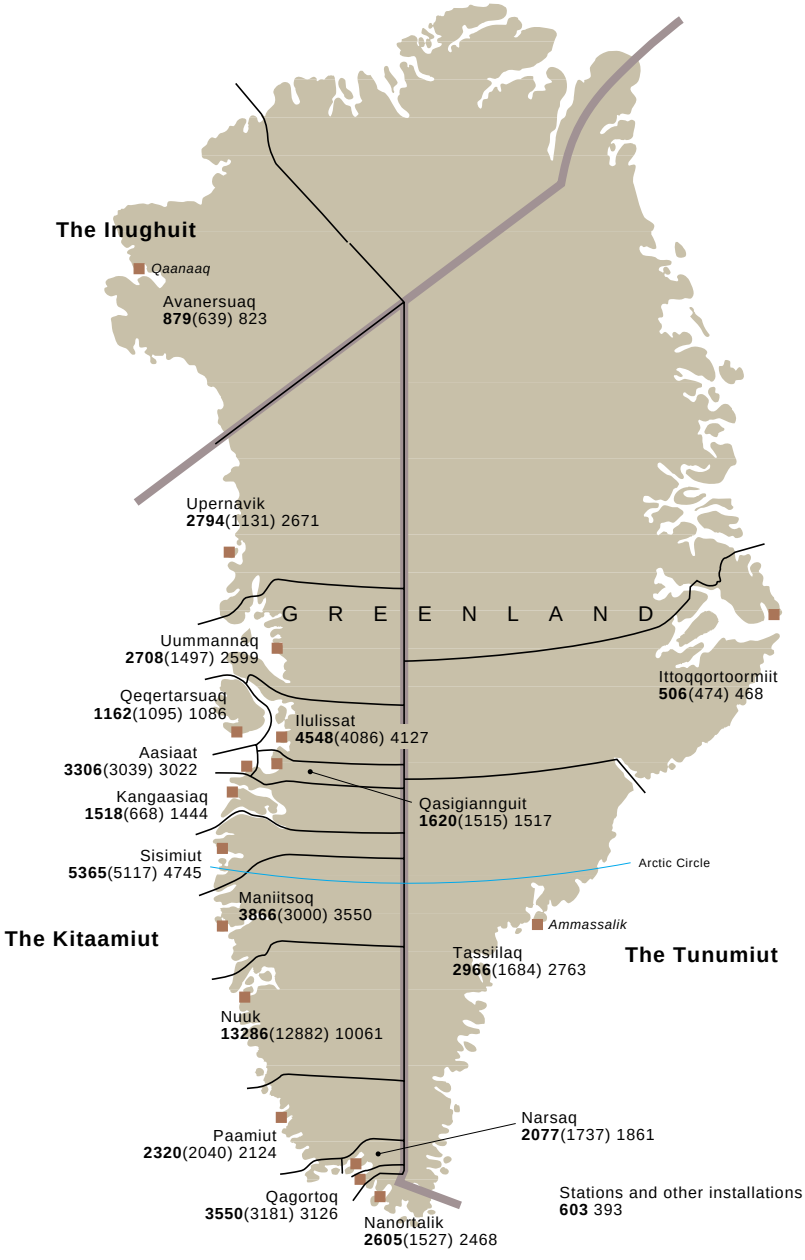
The first Nordic immigrants probably died out in the Middle Ages, but Europeans returned to colonize the island in 1721 and Greenland became a colony of Denmark. Colonial status ended in 1953, when Greenland was recognized as one of three countries within the Kingdom of Denmark.

In the 1970s, a political movement opposing the European Economic Community led to the establishment of the first Home Rule Government, and eventual withdrawal from the EEC. In 1992, the Home Rule assumed responsibility for the last of its potential fields, health care, and has responsibility for all matters except foreign and security policy, the monetary system, mineral and hydrocarbon exploration and exploitation, and some aspects of the judicial system.

Kalaallit are the people of Greenland

Kalaallit (plural of Kalaaleq) is the collective name for Greenland's indigenous people, who are Inuit and belong to three groups: the Kitaamiut (the West Greenlanders), the Tunumiut (the East Greenlanders), and the Inughuit (or Polar Eskimos in North Greenland).

In 1994, the population of Greenland was 55 419, of whom 87 percent were born in Greenland. Most of the non-indigenous population comes from Denmark. The relationship between indigenous and non-indigenous people is good, and the two groups treat each other with mutual respect. The introduction of Home Rule in 1979, and the improvement in Greenland's educational system, have reduced the number of non-indigenous people working and living in Greenland.

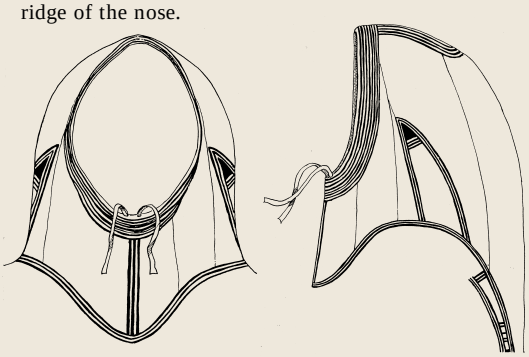


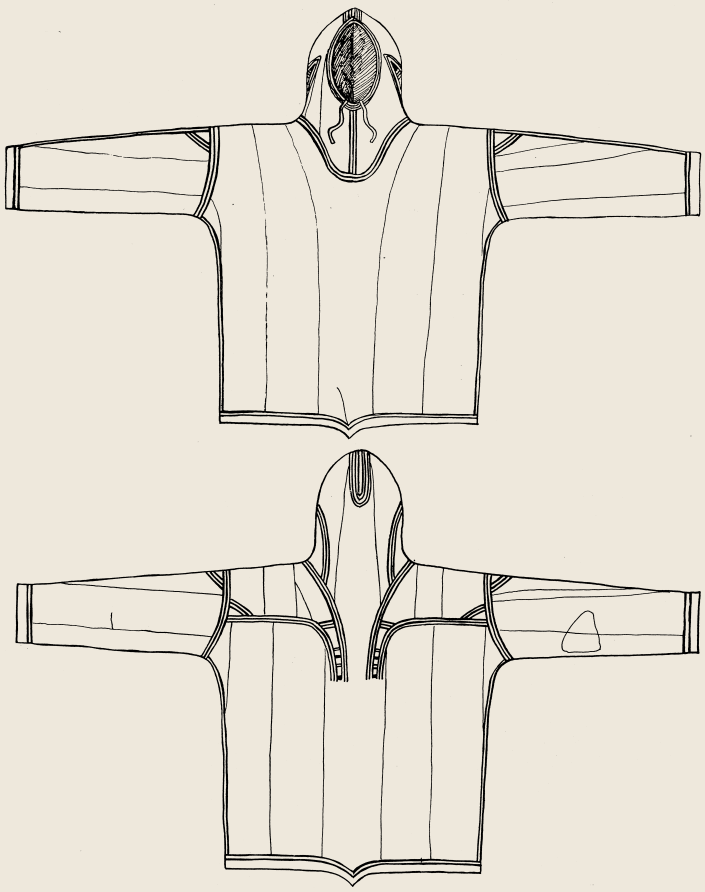
Total and indigenous populations of municipalities in Greenland, shown as: **total population** (town population) indigenous population.

Using materials from animals for equipment and clothing has always been an integral part of Arctic indigenous cultures. In East Greenland, the use of seal intestines for making the traditional water-proof anorak continued until this century. The same material and sewing techniques were used in the oldest known Greenlandic clothing found on frozen mummies. The depicted anorak was made in Ammassalik in 1935. The owner, Jens Rosing, has drawn the pictures and described how it was made.

Seal intestines were cut in one-meter long piece, turned inside out, cleaned, and ´wind-cured', which makes the skin turn white. When ready, the material was cut lengthwise into strips, which were sews into a pattern with double-layered ornamental strips for strength.

The ornaments resemble polar-bear features that have also been found on a Dorset bear figure from 500 BC. Seen from the side, the hood resembles the head of the polar bear, with the triangular ornament symbolizing the ear and eye. The opening is the mouth, while the pattern on top is the ridge of the nose.





Fishing industry and hunting are major occupations

Almost 80 percent of Greenlanders live in towns, and the remainder reside in smaller villages. The largest city and capital of Greenland is Nuuk.

Commercial fishing and the fishing industry is the most important business. The focus has been on shrimp, cod, and halibut, but in recent years the catches of cod have been poor.

About 20 percent of the population is directly or indirectly dependent on hunting activities. The most important resources are ringed seal and harp seal, but a variety of species are taken. Whaling is part of the hunting tradition and still very important in Greenlandic society. The focus is on fin whale, minke whale, narwhal, and beluga. Hunting and fishing practices differ from location to location, but most hunters use modern equipment such as rifles. Traditional hunting methods are rare outside of Avanersuaq, where kayak and harpoon are still used, especially in connection with the narwhal hunt.

Hunter, Qaanaaq, Greenland.

STAFFAN WIDSTRAND

The hunting areas and the species vary by location and season, and traveling far from the villages is not uncommon. For example, caribou are usually hunted in August and September in deep fjords far from the villages. Walrus, minke whales, and fin whales may only be available at sea or in the mouths of fjords, whereas certain seals, fish, and birds can be hunted much closer to home. Polar bear are hunted regularly in Avanersuaq, Ittoqqortoormiit, and Ammassalik.

Subsistence foods are shared between the participants of a certain hunt, and also traded and distributed via outdoor markets and to local processing plants. Fish are sold to the major processing plants.

Most people eat local foods several times a week

Forty-four percent of hunters and fishermen eat their own products daily. For the Inuit population as a whole, 31 percent eat local products daily, 22 percent three to four times a

week, and 25 percent at least once or twice a week. According to another survey, 63 percent of the residents of villages eat Inuit food daily during the summer, compared with 26 percent of the people in towns.

In the south, sheep farming provides a local supply of lamb meat, even if some lamb is also imported. Beef, pork, and chicken are imported from Denmark.

Health

Disease patterns in Greenland include a high mortality from natural causes and a relatively low mortality from heart disease. Furthermore, there is a high incidence of injuries from accidents and suicide. The average life expectancy in Greenland is 68.4 years for women and 60.7 years for men. Smoking is very common among all age groups. 84 percent of Inuit men and 78 percent of Inuit women are currently smokers.

Denmark: Faroe Islands

The Faroe Islands are a mountainous archipelago. The Faroese are descended from Norwegian settlers, who replaced an Irish settlement around 800 ad. Since 1380, the Faroese have been associated with Denmark. A nationalist movement to protect the Faroese language and culture led to an agreement about Home Rule within the Kingdom of Denmark in 1948.

In 1995, the population of the Faroe Islands was 43 700. There are about a hundred towns and villages, of which the largest is the capital Tórshavn, with a population of 15 000.

The sea is central to both the economy and the diet of the Faroese. Fish constitute 44 percent and whale 9.5 percent of Faroese dinner meals. Cod is the major fish species consumed.

Faroese pilot-whaling, known as grind, is an integral part of Faroese culture. Long-finned pilot whales are driven into shallow waters to be killed, butchered, and distributed equally among residents of the district. The traditional measures of whale shares are still used. Grind provides the majority of meat production in the Faroes, and accounts for one-quarter of the meat consumption. Despite pressures from anti-whaling groups, grind continues today as a significant activity in the Faroese culture, diet, and community.

The Faroese economy is overwhelmingly dependent on fisheries, including processing and fish farming. About half the catch is taken in Faroese waters.

Public health is generally good. Life expectancy is 72.8 years for men and 79.6 years for women.

Iceland

Iceland, located just south of the Arctic Circle, was settled by Norse Vikings in the late ninth and early tenth century ad. After a few centuries as an independent commonwealth, it came under Norwegian and later Danish rule. In 1944, Iceland declared itself independent from Denmark. Today, Iceland is a republic with a parliamentary government.

Icelanders are both of Norwegian and Celtic origin and the population is culturally and socially homogeneous. The country is sparsely populated, with a total population of 266 783 in 1994. More than 90 percent of the population lives in towns or villages with more than 200 people.


KUBUS


KUBUS

Grind, Faroe Islands.

Fishing is cornerstone of Iceland economy

Fisheries are the cornerstone of the economy, but employ only slightly more than a tenth of the work force. Cod is by far the most important species. The catch also includes redfish, saithe, shrimp, haddock, Greenland halibut, ocean catfish, scallops, Norway lobster, capelin, and herring. All whaling has ended, and seal hunting is not profitable and thus likely to end as well.

Agriculture is mostly limited to potatoes, turnips, grass cultivation, and animal husbandry of sheep and dairy cattle. Hot springs are used for extensive greenhouse cultivation of tomatoes, cucumber, and flowers.

The diet is typically western, but with more fish than other European nations. Fish, meat, and milk are the main foods.

HENRY HUNTINGTON

Heimaey harbor, Iceland.

Western ailments but long lives

Health standards and health services are similar to other Scandinavian countries. Lifestyle-related diseases, such as cancer and cardiovascular diseases, are the biggest killers. The greatest social ailment is probably alcoholism.

Icelanders have the prospect of a life span longer than that enjoyed by most other nations. Life expectancy at birth is 77.8 years. The infant mortality rate is 6 per 1 000 live births.

Saami

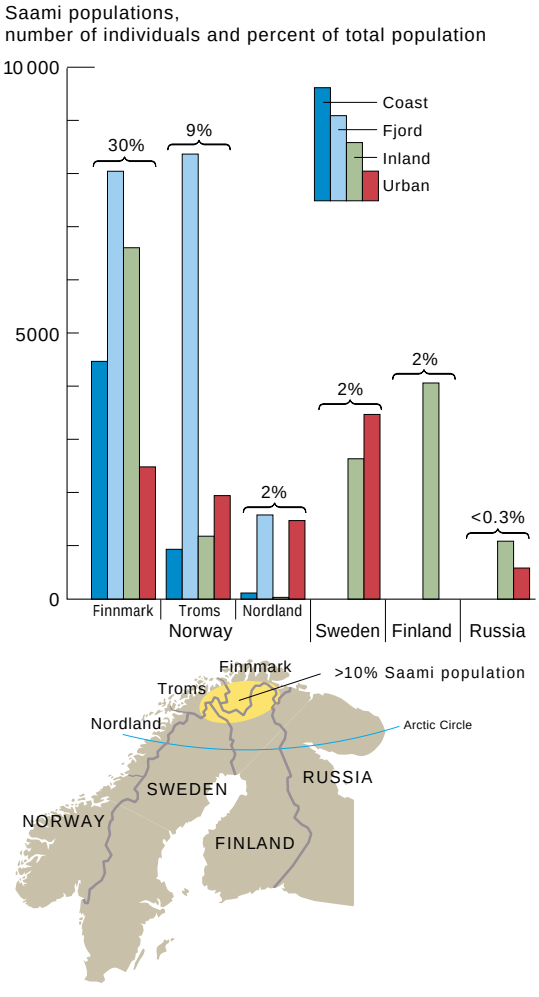
The Saami live in northern Fennoscandia and on the Kola Peninsula of northwest Russia. The Saami homeland is located in four different countries, Russia, Sweden, Finland, and Norway, but their shared culture and history makes it natural to describe all Saami together.

There are no completely reliable estimates of the number of Saami people, both because of different definitions of who is Saami and because ethnicity is not included in recent national census figures. Furthermore, some people with Saami ancestry choose not to identify themselves as Saami. Adjusted older data puts the figure at about 85 000 people. Of these, approximately 50 000 live in the Arctic, where they make up about 2.5 percent of the region's population.

In 1751, the civil rights of the Saami were recognized in the Saami Codicil. This supplement to a new border treaty between Norway and Sweden was written to solve problems of double taxation for the Saami, whose traditional migration routes had little to do with administrative boundaries. Today, the Saami parliaments in Norway, Sweden, and Finland are exploring a common platform across national borders. People who perceive themselves as Saami and who also speak Saami as their first language or have a parent or grandparent who speaks Saami as a first language are eligible to vote for the Saami parliaments.

Nation states have steered living conditions

The Saami homeland is divided by national borders. Both historically and today, lives of Saami people are heavily influenced by the different nation states. In all countries, the Saami homelands have been colonized by the majority populations. In Sweden, for example, settlers and miners used Saami land and labor to develop the northern part of the country. Conflicts over land use are still common, especially in connection with development of hydroelectric power and the right to use forest areas for reindeer grazing in winter. Increased recreational hunting is also seen as competition for traditional Saami resources.



Saami population in Fennoscandia and the Kola Peninsula.

KNUT BRY

Reindeer slaughtering, Lovozero, Kola, Russia.

The Saami poet Ingahilda Tapio has written about land that has been lost to hydroelectric dams.

long, long ago
there were small lakes here
rapids, sounds, bays
small rivers
now all is under water

long, long ago
there were cloudberries here
Sámi tents by the lakes
now all is under water

long, long ago
this was a peaceful place
with fawning reindeer cows
now all is under water

In Norway, the traditional Saami area extends from Finnmark west and south to Hedmark. The Saami in this region were originally nomadic. They were forced to change their system of migration and resource use because game populations were declining and because Norse settlements were increasing along the coast. Some became small farmers, combining fishing and trapping along the fjords. Others became reindeer herders or settled on the coast. The different groups continue to interact.

Today, Saami in Sweden live primarily in Norrbotten and Västerbotten and in the mountain fields of Jämtland and Härjedalen. Only 15 percent of the Saami are engaged in reindeer herding, the rest in occupations similar to the rest of the population. There are a total of 523 reindeer owners among the Saami of the region, of whom about half are engaged in reindeer breeding.

The Saami in Finland were originally settled hunting and trapping societies. Finns moving north forced them northwards where they developed a combination of reindeer herding and fishing. Today, most Saami in Finland live in four municipalities: Inari, Enontekiö, Utsjoki, and northern Sodankylä. Saami have no special rights, but improvement in regulations of reindeer herding have allowed living conditions for Saami to approach those of the general population.

In Russia, immigrant populations pushed the migratory Saami northwards, beginning in the 17th century. Later changes, such as the demarcation of national boundaries and the closing of the Soviet border, forced further alterations to migratory patterns. Economic policies and a policy of assimilation, especially during the Soviet period, led to additional disruptions in the traditional way of life. Today there are 11 Saami villages, of which Lovozero is the largest.

Reindeer herding, fishing, and farming are parts of Saami life

The Saami way of life today varies depending on where people live; see figure on opposite page. In Norway, the majority live in fjord societies, combining farming with fishing in local waters. Over the whole Saami area, fjord Saami make up more than a third of the total Saami population. In Norway, there are also some coastal societies, based on sea fishing. Almost one third of the Saami belong to inland societies, engaged in farming, reindeer husbandry, and some freshwater fishing. The rest make a living in the regular cash economy, often in combination with traditional activities.

The Saami diet reflects the natural resources in the region. Coastal Saami have a diet high in fish, especially cod, and marine products. Fjord Saami eat some fish, most likely from local stocks, and also farm produce. Inland Saami consume large amounts of reindeer meat, as well as some freshwater fish. Farmers consume large amounts of lamb meat.

Most hunting in the Saami areas today is recreational, and is usually done by urban residents visiting the area. While bringing some economic benefits, sport hunting for ptarmigan also conflicts with traditional Saami hunting and other occupations.

Today reindeer herding is increasingly carried out with the help of modern technology, such as snowmobiles, all-terrain vehicles, and helicopters, and in many cases as a business enterprise rather than as a subsistence activity.

Norway

The population of Arctic Norway is 379 461. After a period of people leaving the north, young people are becoming more likely to stay in the area in which they were raised, and also to return after education in the south.

The non-indigenous population has a primarily urban lifestyle. The diet is similar to the rest of Norway but with higher consumption of potatoes and fish, and lower consumption of fruits, vegetables, and alcohol.

Fishing and mining form the economic base of the region. The average income is lower than for Norway as a whole, but unemployment is similar to the national level.

The health situation in Arctic Norway lags behind the rest of the country. The northernmost counties have the highest mortality rates, especially in the fishing communities along the coast.

STAFFAN WIDSTRAND

Utsi family, Kautokein0, Norway.

Cooking marrow bone, from reindeer, Lawo, Norway

Life expectancy for men in the region is five years below the national average of 74.0 years. For women, it is three years below the national average of 80.9 years. The trend for younger people is more optimistic, partly because dietary changes have led to reduced rates of heart disease. Infant mortality, which recently was much higher than in the rest of Norway, is now at the national level.

Accidental deaths are more common in the north, including for example snowmobile accidents connected with alcohol consumption. Smoking is more common than in the south, and is increasing among women. In Sør-Varanger, contact allergies in school children, mostly to nickel, are much more common than in the rest of Norway.

Health care is available, but the sparse population and small isolated communities cannot support full-service hospitals. Education levels have increased drastically, and may become one of the most effective means of improving the health of people in the region.

Sweden

The AMAP area of Sweden includes the area north of the Arctic Circle. It is a forest, wetland, and tundra landscape, of which about one-half percent is used for agriculture or human settlement. The population has increased during this century, when Sweden started to exploit the forest, hydroelectric power, and mineral resources of its north. Currently, the population is stable. In 1990, there were 263 735 people in the county of Norrbotten, which is the northernmost in Sweden. Of these, approximately 64 000 lived north of the Arctic Circle. More than 80 percent of the people of Norrbotten live in towns.

Aside from the Saami, the Arctic part of Sweden is mostly populated by Swedes, with a sizable Finnish-speaking minority. The way of life has a stronger emphasis on the use of natural resources than in southern Sweden. For example, hunting and fishing are important activities. People are more likely to work in mining, electricity, water services, forestry, or public services. Dairy farming is the main agricultural activity, but farming has declined drastically since earlier in this century.

Dietary surveys have shown that people in northern Sweden eat less vegetables and drink less wine, but eat more fat and drink more beer and spirits than other Swedes. They also eat more reindeer meat.

Life expectancy is half a year lower than for Sweden as a whole. Relative mortality is higher, mostly because of more accidents, more alcohol-related diseases, more circulatory organ diseases, including heart disease, and more stomach cancer.

KNUT BRY

Finland

The northernmost province of Finland, Lapland, covers one-third of the country. Coniferous forests dominate the landscape, but there are also substantial areas of marsh land and treeless highlands. Lapland is sparsely populated with slightly above 200 000 inhabitants, of whom half live in the largest cities in the south. There are nearly 7000 Saami in Finland, of whom 4000 live in northern Lapland.

Although unemployment is higher, the standard of living in Lapland equals that of the rest of Finland. Government assistance and development measures have an important role in the economy. Essential infrastructure, such as water supply and waste treatment, and services, such as education and health care, reach all population groups.

Service and tourism are the most rapidly growing industries in Lapland, often connected to natural attractions and winter sports. In rural areas, traditional ways of life include a mixture of livelihoods, such as reindeer herding, animal husbandry, small-scale agriculture, forestry, fishing, and service. Heavy industry is concentrated in the Kemi-Tornio area on the coast of Bothnian Bay, with forest-product and metal factories, and in southeastern Lapland, with the forest industry.

The diet is similar to that in other parts of Finland, although local products such as reindeer, fish (river trout, brown trout, and whitefish), and a variety of natural berries and mushrooms play a large role. Fish are imported from the Gulf of Bothnia and the Arctic Ocean.

Housing, with air-tight buildings, is connected to some health problems. In rural areas, housing standards are lower than elsewhere in Finland.

Age-adjusted mortality is higher in Lapland than in the rest of Finland. Leading causes of death are circulatory diseases, cancer, accidents, and violence.

Russia

The Arctic area of the Russian Federation stretches from the Norwegian border in the west to Ostrov Ratmanova in the east, nearly halfway around the world.

According to the 1989 census, the total population of Arctic Russia is approximately 2 million people, of whom approximately 67 000 are indigenous minorities. An additional 260 000 non-indigenous residents live in the Norilsk mining area in northern Siberia. Seventy-five percent of the indigenous population live in rural areas.

The indigenous minorities of Arctic Russia are the Dolgan, Nganasan, Nenets, Saami, Khanty, Chukchi, Evenk, Even, Enets, Eskimo (or Yupik), and Yukagir. Another five groups live close to or within the Arctic region: the Selkup, Chuvan, Mansi, Ket, and Koryak; see table to the right. Another indigenous group, the Yakut, live in the Sakha Republic (Yakutia). They are too numerous to be considered a minority in Russia, but their traditional way of life includes reindeer herding and activities common to the other indigenous groups in the area.

Most immigrants have arrived in the past century and are engaged in industrial enterprises and related activities. They live in cities and large towns. In the western areas of the Russian Arctic, ethnic Russians known as Pomors have lived in the area for five centuries and have a traditional lifestyle similar to that of indigenous people. Other 'old settlers' live in other areas of the Russian Arctic.

Traditions vary in the different regions of the vast Russian Arctic. However, the lives of all Arctic peoples are closely connected to the history of Russian exploitation of the north.

Resource exploitation has disrupted traditional lifestyles

The Russian north contains large amounts of natural resources, including timber, oil, gas, coal, and minerals. For centuries the resources have been exploited, and today they provide one-fifth of Russia's gross national product. The growth in this development has been tremendous during the past century and is expected to continue, especially considering large hydrocarbon reserves in the Naryan-Mar region and offshore near Novaya Zemlya.

This resource exploitation has taken place in the traditional homelands of the indigenous people of northern Russia. The consequences have been severe. State enterprises have ignored traditional knowledge and patterns of land use, and many people have been forced into collectives. Private ownership is now being reintroduced, but it is too early to determine what effects it will have.

Industrialization has damaged the land. Land and rivers that were once used for reindeer herding, fishing, and hunting have been lost to industrial expansion and pollution. The upheaval has also carried high social costs as traditional cultures have been shattered. Difficulties in taking advantage of higher education have kept most indigenous people from any real opportunity to participate in the industrial economy.

Economic crisis has worsened the plight of northerners

The predicament of the north is accentuated by the recent economic changes in Russia. Supply lines have been disrupted and many people have less to eat, especially of imported foods. Moreover, reorganization of collectives and state farms along with depletion of fish stocks, closure of forest plots, and reduced investments have led to increased unemployment among indigenous people, reversing a previous upward trend in employment. Unemployment is now between 25 and 30 percent,

Total and indigenous population in different regions of Arctic Russia.

Populations by region and ethnicity in the Arctic area of Russia, 1989 census

People/ Region	Murmansk Oblast	Nenets Auton. Okrug	Yamalo-Nenets Auton. Okrug	Taimyr Auton. Okrug	Sakha Republ. Arctic area	Chukotka Auton. Okrug	Russian Arctic	Russia
Saami	1615	0	0	2	0	0	1617	1835
Enets	4	0	2	103	0	0	109	198
Nenets	176	6423	20917	2446	0	10	29972	34190
Khanty	10	5	7247	3	0	4	7269	22283
Nganasan	5	0	3	849	0	0	857	1262
Dolgan	18	0	14	4939	0	4	4975	5363
Even	10	1	46	34	1793	1336	3220	17055
Evenk	20	27	78	311	1285	54	1775	29901
Chukchi	2	0	11	1	428	11914	12356	15107
Yupik	3	6	7	0	0	1452	1468	1704
Yukagir	3	0	3	0	476	160	642	1112
Selkup	1	1	1530	8	0	0	1540	3564
Chuvan	9	0	0	4	0	944	957	1384
Koryak	5	1	31	16	0	95	148	8942
Ket	0	3	6	11	0	0	20	1084
Mansi	18	1	216	1	0	3	239	8279
Total indigenous	1899	6468	30111	8728	3982	15976	67164	
Total population	1164586	53912	494844	55803	66632	163934	1999711	
% indigenous	0.16%	12.00%	6.08%	15.64%	5.98%	9.75%	3.36%	

and is higher among young people and women. Most indigenous people work with traditional activities, such as reindeer herding, fur trapping and farming, hunting, fishing, and making handicrafts.

Housing is in short supply and most buildings are overdue for improvements. Over 30 percent of the indigenous population lives in substandard housing or traditional tents, often because housing in rural areas and along migration routes is not available.

Sickness and social distress lead to shorter lives

Statistics on mortality and the incidence of various diseases bear witness to a dismal health situation. In the north, the mortality rate in 1989 for the indigenous minorities was 10.4 per thousand, compared to 6.6 per thousand for other residents of the area.

At the end of the 1980s, life expectancy was 54 years for men and 65 for women, which is 10 to 20 years lower than the Russian average. Trauma, infectious diseases, especially tuberculosis, cardiovascular disease, parasites, and respiratory disease are common causes of death. Many health problems are related to alcoholism. Infant mortality is very high, at 30 per 1000 among indigenous people. Among Koryak, the infant mortality rate is as high as 52.6 per thousand and among Eskimos 47.6 per thousand.

Certain diseases are particularly common. One is 'northern lung', a suite of respiratory diseases that are widespread among indigenous people. Chronic ear infections are also common. The incidence of tuberculosis is 2.5 to 3 times higher than among newcomers to the region. Dietary changes, including more carbohydrates compared with traditional foods, may in part be responsible for the high incidence of gastrointestinal disorders. Up to 95 percent of the population suffers from vitamin deficiencies or dental diseases.

The risk for disease reflects lifestyle patterns. A study in the Nenets Autonomous Okrug showed that the rates of disease were 50 percent higher in the settled population compared with those living on the tundra. Psychological disorders were 2.5 times higher among the settled populations.

The incidence of disease, as well as traumas, has increased several hundred percent since 1970.

The future of the indigenous peoples of the Russian Arctic is unclear. The Russian Federation has passed some laws to protect minority interests, but implementing the new legislation will take time and effort. One hope is that traditional practices connected to economic activities such as reindeer herding and fur farming can provide some opportunities.

Environmental contaminants are not the greatest threat but are nonetheless a serious concern. They strike at the heart of traditional ways of life as they affect both the food supply and opportunities to make a living off the land.

Reindeer provide food and employment across Russian north

The following description highlights diets and employment opportunities in various parts of Arctic Russia.

Murmansk Oblast

Most people in the Murmansk Oblast live in urban areas. The primary indigenous group is the Saami. Reindeer meat is an important food source for all residents because it is relatively inexpensive and is available in the region. Other important foods are mountain hare and moose.

In the traditional lifestyle, fish and birds add to the summer diet. Salmon and trout were customarily taken in large numbers, but there is currently a quota system limiting the salmon harvest to 25-30 kilograms per person per year.

The major industry is metal processing. It is also the largest polluter.

Among indigenous people, reindeer herding, hunting, fishing, and producing reindeer fur for handicrafts are the most common occupations. The herding teams include Saami, who are joined by Nenets and Komi from neighboring regions, and Russians. The reindeer are driven on to the Kieva Plateau in the summer and south in the winter. The migration routes cannot support more animals and thus limit the growth of the herds.

Nenets Autonomous Okrug

About ten percent of the Okrug's population are Nenets, of whom most live on the tundra. Reindeer meat is the primary food source in the Okrug. Additional sources include moose, brown bear, bighorn sheep, and alpine hare. Lesser sources are seal, beluga, ptarmigan, ducks and geese, and snowy owl.

The main occupations of indigenous people are reindeer herding, hunting, fishing, and fur and leather craftsmanship.

The tundra and forest-tundra have extensive marshes with excellent summer ranges for reindeer, and the Okrug is the major reindeer breeding area in Russia. In the fall, the herds move south along strictly defined passages to the southern tundra, forest tundra, and taiga. The availability of reindeer moss limits the size of reindeer populations in the Okrug.

Yamalo-Nenets Autonomous Okrug

The indigenous population of Yamalo-Nenets include the Nenets, the Khanty, and the Selkup. Together with other indigenous peoples, they make up about 6 percent of the population.

Reindeer and fish are the most important staples in the diet. Additional sources are similar to the neighboring Nenets Autonomous

PEKKA LEHMUSKALLIO

Nenets, Russia.

Okrug. The traditional occupations are also similar.

The main industries are oil and gas production, which have had a major impact on the local environment, reducing the productivity of the reindeer industry. For example, 6.8 million hectares of reindeer rangeland have been polluted by oil seepage and other spills, destroyed by vehicles, or otherwise lost to the herders.

Taimyr (Dolgan-Nenets) Autonomous Okrug
The Taimyr (Dolgan-Nenets) Autonomous Okrug includes vast range land for reindeer, which surrounds the administratively separate mining complex and city of Norilsk. The indigenous people of the region are the Dolgan, Nenets, Nganasan, Evenk, and Enets. They make up about 16 percent of the population.

As in neighboring Okrugs, reindeer meat is the main source of food. Fish and birds are also significant. One of the specialties in the traditional diet is sliced frozen fish (stroganina) during the winter. The major fish species are cisco, whitefish, herring, Siberian sturgeon, Arctic char, nelma, muksun, Arctic grayling, pike, perch, and smelt. Secondary food sources include moose, common seal, beluga, bearded seal, ducks, geese, snowy owl, and ptarmigan. Marine mammals are a relatively small food source, however.

Mining and metal processing is the main industry in the area, and also a major polluter. Small enterprises, including reindeer herding, account for less than 10 percent of the economy. The migration routes from the tundra to the tundra-forest have been overgrazed, limiting the growth of the herds. Year-round navigation of the Yenisey River and the construction of a pipeline between Messoyakha and Norilsk have made large areas of rangeland inaccessible. Hunting of wild reindeer is important for Nganasans.

Sakha Republic (Yakutia)
The Arctic zone of the Sakha Republic (Yakutia) includes a large population of Yakuts plus Even, Yukagir and Chukchi, who make up about six percent of the population.

Reindeer meat, fish, ringed and common seal, and birds are the main sources of food. The emphasis is on fish in coastal areas and on meat inland. Secondary food sources include moose, Kolyma moose, alpine hare, ptarmigan, brown bear, whitefish, ducks and geese, Siberian sturgeon, pike, berries, roots, nuts, and herbs.

The main occupation for the indigenous minorities is reindeer herding, but commercial hunting and fur trapping are also important. Northern Sakha produces one third of Russia's Arctic fox pelts. On the inland forest-tundra, several villages are located at good fishing sites, while coastal people are involved in marine mammal hunting and fishing.

Chukotka Autonomous Okrug
The Chukotka Autonomous Okrug includes the Chukchi as its largest indigenous minority group and also has Eskimo (or Yupik), Even, Chuvan, and Koryak communities.

Thirty percent of the indigenous Chukotkans live in sedentary villages along the coast. They eat marine mammals, as well as reindeer meat from inland. The inland dwellers eat mostly reindeer in winter, while fish and marine mammals from trade with the coastal people add to their summer diet.

The main occupations are reindeer herding, terrestrial and marine hunting, and producing ivory and fur for handicrafts. For Yupiks, fur

Grey-whale and walrus hunting, Chukotka, Russia.

farming, marine hunting, and fishing are the chief occupations. The large state farms for reindeer are currently being dismantled and are being replaced by individual farms and smaller ventures, a transition which has decreased the production of the herds.

The figure below on the opposite page gives a picture of the importance of different foods in Arctic Russia.

Similarities and differences

Arctic people live in a diversity of landscapes and cultures, with different diets, economic opportunities, and living standards. Some of this diversity is also apparent among geographically close groups or even within communities. In spite of this diversity, there are some similarities across the countries and regions that provide an important background for understanding how changes in the environment will affect people's well-being.

The Arctic population as a whole lives close to the environment. This is especially true for indigenous people, but also applies to many other inhabitants of the region. Using local resources is common, and what can be harvested or caught is often the most important source of food. A threat to resources such as reindeer or caribou, marine mammals, and fish is thus not only a threat to Arctic cultures but also to people's ability to obtain nutritious foods. Some communities also rely on local sources of drinking water, and lack of water treatment makes the water supply vulnerable to contamination.

Life expectancy is lower for most Arctic populations than elsewhere in each country. The pattern in causes of death is also different. Death from accidents is much more common than among the general population. In Russia and North America, diseases associated with poor living conditions and poor access to health care are also more common. Alcohol and tobacco use is high in many Arctic communities, and alcoholism is a serious concern.

Health care in most of the Arctic is improving, but sparse populations and long distances limit capacity, especially for getting advanced care. In Russia, disruption of supply lines and removal of incentives to move north have reduced health care capacities below their levels in the 1980s.

In general the Arctic populations are young. In many regions, birth rates are high and infant mortality is much lower than a few decades ago. Again, the one exception is Russia, where the economic situation has caused extensive emigration, and declining health care has led to increased mortality of all age groups. Russia is also the only country in which infant mortality is not declining.

Living standards vary by country. The living standards of native people in North America are higher than among native people in Russia. Nevertheless, the Arctic average is substantially lower than elsewhere in each country. For Greenland, the same applies in a comparison with Denmark. Housing is often crowded, and many dwellings lack modern conveniences such as running water. In the Nordic countries, this distinction is not as apparent.

Jobs are often scarce in the north, and advanced schooling is usually only available outside the region. However, employment and income statistics should be treated with caution as they do not include the extensive and often very productive subsistence economy that exists outside the better documented cash economy.

A common problem in almost all Arctic countries is in the communication between majority populations and indigenous people. For example, many scientists as well as public health authorities lack the necessary cultural and linguistic skills to communicate about contamination. Moreover, many indigenous people lack education in the majority languages in their countries and might therefore be unable to use information that is available in the public debate.

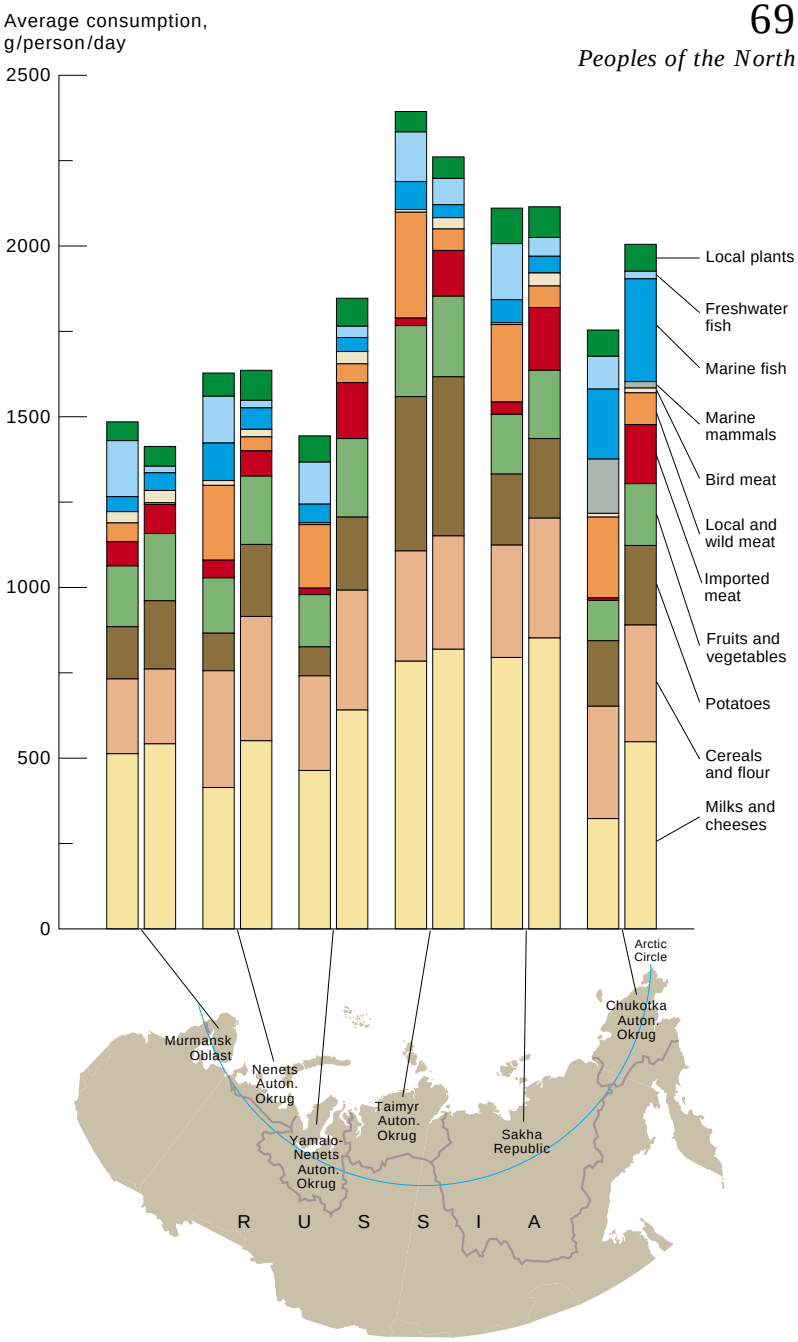
Some of the native languages have been under threat throughout the period of colonization. Historically, national authorities or schools have often discouraged or even forbidden people to speak their mother tongue. Today, there is no such overt discrimination, but for some groups the languages have suffered enough that older and younger people within the same group can have trouble com-

municating with each other. Other languages have always thrived while some, such as Saami, are experiencing a revival connected to a renewed cultural awareness.

There are also some similarities at the political level. Many indigenous groups are more active than ever in working towards self-governance, and in asserting native rights. The Greenland Home Rule and the Nunavut Government in Canada are two examples. In Russia, the Association of Indigenous Peoples of the North, Siberia, and the Far East of the Russian Federation (AIPON) is working to unite the common interests of 30 indigenous peoples and cooperates with indigenous groups in other countries. Native groups are also renewing contact across national borders, for example in the Saami Council and the Inuit Circumpolar Conference. This cultural and political revival is a positive force at a time when many communities are suffering greatly from disintegrating social and cultural ties.

Generalizations about Arctic peoples can be useful in looking at patterns and similarities, but they can also hide important information. On a practical level, statistical averages about food habits or living conditions can conceal widely ranging figures among individuals, even within the same community. Also, statistics do not reveal the vitality and resilience of the cultures of the Arctic, nor do they make clear the dynamics of the cultural changes most communities are going through. In the context of contaminants, daily decisions today often include such previously arcane questions as the levels of industrial chemicals in local foods.

Moreover, the statistics do not put any emphasis on the fragility of the links between people and their environment. These links can be disrupted by contaminants, and also when researchers or health authorities raise concerns about whether indigenous foods are fit to eat. The fear that food is contaminated can itself be destructive, since what was nourishing now appears tainted, whether contaminants are actually present or not. The future of Arctic peoples depends on preventing the degradation of the Arctic environment. The connections between cultures and the environment may be intangible, but they nevertheless lie at the heart of the debate about pollution, global change, and sustainable development.



Average consumption of selected foods in Arctic Russia.
Left columns: indigenous population.
Right columns: general population.

factors complicate any assessment of the real and potential impact of contaminants to Arctic people. Specifically, experiences and results from lower latitudes cannot be directly transferred.

Moreover, great differences between countries, between cultural groups, and between individuals within a community point to the importance of understanding local contexts when making assessments connected with contaminants and people's well-being.

Communication is crucial in the continued work in this area. Not only do Arctic residents have the right to good information about their environment and themselves, they also have knowledge that may assist our overall understanding of environmental damage.

Summary

The lives of indigenous and other Arctic peoples are closely linked to local resources that provide nourishing foods and spiritual connections to the environment.

Food habits, living conditions, employment or subsistence activities, and access to health care are some of the characteristics in which Arctic populations differ from those farther south in the Arctic countries. Together, these