UNIVERSITY OF THE ARCTIC

Module 2

Peoples of the Subarctic: Hunters, Gatherers, and Fishers

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Key Terms and Concepts

- the Subarctic and the boreal, or taiga, forests
- permafrost
- ecological zones (ecozones) of Subarctic Canada, Alaska, and Russia
- traditional lifeways of the indigenous Subarctic peoples

Learning Objectives/Outcomes

This module's objective is, first, to review those features that define the Subarctic: its forests and its landscape. We will examine what permafrost is and how it exists in equilibrium with the environment. In its active layer of soil, for example, plants, lichens, and moss often insulate the permafrost during short, hot summers, while the existence of permafrost in the first place will often determine which plant species can grow in a given region, as not all species of trees are adapted to permafrost zones.

Having reviewed the ecology of the Subarctic, we will then examine the traditional economies of the indigenous peoples of the North American Subarctic and examine the yearly cycle of life in this region of the circumpolar North. Although there is a great deal of linguistic and cultural variation in this part of the world, there are nonetheless many similarities from Alaska to Newfoundland, like the technologies and subsistence strategies.

Upon completion of this module you should be able to

1. identify the area considered the Subarctic, and describe the environmental features that determine its reaches on a map of the northern hemisphere.

2. identify the area considered the boreal forest and taiga, and describe the environmental features that determine its reaches on a map of the northern hemisphere.
3. identify the ecozones, and describe the geographic and ecological features of a given region of the Subarctic.
4. given a region of the Subarctic, describe the species of plants and animals present, their seasonal presence or migrations, and their effects on the seasonal activities of the peoples present.
5. describe the structure of the society, the belief systems, the division of labour and other roles, and traditional rites of passage of a people of a region of the Subarctic.

Reading Assignments

The course instructor will assign readings from the required textbook by Freeman (2000), *Endangered Peoples of the Arctic.*

Lecture

The Subarctic and Its Ecozones

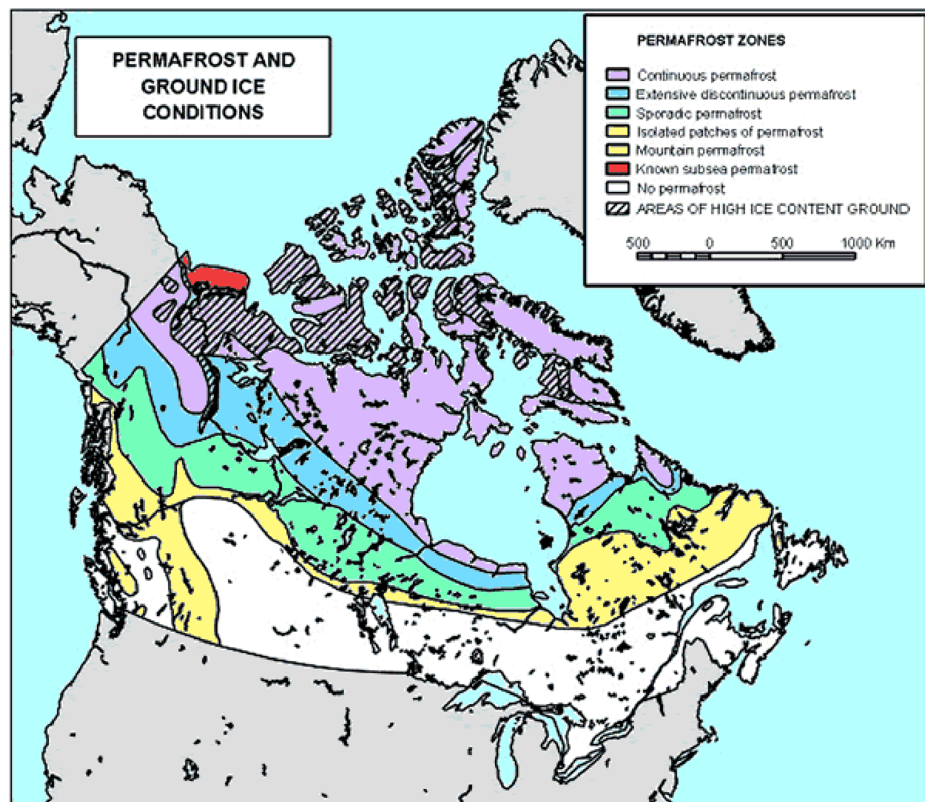
The boreal forest or taiga was formed with the retreat of the continental and alpine glaciers that had covered most of the northern hemisphere. As the ice melted, plant and animal species spread into new zones. The movement of species was facilitated by the low ocean levels, which facilitated the migration of species between the Americas and Asia (northeastern Russia). Also, species moved from continental Europe to northern Scotland, where the boreal forest established itself in the highlands. Today, a small isolated boreal forest remains here, forested with Scotch pine.

The boreal forest or taiga occupies those lands characterized by cold winters, short but hot summers, and relatively poor soils. In Europe, the boreal forest is in high northern latitudes (northern Scotland and the Scandinavian countries of Sweden, Norway, and Finland) because of the mitigating factor of the Gulf Stream, which pushes warmer air far into northern Europe. East of the Ural Mountains, in a region ringed by high mountain chains, the boreal forest pushes as far south as China and Mongolia. In western North America, warm Pacific currents push the boreal forest north: a subpolar rainforest predominates in coastal Alaska and British Columbia, where humid and warm air and generally milder conditions do not favour the boreal forest. Likewise, warm Pacific air

along the coasts of the Russian Far East makes for a much milder climate and the growth of much more temperate forests. In eastern North America, the flow of Arctic air southwards pushed the boreal forest down into Ontario and Quebec, where the boreal forest eventually gives way to temperate deciduous forests.

Permafrost—permanently frozen soil—conditions the boreal forest. To survive, trees require an active layer of soil that will thaw in the summer. Certain species will thrive in a relatively thin active layer of soil. These include the black spruce (*Picea mariana*) and the tamarack (*Larix laricina*) of North America and the larches (*Larix*) of Siberia and the Russian Far East.

Moving north, the boreal forest gives way to tundra. In tundra forest, trees will survive in isolated pockets. Such zones will move over time. For example, during much warmer periods preceding the Little Ice Age of the sixteenth century, boreal forests migrated northwards more than 100 kilometres because much warmer temperatures had favoured the growth of trees much farther north than they now exist. With the cooling that followed, these forests could not survive and were burnt away by forest fires, leaving isolated pockets of trees. (See fig. 2.1.)



Source: Natural Resources Canada, http://sts.gsc.nrcan.gc.ca/permafrost/

Fig. 2.1 Permafrost and ground ice conditions

Permafrost

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.

Permafrost underlies more than 50% of the ground surface in Canada. The two major divisions of permafrost are continuous permafrost and discontinuous permafrost. In the continuous permafrost zone, permafrost occurs everywhere beneath the ground surface except in large bodies of water. In the Far North, it may be more than 500 metres thick. The discontinuous permafrost zone has two other divisions: the widespread permafrost zone, where permafrost underlies 50–90% of the land area; and the sporadic permafrost zone, where it occurs mostly in peat lands and underlies 10–50% of the land area. Permafrost can also occur in localized areas, where it is found in small isolated lenses in peat and affects less than 10% of the land area.

Technically speaking, permafrost is ground that remains below 0°C for two summers and an intervening winter. In practical terms, however, permafrost may be thought of as frozen ground, because it is ice in the ground that creates most of the challenges associated with permafrost. In many ways permafrost defines the North: it is the ground on which plants and animals must survive. It has also determined the way people live in the North—buildings, roadways, and other facilities must handle the distinct conditions associated with "frozen ground."

The atmospheric climate is the main factor determining the existence of permafrost, but the spatial distribution, thickness, and temperature of permafrost is highly dependent on ground surface temperature, which in turn is strongly influenced by several other environmental factors such as vegetation type and density, snow cover, drainage, and soil type.

> Not all permafrost in existence today is in equilibrium with the present climate. Offshore permafrost beneath the Beaufort Sea is several hundred metres thick and was formed when the shelf was exposed to cold air temperatures during the last glaciation. This permafrost is presently in disequilibrium with Beaufort Sea water temperatures and has been slowly degrading. Permafrost occurrence in the southern fringe of the discontinuous zone is closely related to peatland type. . . . The presence of the insulating peat vegetation greatly affects and reduces the rate of its degradation.
>
> . . . In the discontinuous permafrost region, where ground temperatures are within 1–2 degrees of melting, permafrost will

> likely ultimately disappear as a result of ground thermal changes associated with global climate warming. Where ground ice contents are high, this permafrost degradation will have associated physical impacts. Of greatest concern are soils with the potential for instability upon thaw (thaw settlement, creep or slope failure). Such instabilities may have implications for the landscape, ecosystems, and infrastructure. (Natural Resources Canada 2002)

Certain regions will be more heavily impacted by climate change. One of these is the Mackenzie Valley region. Not only has it experienced some of the highest average temperature increases; the soil also includes a high ice content.

The boreal forest equally plays a role in maintaining the permafrost: the forest canopy and layers of moss keep the ground cool in the summer, insulating the permafrost under an active layer of soil. However, the boreal forest and permafrost are not contiguous: in northern Europe—where permafrost is not prevalent—boreal forest does thrive. In warmer zones, the boreal forest is more productive because the warmer soil allows for a faster decomposition of organic materials, releasing more nutrients into the soil, and encouraging a more productive forest (as in Scandinavia).

The Boreal Forest and Taiga: An Overview

The boreal forest or taiga is a forested zone dominated by coniferous trees that grow best in acidic soil. To the north, the boreal forest turns to tundra, where trees—except the odd dwarf specimen—cannot survive; to the south, the boreal forest turns to deciduous forests and steppe. The trees that characterize the boreal forest include spruce (*Picea*), pine and cedar (*Pinus*), larches and tamarack (*Larix*), fir (*Abies*), and deciduous birch trees (*Betula*). The forest composition will vary depending on two variables: soil temperature and moisture. These will produce a variety of boreal forests, including boreal desert, boreal dry bush, boreal moist forest, and boreal rain forest.

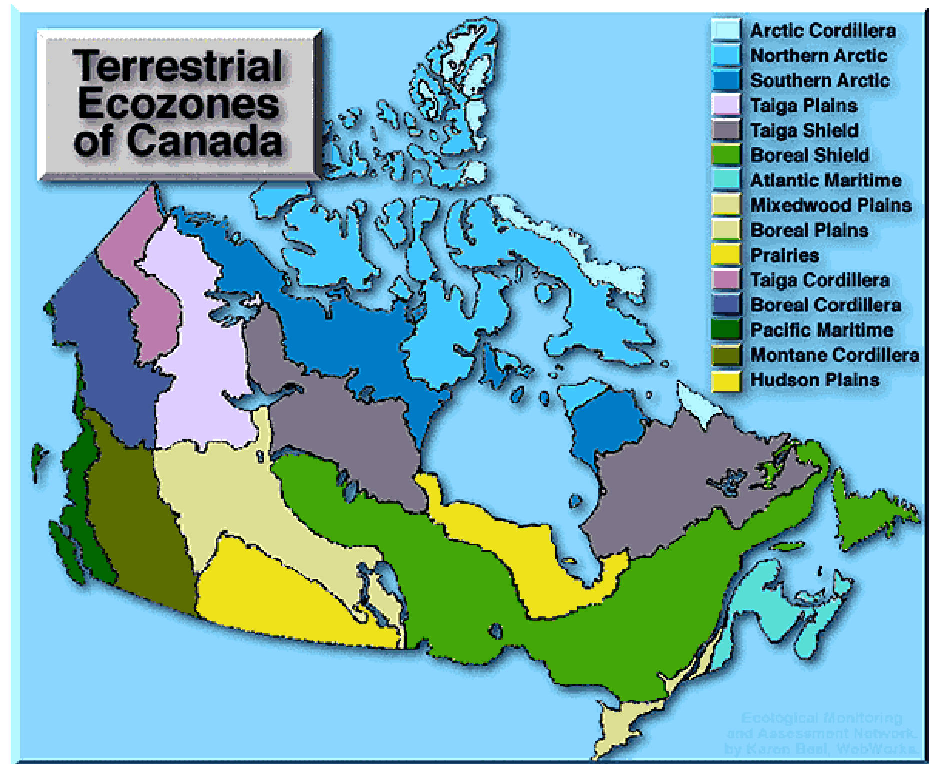
In terms of animal species, the species that is representative of the boreal forest is the moose and its main predator, the wolf. With the exception of the Scottish forests, moose are found throughout the boreal forest, ranging from Scandinavia across Russia and North America. An important seasonal inhabitant of the boreal forest is the reindeer (*Rangifer tarandus*) and its North American relative, the migratory caribou. In both locales, reindeer and caribou migrate over great distances from their tundra summer calving grounds and their winter forest-tundra or lichen woodland pastures located in the northern fringes of the boreal forest. Reindeer and caribou graze primarily on lichens—a symbiotic association of fungus and algae—that do not require soil for their survival and are spread by airborne spores.

Human survival in the boreal forest has followed two general patterns across the circumpolar North. As will be discussed later in this module, one lifeway that emerged is based on foraging (hunting and gathering), with small bands occupying large territories. Subsistence depends on hunting moose and other animal species in the boreal forest, as well as fishing for lake and river species of fish and gathering various berries and plant species in the summer. Another widespread subsistence strategy in northern Europe and in the Russian Far East is reindeer herding. Herding is a successful strategy, especially when combined with the hunting of wild reindeer and a variety of other animal species. Reindeer herding spread across the North and pushed as far south as northern China. Successful reindeer herding requires that human communities protect the reindeer from parasites such as mosquitoes and flies, either by migrating with the reindeer to the tundra where cooler temperatures do not permit the spread of parasites, or through the use of smudge fires to drive away parasites with smoke. Both foraging and herding are successful adaptations that allow human survival in the boreal forest and taiga.

The North American Boreal Forest

Boreal forest covers much of Alaska and most of Canada. From Alaska to Newfoundland there are five major ecological zones. We will examine these ecological zones[1] before turning to the indigenous peoples whose traditional territories were located in the North American boreal forest. (See fig. 2.2.)

[1] Some of the text for these five ecological zones is borrowed from the National Forestry Database Program, "Forest Inventory Terminology" [online] (Canadian Council of Forest Ministers, 2003).



Source: Environment Canada, http://www.ec.gc.ca/soer-ree/English/Framework/NarDesc/canada_e.cfm

Fig. 2.2 Terrestrial ecozones of Canada

Taiga Plains Ecozone

The Taiga Plains are mainly located in the southwest corner of the Northwest Territories; however, they also extend into northeastern British Colombia and the upper margin of Alberta. The climate is semi-arid and cold. Annual precipitation ranges from about 400 mm in the south to about 200 mm in the north. The mean daily January temperature ranges from –22.5 to –30°C; the mean daily July temperature ranges from 10 to 15°C. Plant species associated with the Arctic tundra include dwarf birch, Labrador tea, willows, bearberry, mosses, and sedges. Upland and foothills areas and southerly locales tend to be better drained and warmer, and they support a mixed forest, which is characterized by white and black spruce, tamarack, white birch, trembling aspen, balsam polar, and lodgepole pine. The characteristic mammals of the Taiga Plains ecozone include moose, woodland caribou, bison, wolf, black bear, marten and lynx. Representative bird species include the red-throated loon, northern shrike, and common redpoll.

Taiga Shield Ecozone

The Taiga Shield ecozone lies on either side of Hudson Bay. The eastern segment occupies the central part of Quebec and Labrador, and a western segment occupies portions of northern Manitoba, Saskatchewan, and the south-central area of the continental Northwest Territories. The climate is Subarctic Continental (or Boreal Forest). Precipitation is low: from 175 to 200 mm annually. The mean daily January temperature ranges from –17.5 to –27.5°C; and the mean daily July temperature ranges from 7.5 to 17.5°C. Along the northern edge of this ecozone, the poleward limits of tree growth are reached. The forest stands are open and form lichen woodlands, which merge into areas of open Arctic tundra. The central portion contains relatively unproductive and commonly stunted coniferous and deciduous stands, including open, stunted black spruce—accompanied by alders, willows, and tamarack in the fens and bogs—and open, mixed-forest associations of white spruce, balsam fir, and trembling aspen.

Characteristic mammals of the Taiga Shield ecozone include barren ground and some woodland caribou, moose, wolf, snowshoe hare, Arctic fox, black and grizzly bear, and lynx. Representative birds include the Arctic and red-throated loon, northern phalarope, tree sparrow, and grey-cheeked thrust. In the marine environment, representative species include walrus and bearded, harbor, and ringed seals.

Taiga Cordillera Ecozone

The Taiga Cordillera is located along the northern extent of the Rocky Mountain system. It covers segments of the Yukon Territory and the southwestern portion of the Northwest Territories. The terrain is marked by steep, mountainous topography dominated by repetitive, sharply etched ridges and narrow valleys. The climate is generally dry and cold. Total precipitation averages about 300 mm per year. The mean daily January temperature ranges from –25 to –30°C: and the mean daily July temperature ranges from 12 to 15°C.

Characteristic mammals of the Taiga Cordillera ecozone include Dall's sheep, woodland and barren ground caribou, moose, mountain goat, black and grizzly bear, lynx, Arctic ground squirrel, American pika, and wolverine. Gyrfalcon, willow ptarmigan, and rock ptarmigan are representative bird species.

Boreal Shield Ecozone

The Boreal Shield ecozone is a broad, U-shaped zone that extends from northern Saskatchewan, east to Newfoundland, and which passes north of Lake

Winnipeg, the Great Lakes, and the St. Lawrence River. Climatic conditions vary slightly over the area. This ecozone is largely influenced by cold Hudson Bay air masses, which are also responsible for relatively high levels of precipitation, 400 mm in the west to 1,000 mm in the east. Mean daily January temperatures range from –10 to –20°C, while mean daily July temperatures average 15 to 18°C.

Characteristic mammals of the Boreal Shield ecozone include woodland caribou, white-tailed deer, moose, black bear, raccoon, marten, fisher, striped skunk, lynx, bobcat, and eastern chipmunk. Representative birds include boreal owl, great horned owl, blue jay, and evening grosbeak. In the Atlantic marine environment, typical mammals are the grey, harp, and hooded seals, and the northern bottlenose, sperm, killer, Atlantic pilot, fin, and blue whales.

Hudson Plains Ecozone

Although wetlands are distributed throughout Canada, the world's largest extensive wetlands area is associated with the Hudson Plains ecozone, an area centred in northern Ontario that extends into northeastern Manitoba and western Quebec. Climatically, this ecozone is heavily influenced by the cold and moisture-laden Hudson Bay-low and Polar-high air masses. It is generally a cold continental climate with moderate precipitation of 400 to 700 mm annually. Mean daily January temperatures are about –19°C; while mean daily July temperatures hover between 12 and 16°C.

Characteristic mammals of the Hudson Plains ecozone include woodland caribou, moose, black and polar bear, marten, Arctic fox, and fisher. A variety of waterfowl typifies the birds. The ecozone is, for example, a major habitat for substantial populations of breeding waterfowl, especially Canada geese. In the marine environment, representative mammals include walrus and bearded, harbor, and ringed seals.

Alaska

A number of major ecological zones are found in Alaska. In the northern coastal zones, tundra predominates in the coastal plains. In southern coastal regions, the ecology is pacific maritime, a climate characterized by milder winters and wetter, luxuriant forests. The interior Alaska Plateau, however, falls into the taiga zone. The interior forests are dominated by white spruce and birch. In areas of discontinuous permafrost, black spruce and other shallow-rooted species thrive. The tamarack—related to Siberian larches—is equally widespread. Poplar and aspen equally grow in the Alaska Plateau, generally in areas that were burned by forest fire, as transitional species that will eventually be replaced by conifers.

For a map of the ecozones of Alaska, see http://www.fs.fed.us/colorimagemap/ecoreg1_akprovinces.html.

The Russian Taiga

Russian ecological zones mirror what is found in Canada and in Alaska. To the north, tundra predominates; and to the south, the taiga gives way to the steppe and mixed forests. Northern Russia is nonetheless divided into two large regions by the Ural Mountains. To the west of the Urals, the climate is influenced by the Gulf Stream. As in Scandinavia, the warmer, moist air that the Gulf Stream pushes into the continent has allowed the boreal forest to grow in the Far North. The forests of central Russia are temperate in nature with deciduous trees predominating the landscape. Yet, the tundra is well established in the Russian northwest, which includes the Yamalo-Nenetsky Okrug and neighbouring zones.

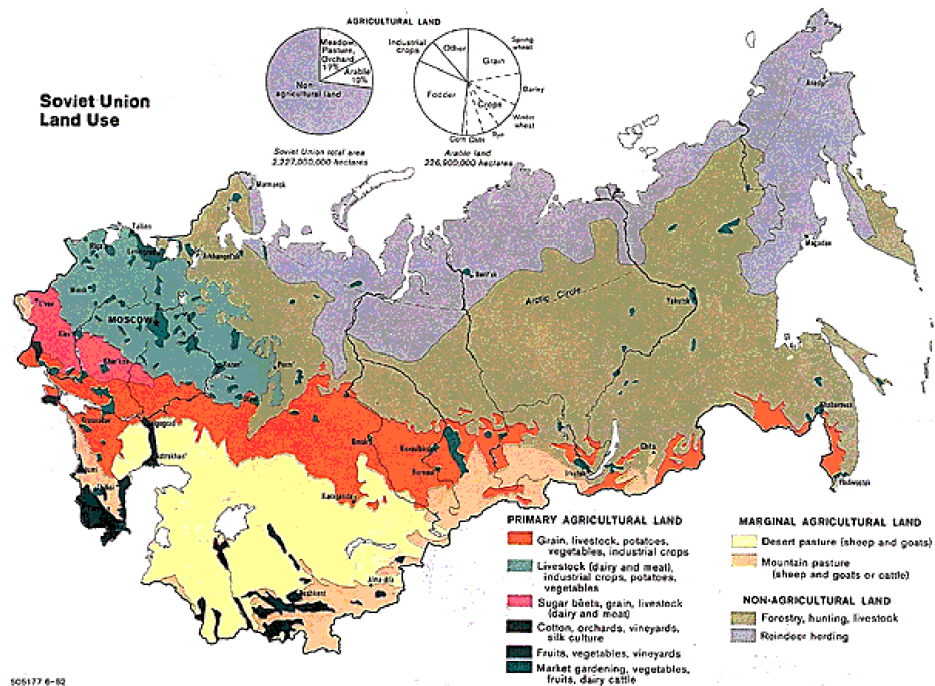
For a list of the ecozones of Russia, see http://www.panda.org/about_wwf/where_we_work/ecoregions/global200/pages/countries/russia.htm.

To the east of the Ural Mountains, temperatures are severe. In coastal zones located in proximity to oceans, the water absorbs heat in the day and releases it in the evening, in summer and winter months. Unlike large bodies of water, land masses do not serve as heat sinks; and unlike the ocean when it is covered with snow, the continents will reflect heat energy back into the atmosphere, leading to even cooler temperatures. In the summer, the reverse is true: the darker land will absorb much heat and will warm up quite quickly. Nonetheless, virtually all of the Russian Federation east of the Urals is composed of permafrost. This poses a challenge to the construction of buildings and other facilities: if a building is built directly on the soil, the permafrost will melt and over time the building will sink into the mud. To avoid this, large buildings in the Russian Far East are built on pylons and a few feet of air separates the building from the soil. This serves to keep the permafrost frozen throughout the year. The geography of the land east of the Urals is thus shaped by mountains and permafrost, which in turn shapes the Russian Subarctic.

To the east of the Ural Mountains, we find a relatively flat, low-lying plain that forms the basin of the great river Ob and its tributary, the Irtysh (also called Ertis). These rivers carry meltwater from the Altai Mountains northwards to the Arctic Ocean. Given the relatively slight gradient, these rivers flow quite slowly. In addition, because the exit to the sea is often blocked by ice, large areas of the Western Siberian Plain are flooded in the spring, creating numerous lakes, marshes, and peat bogs that dominate the geography of the plain. The forest is comprised of pine, cedar, spruce, and larch (which sheds its needles each fall, like the tamarack tree in North America). This taiga is home to

animals found throughout Siberia: brown bear, wolf, elk, reindeer, lynx, and much smaller fur-bearing animals, such as squirrels, polecat, ermine, and sable. To the south, the taiga gives way to aspen and birch forests, which in turn thin out and eventually become open steppe.

The uplands of central Siberia rise on average 600 metres above sea level. The Yenisey River runs along the western edge of the uplands. To the east of the river, the permafrost extends far south, covering the whole of central Siberia and the Russian Far East. However, the Yenisey River system is effective at draining the Central Siberian Plateau, given the greater gradient between the headwaters of the Yenisey and the ocean. As a consequence, the forests of the southern plateau are quite dense as compared to the marshier lands of western Siberia. The eastern forests are dominated by larch. (See fig. 2.3.)



Source: Courtesy of the General Libraries, the University of Texas at Austin, http://www.lib.utexas.edu/maps/commonwealth/soviet_land_82.jpg

Fig. 2.3 Land use in Russia

The Central Siberian Uplands come to an end on the shores of Lake Baikal, the deepest lake in the world. A few miles from Lake Baikal are the headwaters of the Lena River. The Lena cuts across the Far Eastern Plateau and to the east are the Yablonovy and Stanovoy mountain ranges that run out towards the Okhotsk Sea. The highest peaks reach upwards of 3,000 metres. Though these mountainous regions are dominated by taiga, the Lena River valley offers pockets of grassland that serve as pasture to the horses and cattle of the Turkic-

speaking Sakha. To the south, the larch, cedar, and pine forests of the eastern taiga give way to grassy steppe.

The Russian Far East is home to the coldest temperatures outside of the Antarctic. The Verkhoyansk, Suntar-Khayat and Cherskiy mountains rise above the surrounding landscape. The highest peak—Victory Mountain—rises 3,003 metres above sea level. In this triangular zone, temperatures falling below 70°C have been recorded.

In the Russian northeast, the Chukotka Peninsula offers two distinct environments: the coasts, where the summer monsoon season brings much rain and mist to the coast; and the low-lying mountains that dominate the interior and rise between 1,700 and 1,900 metres. The Chukchi, the main indigenous group in this area, adapted to these two different zones. On the coasts, the Chukchi hunted marine mammals and their subsistence patterns resembled that of the neighbouring Aleut and Inuit/Eskimo of Alaska. In the interior, the Chukchi practised reindeer husbandry in the tundra.

To the south, the Kamchatka Peninsula juts into the Pacific Ocean. Massive peaks—the highest of which towers 4,688 metres over the Pacific—dominate the interior of the peninsula. The mountains and volcanoes of the Kamchatka Peninsula overlook a rich climate that is bathed in the warm Pacific air. Broadleaf deciduous forests featuring thick stands of oak trees replace the boreal forest of larch and birch forests of the interior and mountainous regions of the Kamchatka Peninsula. The climate of the southern and coastal peninsula is the antithesis of continental Siberia: summers are cool, and winters are mild. Like the coastal peoples of British Columbia, the indigenous peoples of the temperate Kamchatka Peninsula, the Intelmen, built massive log houses and fished migrating salmon. (See fig. 2.4.)

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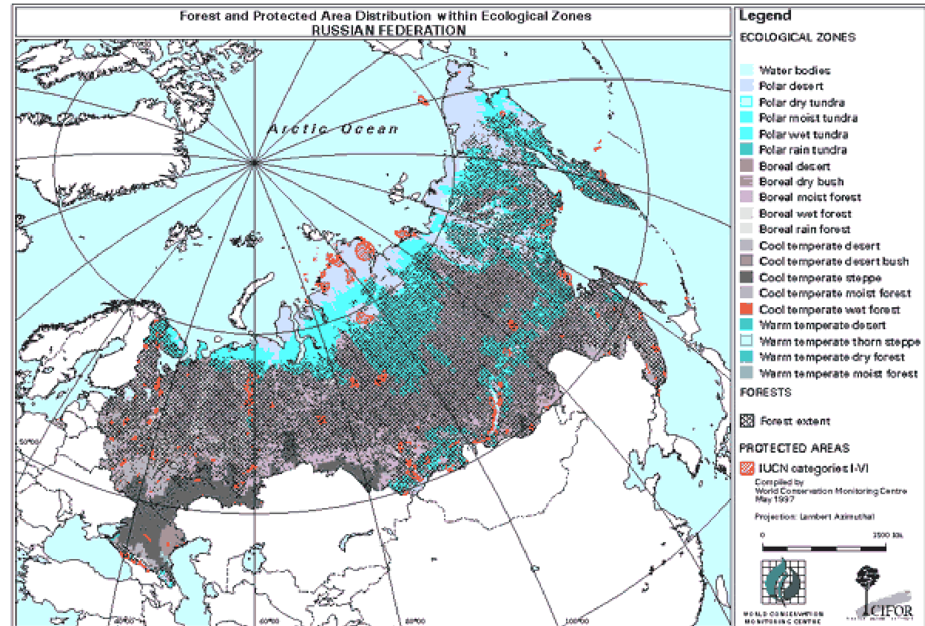

Source: United Nations Environment Programme World Conservation Monitoring Centre, http://www.unep-wcmc.org/forest/data/cdrom2/rus_eco.htm

Fig 2.4 Forest and Protected Area Distribution within Ecological Zones, Russian Federation

Student Activity

1. What geography and vegetation mark the southern extent of the Subarctic in the region nearest you?

2. List the names of the different ecozones in order of their northern-most extension. Locate them on a map.

3. What might determine their southern-most extension?

4. Identify the ecozone on the coast nearest you, and describe its climate and vegetation.

Life in the Subarctic

Though most of the material for this lecture focuses on the Canadian Subarctic,[2] most of what is described here is also true for that part of the Alaska Plateau region that has a Subarctic Continental (Boreal Forest) climate and in pre-contact times was inhabited by Athapaskan speakers, the Dene.[3] As was the case throughout the Subarctic, the Dene were primarily hunters, and fishing was an important secondary activity. A number of parallels can be drawn between the lives of the indigenous peoples of Russia and those inhabiting the North American Subarctic. However, reindeer herding was widespread throughout the European Far North and the taiga zone of the Russian Far East. The lives and traditions of reindeer herders will be discussed in great detail in Module 4.

In the North American Subarctic, subsistence in the Subarctic required great mobility over the territory. Different resources were exploited at different times of the year, and survival depended on a number of big-game species. Life was regulated by the seasons. Following is a general description of how the indigenous inhabitants of the boreal forest structured their lives over the course of a yearly cycle. It tells of the practices and traditions that were widespread throughout the Subarctic from Alaska to Newfoundland.

Spring

The peoples of the Canadian Shield Subarctic shared similar environments. They spoke a variety of languages that can be grouped into two main language families: Dene (or Athapaskan) and the Algonquian. Though there were many differences in their lifeways, the peoples of the Subarctic shared much in common in terms of technology, social organization, and religious beliefs.

The territory of the region is covered by boreal forest or taiga, and this forest is interspersed with a number of bodies of water: rivers, lakes, and muskeg. Forest fires played an important role in the cyclical shaping of the landscape: fire burned away old-growth forest and led to new environments as successive species of trees supplanted each other and as the forest grew and matured before being burnt once again.

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[2] This module's description of life in the Subarctic draws heavily upon *Subarctic*, volume 6 of the *Handbook of North American Indians* and published by the Smithsonian Institute in 1981. This volume gathered the leading researchers and scholars and provides a comprehensive account of the ethnography and history of the Subarctic.
[3] A number of ethnonyms were used to name the indigenous Athapaskan speakers. However, the term that is most commonly used by these populations to name their people is "Dene" which signifies "people." This is common practice: the term Inuit, for example, equally signifies "people."

The spring breakup—along with the autumn freeze-up—was a difficult period during which mobility was greatly reduced. The ice that covered rivers, lakes, and ponds was "rotten," which is to say the ice would often thin in unpredictable ways and it was too great a risk to venture onto the ice. Likewise, the thick layers of powdery snow in the forest began to melt, leaving granular and water-soaked snow that was not suitable for snowshoes and toboggans.

With the arrival of spring, a number of birds returned to the region, either to mate or to nest in the rich wetlands of the Subarctic or as a stopover on a much longer migration to the Arctic. The migratory birds that returned to the North American Subarctic in the spring included a wide variety of ducks, geese, swans, and other migratory species of birds. These migratory birds were especially important as a food source during the spring breakup, when it was difficult for people to hunt big game, such as moose and caribou, and near impossible to fish on the "rotten" ice.

As the snow and ice disappeared, families began moving by canoe to areas where the fishing was better. The indigenous peoples of the Subarctic had mastered the fabrication of birchbark canoes, an efficient means of transportation because the canoes where resilient, light, and easily repaired. Using canoes, they were not only able to travel long distances over the terrain, they also could capitalize on the abundance of fish in the rivers. Fish weirs and traps, along with gill nets woven from the inner bark of willow trees, were used to catch fish. The species of fish available in the Subarctic included whitefish, northern pike, and, closer to the coast, species of migrating salmon. Overland travel was difficult in summer, so families moved using the waterways. In April and May, families were busy building and repairing canoes, nets, and a variety of other tools required for the community's success in the upcoming summer season of fishing, hunting, and gathering.

Canoes were built in the spring, while the bark of the birch tree was easily detached as large sheets of flexible, yet strong construction material. In a few areas where birchbark was not readily available in the western Subarctic, spruce bark was used as a substitute. The birch (or spruce) bark was sewn onto a canoe frame made of cedar, fir, or spruce, using the split roots of black spruce. The seams were sealed using black spruce gum. The final product was sturdy enough to carry families and their belongings and yet light enough to be easily portaged from one body of water to the next. (Rogers and Smith 1981, 138)

Bark was also a common material in making a number of containers and cooking implements. Birchbark pots were used in cooking prior to the introduction through trade of metal pots and pans. Though birchbark pots could not have been placed on cooking fires, water in a birchbark pot was brought to a boil by dropping red-hot stones into the container. This permitted the cooking of meat while not wasting the nutritious juices and fat that would have dripped into a fire if the meat had been "barbecued" over an open fire. The versatility of

birchbark is demonstrated by its widespread use throughout the North both in North America and northern Russia.

Summer

In the Subarctic, virtually every family moved to fish camps on the main rivers and tributaries of the region. The summer fishing allowed for greater concentrations of people. Several families congregated in summer camps along the Mackenzie River and its tributaries. During those months when fish were abundant, populations were relatively sedentary. Living on the shore offered some respite from the swarms of blackflies and mosquitoes, as breezes would repel biting insects.

Summer housing varied, but there were consistent patterns across the Subarctic. Summer homes were made of items that could be easily located or transported. These included conical lodges with a framework of light poles, covered by hides, boughs, bark, or rush mats. In the eastern Subarctic, dome-shaped lodges were common; light poles were driven into the ground, bent forward, and tied together to create a dome framework that could then be covered with hides, boughs, or barks. Smaller versions were used as sweat lodges. Another variation that was equally common in the eastern Subarctic was a ridgepole lodge: a central horizontal pole supported by two A-shaped frames, all covered with hides or bark. At the centre of the lodges would have been a fire and a hearth. Generally, a lodge housed a family, but larger lodges housed a number of families. Larger ridgepole lodges featured a number of fires and an entrance at either end. On short hunting or travelling expeditions, a variety of temporary shelters were built, including lean-tos. (Rogers and Smith 1981, 138)

An important summer activity was fishing in the open water. The installation of traps and weirs was a group enterprise under the direction of a leader who had achieved status and authority. In addition to these traps, a variety of other techniques were used to catch fish, including dragging nets from canoes or from platforms along the shoreline. Much of the summer was devoted to fishing, cutting, and sun-drying or smoke-drying fish for the coming months. In the boreal forest, a number of species were fished, including whitefish, sucker, grayling, pike, and other species.

The summer season also provided a number of edible plant foods, such as blueberries, lowbush cranberries, and rosehips. The berries were placed in birchbark baskets and stored in pits dug into the ground. Though plant products did not provide a significant part of the diet, they were an important supplement. In the west, lichens (genus *Gyrophora*) were often made into a nourishing soup when other foods were in short supply. In southern transitional zones, wild rice and maple sap were gathered seasonally. Plants also figured prominently in the traditional medicines of the indigenous peoples of the Subarctic.

Autumn and Winter

Around mid-September, families left the rivers and lakes for the autumn camps. Those who lived close to the migration routes of the caribou set out to intercept the herds as they moved from the tundra to the treeline. A common method used to hunt the migrating caribou included the "chute and pound." The pound consisted of a circular enclosure of mazes of brush hedges and snares tied to poles or tree stumps. The chutes were two diverging wings that would coax and funnel caribou to the pound. The chutes comprised of brush, poles, or other decoys representing humans set at a distance of 10–20 metres from each other. Wishing to avoid hunters, the caribou moved away from these decoys and were thus herded into a progressively tighter and tighter chute and eventually to the opening of the pound where they would be easily killed by waiting hunters. In other locations, caribou were hunted from canoes as they crossed rivers and streams. (Rogers and Smith 1981, 131–132)

The fall caribou hunt provided valuable hides. Not only were the caribou hides at their best in the autumn, but the caribou were also at their fattest. This is significant, given the great reliance on meat: fat is rich in calories, and it provides many essential nutrients, such as fatty acids, that are essential to a balanced diet. Any surplus of meat was stored for winter use. The caribou flesh was dried—as was fish—and was then pounded to powder and mixed with fat to make pemmican. The pemmican was stored in various containers, notably hide bags or birchbark boxes. These stores could be kept on cache racks out of the reach of bears and other visiting carnivores. (Rogers and Smith 1981, 135)

Far from the caribou migration routes, whitefish were an important source of food for those peoples living deeper in the boreal forest. This species of fish spawns in the fall and moves into shallow waters close to shore or upstream. The congregating fish were taken using dip nets and weirs. Along the St. Lawrence River, eels were similarly fished using weirs.

In the late fall, families returned to their winter camps. The winter dwellings tended to be more substantial. These were usually turf-covered and sometimes semi-subterranean structures. In some Subarctic regions, solid-walled conical wooden lodges were built. The Dene of Northern Alberta, British Columbia, and the territories (the Slavey Dene) had a summer dwelling, which consisted of a conical structure covered with bark, or moose hide. Their winter shelter resembled a low, oblong, log cabin with a pitched roof, covered with spruce boughs. The walls were chinked with moss or cemented with mud and clay. This structure had two doorways, and the fire was placed in the centre, with a hole in the roof letting the smoke escape. (Rogers and Smith 1981, 140)

Quality clothing is essential for survival in severe Subarctic climates, as it was for essential winter activities, such as hunting big game. Generally, it was the women who prepared clothing from hides. Hides were cleaned and scraped.

Most caribou and moose hides were dehaired. Hides were tanned by soaking, scraping, rubbing with brains and grease, and finally by smoking over a fire. The resulting hides would remain supple and could then be cut and sewn into clothing, such as shirts, loincloths, dresses, coats, and parkas. In the eastern Canadian Subarctic, a fur beaver cloak was worn over clothing for warmth, along with a fur hat. To the west, fur coats or parkas were made of caribou or moose hides for extra warmth. Throughout the North American boreal forests, moccasins and leggings were worn: a sock of hare-skin or grass kept feet warm in the moccasins. Clothing was decorated with paint or porcupine quills. With the onset of the fur trade, decorative beads were integrated into indigenous decorative techniques to produce elaborately decorated clothing and moccasins.

During the early months of winter, hunting, fishing, and trapping continued. People fished through the ice, using spears, lures, hooks, and nets. The Metis, for example, used posts and holes cut into the ice to drag nets under the ice. This technique was quite widespread. There are descriptions dating back to the 1770s among the Dene, describing similar fishing strategies. Having cleared the ice of snow using a scoop, an ice chisel tipped with horn was used to bore holes though the ice and gill nets made of willow bast or babiche[4] were threaded under the ice, using a pole and a forked stick. Fishing continued until the ice became too thick and the fish had left for deeper waters. (Rogers and Smith 1981, 136)

In January and February, when food reserves were at their lowest levels, hunting parties went on extended trips. Hunters moved through the forest on snowshoes. These finely made devices consisted of a wooden frame (usually birch), laced with a webbing of woven babiche. Snowshoe styles varied greatly: to the west, snowshoes tended to be long and narrow; while in the east, they tended to be oval in shape. Different types of snowshoes were used according to purpose: the Dene used a narrow snowshoe for breaking and following trails and a wider, longer snowshoe for tracking big-game animals. The weight of a hunter was distributed over the surface area of the snowshoes, and this permitted movement over the surface of light powdery snow. In late winter, moose (or, depending on availability, caribou) were driven into deep snow, where they could not run away from hunters on snowshoes, who speared these large animals floundering in the thick snow. (Rogers and Smith 1981, 138)

In addition to snowshoes, toboggans were used to transport goods over the snow. A toboggan consists of two thin boards secured in place by crossbars. The boards were curved upwards at the front of the toboggan to ensure that the toboggan would not dig into the snow as it was pulled. Like the snowshoe, the toboggan distributed weight over a large surface area, ensuring that it would not

[4] Babiche is a term referring to rawhide strips used for rope, webbing, fishnets, and numerous other tasks. For finer sewing needs, sinew from caribou or moose would have been used.

sink into the snow. Toboggans in the Subarctic were rarely tied to sled dogs: the Subarctic canines were used by hunters, but the dogs were generally too small and the snow too loose and thick for dogs to effectively pull a loaded toboggan.

A variety of animals were hunted: hares, porcupine, spruce goose, and smaller species, as well as the larger ungulates, such as caribou (including woodland caribou), moose, and, in some regions, woodland bison. Bears were occasionally hunted, and they were prized for their fat. However, they were not hunted on a regular basis, as they were generally objects of respect among many of the peoples of the Canadian Subarctic. This parallels the importance of the bear in the Russian North: the Khanty and the Mansy peoples, for example, conducted an annual bear festival with the ritualized killing of a bear. In the North American Subarctic, bears were trapped and killed in deadfalls and snares or simply killed with spears and arrows. In the fall they could be hunted in rich berry patches, where bears would come to fatten before hibernating. In the winter, hunting dogs helped locate bear dens.

Beaver was an important food source in the eastern Subarctic. It not only provided meat, but also a rich fur pelt. This large rodent reproduces quickly and can easily be located by finding its dam. When its ponds were frozen, the beaver’s passageways were blocked. Hunters broke into the lodge, and the beaver had no easy escape.

The indigenous peoples of the Subarctic trapped small animals, too. A variety of snares were used, including the tossing-pole, spring-pole, and stationary snares (see Rogers and Smith 1981, 134). Deadfalls of various sizes were used to hunt a variety of species, including bears as noted. Snares were effective in hunting hare—an important source of meat when big game failed.

Social Organization

The social organization of the peoples of the Subarctic is characterized by mobility, individual autonomy, and reciprocity. Regional groups or bands assembled for seasonal hunting and summer fishing but dispersed into smaller units for most of the year, particularly in the winter. Bands were neither centralized nor tightly defined They were not corporate groups with shifting allegiances over generations, changing the composition of the group. Bands each had a territory that provided all of the resources the group needed to survive; but the territories often overlapped, and neighbouring groups did not contest the use of their territories in times of need.

In the Subarctic, regional bands varied in size from 200 to 400 people. Environmental conditions rarely allowed the entire band to gather for extended periods in one location. Rather, the larger band spread over the larger territory. These smaller groups—hunting groups, or local bands—comprised a few

nuclear families related through primary ties of kinship and marriage: a father and sons, brothers, and brothers-in-law and their families. Nuclear families rarely operated as an independent unit, since a larger grouping was required to provide the necessary labour to ensure the survival of the larger group. The kinship system of most Subarctic peoples was bilateral, with individuals recognizing relatives from both the father's and the mother's kin group. An individual's kindred—all of those individuals considered to be related—provided a flexible group of individuals that could be called upon for assistance. (Rogers and Smith 1981, 141–144)

In general, there was division of labour determined by sex: men hunted and made the weapons, snowshoes, sleds, boats, and other instruments they needed for the hunt; and women, among their other tasks, helped to build shelters, butchered and distributed the animals hunted, prepared hides, sewed clothing, gathered a variety of plants and berries, trapped small mammals, fished, and dried and smoked the meat and fish. Both men and women hauled loads: in the winter, pulling toboggans, and in the summer, hauling packs fixed with a tumpline that went around the head. (See Smith, "Chipewyan," 279 for a description of a division of labour according to sex among the Chipewyan.)

There was a strict egalitarian ethos across the Subarctic. Important group decisions were based on consensus, with the entire group coming to a decision. Individuals could achieve leadership based on skill or demonstrated wisdom or possession of supernatural powers, but the leader was merely the first among equals, as authority could not be imposed. Social control was maintained through gossip, fear of supernatural sanctions, and the need for cooperation. Not only were individuals unable to accumulate power, material goods were shared. Across the North, generosity, sharing, and hospitality were valued: a successful hunter, for example, was expected to share with all. (Rogers and Smith 1981, 144)

Religion and Spiritual Beliefs

The traditional religious and spiritual beliefs of the indigenous peoples of the Subarctic could be characterized as animism: the belief in spirits that inhabit all living things as well as objects and forces. The Cree, for example, called the spirits manitous. These manitous could appear in dreams and grant special powers or protections to an individual. There are historical references to the existence of a Great–Great Spirit, or Kitchi-Kitchi-Manitou, to whom a dog was sacrificed on rare occasion. There is also reference to a Great Spirit (misi-manito), but there is debate as to whether this was a traditional belief or one introduced by the arrival of Christian missionaries. (Smith 1981, 263)

Survival in the Subarctic thus depended upon eating other souls or spirits. To ensure future survival, it was necessary to respect the animals that were

sacrificing themselves to give life to humans. Demonstrating reverence for the animal spirits was central to the spirituality of the indigenous peoples of the Subarctic. A number of ceremonies were conducted after the first animal or fish was caught in a season. There were equally a variety of taboos: among the Naskapi of the eastern Subarctic, beaver bones were not fed to dogs, thereby avoiding an insult to beavers and ensuring beavers could be hunted in the future. As noted, great respect was accorded to the bear throughout the circumpolar North. It was often seen as a “brother” to humans both in Russia and North America. Often when a bear was killed in the North American Subarctic, a communal meal was organized and the heart of the bear was cooked and shared. The Cree would place the skull of a bear in a tree, where it could look over water. Failure to respect taboos and to conduct necessary ceremonies could bring great harm to the community: illness, misfortune, and hunting failures. Offerings were equally made to spirits to appease them: the Chipewyan Prairie First Nation, for example, would scatter tobacco on the water or offer the smoke from a pipe to assuage the spirits of rivers, rapids, and rocks.

Among the Cree, some people obtained great powers from manitous, and they could cure the sick by calling upon the manitous. The shaman also used a variety of herbal remedies in curing the sick and was equally proficient in setting limbs. Such shamanistic practices were common throughout the North, and the term was coined to describe the practices observed in Russia among the Tungus-speaking Even and Evenki. In the North American Subarctic, shamans used sweat baths (i.e., sweat lodges) in healing the sick. As is common in shamanism, the illness was “sucked out” of the sick by the shaman, removing the spirit or spiritual force that was responsible for the illness. At other times, the shaman would retrieve a lost soul and return it to its body. Signs of having a lost soul included listlessness and disparagement. In Alaska, children were thought to be particularly vulnerable to losing their souls because their souls could get caught in thorny berry bushes.

Though shamanism does usually involve healing, it equally involves the harnessing of great spiritual power that could be used to attack others. The Saulteaux of the Lake Winnipeg region hosted shamanistic contests where rival shamans competed for power and authority. Well into the 1950s, shamans would take part in a shaking tent rite. This rite was widespread among the various Algonquian speakers. A cylindrical lodge was erected, and inside it a shaman, bound tightly, sang and drummed to summon spirit helpers. The swaying—the “shaking”—of the tent, the appearance of strange lights, and a host of animal cries signalled the arrival of spirits. While the tent shook, the shaman called upon the spirits to find lost objects or people, to cure the sick, or to counter any sorcery. The shaman emerged from the tent exhausted, dripping with sweat, and untied. The shaman carried out the rite for a negotiated fee. Though shamans played an essential role in the community, they were often feared: their power came from spiritual forces that could be used for evil as well as good, and shaman could turn their power against people. The power of

shamans would remain long after their death, and the burial place of a shaman had to be treated with care, as the soul of the shaman would remain and could cause great harm. (Steinbring 1981, 250–251)

Supernatural forces that could kill humans also inhabited the world. The Dene, for example, feared the “bush man,” a half-man, half-animal entity who attacked lone hunters and ate them. (See Savishinsky and Hara 1981, 319.) The Cree and other Algonquian-speakers lived in fear of the Windigo, a monster that ate humans. Confrontation with a Windigo could lead to a person “becoming Windigo,” a psychological disorder whereby a person would crave human flesh. The condition could be brought about through a shaman’s sorcery. The Cree also believed in *matci manitu*, flame-breathing spirits that flew at night, hunting humans. (Smith 1981, 263)

Even though shamans—both in Siberia and in northern Canada—were renowned for their spiritual powers, others could harness spiritual forces. Individual Cree people, for example, would carry a medicine bundle that would contain objects of great spiritual power (Smith 1981). It was also common throughout the Subarctic to go on a vision quest. Saulteaux adolescent boys travelled to a remote location where they would fast for four days and wait for a vision. The vision came to the young boy in the form of a bird or an animal that represented the boy’s spirit or helper that would stay with the boy throughout his life (Steinbring 1981). Among the Athapaskan speakers of northern Alberta and British Columbia—the Beaver—a young boy on a vision quest gave his life to an animal and he kept tokens of this animal in his medicine bag (Ridington 1981). Though adolescent girls did not venture forth in vision questions, girls could receive unpremeditated visions. Among the Saulteaux, such women could play shamanistic roles, treating the sick. Others could become sorcerers after experiencing such a vision. All could have dreams, which were an important entry into the spiritual world. (Steinbring 1981, 251)

Both song and dance were central to spirituality. Among the Beaver First Nation, each animal species was thought to have its own song, and this was given to the person who sought it. Occasionally, people would come together to sing and dance. A large circle of dancers surrounded a fire and followed the path of the Sun. Men, women, and children danced together, but when they sat around the fire, men sat in the northern half and women sat in the southern half. Young hunters would sit in the eastern section, and older men to the west. Likewise, younger women would be in the east, and older women in the west. (Ridington 1981, 357)

One of the final, and central rites of passage was death. In all Arctic and Subarctic cultures, the soul of a deceased individual was encouraged to move on. In certain cases, it was believed that the soul would be reborn in a newborn child. In other cases, it was believed that the soul would move to another spiritual world. Often, the voyage of the soul in the afterlife involved crossing or

canoeing down a river. Following the death of an individual, there were many taboos concerning the name of the deceased: quite often, it was forbidden to say the name of the deceased.

Student Activity

1. In the Subarctic area nearest you,
   a. how is life regulated by the seasons?
   b. what animals listed in the reading for each season are not present? Where might they live?
   c. was there a shamanistic tradition? What was the shaman's role? What is the shaman's role today?
2. Compare your community to the generalized description of life in the Subarctic, and provide an account of traditional and contemporary life in a Subarctic region of your choice.

Supplementary Readings/Materials

Internet Resources

Bands and nations of Canada's Treaty 8:
http://www.albertasource.ca/treaty8/eng/Peoples_and_Places/Profiles_of_the_Treaty_Makers/Bands_and_Nations/default.htm

Conservation of Arctic Flora and Fauna (CAFF): http://www.caff.is/

Environmental Features of Russia: http://siberian-expedition.de/efr/index.html

Frozen ground maps: http://nsidc.org/fgdc/maps/

Kamchatka Peninsula: http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=10826

Yamalo-Nenets Autonomous Okrug, Russia (includes map):
http://odur.let.rug.nl/~bergmann/russia/regions/rus89yan.htm

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Glossary of Terms

babiche	rawhide strips used for rope, webbing, fishnets, and numerous other tasks
bast	the inner bark of lindens, or other flexible fibrous bark, used as fibre in matting etc.
deadfall	a trap in which a raised weight is made to fall on and kill esp. large game.
ecozone	ecological zone
fen	**1** a tract of low land covered wholly or partially with shallow water or subject to frequent flooding. **2** wet land with alkaline, neutral, or only slightly acid peaty soil.
heat sink	a device or substance for absorbingexcessiveor unwantedheat
lean-to	**1** a usually temporary shelter consisting of an inclined roof supported at one side by trees or posts and covered with canvas, branches, etc. **2** a roof that has a single slope and is supported at its upper end by a wall or building etc.
manitou	(esp. among the Cree and Ojibwa) **1** a good or evil spirit as an object of reverance. **2** something regarded as having supernatural power.
peat	*noun* **1** vegetable matter partly decomposed in wet acid conditions to form a brown deposit like soil, used for fuel, in gardening, etc. **2** a cut piece of this.
ridgepole	**1** the horizontal pole of a long tent. **2** a beam along the ridge of a roof.
shaman	a person regarded as having access to the world of good and evil spirits.
tumpline	a sling for carrying a load on the back, with a strap which passes around the forehead.
weir	an enclosure of stakes and netting set in a stream or river etc., used for trapping fish.

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