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An Environmental History of Canada



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Acknowledgments

THIS BOOK BEGAN in the early 1990s, when I started to rethink Canadian history from an environmental perspective. I developed an undergraduate course in Canadian environmental history and a graduate course in North American environmental history, and I organized a conference on the new field of environmental history. I then began to write this book.

Many people have influenced and assisted me. A special thanks to Elizabeth Jewett for help with the photos. Ben Bradley, Colin Coates, Harriet Friedmann, Richard Hoffman, George Warecki, Alexander Murray, and the Toronto Environmental History group read and commented on earlier versions of several chapters. Thanks to Richard White for his advice about the photos and maps. Thanks to my daughter,

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I am dedicating this book to Carl Berger – my friend, teacher, colleague, and husband. Carl studied the natural world long before there was a field of environmental history. Together, we have bird-watched, gardened, and walked in forests, fields, and deserts. These experiences have influenced me and inform this history.

An Environmental History of Canada

Introduction

North Americans have not yet learned the difference between yield and loot.

— CARL SAUER, GEOGRAPHER, “THEME OF PLANT AND ANIMAL DESTRUCTION IN ECONOMIC HISTORY,” 1938

WHAT IS ENVIRONMENTAL history? More specifically, what is Canadian environmental history? History, in general, is the study of the human past on the planet. But there are many branches of historical inquiry. Political historians analyze policies and the actions of leaders; economic historians examine economic phenomena and institutions and how they have affected history; and social historians use categories such as class, gender, race, and ethnicity to understand the lives of different groups of people. For environmental historians, nature is an agent in human development and social change. These historians focus on the interdependent relationship between people and the natural world, human beings and their environment, and human society and the planet.

Environmental history is a relatively new field that emerged in the 1970s and took on steam in the 1980s; by 2000 historians such as John McNeill were calling attention to the enormous pressure that humans were placing on the planet. Historian Richard Grove (2007, 76) observes that scholars were “increasingly concerned to look back at the

history of global environmental degradation and the impact of capitalism and imperialism on world ecologies.” In North America, influenced in large part by the modern environmental movement, historians began to examine the past to determine how and why the current state of environmental despoliation had occurred. To answer these questions, they had to rethink US and Canadian history.

Environmental history began as an offshoot of intellectual history and is associated with the publication of Samuel Hays’ *Conservation and the Gospel of Efficiency* (1959) and Roderick Nash’s *Wilderness and the American Mind* (1967). Historians of the American West such as Walter Prescott Webb and James Malin recognized the physical environment’s effects on society. Donald Worster’s *Nature’s Economy* (1994), an intellectual history of thinkers’ ideas about nature and ecology, led to his work on the effect of human action on the environment in *Dust Bowl* (2004), a book about the American West in the 1930s. In *Rivers of Empire* (1992), Worster traced the manipulation of rivers to

irrigate western lands, produce wealth, and lay the basis of modern western American society. Historians interested in the roots of modern environmentalism, such as Robert Gottlieb and Adam Rome, examined early “pollution fighters” in the 1960s, the evolving environmental movement, and issues of environmental justice that related the variables of class, gender, and ethnicity to environmental history. Historian Carolyn Merchant, biographer Linda Lear, and others wrote women into environmental history. Shepard Krech III and Richard White examined indigenous people’s attitudes to nature in contrast to those of Europeans.

By the 1980s, environmental history was a vibrant interdisciplinary field. Historians in Canada and the United States experimented by borrowing theories and methods from anthropology, archaeology, historical geography, Aboriginal studies, and various scientific fields. Some drew on science methods to “read” ecological footprints on the land – such as scorch marks in rocks, tree rings, or bones from excavation sites – to reinterpret the past. Others examined how perceptions of the wilderness or the environment had helped to shape, or construct, nature and the landscape. Still others studied the influence of war and government policy on the environment.

The fruit of these lines of inquiry proved original and provocative. For example, William Cronon’s classic study, *Changes in the Land* (1983), about colonial New England, recounted how settlers’ use of the land had differed from that of indigenous peoples, whom settlers marginalized as they transformed the environment. *Ecological Imperialism* (1986), Alfred Crosby’s work

on the Columbian exchange – the massive exchange of ideas, diseases, agricultural goods, and slave labour between the eastern and western hemispheres after 1492 – looked at the theme of indigenous-newcomer contact not from the perspective of imperialism or colonialism but through a lens focused on the environmental consequences of these exchanges. Stephen J. Pyne, in *Fire in America: A Cultural History of Wildland and Rural Fire* (1982), analyzed the relationship between culture and nature through the use of fire, whereas Thomas Dunlap, in *Nature and the English Diaspora* (1999), examined English settlers’ ideas about nature and later conceptions of conservation and ecology. Other environmental historians explored the relationship between the economy and the environment and the economy’s effect on environmental policy and politics. Finally, Martin Melosi and others insisted that environmental history should include the urban environment, and they broadened both environmental history and urban history by examining consumer culture and urban waste and the changing infrastructure of cities and their spatial effect on local communities.

Canadian environmental history was perhaps sparked by Ramsay Cook’s comment in 1990 that early Canadian historians such as W.L. Morton and Arthur Lower had been sensitive to the environment but had not studied it explicitly as a theme (Cook 1990). Harold Innis, a political economist and pioneer in communications studies, for example, had developed the staples thesis to explain the history of Canadian resource development and exploitation, but he did not explore the effect of this development

on the environment. Donald Creighton's Laurentian hypothesis (that Canadian economic and national development derived from the gradual exploitation of key staples such as fur, timber, and wheat) and J.M.S. Careless's metropolitan-hinterland thesis (that large urban communities dominate surrounding territory through economic means) likewise overlooked the effects of historical change on the Canadian landscape. Carl Berger's intellectual history *Science, God and Nature in Victorian Canada*; Suzanne Zeller's *Land of Promise, Promised Land: The Culture of Victorian Science in Canada*, which links landscape to science and technology; and William Waiser's biography of botanist John Macoun, *The Field Naturalist*, are examples of studies that explore the theme of nature but are not environmental histories. Likewise, Canadian historical geographers, influenced by R. Cole Harris, Conrad Heidenreich, and others, concentrated on tracing Canada's geographical evolution over time, as exemplified by the three-volume *Historical Atlas of Canada*. Environmental historian Graeme Wynn suggests that the discipline's prominence perhaps delayed the inception of environmental history in Canada by drawing prospective scholars away from history.

In the 1990s, however, US environmental history began to influence Canadian historians. Several conferences held in Canada showcased existing work by US and Canadian environmental historians and explored new directions for research. At McGill University in Montreal, the Arpents Environmental History Group started a network for environmental historians in 2003. The following year, the American Society for

Environmental History held its first meeting in Canada, in Victoria, British Columbia. These early developments led to financial support from universities and the first appointments in environmental history. The Social Sciences and Humanities Research Council, for instance, began to fund the Network in Canadian History and the Environment (NICHE). This explosion of interest in Canadian environmental history was reflected in scholarly journals. *BC Studies* published an entire issue on the environment in 2004, and in 2007 the American journal *Environmental History* devoted an issue to Canada.

Environmental historians from around the world met in Denmark in 2009 for the First Global Environmental History Conference. Throughout the decade, ecology – the branch of biology that deals with how organisms relate to one another and to their environments – emerged as a lens through which environmental historians could rethink the past. They began to use it as a metaphor and as a model to distinguish their approach from historical geography.

Canadian environmental historians quickly differentiated themselves from their US counterparts. Whereas American environmental history has been shaped by the work of Cronon, Webb, and Malin on the western frontier and by historical studies on conservation, Canadian environmental history has been influenced by Innis's staple thesis, Creighton's Laurentian hypothesis, and Careless's metropolitan-hinterland thesis. Armed with a different national history and historiographical tradition, Canadian environmental historians reassessed these early theories of and approaches to the past,

offered new explanatory frameworks, and focused on Canada's history as a northern nation.

The growing complexity of environmental issues at the end of the twentieth century, including environmental health and climate change, has opened historians' eyes to new subjects and issues, and North American historians took note when European historians urged them to apply more social theory to environmental history. These concerns are reflected in a range of new studies and approaches: from revisionist narratives of Canadian resources development that take into account environmental policy, to studies of the importance of provincial and national parks, to the ideas and backgrounds of leaders in environmental campaigns. The increasing prominence of global environmental issues suggests that Canadian environmental history will only become more important as the twenty-first century progresses.

In a rapidly globalizing world, environmental historians are also examining developments within a comparative or transnational perspective. This research suggests that environmental history may work best on a regional or global scale rather than on a national one. In their introduction to *Ecology and Empire: Environmental History of Settler Societies*, Tom Griffiths and Libby Robin argue (1997, 12) that national histories are limited in that they "need continually to fragment or enlarge the national perspective and to scrutinize and reflect upon the intersections of nature and nation." This book acknowledges this limitation but also recognizes that all Canadians, from students to concerned citizens, need an environmental history of the northern half of North

America. It is true that Canadians are "the other North Americans." But even though Canada's economic and cultural history has become more intertwined with that of the United States, particularly in the second half of the twentieth century, Canada has a different climate, distinctive geographical features such as the Canadian Shield, its own history, a parliamentary system of government and politics, and unique elements such as Crown lands that have affected the exploitation of resources. More importantly, Canada is an immense country that has natural resources such as forests, fish, and water and diverse ecosystems that are increasingly essential to the world.

This book explores how Canada's landscape changed over thousands of years. When glaciers retreated, ending the Ice Age, they left behind a geography that influenced Canada and its history profoundly. This text re-examines well-known subjects in Canadian history – Aboriginal peoples and their first contacts with Europeans, the fur trade, settling the land, the creation of a transportation infrastructure, and the growth of cities – in ways that emphasize the interaction between people and their environment. Today, *sustainable development* is a buzzword for policy makers, but it did not play a large part in Canadian history. Although Aboriginal people lived lives linked intimately to the environment – to plants, animals, and landscapes – they were relegated to reserves after the arrival of European settlers, who sought to conquer the land, not only for survival but also for profit. In the nineteenth century, voters supported politicians and businesses intent on making the nation prosperous and powerful through the

development of agriculture, industry, and resources. *Sustained economic growth*, not sustainable development, has been the driving force in Canadian history. The growth of consumerism in the late twentieth century has only further desensitized Canadians to the natural world, even though we continue to depend upon it for our survival.

Sustained economic growth has been a driving force in history, yet in the past, as in the present, some people questioned whether Canada's bountiful environment was as inexhaustible as the development ethos suggested. In the late nineteenth century, Canadian intellectuals, scientists, naturalists, and civil servants were in the vanguard of the conservation movement. Their belief that exploitation must be balanced by conservation led Canada to adopt early legislation to regulate hunters and resource extractors and to preserve forests, watersheds, and wildlife. Policy makers, however, were motivated as much by commercial gain as they were by a concern for the environment. National parks not only protected nature, they also became sites for multiple activities, including logging, tourism, and recreation, by the late twentieth century.

The 1960s and early 1970s witnessed renewed protests against environmental degradation. In 1962, for instance, Rachel Carson, an American writer, published *Silent Spring* to raise an alarm about the effects of DDT and other chemical pollutants. She found a massive audience of readers in both the United States and Canada. A decade later, a small group of activists set sail from Vancouver, British Columbia, aboard the *Phyllis Cormack* to draw attention to US underground nuclear testing off the coast

of Alaska. These activists, the founders of Greenpeace, helped to foster "a new environmental way of thinking," one that favours human stewardship rather than domination of nature (McNeill 2000, 337). Annual celebrations such as Earth Day and growing awareness of climate change have transformed environmentalism into a mainstream movement. The perplexing issue of how to repair damage to what we now recognize is a fragile planet and forestall a turbulent and threatening future is a growing concern.

Debates about the Kyoto Accord and climate change suggest, however, that the Canadian government's response to modern environmental issues and the enforcement of regulations continue to be lax. Part of the problem is our very disconnection from nature and our over-reliance on and confidence in technology as a solution to problems. As this book shows, hubris is a recurring theme in Canadian history. The collapse of the Newfoundland cod fishery in 1992 is only the most recent example. Quick fixes designed to sustain economic growth rather than preserve nature are no solution. But prosperity, enjoyed far from the crushing poverty of developing countries, makes it difficult for Canadians to appreciate the urgent need to create a sustainable society. The message of conservation articulated early in the twentieth century remains unfulfilled.

Learning new ways to live that leave a lighter human imprint on the environment, developing new energy sources, and reusing resources rather than wasting them are challenges that Canadians and people around the world must meet in the twenty-first century. Because the commercial drive remains

strong, living sustainably will require re-education. This environmental history of Canada brings to light the grave consequences of the development ethos as it

played out throughout Canadian history, not to condemn, but so we can begin to develop strategies to create a liveable, sustainable environment in the future.

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PART 1

Aboriginal Peoples and Settlers

1

Encountering a New Land

Fossil records suggest that in the past 500 million years, there have been five waves of extinction when large numbers of species died out ... most recently, when the dinosaurs disappeared, 65 million years ago. Preeminent scientists believe that humans are currently causing the sixth great extinction in the history of life on Earth.

– DAVID R. BOYD, ENVIRONMENTAL LAWYER, *UNNATURAL LAW*, 2003

THE LAND WE NOW know as Canada evolved over millions of years, and humans have inhabited it for only a fraction of that time. During ice ages, vast sheets of ice and snow covered much of the northern hemisphere. A unique combination of natural forces came together to create land bridges that drew humans to the continent. Climate change influenced the movement and social development of peoples throughout North and South America. Aboriginal peoples, in turn, developed patterns of subsistence living that were finely adapted to local environments and natural resources such as buffalo, elk, deer, and fish. A thousand years ago, European explorers began to encounter the so-called New World for the first time. Over the next eight hundred years, news of the region's riches spread slowly throughout Europe. Speculators, in the form of fishermen, explorers, and fur traders, soon followed. This chapter explores how these long-term developments transformed the

environment and the way in which people – both Aboriginal and European – perceived it.

The Land before People

In the not-so-distant past, North America was a different place than it is today. But then, as now, a combination of geography, ecology, geology, climate change, and accident shaped the continent's turbulent history. During the Mesozoic era (245–65 million years ago), the environment evolved in the absence of humans, and dinosaurs roamed a land that we would not recognize today. The Rocky Mountains did not yet exist, a huge seaway divided the continent in half, and the climate was warm and lush. Small shrubs grew where today we find towering pines, and magnolia, Asian ginkgo, and palm trees dotted Alberta's Badlands.

The Mesozoic era came to an end around 65 million years ago when an asteroid hit what is today known as the Yucatan Peninsula.

GLOBAL WARMING IN HISTORICAL PERSPECTIVE

In the distant past, as in the present, the smallest shift in ocean currents, the earth's tilt, the movement of the earth's crust, or gases in the atmosphere could cause massive climate change. Climatologists have identified what they call the Medieval Warm Period (or

Little Climatic Optimum), which stretched from 900 to 1300 CE, and the Little Ice Age (1300-1870), which was characterized by wetter, cooler temperatures. Over the past two centuries, a number of scientists – Joseph Fourier (in 1824), Svante Arrhenius (in 1894), and Guy

Stewart Callendar (in 1938) – have warned that increased carbon dioxide emissions would cause temperatures to rise. Today, although we are due for another cooling period, greenhouse gases are instead heating up the planet. The Keeling Curve, a graph that shows

ongoing change in the concentration of carbon dioxide in the atmosphere as measured at Mauna Loa Observatory, shows that the global carbon dioxide level was 315 parts per million (ppm) in 1958, 365 ppm in 1997, and 392 ppm in 2011.

Hot rock shot into the atmosphere and started huge fires. The resulting smokescreen destroyed about 80 percent of all species in North America. Most of what remained was rock and clay, but tiny fern spores – “the species that won back the continent” – survived inside rocks (Flannery 2001) as did herbs and palms located in remote, sheltered areas that acted as refuges for them. The Arctic Circle, located far from the blast, was one protective region. There was no ice at the pole, and flora – conifers, small flowering plants, and deciduous trees – began to move slowly southward in a gradual greening process.

Those animal species that survived extinction included reptiles such as lizards and snakes that burrowed in the land and amphibians such as frogs and toads that could survive for a time on dead matter in aquatic ecosystems. The water itself protected these creatures from the asteroid's intense heat. But it was mammals that shaped the post-asteroid order. Following the extinction of their most dangerous predators, the dinosaurs, the mammals that survived grew larger and more varied, and each new species filled a vacuum in the new ecosystem.

Over millions of years, climate change and continental drift – the gradual movement, formation, or re-formation of the continents relative to one another described by the theory of plate tectonics – influenced the

distribution of flora and fauna, resources such as fossil fuels and minerals, and the movement of animals. Sixty million years ago, the movement of the earth's crust also joined the two North American continental halves together. Continental drift caused North America to join with Greenland and Asia at various times. New animal species such as huge flightless birds and amphibians arrived from both the east and the west. The mammals included primitive creatures that resembled hippos, elephants, lions, and horses. Fourteen million years after the dinosaurs disappeared, the continent was once again repopulated, this time with giant mammals that evolved quickly as they hunted in tropical forests. When temperatures cooled, biodiversity decreased and species immigration slowed, despite the presence of land bridges. Cooling caused rainforests to give way to deciduous trees, and drier weather promoted the development of grasslands in open spaces. Most large mammal species disappeared or migrated to South America, which joined North America about 30 million years ago.

During the Pleistocene epoch (2.9 million to 12,000 years ago), waves of glaciation shaped the North American environment. Scholars continue to debate the causes of the Ice Age, but causative variables included changes in ocean currents and the tilt of the planet, the movement of the earth's crust,



and volcanic activity. The last intense freeze occurred between approximately 35,000 and 12,000 years ago, a period known as the Wisconsin Glacial Episode. What is now Canada was covered in massive ice sheets (the Alaskan, the Laurentide in the northern interior, and the Cordilleran along the Pacific Coast) that were several kilometres deep. The pressure of advancing and retreating ice pushed enormous rocks hundreds of kilometres, gouged out holes for lakes, built up rock for mountains, and deposited huge quantities of sediment. It transformed the geology, landscape, vegetation, and water systems of North America.

During the Pleistocene epoch, a land bridge about 1,400 kilometres wide formed across the Bering Strait. Known as Beringia, the landmass stretched from present-day Yukon through Alaska to northeast Asia (see Figure 1.1). Beringia was a productive ecosystem that supported a diverse mosaic of plants, shrubs, and grasslands and large populations of grazing animals and their predators. The area experienced about twenty freezes and thaws during the Pleistocene era that periodically supported the movement of animals over the land bridge. Woolly mammoths (see Figure 1.2), giant ground sloths, muskoxen, camels, broad-fronted moose, and giant beaver crossed into North America pursued by saber-toothed cats, giant short-faced bears, and wolves.



FIGURE 1.1 A cold habitat with a diverse, productive ecosystem, Beringia supported large populations of many species, as well as the humans who hunted them.

The Arrival of Humans

Humans were late to reach the Americas, the last continents they inhabited. Ice sheets blocked movement into North America from Beringia until around 13000 BCE (before the Common Era), when parts of the Northwest Pacific Coast began to deglaciate. Global warming encouraged the growth of vegetation in what is now Canada. Meltwater channels formed, and lichens, mosses, and small shrubs began to sprout on moraines, masses of rocks and sediment carried down by glaciers. Over time, corridors running

FIGURE 1.2 Woolly mammoths crossing Beringia into North America. Archaeologists discovered the bones of these ancient creatures, along with other animals, in Yukon.

Courtesy of the SFU Museum of Archaeology and Ethnology

from north to south formed, large glacial lakes took shape, and boreal forest began to evolve. The process, however, was slow. North America was not fully deglaciated until around 5000 BCE.

Most scientists believe modern humans (*Homo sapiens*), in pursuit of game, began entering North America via the Bering land bridge. Although no human bones have been found in Canada to support this hypothesis, it has been borne out by the 1993 discovery of a projectile point in Alaska. Carbon dating of archaeological evidence – fluted points, microblades, burins, and flakes – at the Bluefish Caves in northeastern Yukon also suggests that small hunting groups sporadically occupied the area between 25,000 and 12,000 years ago. One theory is that the Clovis people, named for their fluted stone spear points, crossed Beringia and then spread southward. As warming temperatures melted the ice sheets, the sea eventually rose to cover the Bering land bridge around 11000 BCE. It is possible that people continued to come to North America by navigating the narrow channel in boats or rafts and that the Bering land bridge was not the only entry point for early people.

When the Clovis hunters reached the Great Plains, they encountered vast numbers of enormous mammals, which they hunted for food and material resources. Their arrival coincided with the extinction of ancient animals, including the mammoth and mastodon. Although some scholars attribute these animals' extinction to global warming, which disrupted plant and animal ecosystems and dried up watering places, others, such as geochronologist Paul Martin, liken the development to a blitzkrieg. According to

this theory, our first ancestors devised long Clovis points to slaughter large game efficiently. Following the mass killing and extinction of many mammal species, however, the Clovis people disappeared within three hundred years. The recent discovery of nanodiamonds in the boundary sediment layer suggests, however, that a medium-sized comet might have hit Earth about 13,000 years ago, killing species and temporarily reversing the effects of global warming.

The Development of Cultural Areas

The Clovis people were of a single stock, but dental and genetic evidence reveals that they became more differentiated as they spread throughout North America and developed into three successor peoples – the Amerinds, the Na-Dené, and the Aleut-Inuit peoples – who used smaller spear points to hunt. Early peoples in North America had to adapt to a dramatically changing environment. Plants disappeared or changed, and new migrant animals filled niches left by extinctions. Bison, elk, moose, and grizzly bear became fauna distinct to North America and the predecessors of contemporary wildlife. A warmer climate fostered the emergence of distinct regions: grasses in the interior; lichen woodland as far northwest as the Mackenzie River Valley; a vast boreal forest dominated by balsam, jack pine, birch, and white pine; and a forest of elm, hemlock, maple, and beech in the cool temperate area of the Great Lakes–St. Lawrence region. By 3000 BCE, when climate change slowed, humans enjoyed a more stable environment. Vegetation existed farther north than today, but as temperatures cooled after 2000 BCE,

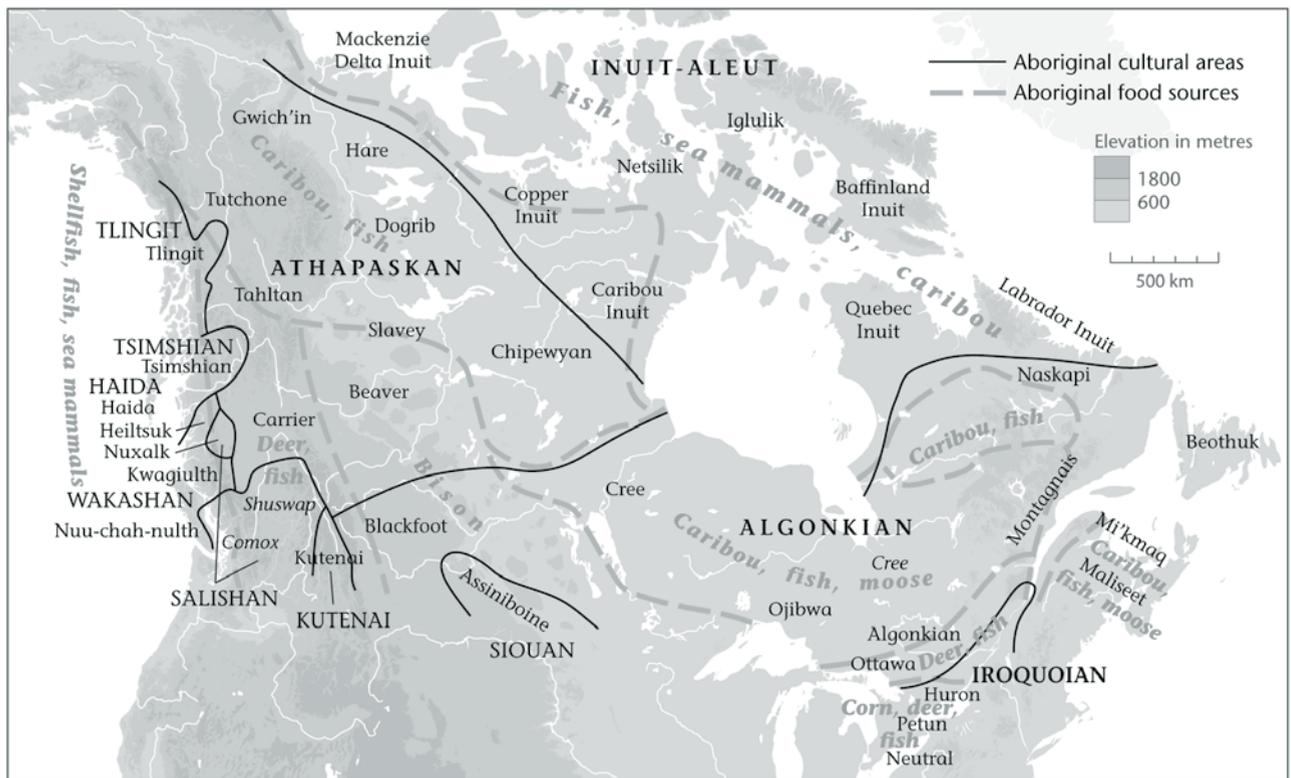


FIGURE 1.3 Indigenous peoples in northern North America spoke different languages and occupied approximately these areas at the time of European contact.

the treeline retreated southward by as much as three hundred kilometres in places. By 500 BCE, environmental conditions were similar to those experienced by Europeans when they first arrived in North America in 1000 CE.

The changing environment influenced the movement of generations of people across northern North America. Their adaptations to new regions – the Arctic, tundra, woodlands, and coastal regions – created different societies and cultures that shared certain characteristics (see Figure 1.3). The climate remained cool, and the environment could not sustain many people. Although warmer areas such as the Pacific Interior and the St. Lawrence Valley supported farming, the majority of people were hunter-gatherers

who relied on relatively simple technology and dispersed, seasonal, and unpredictable food supplies. Despite a harsh environment, they were self-sufficient, relied on their intimate knowledge of the land and resources, and developed patterns of subsistence living finely adapted to local environments. They also developed trade networks within and among tribes.

The peoples of the Pacific Coast and Interior were primarily fishers who relied on spears, hooks, nets, and weirs. Some followed the salmon along the Fraser, Thompson, and upper Columbia Rivers and lived in temporary huts covered in rush mats. More sedentary peoples spent most of the year in pit houses, made of logs and covered in sod, along riverbanks. They feasted, participated

in religious and healing ceremonies, and told stories featuring characters such as Coyote, the trickster.

Northwest Coast peoples consumed enormous amounts of fish but sustained healthy fisheries by holding ceremonies to delay fishing until the salmon spawned. Such rituals were a mark of respect for the “salmon people,” whom they believed were much like themselves but lived in houses and villages under the water. Animals and people were essentially the same and could transfer from one type of life form to another. When the salmon voluntarily left their villages and offered themselves to humans, all groups celebrated their coming. After the feast, they carefully returned the fish bones to the water so the salmon would return once again. Northwest Coast peoples likewise talked to and thanked the animals they hunted and the cedar trees they stripped of bark for clothing and baskets.

Although the peoples of the Pacific Northwest were constantly on the move during their seasonal hunting and fishing activities, they developed more settled and hierarchical communities as their food supplies became more abundant. Because they enjoyed a moderate climate by Canadian standards, their art and construction techniques flourished, and their populations expanded. They used trees from old-growth forests to make large cedar houses, and their regionally distinctive wooden carvings of ravens, thunderbirds, and other powerful creatures reflected their artistic and spiritual sensibilities.

Over the Rocky Mountains to the east, the Plains Indians likewise developed “increasingly effective subsistence strategies over the millennia” (Ray 1996, 13). Huge

herds of buffalo, or bison, which ranged across parkland or grasslands, depending on the position of vegetative communities, dominated these hunters’ lives. Plains Indians moved on a seasonal basis in pursuit of animals, and their dependency on the buffalo meant they had to manipulate the environment to enhance its ability to support herds. Early peoples followed the buffalo on foot and used dogs and travois to carry supplies and carcasses. The men used projectile points on spears, darts (atlatls), and then bows and arrows to hunt. As they became more familiar with the buffalos’ migration patterns, they began to lure them into enclosures in winter or to stampede them off cliffs in summer. They used the same kill sites, such as Head-Smashed-In-Buffalo-Jump in southern Alberta, for thousands of years.

The centrality of the buffalo to the lives of Plains Indians influenced their cosmology, customs, and spirituality. Plains Indians viewed the buffalo as the provider, as a link between the creator and humans. The Sun Dance, a ritual in preparation for the hunt, revolved around the central image of the buffalo. Plains Indians also constructed large medicine wheels on hilltops throughout the northern Prairies for easier communication with the spirits. Composed of circles with lines of stones radiating out like spokes, medicine wheels were used to attract rain and buffalo and, possibly, to mark burial sites. During hunts, Plains Indians made offerings to the buffalo spirits because they believed the boundaries between people and animals were blurred. Following the hunt, they often used every part of the animal: the meat for food, the bones for tools, the hides

and fur for clothing, the skins for making mobile lodgings (teepees), buffalo chips for cooking fuel, bladders for receptacles, and sinews for bow strings and cordage.

In the Eastern Woodlands and Subarctic, Aboriginal peoples can be grouped into two language families: Algonkian or Iroquoian. The Algonkians hunted, fished, and gathered berries and nuts for sustenance. In this harsh climate, they roamed incessantly in search of animals for food and clothing. When Europeans first made contact with the Algonkians on the Atlantic coast at the end of the fifteenth century, these nomadic forest peoples had occupied the same places for generations. From Yukon to Labrador, various groups hunted within territorial boundaries that remained fluid. They assumed that all phenomena, including the dead and animals, had spirit power. The hunt was a spiritual quest in which the hunter's soul spirit would lead him to game that had agreed to be slain. The hunters' sense of kinship with game animals suffused Algonkian culture. Their respect for nature and taboos controlled and moderated human behaviour. Hunters were occasionally wasteful, but their culture often inhibited them from overexploiting wildlife. Their mobile lifestyle also led them to adopt the canoe; light, portable housing; and a few easy-to-carry utensils. This way of life limited their possessions and stores of food, and it probably helped keep their population levels low. Their patterns of living were well suited to their environment.

The Iroquoian "forest" peoples were likewise diverse but "inhabited a single ecological zone of deciduous forest with coniferous admixture." Their material culture and societies resulted from a noteworthy "correlation

THE HORSE AND THE TRANSFORMATION OF PLAINS SOCIETIES

The Blackfoot Confederacy, or Niits'tapi, composed of tribes that inhabit present-day Montana and southern Alberta, first encountered the horse around 1730. Spanish explorers brought the horse to the New World by ship in the sixteenth century, and the animals eventually spread north. The Blackfoot traded some to their neighbours, the Cree

and Assiniboine, by 1750. The horse transformed the buffalo hunt and, with it, Plains Indians. As the kill became more efficient, tribes became wealthier and enjoyed a higher standard of living. Wealth and power, combined with increased mobility, led to more intertribal warfare and the development of warrior societies.

between ecological, linguistic, and cultural boundaries" (Trigger 1969, 6, 14). The Wenro, Erie, Neutral, and Petun peoples lived north of the Great Lakes, where they grew and traded tobacco. The powerful Huron Confederacy (called Wendat, meaning "islanders" or "peninsula dwellers") lived near Penetanguishene on Lake Huron. The confederacy consisted of four nations – People of the Bear, People of the Rocks, the Cord People, and the Deer People – names all drawn from the natural world.

The Huron were distinctive in that they lived on the northern limits of fertile land that could be cultivated, and they practised intensive agriculture. They used the slash-and-burn method to clear areas of forests and weeds. They then intercropped, or planted together, the "three sisters" – beans, corn, and squash – on large, well-spaced mounds. Archaeological evidence of ridged, furrowed, and raised fields suggests that they used various techniques to reduce frost hazards. They also kept gardens for emergency seed supplies in case crops failed. After ten to twelve years of cultivation, they abandoned

DORSET ARTWORK: REFLECTIONS OF A HARSH ENVIRONMENT

The Dorset people's artwork, like Inuit art in general, reflects a culture shaped by a harsh, cruel environment, one in which animals were the main source of survival. Their artwork consisted of small sculptures of humans, animals, and birds carved in bone, antler, ivory, soapstone, and wood. These figures had a magical or

religious significance, and the Dorset possibly used them as amulets to ward off evil spirits or in shamanic rituals. Carvers often depicted the largest predator in their world, the polar bear. Their sculptures of bears with slit throats filled with red ochre and ivory slivers perhaps played a key role in hunting rituals.

exhausted fields to lie fallow. The Huron learned to make various tuberous plants edible, they tapped maple trees for sap to convert to sugar, they wove mats and baskets from reeds, and they turned clay into cooking pots. Because their more sedentary lifestyle and food crops sustained more people, the Huron were more numerous than the northern Algonkian hunter-gatherer societies with whom they traded. They numbered about thirty thousand people at the time of contact with Europeans.

In the Arctic, Aboriginal peoples moved through a harsh environment on a seasonal basis to hunt seal, caribou, muskox, and small birds and animals. The Dorset, a Paleo-Eskimo culture that lived along the coast of Labrador and Newfoundland, developed sturdy hide kayaks for water travel, sleds for snow travel, and made harpoons and small tools out of stone, bone, wood, and ivory. Their rectangular soapstone lamps burned oil from whale blubber for heat and light. The Dorset people's precarious existence depended on hunting seal and walrus in the spring and summer and fishing for Arctic

char in the summer. Even with small numbers, people sometimes starved during the scarce winter months. In the summer, they lived in tents made of seal or muskox skins. In the winter, they built sod and stone huts in the ground. When they hunted seals, they probably built igloos on sea ice. After living for about five centuries in the Arctic, some Dorset communities disappeared as a result of environmental distress, brought on by a cooling period between 550 BCE and 400 CE. When temperatures rose again after 400 CE, they enjoyed a more predictable environment and a surge of creativity in the arts.

Around 1000 CE, the Thule, ancestors of the modern Inuit, moved rapidly across the Arctic from the west and displaced or absorbed the Dorset. Warmer temperatures and changing ice conditions provided the Thule with an opportunity to move eastward through sea ice passages in pursuit of sea mammals, including whales, seals, and walrus. The Thule also had more advanced technology and better weaponry than the Dorset, including projectile-point tools and spears. Thule hunters travelled on water in skin boats and used dog sleds and bows and arrows to hunt caribou on land. Their decorative art was functional and less spiritual than Dorset creations.

The Beothuk, who inhabited Newfoundland at the time of contact, likewise eked out a living in their inhospitable environment. With ingenuity and inventiveness, they used available resources to build half-moon-shaped birch bark canoes, complex conical dwellings called *mamateeks*, and fences to hunt caribou. They covered the *mamateeks* with birch bark and, in winter, insulated them with dried moss and banked

them with soil. The Beothuk population was small but viable. The island's limited resources, however, could not accommodate other peoples, such as the Mi'kmaq. The situation led to competition and hostility between the two peoples.

Aboriginal Perceptions of and Approaches to the Land

Aboriginal peoples adapted to new environments out of necessity. They also modified their environments to suit their needs. They marked the land with rocks, paths, and settlements. They used fire for multiple purposes: for heat and light; to clear fields and campsites; as a weapon; for communication; to enhance the production of certain foods and medicinal plants; to attract, hunt, and drive wildlife; and to improve grazing for horses after they acquired them. By setting fire to prairie grasslands, for example, Aboriginal people created and maintained fire-succession ecosystems. They kept back forests and enhanced soils. In forested areas, they created edge habitats that attracted deer and combatted insect infestations. These practices, which sometimes escaped their control, nevertheless reflected their ecological knowledge of the land and their ability to manipulate it.

Aboriginal people's integration with the environment and knowledge of the natural world led them to view their surroundings from both material and spiritual perspectives. Besides living off the land, Aboriginal peoples developed cultural customs, religious ideas, and myths and taboos to live safely and to better understand their place in the world. They inhabited a vast, dark, and silent

THE THULE: MOVERS OF BOULDERS

The Thule used rocks for many purposes: to hold down tents and boats, to identify winter villages, to build cairns for their dead, to protect meat supplies, and to build dams or weirs to intercept runs of Arctic char. They also built *inuksuit* (plural of *inukshuk*), rocks piled to resemble

humans, to mark a featureless snow-covered landscape or to channel caribou toward waiting hunters. By moving boulders, the Thule altered the landscape and left numerous traces of their presence for modern archaeologists.

land occupied by other species. Spirits, they believed, inhabited these species and had varying degrees of power. Aboriginal people sought to live harmoniously with the spirits by making offerings to them, along with beseeching prayers and gifts. They prayed to ward off diseases caused by evil spirits and to ensure their own safety when crossing dangerous river passages.

Aboriginal peoples' distinctive customs and art expressed their fear of the environment and respect for its animate and inanimate inhabitants. Feasts, ceremonies, traditions, and stories, including creation narratives, were part of indigenous peoples' spiritual lives and religious ideas. They reflected their relationship with nature and helped to integrate their societies. Their animistic religions – religions in which all things, animate or inanimate, have souls or spirits – did not distinguish between human, plant, and animal. They respected and placated them all. Although Aboriginal people hunted animals, they shared their environment with them and developed rituals to show their respect. Within their worldview, human beings did not hold a special place

in the cosmos – they were but one element among many in an integrated environment. This worldview meant accommodation with other species and with nature. Pre-contact farming and hunter-gatherer societies understood their environment. They had to if they hoped to maintain their culture, a food supply, and a manageable population level. They were people who “adapted to their environment and worked out a code of behaviour for living compatibly with their world” (Miller 1989, 13).

Early Explorers: The Norse

Unlike self-sufficient Aboriginal peoples, who lived in sync with their surroundings, the first Europeans to reach the North American continent were traders who came to exploit the new land. Land hunger, trade, and the desire for wealth and fame – if necessary, through piracy and war – motivated the Norse to move overseas. A land shortage in Scandinavia placed limits on crops and animal husbandry. Their agriculture-based economy needed new pastures and grass for grazing animals, and global warming in the centuries between 800 and 1200 CE facilitated their explorations.

The Norse landed in what is today the Arctic and Newfoundland and Labrador in 1000 CE. They stayed a relatively short time, but they traded on return voyages. And although they had only a slight environmental impact on the land, their brief stay in the so-called New World resulted in the earliest meeting of Aboriginal peoples (called Skraelings by the Norse) and Europeans. Unlike European explorations of centuries later, which resulted in permanent settle-

ments, the incursion of the Norse ended when Aboriginal people drove them out. While in the New World, the Norse depended on their own technology – including their magnificent ships, weapons, and iron tools – to maintain themselves, acquire resources, and complete trading expeditions. But they were not self-sufficient, and they could not survive without Aboriginal allies to teach them the geography, assist them in acquiring trade goods, and instruct them in skills to live in such a harsh environment. Aboriginal peoples retained control of their environment.

Leif Eiriksson, son of Eirik the Red, is credited with the first landings in North America. He landed on and named three areas: Helluland, the “land of flat stones,” on the east coast of Baffin Island; Markland, the “land of forests and timber,” in central Labrador; and Vinland, “a warm and bountiful land,” most likely the northern tip of Newfoundland, the site of the Norse village L’Anse aux Meadows. Indigenous peoples had used the site around the village for hunting and fishing for thousands of years. When Leif’s brother Thorvald encountered indigenous people, probably Dorset or Thule, during the second expedition to Vinland in 1004, he provoked hostilities and died from an arrow wound. His crew retreated, wintered at Leifsbudir, a settlement founded by Leif, and sailed home in the spring.

Other Norse traders and explorers likewise encountered Aboriginal peoples, such as the early Algonkians (Point Revenge and Beothuk peoples), as they sailed through icy waters along the windy eastern shores of Baffin Island, Newfoundland, and Labrador. Thorfinn Karlsefni, of Iceland, reached

Helluland and Markland between 1003 and 1015 and explored other areas, which he named. He and his crew acquired trade items, such as polar bear pelts, walrus tusks, narwhal horns, and eider ducks. Later, on a trip to Europe, Karlsefni sold his ship's figurehead, carved of maple from Vinland, to a man from Bremen. It was possibly the first crafted import from North America to Europe. Karlsefni, too, tried to colonize Vinland, but he also encountered Aboriginal people, probably Beothuk. He bartered either milk or red cloth for furs. An outbreak of hostilities, however, caused the Norse to abandon their outpost after only a few years. They returned to their more established colonies in Greenland, settled by the Danes in 986, and made no further colonization efforts in North America. Brief trips (perhaps to Labrador or Baffin Island) for timber and furs ceased after cooler temperatures and ice killed expedition members from Iceland in 1347.

Throughout the period of Norse explorations, Aboriginal peoples and the Norse encountered each other only sporadically. The Thule's encounters with the Norse in both Greenland and in what would become Canada suggest a relationship defined by occasional trade and conflict. Trade was mutually beneficial: the Thule wanted iron, and the Norse wanted animal hides and ivory. By the thirteenth century, the Thule had meteoric iron and had acquired smelted iron, which they valued for tools and tips on weapons. These most northern hunter-gatherers traded occasionally with the Norse but were not interested in lengthy connections. They drove the Norse out of the continent. Perhaps the contact was too brief.

Perhaps the climate, on the eve of the Little Ice Age, which would overtake Europe and North America from around 1300 to 1870, was too cool. It seems the Norse were not carriers of European pathogens. For whatever reason, Aboriginal people were not exposed to European diseases. Consequently, they did not suffer the destabilization and depopulation that followed the Columbian exchange.

European Expansionism

The early Norse period of exploration was largely forgotten in Europe. Although the Norse maintained settlements in Greenland until about the mid-fifteenth century, they abandoned their sailing route to North America when increasing ice in the Atlantic made sailing too dangerous. With the exception of annual voyages across the Atlantic by European fishermen, European exploration did not begin in earnest until the late fifteenth century, when Christopher Columbus's voyage across the Atlantic Ocean in 1492 and John Cabot's rediscovery of North America in 1497 led to general awareness of the American continents.

These so-called discoveries coincided in western Europe with the emergence of imperialism, the policy of extending a nation's authority by territorial acquisition or economic and political hegemony over other nations. The process of imperial expansion led European states with advanced technologies to invade remote lands occupied by migratory farmers and hunter-gatherers, whom they displaced. These incursions were premised on notions of superiority, conquest, and environmental exploitation for commercial gain. Unlike Aboriginal peoples,

Europeans believed, as both Greek philosophy and Christianity taught them, that their minds and spirit made them superior to nature, which was for human benefit, if only it could be mastered. Although Aboriginal people admired aspects of European technology that could make their lives easier, Europeans held the myopic view that indigenous people were inferior beings that lacked both society and culture. Upon hearing of the New World, Europeans instinctively looked for exploitable goods. They started with fish and then moved to furs. The history of Canada, consequently, is partly a story of resources exploitation.

The Early Fisheries

At about the same time that the Norse abandoned their settlements in Greenland, Spanish, Portuguese, Italian, French, and English sailors entered the North Atlantic in search of fish. Although knowledge of western lands, in general, had faded in Europe and had been consigned to saga texts, it had lived on in the stories and knowledge of ordinary fishermen. With the Norse settle-

ments, fishermen pursued whales, fished for cod, and traded European goods for falcons, polar bears, and ivory along the coast. Years after the Norse retreated, European fishers continued to arrive annually to harvest cod, seals, and whales. The Catholic Church had stimulated a burgeoning market for Atlantic cod (*Gadus morhua*) by declaring fish a suitable food for meatless religious holy days. When the building of larger ships enabled travel for longer distances, the cod fishery expanded. Despite high casualty rates in the frigid northern seas, more European fishers sent out ships, which returned with enormous hauls. John Cabot's successful voyage to Newfoundland in 1497 further publicized the immense marine resources of the northwest Atlantic.

The profitable Grand Banks fishery, located southeast of Newfoundland on the North American continental shelf, supplied cod to Europe and drove further exploration. The fishery was an open-access resource, and nations mingled fairly amicably, except in times of war. By the late sixteenth century, hundreds of fishing and whaling fleets with thousands of men set sail for the Grand

BASQUE FISHERMAN AND OVERFISHING IN THE GRAND BANKS

Basques were among the earliest fishermen to arrive in Newfoundland. They hunted whales and found the Grand Banks bountiful with cod. They enjoyed friendly relations with some coastal peoples, such as the Montagnais, but poor relations with the Inuit. The Basques sometimes traded European

goods for seal skins, and they developed a pidgin dialect to communicate with indigenous peoples. When explorer John Cabot wrote about the abundance of cod in the region, he noted that Aboriginal peoples called it *baccalaos*. This was not an Aboriginal word but rather a derivation of *bakalaua*,

a Euskara or Basque word. In other words, Basque fishermen had established a presence in the New World long before Cabot's visit. In the sixteenth century, Basque whalers affected the environment by contributing to the precipitous decline in bowhead whales, the extinction of right whales and

southern walrus, and the depletion of seabird colonies. They harvested enormous amounts of cod. Given that both whales and cod feed on crustacean zooplankton, it is possible that smaller whale populations actually increased cod stocks around the end of the sixteenth century.

Banks each year. In 1578, for example, English merchant Anthony Parkhurst estimated that there were nearly 400 ships in Newfoundland – 150 were French, 100 Spanish (Basque), 50 Portuguese, 30 to 50 English, and 20 to 30 Basque. They processed an estimated 75,000 tonnes of fish annually. The trade required unprecedented skills and large amounts of capital and labour. Europeans adapted their fishing practices to meet the harsh conditions of the new environment. Each country acquired favourite fishing spots and used various fishing tools and methods in their fisheries. Fishermen developed fish oil and wet cod for northern European markets and dried cod for markets in southern Europe and the West Indies. Merchants managed fishers, and governments, in turn, managed merchants. The fur trade began as part of the fishery but later developed into a separate industry.

Codfish stocks remained abundant in the Newfoundland fishery despite prolonged colder temperatures during the Little Ice Age and fluctuations in catches. It is difficult to estimate the size of catches, but they were greater than any catch made by the small Inuit population, and advances in gear technology increased catch levels over time. The catch level remained sustainable throughout the seventeenth and eighteenth centuries, probably because of relatively low-tech fishing methods. Much like their modern counterparts, early fishermen reacted to reduced catches by either moving to new fishing areas or changing their methods. Biologists have recently suggested that continued, intense, unregulated fishing depleted stocks and might have encouraged cod

migration. Because the capture of large fish influences the rate of reproduction among cod, even the early fisheries' "moderate" catches would have altered the age, gender composition, and overall size of Atlantic cod.

Although the fishermen were only sojourners in the New World, they explored and made their mark on the coastal regions of Newfoundland. Fishing crews landed on Terra Nova to rest, to gather fresh water and wood, and to dry fish on the shores. Migratory fishers in the dry fisheries needed cabins, wharves, flakes to dry fish, washing cages, and sometimes oil vats. They stripped trees from old-growth boreal forests, took more wood than they needed, left much to rot, and sometimes started forest fires, which destroyed flora and fauna. The environmental damage was limited, however, because they did not move too far inland. But by 1620 the forests were noticeably less dense.

European fishers had a more permanent effect on those Aboriginal people who had to compete with them for summer fishing sites. Some made special trading or raiding trips to obtain goods from fishermen. Fishermen traded iron, cloth, and arms for furs, which returned to Europe with the large cod catches. By the late sixteenth century, European traders were meeting the Mi'kmaq regularly at summer rendezvous sites to barter, and the Mi'kmaq were changing their hunting patterns to engage in this trade. The Beothuk, in contrast, lost their summer fishing sites to the Europeans and came to depend more and more on the interior for resources. Meagre resources, infectious diseases, and violent encounters with Europeans drove them to extinction.

European Explorers Chart a New Environment

The impact of European expansion was limited to a small geographical area during the era of the early fisheries, a situation that changed once European rulers turned their sights on the New World. Competitive expansionary politics in Europe, scientific curiosity, technological developments in navigation (compasses, quadrants, and astrolabes), and larger ships spurred explorers westward. Cartographers recorded new discoveries on maps as the European world became more connected by trade and commerce. From the beginning, Europeans viewed the New World as a bountiful land. In particular, they sought a shorter sea passage to Asia – the famed Northwest Passage – and new resources to exploit. Their acquisitiveness extended to scientific inquiries that facilitated imperial aims.

The Age of Exploration began in northern North America in 1497, when Britain sponsored Genoese merchant John Cabot's (Giovanni Caboto) search for the Northwest Passage to Asia. The exact place of Cabot's landing is unknown, but the possibilities range from the Strait of Belle Isle to Cape Breton. This first recorded European landing since the Norse led to a better cartographic understanding of what Europeans soon realized was a large continent.

Perhaps because early explorers such as Cabot and Jacques Cartier did not venture far beyond coastlines, their early impressions were of an unending, abundant "wilderness," an earthly paradise or pristine environment inhabited by only a few people. This notion of abundance persisted and set the stage for

wasteful behaviour by fur traders, loggers, and settlers. While sailing near the Grand Banks in 1497, for example, Cabot noted that the fish were so abundant they slowed the boat. In 1501, Gaspar Corte-Real, the Portuguese explorer, recorded that he saw plentiful game – caribou, foxes, sables, otters, wolves, and tigers (probably black leopards) – in Newfoundland. In 1534, when Cartier, exploring for France, approached what he called the Isle of Birds (Funk Island) off the coast of Newfoundland, he described a land where bears swam out to feed on birds and where gannets, murres, and puffins nested. The great auk, the original "penguin," now extinct, he observed, was as large as a goose, "being black and white with a beak like a crow's." Its small wings rendered it incapable of flying (Cook 1993, xvii). The crew killed over a thousand murres and great auks. Sir Humphrey Gilbert, an English explorer who landed in Newfoundland in 1583, wrote that nature made up for the terrible cold weather "with incredible quantity and no less variety of all kinds of fish in the sea and fresh waters, as trouts, salmons and other fish to us unknown; also cod which alone draweth many nations thither." He observed that the many creatures "may induce us to glorify the magnificent God, who hath superabundantly replenished the earth with creatures serving *for the use of man*, though man hath not used the fifth part of same" (Payne 1900, 30).

Despite their initial fear of the unknown and wild animals, explorers evaluated the new environment for exploitable commodities. When Italian explorer Giovanni da Verrazano explored the East Coast from Newfoundland to the Carolinas for the French Crown in 1524, he searched the forests for suitable wood

and examined rocks for minerals. Both Cabot and Corte-Real commented that the region's tall trees would be ideal for ships' masts. Old-growth forests, now almost beyond our comprehension, were a new, valuable source of wood because timber in Europe was becoming a scarce commodity. When Cartier abandoned his settlement on the St. Lawrence and returned to France in 1542, he took with him pyrites and quartz that he thought were gold and diamonds. As Martin Frobisher sailed through the eastern Arctic in 1576 in search of the Northwest Passage, he collected 203 tonnes of mineral samples, which later proved worthless. Although members of several expeditions met Aboriginal people who wanted to trade furs, the trade did not begin in earnest until fashion trends in Europe increased demand for fur.

Although the New World in general was viewed as bountiful, explorers described northern regions in less flattering terms. Although Verrazano, reminded of Vergil's *Arcady*, referred to southern regions as Arcadia, Cartier described Labrador's barren coast as the "land God gave to Cain." A member of Frobisher's expedition remarked, "In place of odiferous and fragrant smells of sweet gums and pleasant notes of musical birds, which other countries in more temperate zones do yield, we tasted the most boisterous Boreal blasts mixed with snow and hail in the months of June and July, nothing inferior to our intemperate winter" (Honour 1975, 16). The comment is one of the earliest recorded complaints about Canada's weather. Because imports from the north – cod, pelts, and wood – were not as enticing as gold from Spanish conquests or spices from the East Indies, the French and British Crowns did

not encourage permanent settlements until changing markets made Canada a valuable source of raw materials.

First Contacts

Europeans' entry into the New World overturned thousands of years of Aboriginal predominance in only a few hundred years. First contact, the first meeting of two cultures, was a long process in Canada that took centuries as explorers and fur traders charted the new environment. These first encounters, described by Europeans as "discoveries," began in 1498, when Cabot bartered a pair of Venetian earrings and a sword with Labrador Algonkians and gave netting needles to Inuit. The first recorded encounter on the Pacific Coast occurred nearly three hundred years later, in 1774, when the Spanish navigator Juan Perez exchanged clothes, beads, and knives for sea otter skins from the Haida. Four years later, James Cook spotted the West Coast from aboard the *Resolution* and discovered that Russian fur-trading companies had hunted sea otter and walrus in the region for years. He sailed past the Strait of Juan de Fuca to Nootka Sound, where men in huge canoes greeted him and traded fine sea otter skins for a few nails. His crew then headed north to the limits of the North American coast in the Arctic in search of an opening into the continent. First contacts ended in 1910 when the Copper Inuit met explorer Vilhjalmur Stefansson near Victoria Island in the Arctic.

Explorers' accounts of first contacts reflect their cultural bias, which influenced how they viewed the landscape and the people who inhabited it. Explorers proclaimed their

FIGURE 1.4 “Cartier Plants a Cross at Gaspé 1534”: Symbols of possession, such as Cartier’s fifty-foot wooden cross, justified European expansion but made Aboriginal people hostile or suspicious of European encroachments on their environment.

Charles W. Jefferys, illustrator,
The Picture Gallery of Canadian History (Toronto: Ryerson, 1950),
1:73



THE MYTH OF DISCOVERY, HISTORY, AND ENVIRONMENTAL HISTORY

The idea that Europeans had discovered or found an empty new continent justified their desire to conquer it. Until recently, historians upheld this myth of discovery by estimating, incorrectly, that the Aboriginal population at first contact had been low. New, scientific methods have raised estimates

substantially. It is now estimated that 60 to 100 million lived in North and South America combined and that 4 to 11 million people lived in North America alone. The indigenous population of northern North America was relatively sparse, about 500,000 people, and lacked cities, as Europeans understood

them, but Canada was, nevertheless, a land inhabited by diverse peoples who had complex material cultures and spiritual beliefs, people who manipulated their environment with fire and by hunting, cultivating, harvesting, and gathering food. This misconception about population numbers made contact a

momentous process because it justified Europeans’ aggressive intrusion into the new environment. Environmental historians continue to view contact as important, but they examine it from the perspective of how imperialism and colonialism affected the peoples and landscape of the New World.

“discoveries” with symbols of possession – such as Cabot’s English flags and Cartier’s fifty-foot wooden cross with a French coat of arms – and claimed territory on behalf of their sovereigns without regard for Aboriginal peoples (see Figure 1.4). Cartier saw no reason to ask permission to explore or establish settlements. He, like most Europeans, believed that Aboriginal people had wasted the land by not rendering it productive. In another kind of possession, he and other explorers gave European names to flora, fauna, and places, without a care that they already had Aboriginal names.

Contact, however, was a momentous two-way process of discovery and acculturation. Both cultures had only a rudimentary understanding of the world’s geography, were vulnerable to food scarcity, and were fearful of their uncertain environments. Europeans had more advanced technology, but unlike indigenous peoples, they had poor personal hygiene and a poor understanding of medicine. Many Europeans had grown up in crowded, filthy cities and showed signs of ill health and poor physical development. By comparison, Aboriginal people were physically strong and healthy.

Whereas written European accounts of first contacts predominated in traditional historical narratives, oral accounts passed from generation to generation among Aboriginal people. In 1633, a young Montagnais who lived along the St. Lawrence related his grandmother’s story of seeing French ships for the first time. The Montagnais thought the “floating islands” were inhabited by supernatural spirits and mistook the sails for clouds and the cannon discharges for thunder. During other first contacts, Aboriginal

people likewise treated Europeans who appeared at the “edge of the water, woods, plains, or desert” as powerful spirits or shamans (Axtell 1992, 26, 35-37). And they interpreted European technology as having extraordinary spiritual power. They examined cloth, metal goods, compasses, and books with fascination. At first, they responded most positively to trinkets such as glass beads, which they buried with their dead because they associated them with natural materials that brought physical, spiritual, and social well-being.

Aboriginal peoples welcomed the newcomers by giving their boats the best anchorages. They carried Cartier ashore so he would not get wet, seated guests on skins or mats, and entertained them with speeches, dancing, singing, and games. Aboriginal people recognized that these encounters with Europeans might have serious consequences and tried to assimilate the “aliens” into their society to ensure peace. In the east, they smoked the calumet pipe with their visitors because tobacco was sacred and lifted their prayers to heaven. Across the land, they offered marriages and the adoption of children, perhaps because they sensed that the newcomers’ power could be a double-edged sword. Europeans at first depended on Aboriginal people for information about the environment. They engaged them as guides, translators, and provisioners and were careful not to offend for fear of being abandoned in the woods or attacked. Aboriginal people had the upper hand in the relationship, as indicated by European efforts to learn their languages. But as Europeans learned more, they became more dominant, and unlike the Norse, they kept coming.



FIGURE 1.5 Hudson's Bay Company canoe manned by voyageurs passing a waterfall

Frances Anne Hopkins, artist, 1869, Library and Archives Canada, Frances Anne Hopkins fonds, C-002771

The Columbian Exchange

Environmental transformation and cultural change began as soon as the peoples from the two hemispheres met. As historian William Cronon notes, two human communities confronted each other for the first time, and two sets of ecological relationships came to inhabit one world. The massive exchange of ideas, diseases, and agricultural goods and the intermingling of North American and European biota – animal and plant life – that followed first contacts quickly shattered the relationship between Aboriginal peoples and their environment.

The Columbian exchange was an uneven exchange. Europeans affected the New World more than Aboriginal peoples influenced the Old. Cartier made notes on edible fruits and nuts and took slips of trees and seeds to France for the king's garden at Fontainebleu. Most expeditions had naturalists. In 1792, for example, Archibald Menzies, a surgeon-botanist, arrived on the West Coast with British explorer George Vancouver. He was the first European to describe, catalogue, and collect West Coast trees, plants, and seeds, which he took to England for his mentor,

Joseph Banks, the director of the Royal Gardens at Kew, who had been on Cook's first voyage. In the 1820s, James Douglas, an explorer and naturalist, sent plants, including the Sitka spruce, to Britain. Europeans gained corn, potatoes, and tobacco from the New World and absorbed indigenous peoples' knowledge about plants into European botany and medicine.

The exchange of knowledge and new plants and crops went both ways. Samuel de Champlain, who founded New France and Quebec City in 1608, encouraged the growth of French crops such as wheat and barley in his colony along the St. Lawrence. They did well in the fertile, previously untilled soil. When settlers and missionaries migrated, they carried seeds and brought domesticated animals, such as cattle and pigs, previously unknown to Aboriginal people. Ships not only carried explorers and settlers, they also carried weeds, insects, and diseases that ran rampant and transformed the ecological systems of the New World and the health of Aboriginal people.

European diseases caused drastic declines in indigenous populations – in some communities, only 10 percent of people

survived – and assisted European occupation and conquest. Pre-contact Aboriginal societies had by no means been disease-free, but because Aboriginal people lived in small mobile groups and in a cool climate free of domesticated animals, they were relatively safe. Archaeological findings indicate that some undernourished peoples suffered from endemic pathologies – diseases restricted to certain areas or populations – but the effects of such diseases were insignificant compared to Old World pathogens, against which indigenous peoples lacked antibodies. When Jesuit priests brought measles to the Huron in 1636 and smallpox in 1640, the epidemics cut the Huron population in half within a few years. Drastic population declines unhinged and destabilized Aboriginal societies. They caused starvation, conflict, and the merger of different groups when survivors adopted refugees and orphans. Territories were cleared of people, cleared land reverted to woods, and wildlife increased. Newcomers moved in, only to start the process all over again.

Historians tend to view the Columbian exchange negatively, as a form of biological imperialism. In the 1930s, geographer Carl Sauer lamented the extensive biological changes brought on by contact between what he called the ecological islands of Asia, Africa, Europe, and the Americas. More recently, historian William H. McNeill has argued that the unification of the planet inaugurated by Columbus either damaged or destroyed local forms of life, human and nonhuman, and made possible political conquest and settlement (McNeill 1976). Alfred Crosby, who coined the term *Columbian exchange*, writes of the “cataclysmic loss

DISEASES IN THE NEW WORLD

The spread of diseases – including smallpox, cholera, measles, influenza, and tuberculosis – from Europeans to Aboriginal peoples was an ongoing process that accompanied, if not preceded, European expansion throughout the continent. Between 1760 and 1820, for example, fur traders introduced diseases to the

Plains Indians. The smallpox epidemic of 1781 killed at least a third of almost every band. Between 1819 and 1839, measles reduced the Cree from 3,000 to 1,600 people, and smallpox spread among the Assiniboine. A smallpox epidemic in 1862-63 reduced the population of the Queen Charlotte Islands by almost 90 percent.

of Native life from imported diseases” and “the extinction of more species of life forms in the last 400 years than the usual processes of evolution might kill off in a million” years. The result? “A more impoverished genetic pool” (Crosby 1994, 180). Such pessimism is understandable, given the plight of indigenous peoples and the downward trajectory of the planet’s environmental health to the present. But the interaction between ecology and empire is a complex historical process that defies simplistic interpretations. The results of the Columbian exchange were not simply destructive. The New World’s ecosystems proved to be resilient and dynamic. Pre-contact Aboriginal societies were viable and sustainable, but so too were postcontact European settler societies. In some cases, Europeans’ drive for wealth and expansion led to the productive management of resources, improved living standards, and increased population numbers.

The Competition for Furs

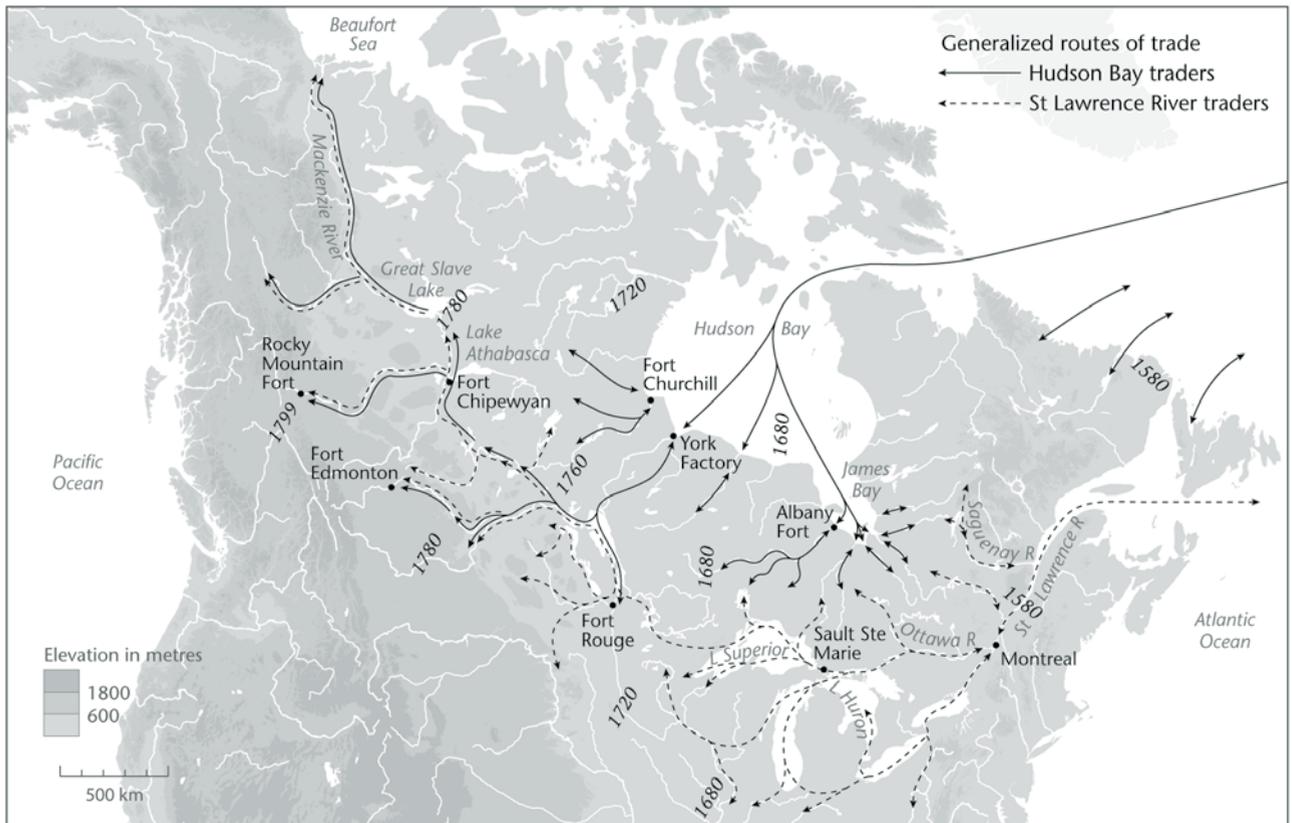
When Europeans encountered the New World, they not only brought new diseases

and flora and fauna, they also “thrust commercialized human predation across the North Atlantic Ocean. Commercial hunting proved to be the most lucrative way to exploit the northernmost regions of the Americas” (Richards 2005, 463). The trade in furs – sea otter, beaver, buffalo – depended on long-term, shifting alliances between French and English traders and Aboriginal peoples that transformed the environment by depleting wildlife, hastening the spread of disease, disrupting ecosystems, and marginalizing indigenous peoples. The fur trade began casually on the Atlantic Coast around 1580, when European fishers and whalers traded goods for furs. It quickly developed into an enormous separate industry fuelled by European fashions, particularly an insatiable demand for hats made from felted beaver fur. Hunters depleted beaver populations in Europe and Russia and turned to North America as an opportune new source for the fur. By 1750, beaver pelts amounted to about 40 percent of all skins sent abroad from North America.

Competition for furs and the exhaustion of beaver fields heightened imperial rivalries between France and England and sparked further exploration of the continent. The territorial reach of the trade quickly exceeded the limits of settlement. Encouraged by traders, Aboriginal hunters pursued beaver in the Maritimes, up the St. Lawrence, along eastern interior rivers such as the Saguenay, St. Maurice, and Ottawa, through the Great Lakes, and beyond the forested areas of the Canadian Shield onto the Great Plains. The fur trade eventually extended over the Rocky Mountains to the Pacific Coast and north into the Athabasca region (see Figure 1.6).

When furs brought to France by fishermen began to turn a reliable profit, the Crown set its sights on establishing an overseas empire and a large-scale fur trade, which would operate from a base in the Gulf of St. Lawrence. Champlain, following Cartier’s route, surveyed the area between 1603 and 1635 and chose the location for permanent settlements. Meanwhile, the British were busy founding the populous and prosperous Thirteen Colonies on the Atlantic seaboard to the south and searching for the Northwest Passage in the North. In 1610, explorer Henry Hudson discovered a passage into the interior – Hudson Bay – to rival the St. Lawrence River. Growing imperial rivalry led the British to establish the Hudson’s Bay Company (HBC) in 1670 and fur-trading posts on both Hudson and James Bays. Over the next century, the French competed effectively with the British by expanding the trade westward along the continent’s northern rivers to the Great Lakes and beyond. Wars between France and England and their Aboriginal allies resulted in the Iroquois’ destruction of Huronia in 1648; the British expulsion of the French Acadians from present-day Nova Scotia, New Brunswick, and Prince Edward Island; and the Conquest of New France in 1763.

After the Conquest, French traders founded the North West Company (NWC) in Montreal and resumed the spatial expansion of the trade. Between 1774 and 1821, when the HBC gained a monopoly over the trade, French traders built 351 posts, the HBC 250. When the United States gained independence from Britain in 1776, the British lost trade in the American West and, in response, expanded the fur trade north into



the Subarctic and west to the Pacific Coast. Peter Pond, American fur trader and a founder of the North West Company, reached the Athabasca country by land in 1778. The following decade, Aboriginal guides led Scottish fur trader Alexander Mackenzie through the interior, north to Great Slave Lake, and up what would be named the Mackenzie River to the Beaufort Sea. On behalf of the North West Company, Mackenzie evaluated the river systems for use as fur trade routes to the Pacific. In 1793, Aboriginal guides led him to the Pacific Ocean, completing the European penetration of northern North America. Simon Fraser built the first fur trade post west of the Rockies in 1805.

The expansion of the trade had an environmental impact that extended far beyond the exhaustion of beaver populations. The expanding trade required infrastructure such as forts and trading posts, ports for York boats on Hudson Bay, and roads that reshaped the landscape. By the late 1700s, the St. Lawrence fur trade's long supply lines included roads built around portages on the Ottawa River, a canal at Sault Ste. Marie, ships on Lake Superior, and supply bases farther west. Fur trade expansion intensified conflict among Aboriginal hunters and between the French and British, which meant more fortified posts and garrisons. Various Aboriginal groups competed for middleman status. European traders depended on middlemen to retrieve

FIGURE 1.6 Major fur trade routes. Competition between the British and French led fur traders to develop different routes through the interior. Settlements both preceded and emerged to service the trade.

furs from interior tribes in exchange for European goods. Middlemen then delivered the pelts to the posts in exchange for more European goods. The trading companies took sides to secure fur trade routes and to maintain cooperation from Aboriginal people, who guided traders, hunted, trapped, and prepared furs. Conflict among Aboriginal groups resulted in more aggressive hunting and more efficient depletion of resources. Wars between Aboriginal groups became more deadly after traders introduced firearms.

Spatial expansion, imperial rivalry, and war marked the fur trade as it opened up the interior and revealed its main waterways and major geographical regions. The notion of abundance promulgated by explorers persisted. The partners of trading companies maintained a rapacious view of the natural world and a sense of entitlement in relation to their Aboriginal partners, whom they pressured to overharvest wildlife. Many voyageurs, the ordinary men who transported furs, did not want to control the landscape, but they served those who did. The voyageurs were mobile people who believed in nonaccumulation. In this sense, they were similar to Aboriginal hunter-gatherers, but they worked on contract for European commercial companies intent on profit through plunder.

The Fur Trade's Impact on Aboriginal People

Because the fur trade turned fur-bearing animals into commodities, Aboriginal people's approach to the natural world changed radically as they participated in it.

As they moved toward commercial hunting, power shifted in favour of Europeans, just as the physical location of Aboriginal groups themselves shifted. Tribes and nations adapted to their role in the trade by changing their spatial distribution. Declining game resources in forested areas and lethal diseases forced Aboriginal people away from Hudson Bay. The Assiniboine and Cree, who once occupied the Eastern Woodlands, pushed west onto the Great Plains. They became buffalo hunters who acquired horses from the Blackfoot and guns from traders.

The fur trade was "perhaps the single most important conduit for contact" and changed Aboriginal peoples' behaviour, hunting practices, and relationship to the environment (Richards 2005, 474). European markets and imperial rivalries drove the trade, but Aboriginal peoples' desire for European goods was persistent, cumulative, and in the case of guns and alcohol, devastating. In the early years, when furs could be obtained without difficulty, trade goods made Aboriginal peoples' lives easier. They could exploit the French-English rivalry to receive gifts and better-quality goods suitable to the northern climate and conditions. As Aboriginal people became dependent on European goods, however, some forgot the old ways. The Montagnais were among the first nations to stop making pottery or cooking in bark containers. It was easier to acquire European goods "in exchange for skins which cost them almost nothing" (Denys 1908 [1672], 442). The Upland Assiniboine and Cree came to value guns so highly and became "so accustomed to using them that they had forgotten how to use bows and arrows as early as 1716" (Ray 1974, 72).

The purpose of hunting changed, and new patterns of living replaced self-sufficient subsistence lifestyles. For example, before 1760, Aboriginal people in the West lived in three distinct habitats – the woodlands, parkland borders, and the grasslands. They followed animals into the parkland in the winter and onto the grasslands in the summer. Their ability to exploit all three zones gave them “a great deal of ecological flexibility,” which allowed them to adjust to changing conditions (Ray 1996, 46). This flexibility was important because the availability of resources fluctuated with periodic outbreaks of disease and short-term changes in climate or rainfall. Hunters lost this ability when they ceased their seasonal food quests at traditional sites and adopted the rhythms of the fur trade, which were shaped by market demand for specific furs.

The fur trade companies did not, as a rule, encourage Aboriginal people to practise conservation of wildlife. They simply moved when animals had been depleted in a region. The Hudson’s Bay Company even had hunters decimate all wildlife in areas where there might be competition for furs. In the Northwest, when wildlife populations declined, the company did attempt to introduce conservation measures for economic reasons. The policy failed, however, partly because prestige and pensions depended on the numbers of furs officials brought in. Traders therefore judged their short-term interests to be more important than conservation. These measures also came too late for Aboriginal trappers. Some expressed concern about killing methods and the scope of the hunt, but they were dependent on the company for food and wages and often in debt to the companies.

Increased commercial hunting and more efficient weapons such as repeating rifles acquired from Europeans changed the culture of hunting among Aboriginal people and probably affected the traditional spiritual relationship between Aboriginal people and wildlife. Whether Aboriginal people were conservationists or wasteful before contact is a matter of debate. Historian Shepard Krech III believes Aboriginal North Americans had ecological knowledge of the environment, which helped them manipulate it. They expressed their kinship with other species through “narratives, songs, poems, parables, performances, rituals, and material objects” (Krech 1999, 211). But such knowledge was cultural rather than ecological in a modern sense. Aboriginal peoples’ behaviour varied depending on the circumstances and could be either conservationist or wasteful. Before contact, for instance, Plains Indians were known to use only parts of the buffalo, rather than the whole animal, if it was undernourished or if its flesh was dry. And buffalo jumps, the pre-contact practice of running buffalo over cliffs, killed hundreds of animals at a time. The fur trade, by making Aboriginal people dependent on the trade, fundamentally altered their circumstances.

Wildlife Depletion

The fur trade depleted North American wildlife. Modern biologists, using historical records, estimate that traders and middlemen slaughtered millions of animals. The trade put the greatest pressure on the North American beaver, which became “prey to one of the longest sustained hunts for a single species in world history” (Richards 2005, 467).

Beaver live in deciduous forests, and Canada's forests were extensive. Estimates of the pre-contact beaver population in North America range from 10 to 100 million. Although beaver are prolific – reproducing two to five kits each year and taking two and a half years to reach maturity – they are vulnerable to hunters because they tend to stay in one place and do not hibernate. Hunters killed approximately 286,000 per year, and diseases (such as an epidemic in 1800 among western beaver) killed off the remainder nearly to extinction.

As the fur trade moved from east to west, it left behind ecosystems altered beyond recognition. Beavers, nature's hydraulic engineers, create dams, ponds, meadows, and useful ecosystems for other wildlife. Beaver dams shape environments by ensuring water supplies and stabilizing stream flows. When beaver populations declined, their dams broke, changing surrounding landscapes and destroying the habitat of other wildlife species. Beaver numbers did not begin to rise until after the 1840s, when Europeans switched from felt to silk hats and when market demand shifted to other furs, such as marten, fox, and muskrat.

Provisioning the fur trade also led to the depletion of other fur-bearing animals. The

HBC hired Homeguard Cree to provision its posts. These contract hunters provided traders with moose, caribou, deer, rabbits, and geese. Traders themselves hunted and fished for wildlife to supply their posts and sustain them on journeys. The HBC's policy of self-sufficiency helped reduce its overhead costs, but it depleted species that fell outside of commercial trade. For instance, it is estimated that traders and provisioners at one post could kill up to two hundred partridges a day. In 1709-10, eighty company men at one post, over one winter, consumed ninety thousand partridges, twenty-five thousand hares, thousands of geese, and fish and deer. These numbers seem high, but traders were engaged in heavy work. A single man could consume between six and twelve pounds of meat per day, and posts often fed guests and Aboriginal visitors.

The extermination and disappearance of the buffalo in the United States and Canada remains a grim narrative in the history of wildlife. A number of factors contributed to overhunting. Plains Indians cultures centred on the buffalo hunt, and the introduction of the horse and firearms only made the hunt more efficient. A market for buffalo robes began to develop in the 1830s when other fur-bearing animals had been depleted.

THE SWAN TRADE

The Hudson's Bay Company did not restrict its business to fur-bearing animals. It marketed swan skins to the European garment industry and sold swan and goose feathers for the

production of quill pens. Overhunting contributed to the decline of trumpeter and tundra swans in North America. Between three thousand and five thousand swans were shot

annually, to the point where "the swan flight into James Bay had almost disappeared by 1783-85" and swans became scarce in the interior (Houston, Houston, and Reeves 2003, 189-98).

Buffalo hides were used for robes and as a source of leather for industrial belts. To acquire trade goods such as guns, Plains Indians hunted more buffalo. The Hudson's Bay Company, which realized robes were being traded south of the border, raised their prices and actively encouraged the buffalo robe trade to keep American traders south of the forty-ninth parallel. Once Plains Indians became enmeshed in trade, it is estimated that they began to harvest buffalo at about twice the rate they would have for subsistence.

The Metis, people of mixed European-Aboriginal descent and the offspring of the trade, were searching for a way to support themselves as the fur trade dwindled. Buffalo hunts became an important aspect of Metis social organization, identity, and lifestyle. The Metis also began to take on a middleman position, buying robes and meat for pemmican from Plains Indians and selling them to the HBC or American companies. In 1840 alone, they drove 1,210 Red River carts, each loaded with a nine-hundred-pound load, to Minneapolis.

Overhunting by American hunters and sportsmen and by Aboriginal and Metis hunters, combined with the US army's policy of exterminating buffalo to starve Plains Indians into submission, pushed buffalo to the brink of extinction by the late 1870s. Prior to contact, it is estimated that 60 million buffalo roamed North America in two vast herds, one northern, one southern. By 1890, there were fewer than one hundred.

With the buffalo gone, many realized that the land could no longer support the Plains Indians' traditional way of life. In 1871, Plains

Cree chiefs asked the HBC's chief factor, W.J. Christie, about the Canadian government's intentions. The chiefs wanted to know what the transfer of the HBC lands to the new nation of Canada in 1870 meant for them. The numbered treaties, which were negotiated between 1871 and 1876, extinguished Aboriginal claims to the grasslands, parklands, and woodlands of the Canadian Prairies. Marginalized on reserves with poor diets, many Plains Indians died. About one-sixth of the Blackfoot in Canada perished between 1879 and 1881. Others suffered the effects of disease, displacement, and dispossession. These developments were the direct result of the spatial expansion of the fur trade and the depletion of animals.

THE PERIOD OF European exploration, Aboriginal-European contact, and the Columbian exchange initiated a process of enormous environmental and cultural change that was as significant as the movement of plants, wildlife, and people before the Ice Age and after its conclusion, when people started residing in North America. The environment was transformed as people's perceptions of it changed. The fur trade slaughtered millions of animals and destroyed ecosystems to line the pockets of merchants and provide Europeans with warm, durable, and fashionable clothing. Although western European consumers benefitted, Aboriginal peoples were left with little to sustain them when the trade contracted and when political and economic developments ushered in a new wave of settlers.

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