The geography of western Canada has played a great role in the history of its people. By the beginning of the nineteenth century, the prairie had been home to the Assiniboin, Cree, Sarcee, and Blackfoot for more than a thousand years. The North American bison numbered 60 million, and the prairie was covered with a variety of grasses—many now extinct. In the Western Mountains and on the Pacific Coast, the Native peoples made the forest their home, using its wood to build their homes, boats, and totems—even to make clothes and utensils. A mild climate lessened the struggle for survival and encouraged the development of a complex social life.

**Métis protest.** When the Scottish Selkirk settlers came to the Red River Valley area in 1811, many Métis were alarmed. They balked when the settlement leader tried to stop them from selling pemmican to the North West Company. As a result, the NWC and the Métis started to harass the settlers, hoping they would leave. Here, two members of a Métis family discuss their plan of action.

**Mighty bison.** Both the Plains peoples and the Métis hunted bison, which numbered more than 60 million until the mid-nineteenth century. The systematic slaughter of the bison by the Canadian and American governments, and the building of the Canadian Pacific Railway, forever disrupted the herds. Bison now remain as a protected species in parks such as Elk Island National Park, Alberta.

Into this milieu came the Europeans—as fur traders and, later, as permanent settlers. In present-day Manitoba, the French fur traders married into Native families, forming a unique culture—the Métis. Métis culture dominated the Red River Valley area until the arrival of hundreds of Scottish settlers in 1811.
Policing the Northwest. The Canadian government established the North West Mounted Police in 1873. The force was created to police an area the government considered to be unstable. During the early part of the nineteenth century, unscrupulous fur traders made the Northwest notorious for violence and alcohol.

In 1860, a new wave of Upper Canada immigrants came to Red River, contributing to rising tensions. The climax of these conflicts was the Red River Rebellion, led by Louis Riel, and the creation of the province of Manitoba and the North-West Territories.

Meanwhile, British Columbia was undergoing its own changes. Two gold rushes—one along the Fraser River, and one in the Cariboo region—caused wild population fluctuations as immigrants from the US, Britain, Europe, and China poured into the area. As fast as some people came, they left, or so it seemed. Economic woes forced the union of the colony of Vancouver Island and British Columbia into the new colony of British Columbia, which joined Confederation in 1871. Then, things began to look up. Vancouver became the terminus for the Canadian Pacific Railway, and the province started to diversify its economic base.

As the century progressed, the Canadian government worked hard to open up the West for settlement. Between 1870 and 1877, under the leadership of John A. Macdonald, it concluded seven treaties with the western Native peoples so that “immigrants could come and fill up the country,” as one government official put it.

Western settlement and protective tariffs for farmers were just two of Macdonald’s ideas for Canada. The third was perhaps the most ambitious—the building of a transcontinental railway to link east and west. This was the future Canadian Pacific Railway. The CPR required the labour of tens of thousands of workers, including 17,000 Chinese immigrants, who laboured in the difficult terrain of British Columbia. Completed in 1885, the railway became a political tool for the Canadian government to finally quash Louis Riel during the Northwest Rebellion of 1885.

Bitter disappointment. Tens of thousands of Chinese immigrants came to British Columbia to help build the railway. They often toiled without knowing that the cost of their supplies and room and board was being deducted from their wages.
CHAPTER OUTCOMES

In this chapter you will examine the geography of western Canada. By the end of the chapter, you will

- identify and understand the major themes of geography
- identify and understand the different physical and natural regions of western Canada
- read and interpret maps, climographs, and technical illustrations
- describe the interactions of physical and cultural factors in the environment
- evaluate the impact of human actions on the environment
Introduction

Although you may not be aware of it, you experience geography every day. Geography is about location—where people live on the Earth. But geography also embraces many other aspects of your life. The weather, the economy, and even the sports you play are all shaped by geography.

Consider the following Canadian newspaper headlines:

- Death of local pulp mill town in BC
- Local tree war spreads to Europe
- Migration to BC slows
- Warm seas ruining BC fishery
- Recyclables one-third of landfill
- Toxins found in bodies of harbour seals

You probably noticed that these headlines are extremely timely. But did you know that they also relate to the broad area of study known as “geography”? Geography explores much about human behaviour—how humans react with their environment, and how they occupy and exploit the physical environment.

When the Royal Geographic Society was founded in 1830 in London, England, its goal was to promote an “important and entertaining branch of knowledge—geography.” Like the founders of the Royal Geographic Society, modern geographers want to unlock the mysteries of the Earth. However, they are less interested in exploring unknown places than they are in understanding the “why” and “how” of the physical world. Geography brings together many fields of study: it draws on a wide range of subjects, such as climate, geology, hydrology, economics, and biology. It looks for spatial patterns on Earth in order to understand how humans live.

In this chapter, you will explore the geography of western Canada and how human activity changed the ecology of the prairies. For thousands of years, the prairies were home to many aboriginal nations. European settlement, which began by the 1860s, was the driving force of change. The aboriginal peoples saw that European settlement would change their world forever and fought against it. You will read more about the political resistance to settlement in the next chapter. By examining the geography of the region in this chapter, you will be able to link these two factors in your appreciation of western Canada’s history.

Figure 3–1 European settlement changed the face of the prairies. In this painting of the Plains Indians hunting bison, the prairie grasses are shown in their natural state. What is your image of the prairie today?
Places have a location. Many people think that geography is simply about finding places on a globe or map. While modern geographers would scoff at this as a definition, location nonetheless is the first step in the process of geography.

All places can be located in precise terms, in other words, a place has a position on the globe and a specific relationship to other places. For example, Winnipeg is located at 49 degrees north latitude and 97 degrees west longitude, and it is 650 kilometres away from Moose Jaw, and 550 kilometres away from Regina.

However, location also has significance, and this is even more important for geographic study. It is more important for geographers to know that Winnipeg is located in western Canada, is the geographic centre of North America and the historic gateway to the prairies from eastern Canada, and that it functions as Manitoba’s economic, administrative, and transportation centre. You can reach Winnipeg by travelling from the east or the west along the Trans-Canada Highway. And if you lived in Minnesota, in the United States, you could drive to Winnipeg in the space of an afternoon.

Geography begins with the posing of questions and the gathering of information. What is a place like? How is it similar to, or different from, another place? Geographers use five organizing principles to help them gather, organize, and analyze their information:

- Places have a location.
- Places have physical and cultural characteristics.
- Places change.
- Places interact with other places.
- Places are in regions.

**Figure 3-2** Winnipeg, Manitoba
Where (Exactly) Are You?

It’s 5:30 p.m.
You’re at the mall.
You’ve spotted the perfect shoes.
You’ve just realized that your bank card’s sitting on your dresser at home.
Phone home with the news, and the response is pretty much guaranteed: “Where ARE you?”

Now, thanks to the Global Positioning System (GPS) you can state your latitudinal and longitudinal coordinates with amazing accuracy, give or take a few metres. The GPS is a new technology that it is being used by researchers and map-makers to pinpoint exact locations.

All you need is a GPS receiver, which looks like a cell phone. The GPS receiver picks up radio signals from twenty-four US Department of Defense satellites orbiting 17 600 kilometers above the Earth. Equipped with four highly accurate atomic clocks, the satellites continuously transmit their positions, time signals, and other data. The GPS receiver compares the positions of three satellites and the length of time it took the signals to reach it. In this way, it calculates your exact position on Earth. GPS calculations are based on the same system of triangulation that was used by Canada’s early map-makers, but the new technology eliminates the back-breaking work.

The US military introduced GPS technology in 1974 to aid in naval navigation and to locate foreign military targets. It was used extensively in the Gulf War to help American troops move around the desert in Saudi Arabia. Today, GPS technology is used much more widely. It is used to survey land, monitor geologic fault lines, explore resources, track wildlife, and fight fires. As receivers become smaller and cheaper, they are being used by hikers, boat owners, and even by golfers who want to figure out how far they are from the hole.

Some California companies are now using GPS to market a “personal satellite tracking device” that will allow parents to locate their children, or even the family pet.

Global Positioning System: a system that uses satellite tracking devices to establish the latitude and longitude of a person or object.

DID YOU KNOW?

Canada is in the process of modifying GPS technology to implant in children’s knapsacks, to foil child predators.

Figure 3–3 Right: With GPS technology, you could offer your exact location. Left: GPS technology is useful in remote areas such as the Canadian Arctic. Here an Inuit fisher is using a GPS receiver to track a whale.

WHAT DO YOU THINK?

1. If your were given a GPS receiver, in what ways could you use it?
2. Imagine that you represent a company selling GPS locators. What kind of customer would be interested in your product? Why?
3. Prepare a five-point company brochure that describes the advantages of GPS locators.
Places have physical and cultural characteristics. Physical characteristics include the landforms and bodies of water found in a place, as well as its soil and mineral deposits. These characteristics have a great impact on how people live, and they usually present distinct advantages or disadvantages, or a combination of both. For example, Prince Rupert has rugged terrain and heavy rainfall, but it also has rich vegetation and abundant water sources.

Virtually every human activity leaves its mark on the physical environment. The visible results of human activity are known as the “cultural landscape.” Peoples of different cultures usually affect the landscape in distinct ways. For example, in the Prince Rupert area of northwestern British Columbia, the Northwest Coast peoples removed bark from standing trees to make blankets, clothing, and fishing nets. Because the trees renewed their bark,
and because the bark itself was recyclable, the long-term impact on the environment was minimal. This was not the case with the activities of later settlers. From its founding as a terminus of the second transcontinental railway [see Chapter 7], Prince Rupert experienced a dramatic alteration of its physical environment: as European immigrants settled in the area, they cleared land and built houses, roads, and port facilities. Eventually they exploited the area’s fish and forest resources on a massive scale.

Places change. Nothing in nature stays the same. Landforms and vegetation are changing all the time, as are political boundaries and patterns of human settlement. How a place looks today is the result of changes that occurred over time. Geographers are especially interested in knowing how the natural environment changes through human actions. For example, how do river dams upstream affect people living downstream? How does a new highway affect the development of nearby real estate or industry? Knowledge of past changes helps us to make informed decisions about future changes.

Places interact with other places. In the past, the size and location of a place determined its level of contact with the rest of the world. Today, however, new transportation and communication technologies have made all but the most remote loca-

Figure 3-5 Before Richmond’s population rapidly increased in the 1980s and 1990s, the area was mainly devoted to agriculture. Farmland was displaced by housing developments and new commercial and light industrial activities.
tions accessible. We live in a world of rapid movement and instant communication. People travel, communicate, and use products, information, and ideas from around the globe. In this way, the places we inhabit have an impact on one another.

Places are in regions. A region is an area where certain characteristics prevail. The concept of a geographic region allows the geographer to organize information about the great diversity of the Earth’s surface. You already use the idea of region in your everyday speech. For instance, you travel to “the coast,” “the interior,” “the prairies”—or to the “Caribbean” for holidays. You have a clear image of these regions. You also know that no two places in any of these regions are the same, but that they are similar enough to allow you to make general statements about the area.

There are as many regions as there are ways to examine and classify the similar physical or cultural characteristics of an area. Natural regions are identified by characteristics such as the prevailing climate, landforms, vegetation, and soils. Economic regions have prevailing industries. Government regions can be as large as a province or as small as a school board. There are also political-economic regions, such as all the countries who participate in NAFTA (the North American Free Trade Agreement). In this and later chapters, you will be introduced to the regions of western Canada as a means of analyzing regional issues.

**Figure 3–6** Edmonton’s position in northern Alberta makes it a crossroads for travel east, west, north, and south. In particular, it is the gateway city for road and air travel to Canada’s northern territories. As the capital of the province, Edmonton also regulates and controls the province’s resources and industry.

### Activities

1. **a)** Record the latitude and longitude of your community by using an atlas and copying the information in your notebook.
   
   **b)** Describe the location of your community in such a way that a person on another continent could find it easily on a map—without reference to latitude and longitude.

2. As a class, create a time line to display the effects of human activity on the cultural landscape of your local area. You could choose four or five main periods, beginning with the culture of the aboriginal peoples and ending with the twentieth century. Groups of students could be responsible for gathering information from the school library on one time period and filling in the information on the time line.

3. List as many regions as you can in your community. Beside each region, briefly describe what type of region it is. Remember that there are many categories of regions.
Our country has a difficult landscape. Its mountains and plains, its massive Shield, and its harsh lands in the North have made the development of Canada a challenge. The physical geography of western Canada is dominated by the presence of the Canadian Shield, the Interior Plains, and the Western Mountains. Each of these regions has distinct geological features, landforms, and climatic conditions. The Canadian Shield is the oldest region; the Interior Plains have the most uniform physical characteristics; and the Western Mountains have the most complex physical structure.

The Canadian Shield
Canada is a young country in political years but one of the oldest in geologic years. Large masses of rock, known as shields, are the oldest parts of the Earth. They are hard, rigid blocks around which the younger areas of the continents have formed.

**Figure 3–7** The physical regions of western Canada are based primarily on the age and type of rock and on topography.

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**geological:** having to do with geology, the study of the history of the Earth as found in rocks

**topography:** the shape of the land
The Canadian Shield stretches from the Arctic islands around Hudson Bay to the Adirondack Mountains in the United States, and east across Labrador. The Shield was once a volcanic mountain range as high as the Himalayas. Over millions of years, weathering and erosion wore it down into a landscape of exposed rock and lakes. The Shield was originally made up of igneous rock from its volcanic state. Much of this rock has been changed by heat and/or pressure into metamorphic rock. This process also created the Shield’s vast storehouse of minerals, such as copper, gold, lead, and nickel. The exposed rock, however, makes the land unsuitable for agriculture and large-scale settlement.

The Interior Plains

In Canada, the Interior Plains region stretches from the Canadian Shield to the Rocky Mountains. It covers almost all of Alberta. The Interior Plains were formed as eroded material from the Canadian Shield was deposited in layers at its edges. These generally horizontal layers of sedimentary rock make up the plains. Millions of years ago, when the area had a tropical climate and was covered by water, occasional flooding left deposits of plants and animals. Over time, these deposits were compressed between the sedimentary layers to form deposits of fossil fuels, such as oil and natural gas, and evaporites, such as potash.
The Western Mountains

The Western Mountains are made up of parallel mountain ranges that are separated by a series of plateaus and valleys. Mountain ranges of this type are known as a “cordillera.” The Rocky and Coast mountain ranges and the Interior Plateau were formed when plate collision caused the Earth’s crust to buckle, which lifted sections of it into the air. The pressure of plate tectonics also caused the terrain to form valleys, plateaus, and trenches. Erosion from rivers and glaciers sculpted the rugged, mountainous landscape that we know today. Sediments carried off by rivers, called “alluvium,” formed fertile river valleys, such as the Fraser River Valley. The area is also rich in minerals, such as copper, gold, molybdenum, and coal.

Figure 3–10 The Rocky Mountains near Banff

The mountain-building process continues today in the St. Elias Range, where British Columbia, the Yukon, and Alaska meet. The force of plate collision is pushing up these mountains, including Canada’s highest, Mount Logan, at a rate of 4 centimetres a year.

Figure 3–11 The diverse landscapes of British Columbia form six parallel regions. This has made east-west travel in BC particularly difficult.

DID YOU KNOW?
The mountain-building process continues today in the St. Elias Range, where British Columbia, the Yukon, and Alaska meet. The force of plate collision is pushing up these mountains, including Canada’s highest, Mount Logan, at a rate of 4 centimetres a year.

fossil fuel: a natural fuel formed by geological forces from the residue of living organisms

evaporite: a type of sedimentary rock that originates by the evaporation of sea water

plate: a slab of the Earth’s crust. Plates are underneath all the continents and oceans. They regularly move away from, and collide with, each other.

tectonics: the study of forces within the Earth that form its surface features, such as mountain ranges and ocean basins
You may think you’re standing on rock-solid, immovable earth on Canada’s West Coast. Think again. The area is located where two plates are on a collision course. As the Juan de Fuca plate collides with the North American plate (see Figure 3–12), grinding occurs. When the Juan de Fuca plate becomes stuck under the North American plate, pressure and tension build up. When The Juan de Fuca plate breaks free, it generates seismic waves and tsunamis, which can have catastrophic results.

In fact, the west coast of British Columbia is the most active seismic area in Canada. Approximately 300 small quakes occur along the 1500-kilometre Juan de Fuca subduction zone every year. Most of these quakes are too small to be felt. The strongest tremors recently recorded originated in Courtenay in 1946, and under the Gulf Islands in 1976. The Courtenay tremor registered 7.2 on the Richter scale; the Gulf Islands tremor registered 5.4.

In recent years, there has been little significant tectonic activity off the coast of British Columbia. For this reason, some seismologists think the “big one” is overdue. They have found evidence of earlier, more serious, ground movements in altered landscapes and in coastal sediment layers that are significantly disturbed. Their research indicates that one serious earthquake, registering as high as 9 on the Richter scale, may have occurred around 1700. Oral histories of the Northwest Coast peoples seem to confirm the theory. Their accounts describe a great shaking and refer to huge waves hitting Vancouver Island. Japanese reports of a tidal wave that engulfed their shores in that year lend further support to this theory.

Some scientists fear that as each plate strains against the other, the pressure of 300 years may be released in a megaquake. Using GPS tracker stations (see page 95) across southwestern BC to determine distances between locations, seismologists have discovered that portions of Vancouver Island’s west coast are rising 5 millimetres each year. The east coast of Vancouver Island is being pushed toward the mainland in a big squeeze. When the tension is released, the earth will shift and bend, sending waves through the ground and water. Damage will be extensive and severe.

Old brick buildings and bridges are the most vulnerable and could be heavily damaged in even a moderate earthquake. Many older buildings are not built to withstand the powerful shaking and swaying that could last for several minutes. Few buildings will

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**Figure 3–12** The Juan de Fuca ridge is a crack that allows magma from the Earth’s mantle to reach the ocean floor. As magma cools, it builds up on either side of the ridge. The altered sea floor pushes the Pacific plate to the west and the Juan de Fuca plate to the east. The Juan de Fuca plate collides with the North American plate, which is moving west. As the oceanic plate is pushed under the continental plate, at a rate of 45 millimetres a year, it is destroyed and returns to magma.
be as secure as Vancouver’s West Coast Energy Building, which is suspended on cables to absorb the swaying motion caused by an earthquake. The low-lying Fraser Delta, and other areas not built on bedrock, will be highly unstable. Their surface will turn to the consistency of porridge, a process known as “liquefaction.”

Scientists studying the faults and plate movements off the British Columbia coast are convinced that the earthquake will happen. The question they can’t answer is: Where and when?

magma: molten rock material within the Earth from which igneous rock is formed through cooling

mantle: the interior part of the Earth that lies directly above the core

epicentre: the Earth’s surface directly above the quake—the middle of the quake

tsunami: a great sea wave produced by an earthquake or by a volcanic eruption

seismic: to do with earthquakes

subduction zone: a long region with a trench through which a descending tectonic plate is assimilated into the earth’s mantle

Richter scale: a measure of the power of earthquakes. Each step on the scale is ten times the previous one, so an earthquake that registers 7 is ten times greater than a 6 and one hundred times greater than a 5.

seismologist: someone who studies earthquakes

bedrock: solid rock underneath looser materials such as soil

**Figure 3–13** When the Big Earthquake happens, the plates beneath BC will come unstuck, sending waves outward and upward from its epicentre. The land will shake uncontrollably and create enormous damage to the built environment. This illustration depicts the possible damage to a typical neighbourhood. Examine Figure 3–13 for a few minutes. How has the infrastructure of this community been damaged? For more information about infrastructure, see Chapter 2, page 69.

**Activities**

1. In groups of four or five students, create a Disaster Education Program to help community members prepare themselves for a major earthquake. With members of your group, create a ten-point brochure that outlines the provisions and equipment people will need in the event of an earthquake. In an opening paragraph, describe the damage to the community infrastructure that may make these emergency items necessary. Add pictures, diagrams, and captions to explain the impact of an earthquake.
Western Canada lies above 49 degrees latitude. Most areas experience a continental climate of temperature extremes and low precipitation. Coastal areas of British Columbia are moderated by a maritime climate of mild temperatures and high precipitation. Temperature and precipitation differences among communities in western Canada reflect their location and local conditions. These are described in the next section.

Factors Affecting Temperature

Latitude. The distance of an area from the equator determines the amount and intensity of sunlight it receives. In northern latitudes, the sun’s rays strike the Earth at a lower angle than they do closer to the equator. As a result, there is greater seasonal variation in the length of day and night. Another effect is that temperatures are generally higher in southern Canada, because the higher angle of the sun in the sky results in more intense heating of the land.

Altitude. The higher the altitude, the colder the temperature. In general, for every 150-metre rise in altitude the temperature drops by 1 degree Celsius.

Distance from the Sea. The surface of land heats and cools more quickly than the surface of water. A large land mass such as western Canada can swing between temperature extremes—high temperatures in the summer and low temperatures in the winter. By contrast, the summer and winter temperatures of areas such as the West Coast of Canada are moderated by the water.

Wind Direction. Winds blowing from the ocean increase the moderating effect of water. The reverse is true for winds blowing off the land. West Coast communities are the only communities in Canada with winter temperatures above freezing. Prevailing winds are those that blow most often in an area. In western Canada, these winds are generally westerlies, that is, from the west, or northerlies, from the north.

Activities

1. Use the following headings to create an organizer comparing the Western Mountains, the Interior Plains, and the Canadian Shield:
   - original state
   - significant changes
   - result of changes
   - appearance today

2. Using a medium of your choice, create a small visual display to illustrate the principles of mountain building. Review pages 101 to 103 for information. You may have to experiment with a number of media in order to represent the results of tectonic plate collision.
Ocean Currents. Ocean currents are either warm or cold, depending on their origin. Ocean currents affect the temperature of the land by warming or heating the air blowing over them. Warm air can absorb more water than cold air. This is why the West Coast enjoys a mild, wet climate. The prevailing westerlies blow over the warm Alaska current, which comes from warm southern waters.

Precipitation. The amount of precipitation received by a location is determined by its distance from the sea and by the prevailing winds. Heavy precipitation is often confined to a season, or seasons. In turn, the form of precipitation—for example, drizzle, heavy rain, snow, or hail—will have an impact on the location. Western Canada experiences three basic types of precipitation: orographic, convectional, and frontal.

Prevailing westerly winds push warm, moist Pacific air up against the mountains of Vancouver Island and the Coast Range and create orographic precipitation. As the winds force the air up the mountainside, the air cools and expands, losing its moisture as rain or snow. As the air

DID YOU KNOW?
The lowest temperature ever recorded in Canada was -62.4 degrees Celsius in 1948 at Snag, in the Yukon. The highest temperature, 42.8 degrees Celsius, was recorded at Osoyoos, BC, on July 27, 1998.
descends on the eastern slopes, it becomes warm and dry; this area is called the rain-shadow. Orographic precipitation also occurs on the Rockies, although less rain falls on the western slopes. In winter, the winds that descend the eastern slopes of the Rockies—called “chinooks”—warm so quickly that they can raise the temperature 20 degrees in a matter of hours.

Convectional precipitation is caused by convection currents in the atmosphere. It falls primarily on the prairies and on the Canadian Shield during the hot months. As the ground heats throughout the day, it heats the air. This warm air expands and rises, and meets cool air, which also warms, rises, and cools, eventually forming a cloud of rain or hail, which falls back to the Earth. While this type of precipitation provides much-needed moisture to the arid prairies, it is unreliable, and the heavy rain or hail often damages crops.

Most of Canada lies in a zone between cold polar air, which originates in the North, and warm tropical air, which originates in the Gulf of Mexico. These two air masses cannot mix, and their line of contact is called a “front.” Because warm, tropical air is less dense than cold air, it rises over the cold air. As the warm air rises, it condenses and forms clouds, usually resulting in prolonged precipitation. There is more frontal activity during the Canadian winter because the polar air extends further south and the two air masses—warm and cold—vary most dramatically in temperature. Fierce frontal activity, known as “cyclonic storms,” result, and are pushed from west to east by the prevailing westerlies.

**Water Resources Of Western Canada**

Most of the rivers of western Canada begin in the cordillera. The high levels of precipitation and melting...
snowpacks provide a constant flow of water. Rivers flow east or west from the highlands of the Rockies and Coast range until they meet a major body of water, such as Hudson Bay or the Pacific Ocean. Along the way, they join other rivers, flow through lakes, and form river systems that drain the land. A drainage basin is an area of land drained by one river system. Basins are formed as the rivers carry away eroded material from the land.

The abundance of water in most parts of western Canada has made many Canadians complacent. However, as population and development have increased, so too have threats to water quality. Today, serious efforts are underway to find solutions to these problems. For example, the Lower Fraser River Basin, which includes the greater Vancouver area, has been a dumping ground for industrial and municipal sewage and agricultural run-off for decades. In the early 1990s, communities in the lower mainland of British Columbia, along with the provincial government, set aside $50 million to clean up the Fraser. At that time, most experts estimated it would take more than ten times that amount to treat the sewage dumped into the Fraser each year. For Canadians, water quality, not water supply, will be the issue for the future.

**ACTIVITIES**

1. Examine the climographs in Figure 3–14 to identify and explain which locations have the following: highest rainfall, lowest precipitation, lowest monthly temperature, highest monthly temperature, and the greatest range in temperature between summer and winter.

2. Explain why most rainfall in Winnipeg occurs in the summer months.

3. Explain which climograph location would have the most precipitation in the form of snow.

4. Use the map of physiographic regions on page 101 to list the three major drainage basins in western Canada. Which of the drainage basins is the biggest? Which of the drainage basins are likely to suffer from pollution from: a) urban sources, b) agricultural sources, c) industrial sources.

**DID YOU KNOW?**

Approximately 22 percent of British Columbia’s population relies on ground water for its water supply.

**sewage:** municipal and industrial waste

**run-off:** pesticides, herbicides, and other materials that drain from fields into rivers and lakes
Ecosystems and Biomes

A natural environment is defined as the conditions under which plants and animals live in relation to each other and with the non-living parts of the environment. The natural environment of western Canada is made up of a number of large ecosystems, or biomes, each with its own characteristic type of vegetation and animal species.

A biome contains a number of smaller ecosystems—natural areas where the life cycles of plants, animals, and other organisms are linked to each other and to their physical surroundings. Smaller ecosystems are in turn made up of habitats, places where plants and animals have adapted to a set of specific conditions, for example, a bog. Because all the elements of an ecosystem are interdependent, altering one part of the system, or introducing a new organism into the system, usually sets off a chain reaction. For example, removing the forest cover has a dramatic impact on the animals that use the forest as a habitat. Here is another example: During this century, rats were introduced to Haida Gwaii—the Queen Charlotte Islands—by coastal trading ships passing by. The rats dramatically reduced the number of nesting bird colonies. In 1995, a rat control program was established to rid the islands of this unwanted species.

The Natural Regions of Western Canada

More than 500 species of plants now found in British Columbia—approximately one in five of the total flora—have been introduced by humans either by accident or intention.

Figure 3–18 This simplified example of an ecosystem shows how the physical and natural environments are balanced and interdependent. Interruptions and reorganizations in the system lead to imbalance and often undesirable side effects.
The Western Biomes

Biomes are usually named for the dominant vegetation type of a region.

Boreal Forest

Most of this region is made up of coniferous trees. Needle-leaf evergreen trees, such as spruce, fir, and pine, are able to survive the very cold winter temperatures and erratic precipitation. Very little moisture is lost through the needles, and they do not freeze, even in frigid weather. Evergreens begin growing in early spring to make use of the short growing season.

The soil type of this region is known as “podzol.” It is acidic, due to leaching from the surface layers and needles, and is not very fertile because it contains only small amounts of humus. Deer, moose, black bears, wolves, and many furbearing animals such as beaver, otter, and muskrat, inhabit this biome. Many species of owls and blue jays, and many other types of birds, frequent these forests.
Parkland

Parkland is a transitional area between the dry prairie grasslands and the coniferous forest regions of the North. The natural vegetation is long grass, with isolated stands of trees—mainly aspen, willow, and some pine. The long grass, after it decays over many years, provides a lot of humus, resulting in rich, black soil. This is an ideal region for growing wheat because the soil is rich and precipitation is sufficient.

The Prairie

The prairie, sometimes called the “grasslands,” is a vast area of western Canada located between Winnipeg and Calgary. It is very dry in the southeast, around the Alberta-Saskatchewan boundary. The driest area is known as the “Palliser Triangle,” after the 1857–1860 expedition of Captain Palliser, who mapped British territory from Lake Superior to the Okanagan Valley. The prairie is sufficiently moist in the northwest to support ranching and agriculture, but never moist enough to support trees.

The natural vegetation of the grasslands includes several types of short grasses—sagebrush and cactus in the south, and some areas of long grasses. Agriculture has completely destroyed some of the indigenous grasses. In addition, human activity has led to wind erosion, although there is less wind erosion on the prairie today than during the 1930s. At that time, much of the topsoil of the region was blown away after years of prolonged drought.

The soils of the region are brown in colour and have a high mineral content. Depending on the length of grasses, and so the amount of humus they would provide over many years, the soils will vary from light to dark brown. The dark brown soil type, known as “chernozem,” is ideal for growing wheat and other grain crops. Ground squirrels, gophers, and prairie dogs abound in this region. Hawks, owls, and badgers are the predators of the gophers. Deer and antelope have replaced the exterminated bison as the largest animals in this biome. Wild fowl are found in the region’s many sloughs.

The Interior Mountain Region

The Interior Mountain Region consists of a variety of landforms—meadows, plateaus, and mountains. Vegetation is also highly varied, and includes pine forests, sub-alpine forests, and, in the high meadows, areas of tundra that resemble vegetation found in the Arctic, such as dwarf shrubs, lichens, and grasses. The region has as many soil types as varieties of vegetation. Soils of coniferous regions are found on the mountains, whereas the grasslands have...
prairie soils. Tundra soils—typically thin, with little humus, and a permanently frozen subsoil—are found on the meadows. Wildlife is abundant in this region. Bears, deer, mountain goats, and sheep are easy to sight, as are varieties of owls, woodpeckers, and bluebirds. Canada’s only preying mantis—the ground mantis—is found in this region, as is the rattlesnake.

**Coastal Forest**

The forests of the Pacific Northwest are rain forests, but they are coniferous, which distinguishes them from the world’s other temperate rain forests. They receive most of their rain from November to March—and conifers can grow during mild winters. Owing to the mild temperatures and abundant precipitation, the trees of the coastal forest are huge, although the tallest trees have been cut down. Today, many Douglas firs, red cedars, and hemlock trees remain. The largest trees are close to 90 metres high, with diameters ranging from 1 to 2 metres. Soils and wildlife of the region are the same as those found in the boreal forests. Not surprisingly, the forests of the Pacific Northwest are much sought after by the lumber industry.

![Figure 3–22](image) Coniferous forests grow on the lower slopes of the mountains. As altitude increases, temperature decreases and the growing season shortens. As you ascend the mountain, an area known as the treeline is reached. Above the treeline, alpine flowers and grasses grow. Further up, only mosses and lichens can grow. Finally, at the permanent snow line, no forms of vegetation can grow.

![Figure 3–23](image) A thick blanket of giant conifers covers the windward slopes of the Coast Mountains. The trees tend to have shallow roots, which spread like mats beneath the surface of the soil. As in any rain forest, almost 97 percent of the seedlings germinate on decaying logs and stumps, often called “nurse trees.” These provide humus, which is otherwise unavailable in the moss-covered forest floor and nutrient-poor, acidic soil.
THE PRAIRIE GRASSLANDS: A Changing Ecosystem

As a resident of British Columbia, you have probably taken many strolls through the forest. Vast tracts of old-growth forest still remain in the western provinces, and it is possible to see what the original landscape looked like in areas such as Clayoquot Sound. The same cannot be said of the prairie grasslands. Only in isolated locations, such as Elk Island National Park, can you see the original landscape.

What happened to the prairie? In a word: settlement.

Figure 3–24 Bison are now being protected in Elk Island National Park, Alberta.

First Impressions of the Prairie

Newcomers to the prairie usually had strong first impressions of the landscape. This letter from Edgar Dewdney, Indian Commissioner of the North-West Territories (1879–1888), to Sir John A. Macdonald reflects the awe with which many viewed the region:

The next excerpt comes from the diary of Henri Julien, a reporter from Canadian Illustrated News. Julien accompanied the North West Mounted Police on their initial—and disastrous—trek west. He had a less positive view of the landscape:

Here we first encountered the hostility of the mosquitoes. We had men from all parts of the world … but they all agreed that nowhere had they seen anything equal to the mosquitoes of the prairie.

As soon as twilight deepens, they make their appearance on the horizon, in the shape of a cloud … At first, a faint hum is heard in the distance, then it swells into a roar as it comes nearer. The attack is simply dreadful. Your eyes, your nose, your ears are invaded. If you open your mouth to curse at them, they troop into it. They insinuate themselves under your clothes, down your shirt collar, up your shirt sleeves … They send dogs off howling in pain. They tease horses to desperation. They goad even the shaggy buffalo …
For thousands of years, the vegetation of the prairies supported an abundance of animal life. In the seventeenth century, an estimated 60 to 70 million **bison** roamed the grasslands, together with 50 million antelope, grizzly bears, wolves, prairie dogs, and many species of birds, reptiles, and insects. Today, few of these larger mammals survive, and the habitats of many smaller species are threatened.

Human activity has dramatically altered the prairie ecosystem. Other than the temporary effects of drought, fire, and overgrazing by animal herds, the prairie grasslands had remained in a state of natural balance until the mid-nineteenth century.

Both in Canada and the United States, the Native peoples who lived in the region did little to alter the ecosystem. They maintained the natural grasses and subsisted almost entirely on the bison. The opening of the West to settlement eventually led to the virtual extinction of the bison. In fact, US government policies in the late nineteenth century actively contributed to the vanishing herds. The slaughter of the bison became part of the campaign to force Native peoples onto reservations so that the West could be made available to European settlers. In 1870, American General Philip Sheridan advised the Texas legislature to stop a bill that would have protected the bison. Instead, he suggested, hunters should be offered a bronze medal featuring a dead buffalo on one side and a discouraged-looking Native person on the other.

When the migrating herds of bison failed to reappear in Canada, the way of life of the Canadian Plains Indians and the Métis was also seriously threatened. As one observer noted in a letter to John A. Macdonald:

> Invite all the sportsmen in England and America this fall for a Great Buffalo Hunt and make a grand sweep of them all.

By contrast, General William Sherman, Commander of the US Army in Sioux territory in the 1800s, had little good to say about the bison. In a letter to General Philip Sheridan, Commander of the US Army in the Southwest, he noted:

> Fur traders moving West had already helped to reduce the population of bison. Then in the
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7) coincided with the development of hardier strains of wheat. These settlers, mainly from Eastern Europe, ploughed under the prairie grasses and planted Marquis and Red Fife, new strains of wheat that matured early and had superior baking qualities. They made Canada famous for its high-quality wheat and made wheat the most important cultivated crop in Canada.

Over-cultivation and drought in the 1930s, however, led to soil erosion on the prairies. Soil conservation methods, such as contour ploughing and wind breaks, have helped to reduce this problem. Monoculture—the cultivation and reliance on a single crop—has also created problems. Both insecticides and pesticides must be used in order to protect a single crop from insect damage and disease. Critics of monoculture say that the reliance on chemicals adversely affects many prairie ecosystems and habitats. They claim it reduces the area’s biodiversity—the variety of insects, birds, and predators that make up a living system, an ecosystem. Monocultures are incapable of protecting themselves because they are single systems and must be supported with chemicals. Farmers counter that single-crop farming produces higher yields and helps feed the world’s growing population.

Settlement and development led to extreme alterations of the prairie ecosystem, and to both negative and positive consequences. The balance between the two is very much open to debate. The natural prairie biome has been mostly replaced by extensive farms and cattle operations. Its large mammals have been hunted to near extinction and many of its smaller species have been greatly reduced in numbers. The extinction of the bison contributed to the loss of territory for the Native peoples in both Canada and the United States. In return, cereal farming and grazing herds have made Canada one of the world’s leading exporters of food and have contributed to a high standard of living.

*bison*: North American buffalo

*feedlot*: an enclosed area where large herds of cows eat high-quality feed

*contour ploughing*: ploughing along the shape of the land to prevent erosion

*wind break*: a line of trees planted to prevent wind erosion by shielding the soil

Figure 3–27 Saskatchewan grows approximately 60 percent of Canada’s wheat. The prairies produce an average of three times as much grain as Canadians consume, which makes Canada one of fewer than half-dozen countries that have a large grain surplus for export.
Environments that have been used and altered by humans are called “cultural environments” or “cultural landscapes.” Culture—and cultural attitudes—determine how people view and use the land. For example, the Cree of the Interior Plains did not view the land and its resources in the same way as did the fur traders, and the fur traders did not view the land with the eyes of European settlers. Opposing attitudes can often result in a crisis, for example, the extinction of the North American bison, or the conflict that has arisen between environmentalists and the logging industry in BC. You will read more about that particular conflict in Chapter 9.

**Settlement and Population**

At the beginning of the twentieth century, western Canada was only beginning to experience the effects of large-scale settlement. The Native peoples had used the environment for millennia without significantly changing the landscape. Wherever they lived—on the Canadian Shield, the Interior Plains, or the Western Mountains—they used land and water resources in a way that respected the natural environment. The prosperity of the Laurier era, which will be described in Chapter 7, brought large-scale settlement to the Canadian West and upset this balance.

**ACTIVITIES**

1. Sketch a flow chart of the possible impact of one of the following on an ecosystem or habitat: a road is built through an area of untouched wilderness; the number of tourists to a scenic location increases dramatically.

2. Find or make a sketch or flow chart of an ecosystem in your vicinity. Annotate the sketch with information on the interrelationships of its various parts. Determine to what degree the ecosystem is threatened and by what. Develop a plan of action to protect it.

3. Make a flow chart of your school as an open system. Buildings and grounds can be the habitat, and students, teachers, and support staff can be the organisms. Books and other materials are included. You could add variables—such as new courses, or new technology—and note the impact on the system.

4. Search out some of the many excellent accounts of the prairies before settlement, such as William Butler’s *The Great Lone Land*. Share descriptions from these books with your class and combine your findings with pictures to form a collage of the Canadian prairies before settlement.

5. Compare the fate of large herding animals in Africa with that of the North American bison. What effect is the fate of the animals having on the people?

6. Write an e-mail to a farmer or environmental group, stating your opinion of monoculture on the Canadian prairies.

7. Investigate the issue of genetically altered seeds and the control of these seeds by multinational chemical companies.

**THE CULTURAL LANDSCAPE**

Environments that have been used and altered by humans are called “cultural environments” or “cultural landscapes.” Culture—and cultural attitudes—determine how people view and use the land. For example, the Cree of the Interior Plains did not view the land and its resources in the same way as did the fur traders, and the fur traders did not view the land with the eyes of European settlers. Opposing attitudes can often result in a crisis, for example, the extinction of the North American bison, or the conflict that has arisen between environmentalists and the logging industry in BC. You will read more about that particular conflict in Chapter 9.
Waves of immigrants have also changed the way the land looks. Métis farmers in Manitoba followed the French practice of dividing their farms into narrow strips along rivers. The Canadian government followed the English grid system when it surveyed the West, while Mennonite farmers in Manitoba used a combination of both systems. During the twentieth century, extensive farming and cattle ranching, mining, manufacturing, and urban development have all contributed to the alteration of the natural environment in western Canada.

Where people decide to settle depends on several factors, but the principal factors are the physical environment and its economic possibilities. Landforms and climate play a key role in determining how many people will permanently settle an area. Flat land, mild winters, adequate precipitation, and good soil are some of the factors that often entice people to settle permanently in an area. The agricultural areas of the prairies and British Columbia follow this pattern.

Areas that lack these features can also experience population growth in brief spurts. This is because people almost always live where they can find work. Resource towns on Canada’s frontier go through cycles of **boom and bust** as the resource is developed and then exhausted. Barkerville, British Columbia, was created in the 1860s after gold was discovered in the Cariboo region of the British Columbia interior. Its population climbed to 5000 people, but eventually it became a ghost town. Ocean Falls, British Columbia, and Uranium City, Saskatchewan, are other examples of towns that fell into decline when their resources were exhausted. This story has been repeated all across western Canada’s resource frontier, and is still being repeated today.
All settlements have a function, which is defined as the activities responsible for the economic and social development of the place. A place can be considered a successful settlement when it has an economic base to support the people living there. This economic base—along with the kind of place it is—will usually determine the community that results. For example, a suburban residential community with most of its population working elsewhere will look different from a single-industry town. Smaller communities usually have fewer functions, acting as service centres or single-resource-based communities. Today, most cities have a number of dominant functions and many minor ones. Some of the common functions of settlements in western Canada are found in Figure 3–29.

Figure 3–29 Would a small village of 100 people have all these functions? Explain.

DID YOU KNOW?
The lifespan of a town that relies on a non-renewable resource is about 25 years. This is the projected lifespan of Canada’s only operating diamond mine, opened in 1998 at Lac de Gras, north of Yellowknife. Lac de Gras is a single-function community. Its 650 workers must live in special housing units that are insulated from the tundra.

Figure 3–30 How land is used helps to determine the distribution and density of the population (see definitions, page 118). This map shows the population distribution of western Canada in 1911.
Canada’s resource towns do not employ as many people as do the manufacturing and service industries of cities. That is why western Canada’s population is concentrated in its major cities. Since Confederation, Canada’s urban population has increased from 17 percent in 1871, to 45 percent in 1921, to 54 percent in 1951. Today, three quarters of the population lives in an urban area.

In Chapter 9, you will learn in more detail how the economy of western Canada is based on the exploitation of its natural resources. These resources also affect patterns of settlement. Soil type, mineral deposits, and energy resources all play a role in determining where people will come to live, known as population distribution, and how many people will eventually settle in the area, or its population density.

**Boundaries: The Lines on a Map**

The provincial and territorial boundaries of western Canada are so familiar that it is easy to forget how abstract they are. These political boundaries are what geographers call “artificial” boundaries. Before European settlement, the Native peoples, Métis, early explorers, and fur trappers divided western Canada according to its natural boundaries—the recognized physical features of Shield, plains, mountains, rivers, and forests. Such boundaries are ill-suited for the purposes of the modern state: political leaders like to have clear lines indicating the extent of their authority.

As European and, later, North American governments began to dominate the continent, frontier zones were replaced by political boundaries. Geographic knowledge of the more remote areas, however, was very limited. Dividing these regions with boundaries inevitably led to conflict. The establishment of a boundary between British Columbia and Alaska is an example you will study in Chapter 7. Another example is the 49th parallel of latitude, which set the boundary between British and American territory in the West. Because it cut through plains and mountains, people who had been accustomed to crossing a natural area were now hemmed in by lines on a map.

The Native peoples living in the frontier regions did not have the power to draw these lines on the
map themselves. In the last decades of the twentieth century, however, the power to do so shifted. The Inuit and other aboriginal Canadians became more successful in reclaiming control of their traditional territories. In British Columbia, the wheel came full circle. Because the right of aboriginal title had been recognized in the Constitution Act of 1982, and was later confirmed in court decisions, new lines marking First Nations land claims appeared on BC maps. Negotiations continue to determine where those lines will finally be drawn. In 1998, the Nisga’a signed the first treaty in British Columbia since Confederation, and gained title to some of their ancestral lands. You will learn more about this in Chapter 7.

Figure 3–32 Physical features such as mountains and bodies of water are natural borders. Political borders are actually artificial.

Canada’s Newest Regions

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going happened to Canada on April 1, 1999. The Northwest Territories were split in two. Nunavut and the Western Territory (Denendeh) form Canada’s newest political regions. Canada has witnessed a number of provincial and territorial boundary changes since Confederation. Cartographers last redrew the map of Canada in 1949, when Newfoundland joined Confederation. And the Northwest Territories were actually divided once before—in 1905, when the provinces of Alberta and Saskatchewan were created.

While the new territories share an Arctic climate, they also differ in many ways. In every region of the Arctic, physical characteristics have a dramatic impact on the cultural and economic life. With its vast stretches of permanently frozen ground and polar islands, Nunavut supports little vegetation. Trapping has been the mainstay of the Inuit economy for thousands of years. By contrast, most of the Western Territory lies below the treeline, making its resources of diamonds, gold, oil, and gas easily accessible. Nunavut also has large stores of gold, lead, zinc, and oil and gas, but the climate and physical characteristics of the region will make it a challenge to retrieve these resources—both from the viewpoint of economics and environmental safety.

cartographer: someone who draws maps

| Time Line 3–1 |
| Creation of Nunavut and the Western Territory |
| 1960+ | Federal government considers dividing the NWT |
| 1967 | Yellowknife becomes capital of the NWT |
| 1976 | Inuit propose land claim and creation of Nunavut |
| 1982 | Most voters in the NWT want to divide the territories |
| 1991 | Boundary between the Eastern and Western Arctic approved |
| 1993 | Nunavut Land Claims Agreement and Nunavut Act approved by Parliament |
| 1999 | Nunavut and Western Territory become Canada’s newest political regions |
Since 1867, Canada’s boundaries have increased to include all the land to the west and the north, except Alaska. In 1977, Canada’s present boundaries were set to include most of the Arctic Ocean and all waters within 370 kilometres of the coastline.

Under the control of the Hudson’s Bay Company, the West had been an ill-defined area that simply served the company’s mandate: furs should not fall into the hands of rival companies. With Confederation and the purchase of Rupert’s Land by the Canadian government (see Chapter 4), more specific boundaries were needed to establish whether areas were controlled by the federal government or the provinces. As more areas of the West were settled, people asserted their right to local control in such areas as transportation, resources, and civil law. By 1949, provincial status had been granted to all areas south of 60 degrees north latitude. In 1999, the division of the Northwest Territories into the eastern territory of Nunavut and the Western Territory completed the expansion of self-government.

This family is using a new, lightweight kayak.
from the shores of the St. Lawrence River to the Pacific and to the Arctic oceans.

Boundaries are not visible on the landscape, but they have profound effects on people’s lives. They determine the amount of taxes you will pay, what form of education you will receive, what form of government you will have, how—or whether—your environment will be protected, and a host of other regulations. As Canada enters the twenty-first century, however, the very concept of “boundary” is being challenged. By determining boundaries, groups establish power and control over their own fate and region, often by taking away power and control from other groups. Today, in response to a global revolution in technology and communications, areas of international control are being established through agreements such as the North American Free Trade Agreement. This is challenging older concepts of boundaries. Will there ever come a time when people and goods can move freely anywhere in the world? What power and control will be exerted by national governments within their boundaries? These are questions for economists, politicians, concerned citizens, as well as for geographers. You will learn more about these issues—and their effect on Canada—in later chapters of Horizons.

Figure 3–36 Paul Okalik (left), the Premier of Nunavut, shakes hands with Nunavut Commissioner Helen Mamayoak Maksagak as she is swore in as a member of the legislature in Iqaluit on April 1, 1999.
ACTIVITIES

1. Determine the most and least urbanized provinces in western Canada. Use a Venn diagram to compare and contrast the two provinces as a way of discovering the reasons for their differences.

2. Research the history of a resource town in western Canada. Find out what resource was extracted, the town’s peak population and lifespan, and its status today.

3. Research the origin and growth of your community. Plot its development on a time line, dividing it into sections according to your community’s functions and stages of growth.

4. Refer to an atlas to classify the following western places according to size and function(s): Whistler, Trail, and Prince Rupert, in British Columbia; Calgary, in Alberta; Regina, in Saskatchewan; and Churchill, in Manitoba.

5. Draw a flow chart showing the hierarchy of services for a retail item such as an automobile or a specialized service.

6. Examine Figure 3–30, and refer to information in this chapter and Chapters 6 and 7 (you may also need an atlas). Explain:
   ■ the absence of significant population above 55 degrees north latitude
   ■ the relatively even distribution of population in the southern prairie region
   ■ the concentration of population in the southwest corner of Manitoba
   ■ the concentration of British Columbia’s population in the southwest corner and the narrow threads of population in the rest of the province.

7. Look up and study maps of the region where you live. Examine how your region’s “artificial” boundaries—such as your school district, regional district, sports leagues, and electoral ridings—correspond to its “natural” boundaries.

8. With a partner, examine an up-to-date map of Canada in an atlas. Suggest further divisions or changes in boundaries that might be made in the provinces or territories. Defend your choices in a presentation to the class.

9. Use a webbing technique to brainstorm the characteristics of the Nunavut region using the headings Physical, Natural, Cultural, Economic, and Influence, as described above.

10. “Those with power draw the lines on the map.” Evaluate this statement in light of the establishment of Nunavut and the Western Territory.

11. Compare and contrast your lifestyle with that of a young person in one of the new northern territories. Consider the influence of the natural and cultural environments and any unique attributes that may result.
CONCLUSION

Geography is a diverse field of study. It incorporates many other disciplines in studying how humans interact with their physical environment. In particular, geography examines the spatial relationships and connections between people, resources, settlements, ideas, and their physical environment.

Western Canada is a region of diverse landforms, vegetation, and climate. Historically, people have responded to the natural environment in different ways. The lifestyles of the Native peoples had little impact on the landscape over a period of thousands of years. European contact and settlement, however, had an enormous impact on the landscape, and within a brief period of time. The cultural landscape we see today in western Canada has evolved over a century of resource development and settlement. Canadians are increasingly aware of the beneficial impact these activities have had on their living standards. They are also becoming increasingly aware of effects—both damaging and beneficial—that these activities have had on the natural environment of the Canadian West.

SUMMARY ACTIVITIES

1. In groups of three, present the major regions of western Canada as a colourful, illustrated poster-map. Use illustrations to show the most outstanding features, challenges, and attractions of each region. For example, a picture of a skier could be used to show the recreational potential of the Rocky Mountains.

ON YOUR OWN

1. With a partner, create an earthquake-awareness brochure for distribution in threatened communities.

2. Research a current conservation issue in western Canada, using the library or the Internet as a reference resource. Write a letter to the appropriate agency expressing your views on the issue.

3. Imagine that you have to move to one of the regions of western Canada other than the Western Mountains. Make a list of the changes you would have to make to adapt to living in that region. Think of such factors as climate, vegetation, economy, and size of population.