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Introduction

20.1 Introduction

The Saharan region is filled with the unexpected. Just ask someone who has survived the Dakar Rally, a competition in which cars, trucks, and motorcycles race not only against each other but also against the wind, sand, and heat of this desert. With few roads, the drivers speed over shifting dunes, rocky plains, and dry grasslands. They cross parched riverbeds that have not seen water in years, and they struggle through sandstorms and scorching heat. If driving across the Sahara is this difficult, think how much harder it must be to live there.

The Sahara is one of the harshest environments on Earth. Through the years, however, people have adapted to living in this hot, arid region. Most people live near a desert oasis, which is an isolated location where water is found in a desert. The Sahel is a semiarid grassland that is located along the Sahara's southern edge. Although its environment is not quite as harsh as the Sahara, the Sahel often suffers from drought, or long periods with very little or no rain. This decrease in rainfall has made life in the Sahel even more challenging.

In this chapter, you will read about the physical features of the Sahara and the Sahel. You will find out how the environments of these two regions have been shaped by changes in climate. You will also learn how people have adapted—and still are adapting—to the environments of these arid lands.
Shrinking Lake Chad

Lake Chad is a large, shallow lake in the Sahel. The lake shrinks or grows depending on the amount of rainfall. But its overall size is slowly shrinking.

20.2 The Geographic Setting

The Sahara stretches across most of North Africa, covering approximately 3.5 million square miles, an area roughly equal to that of the United States. This huge desert region is bordered on the east by the Red Sea and on the west by the Atlantic Ocean. To the north, the Sahara begins at the Atlas Mountains. From those mountains, the desert sweeps south for more than 1,000 miles, eventually merging with the semiarid Sahel. Together, the Sahara and Sahel regions include all or parts of 15 African countries.

The World's Largest Desert

The Sahara is the largest desert in the world. Its name is derived from the Arabic word sahara, which means "desert." The region's climate is very hot and very dry. In fact, the world's highest known daytime temperature, 136°F, was recorded in the Sahara in 1922. Average rainfall is less than five inches a year.

The Sahara has not always been so dry. Many thousands of years ago, the region had a much wetter climate. Rivers and lakes were filled with fish, and elephants and other animals roamed through grasslands and forests. People settled throughout the region and survived by hunting and fishing.

About 6,000 years ago, the climate of North Africa began to change, as year by year less rain fell. Eventually the Saharan region began its transformation into a desert. Ever since then, the desert has gradually been expanding.

Trade winds blowing across North Africa help to keep the region dry. These winds begin in northern latitudes and blow south toward the equator. As trade winds pass over the Sahara, they pick up any moisture from the ground below, leaving so little moisture that few clouds form over the Sahara. With no clouds to provide shade, the sun beats down on the land, making it even drier.

Parts of the Sahara are so arid that nothing lives there, but in other areas an oasis makes life possible. Most of the plants and animals that live in the Sahara are found near its oases.

The Sahel: On the Sahara's Edge

The Sahel lies on the southern border of the Sahara. Its name comes from the Arabic word sahel, which means "border" or "shore." This region receives more precipitation than the Sahara, but it often suffers from long periods of drought.

Most of the Sahel is marginal land, land that is not well suited for farming. People who farm marginal land may harvest barely enough food for their families to survive.

For thousands of years, pastoral nomads have adapted to life on the Sahel's marginal lands. Pastoral nomads are herders who wander endlessly in search of water and grazing land for their animals. Once their herds have grazed an area, the nomads move on. This gives marginal grazing land a chance to recover.

In more recent years, the Sahel region has been undergoing desertification, a process in which an area becomes increasingly dry. In this chapter, you will discover why parts of the Sahel are being transformed into desert and what this desertification means for the people who live in the region.

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desertification the process by which land becomes more and more dry until it turns into desert. This may be caused by climate change, human activities, or both.

drought an unusually long period in which little or no rain falls

marginal land land that is not well suited for growing crops

pastoral nomads groups of herders who move with their animals from place to place in search of pasture and water
20.4 Adaptations to Life

In the desert are pastoral nomads. Many desert nomads belong to a group known as the Tuareg. The Tuareg live in six countries in the southern Sahara and are known as the "Wandering Tuareg" because of their nomadic lifestyle. They traditionally raise camels, goats, cattle, or sheep. When the pasture in one area has been exhausted, or used up, the Tuareg move their animals to a fresh area.

The Sahara's Sea of Sand

The Sahara has three principal types of landform: ergs, regs, and hammadas. Ergs are great seas of sand with tall sand dunes that can be moved by the wind. Regs are gravel-covered plains. Hammadas are high, rock-covered flatlands, some of which are so tall that maps indicate their locations as mountains. Only two rivers flow through the Sahara: the Nile and the Niger, with the water in the Niger coming from mountains beyond the desert. Sandstorms can begin when strong winds stir up enormous dark clouds of dust and sand from the desert floor. A severe desert sandstorm can reduce visibility to practically nothing while also getting sand into everything. Trucks are gradually replacing camels in the Sahara. There are not many roads, though, so trucks are built to deal with the rough and sandy desert. The owner of this truck has to clear the sand that has piled up over him with a large shovel. Sandstorms can begin at any time, and the weather can change without warning. The Sahara is like an ocean of sand, but the sand takes various forms. The sand is soft and can move. The Sahara's Sea of Sand is constantly changing. Nomads Tend Their Herds

20.3 The Desert Environment

The nomadic Tuareg are known as the "Men of the Desert" because of their clothing. Men of the Desert wear long, loose clothing that protects them from the scorching sun. Their clothing, covering their heads and across their faces, is blue cloth. Some Tuareg men around town also wear blue cloth. The Sahara's Sea of Sand is more diverse. In just a single afternoon, a traveler in the Sahara saw "pink and yellow dunes, blue craggy cliffs, black volcanic rubble... an barren hills." Little grows on the dunes, and in some places the sand is so soft that camels sink halfway to their knees in it. The Tuareg are known as the "Wandering Tuareg" and in the presence of close family members, they never remove this face cover, even in the presence of close family members.

The Desert Landscape: More Than Just Sand

Many people picture the Sahara as a sea of burning sand, but its landscape is actually far more diverse. In just a single afternoon, a traveler in the Sahara saw "pink and yellow dunes, blue craggy cliffs, black volcanic rubble... an barren hills." Little grows on the dunes, and in some places the sand is so soft that camels sink halfway to their knees in it. The Tuareg are known as the "Wandering Tuareg" and in the presence of close family members, they never remove this face cover, even in the presence of close family members.
20.5 The Oasis Environment

The Sahara region holds many surprises, including a variety of life. In a hidden canyon oasis, crocodiles feed on fish and on animals that come to drink. At a larger oasis, thousands of date palms provide shade for other fruit trees, and wild gazelles graze nearby. In the arid Sahara, where there is water there is life.

Islands of Water Surrounded by Desert

For weary, thirsty travelers trekking across the Sahara, no sight is more welcome than the appearance of a distant palm tree, a sign that they are approaching an oasis. Each oasis is an island of fresh water in a sea of dry sand and rock.

Humans have also created some oases. In the past, people constructed oases by digging wells by hand. As you read earlier, drilling machines are now being used to dig deep into the ground to locate hidden water.

Large and Small Centers of Life

The Sahara has approximately 90 large oases. Each large oasis can supply enough water to support a village and small farms. In addition, there are many small oases, with some supporting only one or two families.

Many species of plants and animals can be found at a desert oasis. Acacia and baobab trees mix with smaller shrubs. Gazelles and other animals drink in the pools, while butterflies, crickets, and other insects flit through oasis gardens.

Date palms are by far the most important and common oasis plant. Every part of the date palm is useful. Its fruit, the date, is eaten fresh or dried. Its trunk and leaves are used as building materials, and the fiber from its bark is twisted together to make rope. Date pits, or seeds, are burned as fuel or fed to animals. A visitor to the Sahara once wrote, "These magnificent palm groves are the blood and bone of the desert: life in the Sahara would be unthinkable without them... The size of an oasis is reckoned by the number of trees it contains, not by the number of square miles it covers."

People move to an oasis for many reasons. Some may be looking for jobs on date farms or in date-processing factories that prepare dates for export. Nomads sometimes settle at an oasis when they can no longer find pasture for their animals. Refugees from drought or wars may move to an oasis in search of water, food, and safety.

Growing oasis settlements face two kinds of water problems. The first challenge is how to transport water to people as the town expands. New housing areas and camps that are established to shelter refugees often lack wells or piped water. If the residents of these settlements cannot walk to water sources, water may have to be brought to them by truck.

Water shortages are the second problem facing oasis towns. In some oases, palm groves have been expanded into the surrounding desert. The new palm trees are kept alive with water that is pumped out of the ground. However, if too much water is pumped out, the underground streams that create an oasis could run dry.

20.6 Adaptations to Life in the Oases

Most oasis settlements are relatively small, accommodating fewer than 2,000 people. The largest oases may support thousands of date palms, but in an oasis that has little water, several families may have to share a single date palm.

The Traditional Ways of Oasis Settlers

Trading and farming are the major economic activities at an oasis. Most people are subsistence farmers, but others grow cash crops such as dates, wheat, barley, and vegetables. Farmers exchange their produce for goods brought in by camel, truck, and plane, while visiting nomads trade their meat, milk, and cheese for water and food. Caravans and trucks stop to trade and to fill their containers with water.

Most homes within an oasis town are constructed from mud bricks; in order to keep out the heat, the homes have few windows. Little work is done during the hottest part of the day. In the cool of the evening, men gather to discuss the day's news.

An oasis farmer is always struggling against the harsh desert environment. Blowing sand and creeping dunes will rapidly cover crops unless the plants are protected by windbreaks, which are walls or hedges that break the force of the wind. Windbreaks can also prevent sand from piling up on farm fields.

Water Problems Limit the Growth of Oasis Towns

Oasis settlements come in a variety of sizes. Most are small villages, but a few settlements are growing into towns and cities. As an oasis settlement expands, its water problems increase as well.

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20.8 Adaptations to Life in the Sahel

Most people in the Sahel are farmers or herders. In the past, these people have adapted to the challenge of farming and herding on marginal land in many ways. One adaptation was to plant crops such as millet and sorghum, which are grains that will flourish in dry places. Another adaptation was shifting agriculture. In this method, a farmer first cleared a field and planted it with crops for a year or two. Then the farmer moved on to a new field. Herders used a similar system to feed their animals, moving their herds from one grazing area to another to let the grass grow back.

The changing ways of life in the Sahel may be contributing to desertification. Some farmers, for example, have begun to raise cash crops, like peanuts, which often wear out the soil faster than traditional crops. After the soil has been depleted, or worn out, it may blow away before it can recover its fertility. Similarly, some nomads have increased the size of their herds so that on limited grazing land. Loss of vegetation from overgrazing may also contribute to desertification.

A television advertisement in southern Niger begins by panning slowly over the sandstorms like this one in Mali. The advertisement is intended to persuade people in Niger to switch from using wood to coal for cooking, in the process helping to preserve Niger's trees and perhaps, in the long run, to prevent desertification. In addition, farmers are testing new agricultural techniques to counteract desertification. In addition, farmers are testing new agricultural techniques to counteract desertification. In this chapter, you learned how people have adapted to living in the Sahara and the Sahel. You found out how people have learned to raise crops and animals on the marginal lands of the Sahel. In addition, you explored the effects of drought and desertification on the Sahel region.

Drought is a fact of life throughout the Sahel. One severe drought began in 1968, and very little rain fell during the next six years. Since then, desertification has begun, In areas with little rain, few plants grew. Without vegetation to anchor the dry soil in place, desert winds picked up the soil and carried it away. When this happened, the soil in the affected areas was completely blown away.

The Sahel is not the only area in the world that continues to be threatened by desertification. About one third of Earth's land is arid or semiarid, and some of these desert regions are expanding. In China, for example, the capital city of Beijing is sometimes blasted by sandstorms. This sand, which is labeled as dust from the Sahel, becomes very difficult. A Landscape Threatened by Drought and Desertification

The sahel is a transition environment between the dryer Sahara and the wetter savannas. Pastoral nomads survive by staying on the move. Farmers adapt by settling around oases that serve as farming and trading centers in this arid land. You found out how people have learned to raise crops and animals on the marginal lands of the Sahel. In addition, you explored the effects of drought and desertification on the Sahel region.