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ARTICLE

# Africa: Physical Geography

Africa has an array of diverse ecosystems, from sandy deserts to lush rainforests.

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## ARTICLE

## VOCABULARY

Africa, the second largest continent, is bounded by the Mediterranean Sea, the Red Sea, the Indian Ocean, and the Atlantic Ocean. It is divided almost equally in half by the Equator.

Africa's physical geography, environment, resources, and human geography can be considered separately.

Africa has eight major physical regions: the Sahara, the Sahel, the Ethiopian Highlands, the savanna, the Swahili Coast, the rainforest, the African Great Lakes, and southern Africa. Some of these regions cover large bands of the continent, such as the Sahara and Sahel, while others are isolated areas, such as the Ethiopian Highlands and the Great Lakes. Each of these regions has unique animal and plant communities.

### **Sahara**

The Sahara is the world's largest hot desert, covering 8.5 million square kilometers (3.3 million square miles), about the size of the South American

country of Brazil. Defining Africa's northern bulge, the Sahara makes up 25 percent of the continent.

The Sahara has a number of distinct physical features, including ergs, regs, hamadas, and oases. Ergs, which cover 20 percent of the Sahara, are sand dunes that stretch for hundreds of kilometers at heights of more than 300 meters (1,000 feet). Ergs cover most of Algeria and Libya, and parts of Mali and Nigeria. Ergs can contain large quantities of salt, which is sold for industrial and food use.

Regs are plains of sand and gravel that make up 70 percent of the Sahara. The gravel can be black, red, or white. Regs are the remains of prehistoric seabeds and riverbeds but are now nearly waterless.

Hamadas are elevated plateaus of rock and stone that reach heights of 3,353 meters (11,000 feet). They include the Atlas Mountains, which stretch from southwestern Morocco to northeastern Tunisia; the Tibesti Mountains of southern Libya and northern Chad; and the Ahaggar Mountains in southern Algeria.

An oasis is a hub of water in the desert, often in the form of springs, wells, or irrigation systems. About 75 percent of the Sahara's population lives in oases, which make up only 2,071 square kilometers (800 square miles) of the desert's vast area.

The Sahara's animal and plant communities have adapted to the region's extremely dry conditions. The kidneys of the jerboa, a type of rodent, produce highly concentrated urine that minimizes water loss. A

dromedary camel (*Camelus dromedarius*) conserves water by changing its body temperature so it doesn't sweat as the day gets hotter. The scorpion limits its activities to the night, burrowing into the cooler sands beneath the surface during the day. As a predator, the scorpion also absorbs water from the flesh of its prey.

Saharan plants survive thanks to root systems that plunge as far as 24 meters (80 feet) underground. In parts of the Sahara, plants cannot take root at all. In the southern Libyan Desert, for instance, no greenery exists for more than 195 kilometers (120 miles).

## Sahel

The Sahel is a narrow band of semi-arid land that forms a transition zone between the Sahara to the north and the savannas to the south. It is made up of flat, barren plains that stretch roughly 5,400 kilometers (3,300 miles) across Africa, from Senegal to Sudan.

The Sahel contains the fertile delta of the Niger, one of Africa's longest rivers. Unfortunately, the Sahel's fertile land is rapidly becoming desert as a result of drought, deforestation, and intensive agriculture. This process is known as desertification.

The Sahel's animal communities are constantly scavenging for scarce water and vegetation resources. The Senegal gerbil (*Taterillus pygargus*), the most common mammal in the Sahel and measuring only a few centimeters, consumes as much as 10 percent of the Sahel's plants.

The Sahel's green vegetation emerges only during the rainy season, when it

is often quickly harvested by farmers or consumed by animals. Baobabs (*Adansonia digitata*) are drought- and fire-resistant trees with trunks that are often 15 meters (50 feet) wide and as tall as 26 meters (85 feet). Acacia, whose deep root systems are ideal for semi-arid climates, are among the most common trees found in the Sahel. Cram-cram, a prickly grass, is the primary fodder for Sahel herds such as zebu cattle (*Bos indicus*).

## Ethiopian Highlands

The Ethiopian Highlands began to rise 75 million years ago, as magma from Earth's mantle uplifted a broad dome of ancient rock. This dome was later split as Africa's continental crust pulled apart, creating the Great Rift Valley system. Today, this valley cuts through the Ethiopian Highlands from the southwest to the northeast. The Ethiopian Highlands are home to 80 percent of Africa's tallest mountains.

The highlands' craggy landscape is perfect for nimble animal species. Native species such as the walia ibex (*Capra walie*), an endangered wild goat, and the gelada (*Theropithecus gelada*) live in the ledges and rocky outposts of the Simien Mountains. The most emblematic highland species is probably the Ethiopian wolf (*Canis simensis*), which is now on the brink of extinction.

Important plant species native to the Ethiopian Highlands include the Ethiopian rose (*Rosa abyssinica*), Africa's only native rose, and the ensete, a tall, thick, rubbery plant that is a close relative of the banana.

## Savanna

Savannas, or grasslands, cover almost half of Africa, more than 13 million square kilometers (five million square miles). These grasslands make up most

of central Africa, beginning south of the Sahara and the Sahel and ending north of the continent's southern tip.

Among Africa's many savanna regions, the Serengeti (or Serengeti Plains) is the most well known. The Serengeti is a vast, undulating plain that stretches 30,000 square kilometers (11,583 square miles) from Kenya's Maasai-Mara game reserve to Tanzania's Serengeti National Park.

The Serengeti is home to one of the continent's highest concentrations of large mammal species, including lions (*Panthera leo*), hyenas (*Crocuta crocuta*), zebras (*Equus quagga*), giraffes (*Giraffa camelopardalis*), and elephants (*Loxodonta africana*). Each year, more than one million wildebeest (*Connochaetes taurinus*) travel in a circular migration following seasonal rains across the Serengeti Plains. Their grazing and trampling of grass allows new grasses to grow, while their waste helps fertilize the soil.

### **Swahili Coast**

The Swahili Coast stretches about 1,610 kilometers (1,000 miles) along the Indian Ocean from Somalia to Mozambique. The nearby coral reefs and barrier islands protect the coast from severe weather.

There is not a lot of animal life on the sandy Swahili Coast. The golden-rumped elephant shrew (*Rhynchocyon chrysopygus*), an insect-eating rodent with a long snout, is common. A small, primitive primate known as the bush baby inhabits vegetated areas of the Swahili Coast. Bush babies, which have enormous eyes for hunting at night, feed primarily on insects, fruit, and leaves.

These more vegetated areas are located on a narrow strip just inland from the coastal sands. Heavy cultivation has diminished the diversity of plant species in this interior area of the Swahili Coast. Mangrove forests are the most common vegetation. Mangroves have exposed root systems, allowing the trees to absorb oxygen directly from the air as well as from the nutrient-poor soil.

## Rainforest

Most of Africa's native rainforest has been destroyed by development, agriculture, and forestry. Today, 80 percent of Africa's rainforest is concentrated in Central Africa, along the Congo River Basin.

Africa's rainforests have a rich variety of animal life; a six-kilometer (four-mile) patch could contain up to 400 bird species, 150 butterfly species, and 60 species of amphibians. Important mammals include African forest elephants (*Loxodonta cyclotis*), gorillas, the black colobus monkey (*Colobus satanas*), and the okapi (*Okapi johnstoni*), a donkey-like relative of the giraffe.

The driver ant is one of Africa's most aggressive rainforest species. Driver ants move in columns of up to 20 million across the rainforest floor and will eat anything from toxic millipedes to reptiles and small mammals.

The African rainforest's plant community is even more diverse, with an estimated 8,000 plant species documented. More than 1,100 of these species are endemic, or found nowhere else on Earth. Only 10 percent of the plants in Africa's rainforests have been identified.

## African Great Lakes

The Great Lakes are located in nine countries that surround the Great Rift Valley. As the African continent separated from the Arabian Peninsula, large, deep cracks formed in Earth's surface. These cracks later filled with water. This geologic process created some of the largest and deepest lakes in the world.

There are seven major African Great Lakes: Lake Albert, Lake Edward, Lake Kivu, Lake Malawi, Lake Tanganyika, Lake Turkana, and Lake Victoria. Lake Victoria, the largest lake in Africa, is the southern source of the Nile River, the longest river in the world.

The African Great Lakes region has a diverse range of aquatic and terrestrial animal life. Fish include the 45-kilogram (100-pound) Nile perch and the 2.5-centimeter (one-inch) cichlid. Migrating savanna animals, such as wildebeest, use the lakes as watering holes. Hippos (*Hippopotamus amphibius*) and crocodiles (*Crocodylus niloticus*) call the region their home.

The Great Lakes abut everything from rainforest to savanna plant communities. However, invasive species like the water hyacinth (*Eichhornia crassipes*) and papyrus (*Cyperus papyrus*) have begun to take over entire shorelines, endangering animals and plants.

## **Southern Africa**

The region of southern Africa is dominated by the Kaapvaal craton, a shelf of bedrock that is more than 2.6 billion-years old. Rocky features of southern Africa include plateaus and mountains, such as the Drakensberg range.

Southern Africa is the epicenter of Africa's well-known reserves, which



protect animal species such as lions, elephants, baboons, white rhinos (*Ceratotherium simum*), and Burchell's zebras (*Equus quagga burchellii*). Other important animal species include the impala (*Aepyceros melampus*), a type of deer, and the springbok (*Antidorcas marsupialis*), a type of gazelle that can spring several feet into the air to avoid predators.

Southern Africa's Cape Floral Region is one of the richest areas for plants in the world. While the Cape Floral Region covers less than 0.5 percent of Africa, it is home to nearly 20 percent of the continent's flora. The king protea (*Protea cynaroides*), South Africa's national flower, is found in the Cape Floral Region.

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##### **Population Density**

41.9 people per square kilometer (109 per square mile), as of 2020

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##### **Highest Point**

Kilimanjaro, Tanzania (5,895 meters/19,340 feet)

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## Most Renewable Energy Capacity

South Africa (6,065 megawatts), as of 2019

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