

# Biomes of the World

## Range, Habitat, Animals, Plants, Map & Illustrations



North Carolina is the most ecologically unique state in the southeast because its borders contain sub-tropical, temperate, and boreal habitats. Although the state is at temperate latitudes, the Appalachian mountains and the Gulf Stream influence climate and, hence, the vegetation (flora) and animals (fauna).

**Three biomes of North Carolina:**

**1. Coastal**

- Located in eastern North Carolina, the coastal region is much warmer and more humid.
- Climate: [Humid Subtropical](#)
- Geography: Flat coastal plain

**2. Piedmont**

- This region includes the [urban area] urban biomes of **Raleigh and Durham**, as well as a large area of semi-mountainous, rolling hills.
- Climate: Humid Subtropical
- Geography: Rolling, gentle hills and flat valleys. The Piedmont ranges from about 300–400 feet (90–120 m) elevation in the east to over 1,000 feet (300 m) in the west

**3. Appalachian Mountains**

- Mountainous western North Carolina
- Climate: Humid Continental
- Geography - The Appalachian Mountains with elevations between 1500 to more than 6000 feet.

**Biodiversity** includes all of the living things on the earth including plants, animals, fungi, and even microorganisms. Biodiversity is found in your backyard and all over the planet.

Biodiversity increases ecosystem productivity; all of the species in that ecosystem, no matter their size, have a big role. A diverse ecosystem can prevent and recover from lots of disasters. Humans depend on plants and animals. For example, one quarter of all prescription medicines in the U.S. have ingredients from plants. If a diverse ecosystem is more productive, it's easier to get these plants.

**Here are some of the major ways biodiversity helps humans:**

1. Plants absorb greenhouse gases and help stop global warming.
2. It is easier for biodiverse ecosystems to recover from natural disasters.
3. Healthy biodiversity of species can provide a variety of food (like meat and produce).
4. Many of our medicinal drugs come from plants.
5. All of our wood products come from nature.
6. We can learn more about our earth by observing a diverse ecosystem.
7. Many recreational areas benefit from a healthy ecosystem, which promotes tourism.
8. Biodiversity is beautiful and should be enjoyed.

## What Are the Threats to Biodiversity?

1. Using up natural resources before they can be renewed (over-fishing in oceans, or over-harvesting trees on land)
2. Habitat destruction like clearing forests or draining wetlands for towns or agricultural purposes
3. Releasing invasive species into foreign ecosystems (like the cane toad in Australia or the zebra mussel in the Great Lakes)
4. Any kind of pollution (water, air, soil, etc).
5. Failure of food chains

## Biosphere

The biosphere is the global sum of all ecosystems. It can also be called the zone of life on Earth, a closed (apart from solar and cosmic radiation) and self-regulating system.

## The Ecosystem

The ecosystem is composed of two parts: the biotic and the abiotic. The biotic is living component of the environment. It includes the fauna, animals, and the flora, plants, and all other living things. The abiotic is the non-living component which includes the air, soil, water, etc. The biotic( living) and abiotic( non-living) continuously interact with one another.

## Major Biomes of the World

Have you visited any biomes lately? A **biome** is a large ecosystem where plants, animals, insects, and people live in a certain type of climate. If you were in northern Alaska, you would be in a frosty biome called the **Arctic tundra**. If you jumped on a plane and flew to Brazil, you could be in a hot and humid biome called the **tropical rainforest**. The world contains many other biomes: **grasslands, deserts, and mountains**, to name a few. The plants and animals living in each are as different as their climates.

### Arctic Tundra

The **Arctic tundra is a cold, vast, treeless area of low, swampy plains in the far north around the Arctic Ocean**. It includes the northern lands of Europe (Lapland and Scandinavia), Asia (Siberia), and North America (Alaska and Canada), as well as most of Greenland. Another type of tundra is **the alpine tundra**, which is a biome that exists at the tops of high mountains.

**Special features:** This is the earth's coldest biome. Since the sun does not rise for nearly six months of the year, it is not unusual for the temperature to be below -30°F in winter. The earth of the Arctic tundra has a permanently frozen subsoil, called **permafrost**, which makes it impossible for trees to grow. Frozen prehistoric animal remains have been found preserved in the permafrost.

In summer, a thin layer of topsoil thaws and creates many pools, lakes, and marshes, a haven for mosquitoes, midges, and blackflies. More than 100 species of migrant birds are attracted by the insect food and the safe feeding ground of the tundra. Other animals that live in this biome include **polar bears, Arctic foxes, caribou, and grey wolves**. Plants that you might find include small shrubs and cushion plants, and the lichen which cover the many rocks on the tundra's terrain. The Arctic is also famous for the beauty of its flowers during early autumn.

### Deciduous Forest

This **biome is in the mild temperate zone of the Northern Hemisphere**. Major regions are found in eastern North America, Europe, and eastern Asia.

**Special features: Deciduous trees lose their leaves in fall.** The natural decaying of the fallen leaves enriches the soil and supports all kinds of plant and animal life. The deciduous forest is a lively place, where oak, beech, ash, and maple trees are typical, and wildflowers, berries, and many types of insect and animal life abound. But the fertile soil is also good for people, and in Europe most of the deciduous forest has been destroyed to make room for farms and homes. In the U.S., the deciduous forest is a home for deer, American gray squirrels, wood mice, rabbits, raccoons, woodpeckers, cardinals, and finches, to name a few.

## Taiga

Taiga, also known as the boreal forest or coniferous forest. **Taiga** is the world's largest terrestrial biome

These forests consist mainly of cone-bearing trees such as spruce, hemlock, and fir, which are well suited to the cold climate. The soil is not very fertile, however, because there are no leaves to decompose and enrich it. Some animals that thrive in this biome are the ermine, the moose, the red fox, the snowshoe rabbit, and birds such as the crossbill and the great horned owl.

**Special features:** Taiga is the world's largest land biome, and makes up 29% of the world's forest cover; the largest areas are located in Russia and Canada. The taiga is the terrestrial biome with the lowest annual average temperatures after the tundra and permanent ice caps. Extreme winter minimums in the northern taiga are typically lower than those of the tundra. The lowest reliably recorded temperatures in the Northern Hemisphere were recorded in the taiga of northeastern Russia. Desert

## Desert

**A desert is an area where little life exists because of a lack of water.** Scientists estimate that about one-fifth of the earth's land surface is desert. Deserts can be found on every continent except Europe. There are two different kinds: hot and dry (such as the Arabian and Sahara deserts) and cold and dry (such as Antarctica and the Gobi desert).

**In North America, there are four major deserts: the Great Basin, the Mojave, the Sonoran, and the Chihuahuan.** All but the Great Basin are hot deserts located in Mexico and the southwestern part of the United States. The Great Basin covers parts of Idaho, Nevada, Oregon, and Utah, and is considered a cold desert.

**Special features:** The lack of water and intense heat or cold make this biome inhospitable to most life forms. Most of the plants you'll see in the desert are species of cactus. You might come across yucca, aloe, octillo plants, or the tall saguaro cacti. A few animals—mainly reptiles, like snakes and lizards, and amphibians, like frogs and toads—are well adapted to the hot desert. Another famous desert animal is the camel, which can make water from the fat it stores in its hump. The Emperor and Adélie penguins are well-known animals living at the edge of the Antarctic desert.

## Grasslands

**Grasslands are places with hot, dry climates that are perfect for growing food.** They are known throughout the world by different names. In the U.S. they are called prairies and extend from the Midwest to the Rocky Mountains. In South Africa, grasslands are called the veld. Hot, tropical grasslands called savannas are found in South America and Africa. In Eurasia, temperate zone grasslands are called steppes; in South America, pampas.

**Special features:** This inland biome is made of vast areas of grassy field. It receives so little rain that very few trees can grow. The U.S. prairies are used to graze cattle and to raise cereal crops. There is little variety of animal life. Some original prairie animals like the wolf and bison have come close to being eliminated from the habitat by hunters. Today, some of the most common grassland animals include the

prairie dog and the mule deer in North America, the giraffe and the zebra in Africa, and the lion in Africa and Asia.

## **Mountains**

Mountains exist on all the continents of the earth. Many of the world's mountains lie in two great belts. The Circum-Pacific chain, often called the Ring of Fire, runs from the west coast of the Americas through New Zealand and Australia and up through the Philippines to Japan. The other major belt, called the Alpine-Himalayan, or Tethyan, system, stretches from the Pyrenees in Spain and France through the Alps and on to the Himalayas before ending in Indonesia.

**Special features:** Mountains are usually found in groups called chains or ranges, although some stand alone. A mountain biome is very cold and windy. The higher the mountain, the colder and windier the environment. There is also less oxygen at high elevations.

The animals of this biome have adapted to the cold, the lack of oxygen, and the rugged landscape. They include the mountain goat, ibex (wild goat), sheep, mountain lion, puma, and yak. All of them are excellent climbers, which means they can move freely in the steep, rocky landscape. Types of plants vary depending on geographic location and altitude. Lower elevations are commonly covered by forests, while very high elevations are usually treeless.

## **Rainforests**

Tropical rainforests are found in Asia, Africa, South America, Central America, and on many of the Pacific islands. They are often found along the equator. Almost half of the world's tropical rainforests are in the South American country Brazil.

There are other types of rainforests around the world, too. For example, northern Australia has a “dry rainforest” that experiences a dry season each year, and the rainy Pacific Northwest in the United States has a “temperate rainforest” that is made up of evergreen trees.

**Special features:** Tropical rainforests receive at least 70 inches of rain each year and have more species of plants and animals than any other biome. Many of the plants used in medicine can only be found in tropical rainforests. The combination of heat and moisture makes this biome the perfect environment for more than 15 million plants and animals. The thick vegetation absorbs moisture, which then evaporates and completes the cycle by falling again as rain.

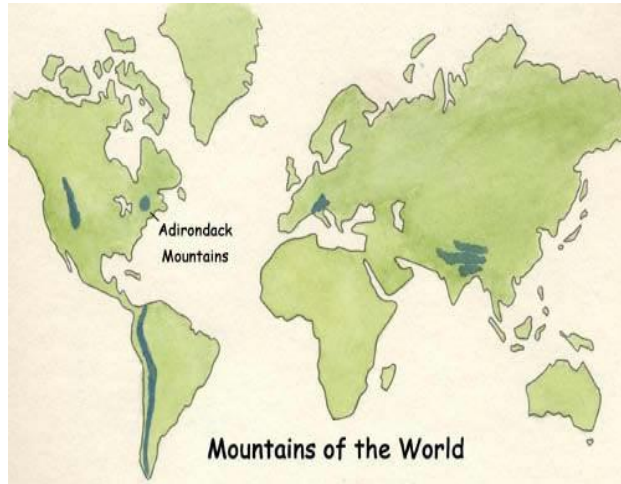
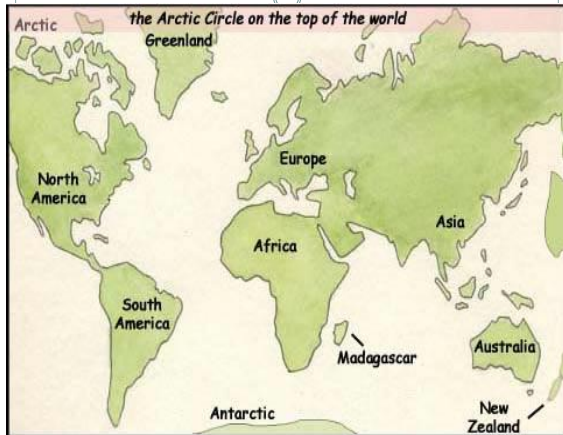
A rainforest grows in three levels. The canopy, or tallest level, has trees between 100 and 200 feet tall. They block most of the sunlight from the levels below. The second level, or understory, contains a mix of small trees, vines, and palms as well as shrubs and ferns. The third and lowest level is the forest floor, where herbs, mosses, and fungi grow.

Rainforests are an endangered biome. People have cut the trees and sold the wood for firewood, building materials, and paper. Parts of the rainforest have been burned to make space for grazing and farming. Every minute, approximately 30 acres of rainforest are destroyed. The large amounts of carbon dioxide that are released due to the cutting and burning of rainforests contribute to the greenhouse effect.

Some of the animals of the tropical rainforest are the anteater, jaguar, brocket deer, lemur, orangutan, marmoset, macaw, parrot, sloth, and toucan. Among the many plant species are bamboo, banana trees, rubber trees, and cassava.

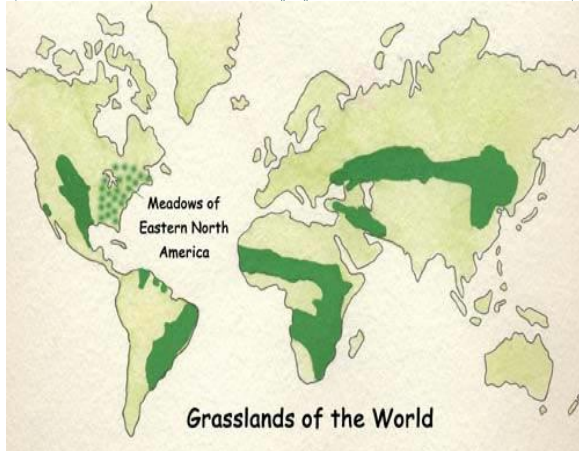
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## Location of Arctic Tundra



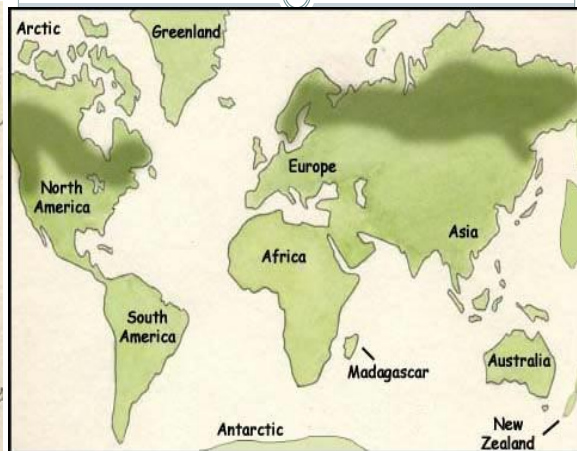
Mountains of the World

## Grasslands

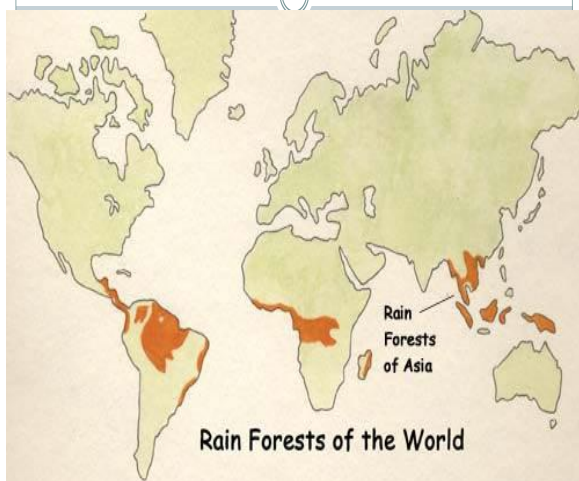


Grasslands of the World

## Location of Northern Boreal Forests or Taiga or Coniferous Forest



## Rainforests



Rain Forests of the World

## Grasslands

Pecos and Staked Plains of the Texas Panhandle



**Biodiversity and Biomes**  
**Environmental Science**

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Essential Question:** Why is biodiversity important to the biosphere?  
How do human activities impact the biosphere?

1. Why is North Carolina considered as the most ecologically unique in the southeast of the U.S.?  
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\_\_\_\_\_

2. What are the three types of biomes in North Carolina?  
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\_\_\_\_\_

3. What kind of biome do we have in Winston-Salem North Carolina?  
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4. What is biodiversity?  
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\_\_\_\_\_

5. Why is biodiversity important?  
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6. Write three ways on how biodiversity help human being.  
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7. Write three threats to biodiversity.  
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\_\_\_\_\_  
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8. Why is releasing invasive species a threat to biodiversity? ( Think!)  
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\_\_\_\_\_

9. Why is using natural resources before they can be renewed a threat to biodiversity? ( Think!)  
\_\_\_\_\_  
\_\_\_\_\_

10. What is a biome?  
\_\_\_\_\_  
\_\_\_\_\_

11. What determine the type of animals living in a certain biome?  
\_\_\_\_\_

12. What is an Arctic tundra biome?  
\_\_\_\_\_  
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13. What are the special features of the arctic tundra?  
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14. What is a permafrost?

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15. Why are there so many mosquitoes in the arctic tundra during summer?

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16. Why are there so many migrant birds in the arctic tundra during summer? ( Think!)

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17. What are the animals and plants in the arctic tundra?

Animals include:

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Plants include:

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18. What is a deciduous forest biome?

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19. What are the special features of the deciduous forest?

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20. What are the animals and plants in the deciduous forest?

Animals include:

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Plants include:

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21. What is a taiga, boreal forest, coniferous forest biome?

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22. What are the special features of taiga biome?

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23. What are the animals and plant in taiga , boreal forest, coniferous forest?

Animals include:

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Plants include:

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24. What is a desert biome?

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25. What are the special features of a desert biome?

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26. What are the four major deserts of North America?

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27. Why is the camel a famous desert animal?

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28. What continent does not have a desert biome?

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29. What are the two different kind of deserts?

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30. Give examples of deserts?

Hot and dry: \_\_\_\_\_

Cold and dry: \_\_\_\_\_

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31. What are the animals and plants in the desert biome?

Animals include:

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Plants include:

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32. What are grassland biomes?

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33. What are the different names of grasslands biome?

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34. What are the special features of a grassland biome?

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35. What are the animals and plants in the grassland biome?

Animals include:

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Plants include:

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36. What are the two great belts where many of the mountains exist?

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37. What are the special features of mountains?

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38. What are the animals in the mountains?

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39. What is a rainforest biome?

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40. Where are most rainforest found?

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41. What are the special features of rainforest biomes?

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42. What are the three levels of growth in the rainforest?

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43. Why are the rainforest considered as endangered biomes?

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44. What are the animals and plants in the rainforest biome?

Animals include:

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Plants include:

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41. Which of the following would be considered to be a biotic component of an environment?

- a. Fungi                      b. Water                      c. Soil                      d. Fire

42. Which of the following has the least similarity when comparing two examples of the same biome located in different parts of the world?

- a. Continent                      b. Latitude                      c. Elevation                      d. Climate

43. What is the effect of latitude on biomes?

- a) Latitude refers to the distance from the equator. The closer an area is to the equator, the more solar energy and rainfall it receives  
b) Latitude refers to the distance from the equator. The closer an area is to the equator, the less solar energy and rainfall it receives

44. Why is biodiversity important to the biosphere?

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45. How do human activities impact the biosphere?

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**North Carolina** is in the biome known as the temperate deciduous zone. The most outstanding characteristic of this zone is the changing of seasons through the complete cycle of spring, summer, fall, and winter. This quest will introduce you to this biome and its most outstanding characteristic. You will learn many things about your natural environment and how living things, both plant and animal, have adapted to the changing of the seasons.

Forest Vocabulary

Print this list.

**axis**-- an imaginary straight line through the center of the earth around which the earth rotates

**biome**-- all the plants and animals that live in a certain region

**characteristic**-- a feature

**deciduous**-- shedding leaves at the end of the growing season

**ecosystem**-- a part of a biome in which all living things work together as one unit

**temperate**-- having a mild or moderate climate

**trait**-- a characteristic that is inherited

Biome	Water	Temperature	Soil	Plants	Animals
Desert	Almost none	hot or cold	poor	sparse - succulents (like cactus), sage brush	insects, arachnids, reptiles and birds (often nocturnal) camel, vultures
Tundra	dry	cold	permafrost (frozen soil)	lichens and mosses	migrating animals mosquitoes
Taiga (coniferous forest)	adequate	cool year-round	poor, rocky soil	conifers	many mammals, birds, insects, arachnids, etc.
Temperate Deciduous Forest	adequate	cool season and warm season	fertile soil	deciduous trees (Leaves color changes)	many mammals, birds, reptiles, insects, arachnids, etc.
Grassland	wet season, dry season	warm to hot (often with a cold season)	fertile soil	grasses (few or no trees)	many mammals, birds, insects, arachnids, etc.
Tropical rain forest	very wet	always warm	poor, thin soil	many plants	many animals
Swamp	very wet	warm	nutrient-rich soil	many plants	many animals

<http://www.enchantedlearning.com/biomes/>

Describe the following land biomes. Use the data above and the pictures below for your descriptions.

Example:

1. Desert is a type of biome that has almost **no water**. The temperature is **very hot during daytime and very cold during night time**. The soil is **poor for farming** because of insufficient water. The flora in the desert includes succulents like cactus and the fauna are more of insects and arachnids, reptiles, and birds. Most animals are **nocturnal** meaning they only go out at night.

2. Tundra is \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

3. Taiga is \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. Temperate Deciduous Forest is \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

5. Grassland is \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. Tropical rain forest is \_\_\_\_\_  
 \_\_\_\_\_  
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