**APES- Introduction to the World’s Biomes**

**Objective:** Understand the **plants, animals and climate** that characterize each biome of theworld. Site: http://mbgnet.mobot.org/ **Missouri Botanical Gardens**

Browse each biome and fill out the chart below and answer the questions below about each individual biome



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| **Terrestrial Biome** | **Common Plants/** | **Interesting Features** | **Weather/Climate** |
|  | **Animals** |  |  |
|  |  |  |  |
| **Rainforest** | Double Coconut, Banyan Tree, Capybara, Chimpanzee, Bearded Pig | Home to half of Earth’s plant and animal species and tribal cultures, source of medicinal plants | Very warm and wet, 70-85F, regular rainfall |
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| **Tundra** | Lichen, Cushion Plants, Polar Bears, Arctic Foxes | Temps can dip to as low as -60F, soil is usually frozen | Very cold, ridden with permafrost, low precipitation |
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| **Taiga** | Evergreens, Birch, Hawk Owl, Beavers, Moose, Lynx | The largest biome, primarily forest, located in the northern hemisphere | Low temperatures, 12-33 inches a year of rain, long nights in winter, long days in summer |
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| **Desert** | Various Cacti, Dragon Tree, Dingo, Fennec Fox | Deserts near mountains caused by rain shadow effect, found along 30N and 30S | Hot during the day, cool at night, little precipitation and humidity |
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| **Temperate** | Silver Maple, Red Maple, Black Bear, Turkey | Forest leaves change colors over seasons | Changing seasons, 30-60 in. of rainfall a year, weather varies over seasons |
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| **Grasslands** | Prairie Blazingstar, Coneflower, Giraffe, Warthog | Found everywhere except Antarctica | 10-30 in. of rainfall per year, fertile, temperate or hot all year |
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| **Aquatic Biomes** | **Common Plants/** | **Interesting Features** | **Weather/Climate** |
|  | **Animals** |  |  |
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| **Rivers & Streams** | Anaconda, Otter, Common Puffer fish, River Turtle | Water is filtered through groundwater, water accumulated through runoff | Climate depends on area that river resides in |
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| **Ponds & Lakes** | Algae, Bass, Carp, Platypus, Trout, White Pelican | Ponds can support rooted plants, largest lake has area of 143,244 square miles | Climate depends on area that the pond or river resides in |
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| **Wetlands** | Alligator, Walking Catfish, Forbs, Grasses | Wetlands being destroyed by settlement, prevents flooding in areas and is a home to many organisms | Vary depending on area, moderate temperatures, moderate to heavy rainfall |
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| **Shorelines** | Crocodile, Sea Lion, White Collared Kingfisher, Herring Gull | 8 different listed shorelines, tides created by pull of the moon | Moderate climate due to the proximity of the ocean, windy |
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| **Temperate Oceans** |  |  |  |
|  | Salmon, Grey Whale, Mollusks, Eels, Lantern fish, Halibut, Hagfish, Seaweed | Photosynthesis only takes place in the euphotic zone, other zones are too dark | Climate depends on depth, higher depths warmer, lower depths freezing |
| **Tropical Oceans** | Stonefish, Turtle, Barracuda, Porpoise, Mollusks, Marlin | Many animals have adapted to the warm waters of the coral reefs, adaptations | Found in shallow, warm water, coral reefs |
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**Rainforests**

**1: What are the two types of rainforests? In the United States, where are our rainforests located? (Be specific). What percentage of our original rainforests does this represent?**

The two types of rainforests are temperate and tropical. In the U.S, rainforests are found on the Pacific coast, from Oregon to Alaska. This represents

**Tundra**

**2: Where is the Tundra Biome located? What is permafrost? What percentage of the Earth’s surface is covered by Tundra?**

Tundra are located near the North Pole. Permafrost is a frozen layer of soil that is characteristic to tundra, and they cover about a fifth (~20%) of the Earth’s surface.

**Taiga**

**3: Where is the Taiga Biome located? What is the soil like in the Taiga- why?**

Taigas are located in Canada, Europe, and Asia. Soil in taigas is lacking in nutrients because decomposition happens very slowly.

**Desert**

**4: How much rainfall is characteristic of deserts? Explain where most deserts are located and the RAINSHADOW Effect.**

Rainfall is seldom seen in deserts because of the rain shadow effect, which occurs in deserts located on the leeward side of mountains. Clouds travelling over mountains rain due to the cold temperatures near the peaks, and is stored again because of the warmer temperatures that are encountered down the slope.

**Temperate Deciduous Forest**

**5: What is special about this biome? Deciduous trees have special leaves that are adapted to the biome- explain.**

The biome’s changing seasons and color are unique to it. The leaves on the deciduous trees change color in autumn, fall off in winter, and grow back in spring in order to survive winter.

**Grasslands**

**6: Grasslands are found on every continent except for one- which? How much rainfall do grasslands get- why is this important? What are the 3 types of grasslands that are found in North America? What are grasslands called in other places in the world?**

Grasslands are not found in Antarctica. Grasslands get about 10-30 inches of rainfall per year, and if they received more or less, they would be forests or deserts. Grasslands are called pampas in South America, steppes in Europe, and savannas in Africa.

**Rivers & Streams**

**7: How much water on Earth does running water represent? What is a watershed? What are the two main processes that happen to surface water? What is the longest river in the world? What is the longest river in the United States? What is a hydroelectric dam?**

Running water represents .3% of Earth’s water. A watershed is an area of land that contains a common set of streams and rivers that all drain into a single larger body of water. The two main processes that affect surface water are surface runoff and infiltration. The longest river in the world is the Nile; in the U.S, the Mississippi-Missouri. A hydroelectric dam is a dam that produces power through passing water.

**Ponds & Lakes**

**8: What is the difference between a pond and lake? Name the four stages of succession of a pond. Explain how an Oxbow Lake is formed. What is the largest lake in the world? What is the largest lake in the United States? What is the deepest lake in the world? What is Lake Effect Snow? Explain. What is the cause of summer kill in some lakes?**

A pond is shallow enough to support rooted plants, and a lake is too deep to do so. The 4 steps of succession are 1: Seeds and animals migrate to the pond as pioneers. 2: Emergent plants grow and die, which raises the pond. 3: After enough growth occurs, emergents can grow in the pond, and the pond could turn into a marsh.

**Wetlands**

**9: What are the types of freshwater wetlands- name and define them. Explain why wetlands are so important. What is happening to our wetlands?**

Marsh – an area inundated in 1-6 feet of water that contains many small plants.

Swamp – Slow moving streams, rivers, or depressions that host trees and shrubs.

Bog – A wetland that accumulates peat. Most water comes from precipitation, and small plants thrive.

Prairie Pothole – Bowl-like depressions found in the Great Plains. Usually not wet year round.

Riparian Marsh – Marshes that occur along rivers that absorb excess water when flooded and release water when dry.

Wetlands are important because they prevent flooding in areas by absorbing excess water. Wetlands are being destroyed by human intervention and landscaping.

**Shorelines**

**10: What kind of life forms will you find in the intertidal zone? What is a barrier island? What is an estuary? What is life like in an estuary? What is a salt marsh? What is the Mangrove Forest? How are the trees specially adapted to living in that environment? Why are they important?**

You may encounter organisms like sea stars and clams along intertidal zones. Barrier islands are islands that are separated from the mainland by bodies of water ranging in size. An estuary is a partially enclosed body of water where seawater is mixed with freshwater from the land. Estuaries are home to both organisms from the land and sea, such as mammals, birds, fish, shellfish, and reptiles. A salt marsh is an area (presumably a barrier island or any coastal area) that is exposed to salt water. The Mangrove Forest is a forest comprising of Mangrove trees that thrive near large river mouths. Trees have a special desalinating root structure that keeps them from being swept away by the moving water. They are important because they prevent erosion of the coastline.

**Temperate Ocean Zones**

**11: Name and describe the different zones of the ocean and how they are divided. Describe the different photic zones of the ocean. What are kelp forests? Where are they found?**

The sea’s zones are sorted by how much sunlight can penetrate the area. The water itself is called the pelagic zone, which extends to the euphotic zone, the sunlit zone. As the water gets deeper, sunlight diminishes, which is evident in the disphotic, or twilight zone. Sunlight soon completely disappears in the aphotic and benthic zones. Kelp forests are large clumps of seaweed encountered in temperate oceans like the Pacific and Atlantic coasts.

**Tropical Ocean Zones**

**12: What is coral made of? Explain. Where are most coral reefs located? Where is the largest coral reef?**

Coral is made up of animals called polyp that accumulate and create calcium carbonate exoskeletons, which give coral its distinct hardness. Coral reefs are located in shallow, warm waters, and the largest coral reef is the Great Barrier Reef in Australia.