

## Encounter/Outreach – Habitats

Objectives: Describe the basic requirements for all living things to maintain their existence. Discover the differences in habitats (a region where a plant or animal naturally occurs). Learn how animals are adapted for life in their particular habitats. Describe the relationship between various plants and animals within a habitat.

Key Terms: **Habitat, Food Chain, Habitat Destruction, Ecosystem, Adaptation**

**TUNDRA:** The climate here has low temperatures, cold, dry winds, and not much rain. (In the wettest months of the summer it only rains about one inch). North of the Arctic Circle there is permafrost (permanently frozen ground below the uppermost layer of soil), so melting snow water collects on the soil's surface in spring so some plants are able to grow. Within this **HABITAT**, songbirds live on seeds, insects, and berries. Birds of prey seek out rodents and lemmings. Foxes, wolves, and bears also prey upon the lemming, completing the **FOOD CHAIN** here. The chinchilla is found in this environment. It is an herbivore that feeds on whatever plant matter it can find. It has **ADAPTATIONS** for survival including specialized fur (too thick for penetration of even fleas!) and lava dust baths to keep fur clean.

**CONIFEROUS FOREST:** This is where trees grow that do not lose their leaves. Temperatures vary from lows of -20 to highs of 70 degrees Fahrenheit. The ground thaws completely and winters are shorter and less severe than in the tundra. Annual rainfall is good, but drainage is poor. Cold air reduces evaporation. Conifer needles and flexible branches do not allow snow to collect and crush these trees. As evergreens, they can photosynthesize whenever conditions permit. Within this habitat, birds eat seeds produced by the pine trees. Rodents feed on grasses, mosses, and herbs. Wolves eat a wide variety of smaller rodents, hares, birds, and large prey like moose and elk. Show the pelt of the ermine, a relative of the ferret. Pass its fur around. This small mammal makes use of the air pockets trapped in plant undergrowth where the temperature never drops more than 1 or 2 degrees below freezing. Here they can also locate their prey, which includes mice, moles and voles.

**DECIDUOUS FOREST:** This climate is moderate, varying 0 degrees to 80 degrees Fahrenheit. Precipitation varies from 30 to 50 inches per year. Winters are shorter than in the coniferous forest but cold enough to reduce growth. To increase efficiency, deciduous trees enter a dormant period and shed their leaves. The leaves decompose on the ground, creating rich humus. Here, the buds and seeds of trees provide food for many species of birds. Larger birds, such as jays and woodpeckers, eat acorns. Rabbits nibble at herbs, tree bark, and small plants. Larger carnivores of the deciduous forest have suffered from human intrusion more than those in any other zone. Some have retreated into the coniferous or mountain forest, but many, such as bobcats or members of the weasel family remain. Here the trees provide shelter, protection, and nesting sites for a large variety of forest animals. Others dwell in the rich humus beneath the trees. The rabbit, the box turtle, and the opossum all live in this habitat.

**GRASSLANDS:** Similar in climate to the deciduous forest, but with rain only sufficient for many grass species, not tree growth. Intermittent fires kill seedling trees but grasses recover quickly. The short-lived grasses, contribute large amounts of organic material to the soil, providing rich nutrients. This habitat contains many grazing animals. They are built for speed, and safety in numbers is often the rule for these prey animals. Long-distance vision is very important for both predator and prey. Without trees for concealment, many rely on camouflage coloration. Due to over hunting, the bison that once wandered the prairies in the American West all but disappeared. Modern beef cattle overgrazed and upset the natural balance. Today, only a few

small areas of the earlier grassland **ECOSYSTEM** remain. The ferret, dove, and rabbit all come from the grassland habitat.

**DESERT:** There are cool deserts, averaging about 50 degrees Fahrenheit, and hot deserts, where the average is over 68 degrees Fahrenheit. Temperatures vary greatly within a 24-hour period and from winter to summer. Less than 10 inches of yearly rainfall is recorded in the desert. It is this lack of water, not temperature, which produces deserts. Vegetation has to be able to survive these extreme conditions. Succulents (juicy plants), can survive long droughts by storing moisture. Most cactus plants have a rounded shape that minimizes the exposed surface area and can store rainwater. Propagation of some of these desert plants is dependent on animals. The Saguaro cactus produces a sweet fruit that is eaten by birds that, in turn, eliminate the seeds below the nesting site where they remain until the next rain produces germination. Birds are the animals most able to be active during the day: they have no sweat glands and a higher body temperature. In addition, birds of prey and insect-eating birds can get their moisture from the foods they eat. Many animals are nocturnal and some burrow to escape the heat of the day. The bearded dragon, blue-tongued skink, and tarantula all are found in the desert.

**TROPICAL RAINFOREST:** The tropical forests are areas with lots of rain, high humidity, relatively high and constant temperatures, and little seasonal variations. These lush forests receive at least 100 inches of rain annually. Temperatures remain mostly at a comfortable 75 degrees Fahrenheit. Two-thirds of all living organisms are found in the rainforest. The soil, however, has very poor nutritional value. Without a seasonal change to provide decaying plant matter, no rich humus soil layer is built up. This, in addition to the heavy rains, contributes to failure of farming attempts when the rainforest is cleared to make room for agriculture. Once the bare soil is exposed, the rain erodes it and the sun bakes it. Interdependence among species is crucial in the rainforest! Plants must rely more on animal power than wind to scatter their seeds. Bats, insects, and birds disperse seeds over long distances. Some of the largest birds of prey are found here, and feed on primates. Large cats, making up the top of the food chain in this ecosystem, drop on unsuspecting prey below. The parrot, boa, and hissing cockroach each live in different layers of this habitat.

**RIVERS AND LAKES:** Only a fraction of a percent of the water on earth is fresh water. This area consists of flowing habitats (icy mountain brooks to vast tropical rainforest rivers), and still water habitats (tiny rain pools to giant lakes). At a river's source, mosses, liverworts, and ferns are found. As it emerges from its foothills, sediment deposits allow for more plants, and as it nears the sea, the silt that is deposited is high in nutrients, and life is at its richest. Reeds, rushes, and plankton abound. In lakes, plant life varies from phytoplankton (typically green algae) to reeds and rushes to water lilies depending on the degree of nutrients available. Plant life determines what animals can survive in both rivers and lakes. Insects feed on plants, and plants, in turn, attract birds (dippers) at the river's source. Fish here must be strong swimmers (trout and stone leach). Perch, pike, insects, birds, and mammals can be found in abundance as the river nears the sea. Insects, plankton, shellfish, and fish live in the lakes, and birds such as reed warblers nest among the reeds. Various mammals either forage or hunt along shorelines. Human activity, including building, razing and diverting waters has altered these habitats reducing and destroying plant and animal life in the lakes and rivers. **HABITAT DESTRUCTION** of some type by humans has occurred in almost every type of ecosystem across the planet.