

# *Animal and Plant* **ADAPTATIONS**



The male emperor penguin incubates the egg on his feet, under a fold of abdominal skin. During incubation, emperor male penguins huddle together in large groups to reduce exposed surface area of the penguins to the extreme cold.



**Chimpanzees have an incredible ability to adapt to their environment. In the wild they use a variety of tools and techniques to get food. New tricks are shared within groups by one chimp actively teaching another as well as by passive imitation.**



**Native frogs, toads, and salamanders spend the winter hibernating under water or buried in the soil, depending on species. In general, salamanders, toads, wood frogs, and frogs all hibernate.**



The weasel's coat changes color. The brownish summer coat turns white for the winter. Just the tip of the tail stays black. The arctic fox also changes colors for the winter.



The Wilson's Warbler spends spring and summer in the Pacific Northwest and can be found as far north as Canada. But come fall, they migrate as far as Central America to spend the winter. This involves a nonstop flight of up to 3,500 km (2,175 miles) and 88 hours. Studies have shown that this species has an exceptional ability to accumulate and retain fat, apparently an adaptation for such sustained flights.



**This Variable Checkerspot butterfly can't fly if it gets too cold. One way for it to warm up is to bask in the sun. Can you see how dark its body is? Remember that dark colors absorb light better than light colors.**



**Hares will form groups of 100 to 300 animals. While some rest and feed the others act as guards. Hares are able to survive the Arctic winters by huddling together in snow drifts, under bushes or behind rocks. Young hares quickly learn to sit perfectly still and become almost invisible to their enemies. It moves so quickly that predators have a hard time catching it.**





The caribou's normal body temperature is set at 105 degrees F. Their circulatory system is uniquely adapted to northern climate extremes. They have a four-chambered stomach to save food for later. Their muzzles are unique because they are covered with short hairs which help keep out the cold.

Each zebra has its own stripe pattern. The zebras recognize each other by their stripe pattern and by their smell. The stripes are an adaptation that helps a group of zebras look like one large animal. Do you see the large ears on the zebras? Large ears help to dispel or get rid of body heat. They also have strong muscles and large lungs that allow zebras to keep running for long distances without tiring or slowing down. Zebras are grazers, so they spend much of their life migrating from place to place in search of grasses to eat.





**The spines or thorns on this cactus are actually its leaves. The spines of the cactus protect it from animals, and provide it with some shade**



**The Creosote is found in the hot dry deserts throughout the southern United States and Mexico. The leaves of the creosote bush are coated with a waxy substance to prevent water loss in the hot desert. The wax of the creosote bush also protects the plant from being eaten by most mammals and insects. The leaves of the Creosote are small and multi-directional insuring that some of the leaves will remain in the shade throughout the day. Some reports say it gives off a chemical into the soil that prohibits other plants from growing near it.**





The Manzanita plants have a leathery surface and are positioned vertically to provide as little surface area to the sun as possible. Fire is important to its seed distribution. Seed pods must be scorched or burned in order to release the seeds found inside.



Notice how the leaves of the Mojave yucca are shaped to channel rain and dew to the center of the plant



**Prairie grasses** have narrow leaves which lose less water than broad leaves. Soft stems enable prairie grasses to bend in the wind. Narrow leaves minimize water loss. Roots of prairie grasses extend deep into the ground to absorb as much moisture as they can. These extensive root systems also help to prevent grazing animals from pulling roots out of the ground. Many grasses take advantage of exposed, windy conditions and are wind pollinated



Prop roots help support plants in the shallow soil of the tropical rain forest. Shallow roots also help capture nutrients from the top level of soil. The smooth bark and smooth or waxy flowers speed the run off of water. Many leaves of plants found in the tropical rain forest have drip tips and waxy surfaces which allow water to run off quickly to discourage growth of bacteria and fungi.





The taiga has cold winters and warm summers. Many trees living in the taiga are evergreen so that plants can photosynthesize right away when temperatures rise. Many trees have needle-like leaves which allow for less water loss. Needles also shed snow more easily than broad leaves. The waxy coating on the needles prevents evaporation. Needles are dark in color allowing more solar heat to be absorbed.



Many trees have thick bark to protect against the cold winters in the temperate deciduous forest. Trees in a deciduous forest drop their leaves in the autumn, and grow new ones in spring). Most deciduous trees have thin, broad, light-weight leaves that can capture a lot of sunlight to make a lot of food for the tree in warm weather; when the weather gets cooler, the broad leaves cause too much water loss and can be weighed down by too much snow, so the tree drops its leaves. New ones will grow in the spring.