The Ecosystems program takes place in the zoo’s Northern Trail bioclimatic zone. During your program, you and your students will discover what the essential elements of the taiga and tundra ecosystem are, and how they are interconnected. To help you and your students to get the most out of the zoo program, we have put together an overview of the program and a list of key vocabulary words used by our instructors. If you visit the zoo after you have completed the classroom lessons of the Ecosystems curriculum, your students will already be familiar with these key concepts and vocabulary words, but if you visit the zoo first, they may not be as familiar with them. Knowledge and understanding of these key ideas will enhance their zoo visit.

- Your Ecosystems program will last for approximately one hour.
- Please arrive at the zoo dressed appropriately to be outdoors, regardless of the weather.
- Please have your students eat either a snack or their lunches prior to the program time.
- Please refrain from visiting the Northern Trail bioclimatic zone prior to your program.
- We rely on chaperones to help the students in this program—please request that chaperones do not bring younger siblings and that they turn their cell phones off during the program time.
- Your zoo instructor will meet you under the large tree in front of the Education Center in the South Entry Plaza and will be holding a sign with your program name.

For more information and activities focusing on the animals and plants in Woodland Park Zoo’s Northern Trail bioclimatic zone, a Northern Trail teacher packet is available downloadable from our website http://www.zoo.org/education/teacher-packets.

PROGRAM OVERVIEW

The instructor will begin with a review of concepts and terms, and will then take you and your students on a tour of the zoo’s Northern Trail. At each stop, students will observe part of the ecosystem, and name as many essential elements (listed on this page) as they can find. The group will discuss what each element is, and how and why it is important to other parts of the ecosystem.

CONCEPTS

- An ecosystem is an area of any size in which a community of organisms (biotic) and its environment (abiotic) interact and through which nutrients and energy cycle.
- Organisms can be categorized by the functions they serve in an ecosystem: producers, consumers or decomposers.
- Organisms in an ecosystem have dependent and interdependent relationships.
- Essential elements of an ecosystem include both the organisms within the ecosystem and the physical attributes of the ecosystem, including weather and climate.

ESSENTIAL ELEMENTS OF AN ALASKA ECOSYSTEM AND THEIR ROLES IN THE ENVIRONMENT

- Plants and trees: Provide food for some animals; nesting material, shelter and cover for small animals; building materials; prevent soil erosion
• **Snags**: Provide homes for animals, food for certain invertebrates and in turn feeding areas for birds and other animals, they also provide nesting areas

• **Streams and Snowmelt**: Provides water for drinking and bathing. Many plants grow along streams because of the water supply and these create homes for animals.

• **Predator**: Keeps prey populations in balance; leftover kills provide food for scavengers

• **Prey**: Provides food for predators; keeps grass growing by trimming the top and stimulating growth; fecal material provides fertilizer

• **Dens**: Provide essential shelter for animals in cold, harsh climates

• **Rocky Outcroppings**: provide a lookout for animals to watch for predators and a place for predators to watch for prey

### VOCABULARY

- **Camouflage**: the natural coloring or patterning of an animal that allows it to blend easily with its surroundings
- **Carnivore**: an animal that kills and eats other animals
- **Ecosystem**: an area of any size in which a community of organisms (biotic) and its environment (abiotic) interact and through which nutrients and energy cycle
- **Herbivore**: an animal that feeds on producers such as plants, algae or lichens
- **Interdependence**: the reliance of plants and animals on each other for survival
- **Omnivore**: an animal that eats both plant and animal matter
- **Predator**: an animal that obtains food by killing and eating other animals
- **Prey**: an animal that is killed and eaten by other animals
- **Scavenger**: an animal that feeds on other dead animals for all or part of its diet
- **Snag**: a tree that has died but remains standing; often there are few branches and the top has been broken off
- **Taiga**: a bioclimatic zone that is characterized by conifers and occurs north of the temperate forest
- **Tundra**: windy, treeless and periodically cold environments that occur at high latitudes or high elevations

### PRE- AND POST-ASSESSMENT

The following activity will provide you with an understanding of your students’ current knowledge of ecosystems. In order to encourage their creativity and expression, remind your students that this exercise is not a test, but is a way of seeing what they already know and what they haven’t learned yet. After your visit to the zoo for the Ecosystems program, repeat the activity and compare student work from before and after.

### ECOSYSTEMS CONCEPT MAP

Have your students work in small groups or as a whole class to create a concept map showing the essential elements of an ecosystem found in Alaska and how they are interconnected. For example, the map might look like a spider’s web with all of the connections drawn between each element of the ecosystem. Or there might be a main concept, “Alaska Ecosystem” and subheadings of “Living” and “Non-Living” with plants, animals, snags, snowmelt and other essential elements of an Alaska ecosystem radiating from the appropriate heading.

**QUESTIONS ABOUT YOUR ECOSYSTEMS PROGRAM?**

**PLEASE CALL 206-548-2424.**