



General Ecology Hike

For 4th grade and up

Theme: Like the parts of a bicycle, all components of an ecosystem are needed to make the system work.

“Ecosystems are not only more complicated than you think, they are more complicated than you CAN think.” -- Frank Egler

Universal themes inherent in program or explicitly written in theme statements:
survival, connection, care, protection

Materials: Bear scat with seeds in it, in a tub
Bee puppet and little container of “pollen”

Introduction - Who has ridden on a bicycle? Pretend to do so and get the students to do the same. A bike is an example of a system -- many individual parts that all work together to make something happen. Other examples - digestive system, circulatory system, a car, a dish washer.

An ecosystem is also a system, but more complicated.

See if they can define “ecosystem” -- the total of living and non-living elements of a particular place, and all their interconnections.

What happens to a bike if you take off the chain? Take off the wheels? Take off the brake, or handlebars? Impairs the function.

What happens to an ecosystem when you pull elements out of it?

Game: Circle of life: Participants pick elements of ecosystem: favorite plants, animals, fire, air, water, etc. Try to get humans, fire and sun in the group, even if you have to choose one for yourself. Hold hands, everyone leans back to be supported by whole circle. Ask what happens if water is polluted, and can't be in circle anymore. Yank the water out and let the circle collapse. Repeat with a few other examples. Just like taking the chain off a bicycle.

Game: Solar Energy Pulse: A very nice add-on to the activity above. Shows how the sun is vital to the ecosystem. Everyone should already be in a circle holding hands, and have chosen elements of the forest ecosystem to represent. The person who represents the sun squeezes her left hand on the right hand of the person next to her; that person passes the squeeze on, and so forth until the squeeze has been passed all around the circle and back to the sun. Explain how all members of the ecosystem depend on the sun for energy. Try to get the pulse going as fast as possible: time with a stopwatch. “We can do better than that! The record was 2.5 seconds.” People get very excited by the challenge.

Start hiking

“Keep your eyes open for examples of ecosystem members being connected.” (watch for teachable moments).

Examples of things to look for:

- Insects pollinating flowers
- Fruits with big seeds that are dispersed by fruit eaters
- Parasitic plants like mistletoe
- Ants at work, carrying seeds or dead bugs
- A standing or downed dead tree that is an animal’s home

If you encounter any of these, make an impromptu stop to examine how they are like parts of a bicycle in the greater ecosystem. Show the bear scat with the seeds, if appropriate.

If you find insects pollinating flowers you could do the following activity

Pollination Game – use a bee or butterfly puppet and a little flour or non-dairy creamer (pretend it’s pollen)

1. ask one student to be the insect and give him/her the puppet
2. ask all others to be pretty flowers, holding two hands together, palms up like a pretty flower. Sprinkle some “pollen” on some of the hands, leaving others without.
3. direct the student with the puppet to visit each flower and drink some nectar (make loud slurping noises as this is done).
4. Start with a child-flower that has pollen/flour on it, bee will get visible pollen on its face. Direct the bee to visit another flower that has no pollen/flour and show all the other students the pollen/flour brought over from the first plant by the bee as it sips nectar (slurp) from the second plant.

Explain that plants make the best seeds when pollen from one plant is brought to a different plant, where it joins with an egg to make a seed.

Have the student with the bee puppet continue to visit each flower, spreading pollen from one to the next.

Game: Carrying capacity Jam - a personal illustration of interspecific competition:

How many flowers can live in this meadow?

Draw a 4’ diameter circle in the dirt and tell them this is the only good habitat available, and they all want to live! Jam as many people into it as will fit. There will be much pushing, shoving and some kids will be left out. They are “dead.” Discuss how limiting resources (in this case, space) create an upper limit to a specie’s population. Competition for limiting resources is that tight in the natural world, and many plants and animals exist right at the edge (hungry most of the time), others don't make it. Point out how they pushed and shoved to get into the circle.

Do the activity again, but this time make everyone who is wearing blue become a noxious weed. Show how many of the wildflowers were unable to find space and died, and how many weeds took over their spaces in the ecosystem.

In an ecosystem, noxious non-native invaders are like putting sand in the chain of the bicycle, or like poking pins in the tires or sticks into the spokes.

Another option for a Carrying Capacity game:

Circle area w/twine. Pick 4 participants to be “trees”. Divide ½ a graham cracker amongst them. “This is all the sun, water, nutrients and air you have to grow on this year.”

“A year has gone by, you made seeds, some sprouted and now there are more trees. No fires burned so they all lived.” Bring in most/all of the remaining students. “But you still have the same amount of resources to grow. So here it is, (another half a graham cracker, which you split up between everyone). Anyone hungry? Anyone thirsty? Anyone dead because there weren’t enough resources?”

“Is fire a helpful thing for this forest, with its limited resources?” Yes. “Should you set one?” NO, and explain why.

Point: Area can only support a certain number of plants.

Humans in the ecosystem discussion

If you get to a place where you can see Boulder in the distance, or other prominent human features, you can ask how humans fit into the ecosystem. This works especially well if you were able to include people in the circle of life at the beginning.

Are humans part of the bicycle, or are they damaging to the bicycle? How so? Do we depend on the ecosystem for survival? Are there animals and plants that do better around humans (crows, squirrels, raccoons, magpies) and some that do worse (bison, badgers, wolves, grizzly bears)? What would exist as protected land if humans didn’t care? What is the difference between a bear’s interaction with the ecosystem, and a human’s? (scale of change, choice about how to interact). Are humans necessarily bad for an ecosystem? Can they be good for an ecosystem?

It is important that kids come to see humans as an integral member of the circle of life, and to understand that actions that befall the circle befall humans as well. It is also important to present an optimistic portrait of humanity in our stewardship capacity instead of a negative “humans only destroy everything” capacity. We wish to inspire and motivate action, not deflate and discourage.

Conclusion:

Review: What happens to a bike or ecosystem when you take pieces out?

What good is the OSMP system for protecting ecosystems?

What can you do to help the wild things that live here? The plants and the animals?

1. Leave No Trace:

- “Is it okay to pick a flower or take a pretty rock home?” No, because that flower may be someone’s food and the rock may provide someone else with shelter – each thing is part of the bicycle.
- “What would happen if your dog chased a wild animal?” That causes an animal to burn precious calories and may even kill it or a baby it is carrying.

- “What happens if every time someone visits this place (and we get about 5 million visits and 2.7 million dogs a year) they walked off trail?”
2. Buy locally, some of the taxes you pay on purchases made in the city of Boulder come to OSMP to help us manage these lands as home for the wild things
 3. Support the creation and maintenance of wild lands everywhere