



All Day Forest Hike

This all day adventure will take students from the bottom of the forest to the top of the mountains. We will engage in a wide range of activities including shelter building, plant and tree identification, Life and Death in the Forest, and more!

Grade Level: 4th-8th

Objectives:

- Students will learn about forest ecology
- Students will learn about population fluctuation
- Students will get to explore the forest

Materials Needed:

- Life and Death Bin
- Poker chips
- Yarn
- Frisbee or bandana

Prep Time: 10 minutes

Activity Time: 80 minutes

Follow-up Activities:

- Stream Ecology
- Outdoor Living Skills
- Geology

Nevada State Standards Addressed:

- N.5.B.2 - Students know technologies impact society, both positively and negatively.
- N.8.B.1 - Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.
- P.5.C.3 - Students know heat is often produced as a byproduct when one form of energy is converted to another form (e.g. when machines and living organisms convert stored energy to motion). E/S

NAAEE standards Addressed:

- 1.3 Openness to inquiry
- 3.1 Critical and creative thinking
- 3.2 Applying skills to issues
- 4.1 Sense of personal stake and responsibility.
- 5.1 Learner-centered instruction
- 5.2 Different ways of learning
- 5.3 Connection to learners' everyday lives
- 6.7 Fit with national, state, or local requirements

Key Vocabulary:

Ecology– The study of how organisms interact with each other and their physical environment.

Population Fluctuation– The ever-changing numbers of a group of organisms of the same species living in a given area.

Biodiversity– The variety of plants, animals, and other living things in a particular area or region.

Lead-In Information

Before we head out into the forest, let's talk about something called "Leave No Trace". Has anyone heard of LNT? Here are the guiding principles behind LNT:

- **Know Before You Go**– Where are you going? What's it like there? What things will you need to be prepared?
- **Choose The Right Path**– Stay on trail to lower our impact
- **Trash Your Trash**– Pack it out!
- **Leave What You Find**– Don't steal someone else's WOW!
- **Be Careful With Fire**– Always make sure fires are completely out!
- **Respect Wildlife**– This is their house, watch from a safe distance
- **Be Kind To Other Visitors**– Other people are trying to enjoy it here too!

Preparations:

Before you head out, talk to the students about trail etiquette. Make sure that all students have lunches, water bottles, an extra layer of clothing, and close-toed shoes. Also, make sure that everyone has gone to the bathroom.

Activity:

Bandana Bonanza! Have the students gather in a circle. Talk to them about how we are going to head out and be carrying all of our stuff for all day. Let's think about a few things that we may or may not want to take. (have the students brainstorm each of these lists) How can we make what we pack more efficient? We can take things that we can use in many ways, right? Okay, let's take this bandana. How can you use this? Pass the bandana around and have each student say one thing they could use it for. See how many times you can go around the circle. (One group I had came up with 57 uses) Talk about some other things (Frisbee's, bowls, etc.) that would be similar to the bandana in terms of efficiency.

While on trail, there are a wide variety of activities that you can teach at optimal moments. Take time to hike, check out the trees, and do these activities. Tell the students we are going to be learning about forest ecology while out on trail today. Does anyone know what ecology means? ("Eco" means home, "ology" means study of). So we are going to be learning about the home of the forest. We are also going to be learning about Biodiversity. That's a big word, eh? Well, let's break it down. "Bio" means life and "diversity" means all different kinds. So, let's see how many "different kinds of life" we have living in this area.

Activity: Decomposition Tag

Let's chat about who's in the forest. We have three main groups of organisms— producers, consumers, and decomposers. What are each of these? Can you give me an example of each?

Rules: This game is played two ways; the first time it is played, no decomposer is present and the second time a decomposer is added.

--1st time played-- one person is death and everybody else are living organisms (you don't need to tell them what they are, just that they are alive). When you say "go" death tries to tag (kill!!) everybody, when s/he does the organism must squat down. Let this go until only a few organisms remain alive.

--2nd time played--the set up for this is the same as the first time except that now you add a decomposer (fungi, bacteria, etc...) If death tags someone then two living organisms can grasp hands with the 'dead' organism (one on each side) and also grasp hands with each other. Now they recycle the dead organism and they can once again run around and be alive. Death cannot tag anyone attached to a 'dead organism'. This game can be played until death is very tired.

Possible Debrief: This is a good active game which shows the importance of decomposers. From this you can talk about energy cycles, interdependence, and anything else you want to. I usually ask what a world with out decomposers would look like. --there would still be huuuge piles of dino poop and dead bodies everywhere!!!

Activity: Camouflage!

Find a good place in the forest where you can have some good hiding spots.

Rules: All age groups love this game. It consists of the leader picking out different areas in the woods during the class to scream out "Camouflage!!" The students have until your loud count of five to find a hiding place where they can't be seen. The leader will open their eyes and start calling out the people they can see. After all the noticed people are calling in, call everyone else in. Discuss where they hid effectively in this habitat and why. Discuss other defenses animals have besides hiding. Play again in various habitats and discuss what animals live there and how they camouflage themselves from predators.

After discussing several defenses, play a round where the students have to use a defense besides hiding.

Camouflage hardcore style:

This game is the same as Camouflage listed above except the students have to hide in an area where they can still see your eyes. Allow more time for the students to find a hiding place since this twist takes a little more thought. The benefit or lesson in this is that many animals watch their predators before they have been detected. This is very true for humans walking through a forest. We see very few animals but they all see us.

Activity: Circus Circus

Materials: Half as many pieces of yarn as you have students, about 24 inches long.

Rules: This activity is designed to get students to really look at what is on the forest floor that they are walking on. Students can pair up in groups of 2 or 3 and work together. Introduce yourself as the leader of the planet *whatever* and tell them that you are looking for some earthlings to come and build an adventure park on your planet. The only thing is that everyone on your planet is SUPER small, about the size of a shelled peanut. Then give the students 10-15 minutes to find themselves a spot on the forest floor and build the adventure park. They can only use things they find on the forest floor to help them build it and they can NOT pick anything that is living! When all of the groups are wrapping up, you can walk around and have each group explain their park.

Possible brief/debrief: You can talk briefly about what's on the forest floor before you start. After you are done, ask your students again what is on the floor and you will see that they can name many more things!

Activity: Don't touch my Pine Nuts!

Materials: Poker chips (about 7 for every kid)

Rules: Get all of the kids circled up. Start talking about resources and how various animals survive through the season living together. Explain that we are all being transformed into squirrels. Ask the kids how squirrels survive when there is no food around.

Explain that we will be hiding the poker chips just as squirrels do. Set boundaries. Tell each student that you must have 10 chips to survive. If there are no more in the cache in the center, they can steal from other squirrels. The only way that you can stop someone from stealing your nuts is to point at them and yell as loud as you can "DON'T TOUCH MY PINE NUTS!"

After about 5-7 minutes, have them all come into the center again. Ask who survived and who didn't. Ask some of the kids what their strategies were. Play another round.

Variations: Go to a cemented area and play there. Is this harder in a parking lot verses in the woods? Also, you can have one of the colors of chips (or one squirrels chips) be contaminated. What effect does that have on the whole group?

Life and Death in the Forest:

Define omnivore, herbivore, and carnivore.

Develop a direct understanding of predator-prey relationships. Discover animal feeding patterns and strategies.

Understand how populations of animals have a natural fluctuation and there is no "balance".

Activity:

1. COUNT HEADS!!!!

2. You can start the discussion by asking: "What does every animal need in order to survive?" (food, water, shelter, (habitat/niche) "How do animals survive?" (prey/predator) or "How does the forest ecosystem work?" (food pyramid) Go over terms they will use in the game: Predator, Poaching, Stalking, Prey, Role Playing, Carnivore, Omnivore, Herbivore

3. Now go over the game and how it works: draw a food pyramid as a visual- in a forest ecosystem there will always be more herbivores than omnivores and carnivores; more omnivores than carnivores. Have kids figure out why this is. All the kids will have a chance to role-play one of these animals. They will become this animal. Eating as it eats, stalking as it stalks, etc. (Get 'em into it!) PASS OUT HEADBANDS proportionately (10:7:2).

B. All animals need a stomach (a laminated index card with food on one side and water on the other) and an eating utensil (a crayon). PLEASE be sure they bring these items back!!

C. NEXT.... Explain how animals forage for food. All boundaries are marked with bright orange or pink flagging tape. The area they live in is a wildlife preserve and they must stay within the boundaries, lest they be shot by a hunter. All "water" trees are signified with blue flagging tape and a blue square hanging from the tree. All "plant food" trees are signified with a yellow-green flagging tape and a green square hanging from the tree. When the game begins, students forage for food and water. They show that they have located food or water by recording letters from the "food" or "water" squares onto their stomachs. For example, they find a green "food" square that has the letters [crn] on the back.

They would record [crn] on their stomachs. And so on... Since herbivores, omnivores, and carnivores are on different Trophic levels, they will eat different #'s and kinds of foods.

D. All animals receive a certain # (see chart) of lives (rubber bands) When a predator tags a prey, the prey must give up a life. This counts as food for meat-eating animals. (Emphasize fair and legal tagging-- a predator must give its prey 10 seconds to get away.)

E. Survival is the ultimate goal of this game!! In order for an animal to survive, they must have enough water, enough plant and/or animal food, and at least 1 of their lives left!

F. Safety: This looks and seems like an out of control tag game.... however, it need not be this way, and can still be exciting and challenging. Get the kids into their characters!!! Have you ever seen a wolf running through the woods screaming, "I'm going to get you, you dumb deer". Have the kids practice stalking, hiding, moving quietly and most important, being STEALTHY! You may also have a poacher character (adult that maintains order out in the forest) that shoots animals (and takes rubber bands) that are unnecessarily acting out of control. Try it, it works quite well. "Poachers are dumb, they don't notice stealth animals; but if animals are being loud and running furiously through the sticks, they will lose a life."

Numbers for YOU:

These are not written in stone:

LIVES (rubber bands):

In the beginning, each group should have these numbers:

Carnivores: one life

Omnivores: 3 lives

Herbivores: 5 lives

FOOD and WATER (in order to survive) Everyone needs 4 waters, no exceptions.

Food:

Carnivores: 0 plant/ 5 lives

Omnivores: 2 plant/ 3 lives

Herbivores: 4 plants/ 1 life

(The same food or water source may not be utilized twice.)

Before you send the students out, tell them when they hear you yelling "Game Over" they should come back to where you are. Tagging is no longer allowed. When everyone gets back you will talk about what happened. After each group makes up their own cheer, let the Herbivores go out into the forest first. After a minutes or so, send out the Omnivores. A minute or so later, send out the Carnivores. Allow game play to happen for about 10 minutes and then call them back in. (You can have the other adults walk around the area to make sure the students are all participating and being safe.) When the students all get back in, ask who survived. Who didn't? (Record results on white board). What do you think is going to happen this round? All of the students who died become herbivores, all of the herbivores who survived become Omnivores, and Omnivores who survived become carnivores. Carnivores who survive stay carnivores. All students should switch stomachs and bandanas to their new ones. Have an adult who is around gather all of the rubber bands and redistribute them appropriately. Tell them we are going to play another round. What do we think will happen this time?

Play another round. Let this one go for about 10 minutes. Call everyone in. Who survived? Did everyone get all of the water they needed? Food? You can play a few regular rounds and then add in a couple variables. Possible variations:

- Who drank from the stream? Raise your hands. The stream was poisoned, so all of you are dead now. Also, who ate any of these animals? You are also dead. What impact can pollution have on the ecosystem?
- What would happen if we introduced a "Super predator" like a human, who could do what ever they wanted? (This should be an adult). How do they (we) impact the ecosystem?

The debrief of this activity is really important, so make sure you leave enough time at the end. Talk about the population fluctuation. Did the ecosystem stay "balanced"? NO. But, it's not supposed to. Populations change depending on weather, predators, prey, food, etc. True balance is in fluctuation.

Review Questions:

- What is population fluctuation?
- What is an ecosystem?
- What are 3 ways animals or plants adapt to their environment?

Evaluation:

- Have students chart how populations fluctuate.
- Have students name 10 species within their ecosystem.

Learning Intelligences addressed:

- Kinesthetic
- Logical-Mathematical
- Linguistic
- Spatial
- Interpersonal