



Layers of a Forest

Activity Description:

The purpose of this activity is to understand micro and macro ecosystems within a landscape. This activity will ask you to observe, draw, and photograph specific aspects in order to isolate the layers of a forest. You will make observations to answer a series of questions and then will be asked to write a reflection piece about the activity and your experience.

Before beginning this activity, please read the Layers of a Forest reading (Page 5). It will ask you to pause and think. Use this time to consider the questions so you are better prepared for the activity.

This activity can happen anywhere, not just in a forest ecosystem!

Materials:

- This activity printout
 - Pencil
 - Notebook
 - Camera (optional)
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Ecosystems are areas with living organisms that interact with each other and their environment.

Ecosystem is short for ecological system, which describes a system of living things in an area. Ecosystems are different from habitats. Habitat describes a plant or animal's home or territory. Ecosystems refer to many homes for many animals and plants, all within one area. These areas can be big or small; for example, ants, blackbears, hawks, pine trees, regal lizards, and wasps can all live in the same ecosystem!

Ecosystems are fragile. Each species in an ecosystem plays a critical role in the behavior of its ecosystem. For example, every year the oak trees in the Santa Catalina Mountains produce acorns. These acorns feed many animals like Abert's squirrels, acorn woodpeckers, even black bears! The acorns are habitats to many species of beetle larvae, which are eaten by many birds, lizards, and small mammals. Their shells get old and break apart, helping to create soil for other plants to grow. The ones that are not eaten are lucky

and can grow to become great big oak trees, which are habitats for thousands of insects, arachnids, reptiles, mammals, and birds. What if one year, the oak trees did not produce acorns? The ecosystem would be greatly affected.

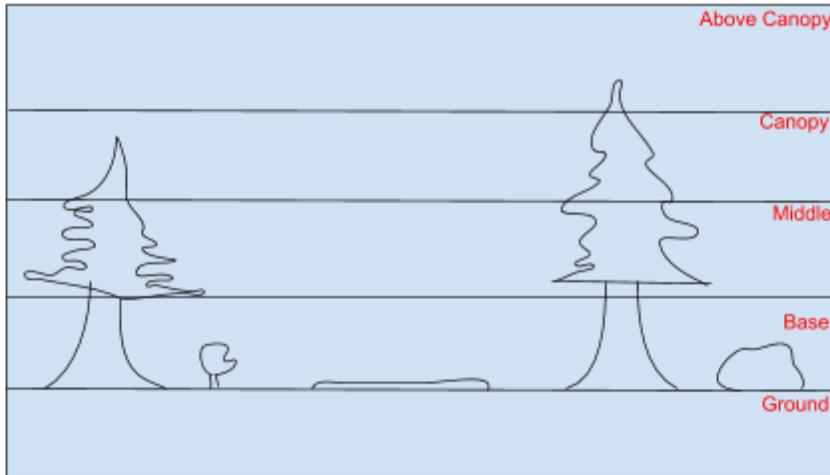
Follow this link to learn more: <https://www.youtube.com/watch?v=7cRgK0qG00E>

Directions:

1. **Begin your hike and keep an eye out for somewhere that looks especially pleasant to you.** Your spot should have a lot of stuff on the ground, with trees and shrubs too. If you can't find a spot like that, that's okay!
2. **Now that you are at your spot, please draw four horizontal lines on a piece of paper.**

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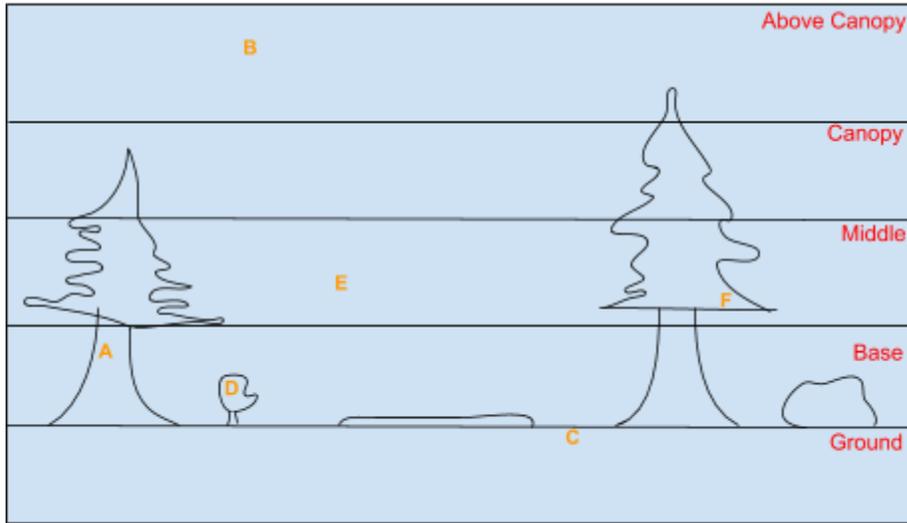
3. **Next, draw some plants and other objects that represent the landscape around you.** For example, if you are in a forest, draw different sized trees similar to the ones around you. If there are rocks or boulders, add those too. If there are fallen trees, or creeks, or bushes and shrubs, add those as well! It is just a general representation, so it doesn't need to be perfect. Here is an example...



As you can see in the example, the drawing is separated into five sections. From top to bottom, these layers are: Above canopy, canopy, middle, base, and ground.

4. **Please start by observing the *above canopy* section.** This could be done sitting or moving around. Spend ten minutes looking for any signs of life. This could be seeds blowing in the wind, spider webs, or birds. Remember, these are things above the trees, not things moving from tree to tree. Please write a list of everything you can see. If you don't see anything, that's okay.
5. **Please do this for each layer and spend a lot of time exploring and looking for life.** The closer you get to the bottom, the longer you should spend looking for signs of life. Remember, this could be tree roots, bugs, squirrels, worms, birds, bushes, flowering plants, and so on.
6. **Using the alphabet (a, b,c ,d ,e ,f...etc.), please assign each observation you've recorded in your notebook a letter.** For example, it might look like this:
 - Black and white beetle crawling up tree A*
 - Big bird soaring high in the sky B*
 - Ants marching across the ground C*
 - A butterfly D*
 - Etc...*
7. **Now that your observations have been assigned to a letter you will write the letter on your map that shows where your observations were made.** For example, if you saw *Black and white beetle crawling up tree A* in the middle layer of a

forest, you would write “A” on the trunk of a tree in the base zone of your forest map. It might look something like this..



8. **For your last step, please write a reflection about this activity.** Now that you have your observations marked on your map and listed in your notebook, you can use these as a reference to understand where certain living things might spend their time in a forest. Here are some questions to help you write a reflection. How do you see the forest differently after the activity? What was your favorite experience of your day outside? How might this activity help you in the future? What new relationships do you have after this activity?
9. **Share your activity sheet with Seeds of Stewardship.** Send us photos of your layer map and completed worksheet:
 - Post your photos to Instagram and tag [@aztsos](#)
 - Or email your photos to
 - julie@aztrail.org for Northern AZ
 - treven@aztrail.org for Southern AZ
10. Remember that ecosystems are fragile! So do what you can to protect the environment and all its life forms, whether you're on the AZT or at home!

Layers of a Forest

When I am walking through a forest, my eyes are captivated by the surroundings. Brown tall tree trunks soar into the sky, disappearing under green canopies. The wildlife seems woven together, making the depth of the woods feel unknown and mysterious. I feel as though, with quick eyes and keen senses, any rare animal could be hiding around any corner, and I go searching with obsession.

My eyes usually stay in the trees, looking between pine needles and branches. I'm looking for movement, usually by birds and squirrels who navigate the same layers together. I love seeing flashes of color, distant and odd calls, the occasional hunt and flee routine of the flying friends of the forest. From tree branches to tree tips, there is so much that goes on. There are entire colonies of insects that rarely if ever leave that space. And spiders who build their webs near the tree tops, catching high soaring bugs. Sometimes, when I am lucky, I see a spider shoot her web into a breeze and catch a ride on the wind to distant places in the forest. Can you believe that? Flying spiders? They're real, and they live in the top layers of a forest, high in the tree canopies.

Up top, there is so much to see, but it is a bad habit of mine - keeping my chin lifted and eyes up, I miss so much that is right in front of me. For example, with my eyes forward, looking at the middle layer of a forest, I might notice an ant colony transporting goods up and down a tree. Maybe I'll see a thousand colonies of lichen blooming on a tree trunk. If I am lucky, I will see marks made by a bear scratching her back, or scratches a deer made when he rubbed the velvet off of his antlers. I could notice lizards bathing in the sun after feasting on their neighbor ants, or perhaps I'll notice a special mushroom growing that I've never seen before. Keeping my eyes straight ahead, I might see the wanderers of the forest floor. You know, the black bears, and the mountain lions. Oh and we have some rare ones too, like the ocelots and jaguars. These animals like to move from the ground to the middle layer, and are exceptionally good at hiding. Most of the time, they can hide in plain sight, just standing still. If I kept my eyes forward, maybe I'd notice them more often!

Then there is the low layer of a forest. This one is both the easiest, and the hardest to see all at the same time. Keeping your eyes low is easy because it can help you navigate and move around. Watching where your feet go is a great way to notice the really special things of a forest. You may see wildflowers that have a variety of vibrant colors you've never seen before. Maybe you see a snake, coiled in grass waiting for a mouse to run by its head. You could see new pine trees sprouting from their seeds, barely an inch tall, destined to become giants of a forest. Looking low, you can see the tracks made by animals that have walked by, important clues to the residence of this neighborhood.

But what about under the bottom layer? Under the leaves, the pine needles, the rocks and the dirt? Where do the holes in the ground go? Who lives there? This is a whole other layer, full of more life than ever could live above ground. Here is where worms are moving, scorpions are waiting, foxes are sleeping, frogs and tortoises are aestivating. This bottom layer, and all layers underneath it are places where life socializes, moves, and lives.

In fact, the layers I've described are all imaginary. In reality, even the smallest spaces you can find, like the cracks in tree bark or the ridges in a rock, are places where life moves, eats, sleeps, and lives daily. These are layers too. It is where water collects, and food gets stored. It is where praying mantis lay their eggs, and where hummingbirds build their nests. When you look around, imagine yourself to be different sizes, and see where you might go, sleep, eat, or relax. Where would you build your home, and why? The better we are at noticing the layers in wild space, the better we can understand who lives here, and how they live here.

But it is not just about plants, animals, and fungi. Forests create their own atmospheres. In fact, every layer has its own atmosphere. Under tree canopies, air is trapped, making things stay cooler during the day, and warmer at night. This type of "shelter" from the sun and night helps residents live easier. This type of atmospheric control happens between branches, leaves, and even dirt. Look at the forest floor, and see if you can notice a layer of sticks, leaves, and dead plant stuff, all of which sits above the dirt. Sometimes this layer is so thick, you might not be able to find the dirt. All of this decaying matter gives off heat, and all of the small plants and animals that live under this layer use this warmth for survival! It's like its own little world underthere.

Look where places are still moist. Maybe in cracks or ledges of rocks where sunlight rarely reaches. How would you know there is more moisture? Well look for moss, or lots of little green plants growing. Or maybe you are lucky enough to find a small pool of water. Here the layers of the forest are alien compared to everything else. All life in this pool depends on this pool, and as the weather changes, so too does life in this pool. Some of the life lives near the surface, other life swims at the bottom. Some of the living things cling to the sides of the pool, some even crawl away for small periods of time. Some life lives below the water, in the soaked mud. In these places, where things stay moist and all life depends on that moisture, is a layer often unseen in our dry forests and is so important for so many living things. These neighborhoods are full of homes and communities, individuals that live in specific environments that are fragile, fostered, and friendly.

You see, these layers are everywhere. It only takes an open mind to see them. Understand that there is not a nook in a forest that is off limits or unoccupied. More importantly, by understanding the endless layers of a wild place, you can walk through each neighborhood

respectful and observant. You can be a tourist excited to meet the locals. These are my goals. I want to open my mind and use my eyes, ears, nose, taste, and touch, to immerse myself into the place that I am moving through. When I walk through a forest, I want to see everything, and to do this I need to make my vision smaller, and larger. I need to see like the thread snake, or the owl, or the canyon tree frog. I need to feel like the pine tree, the moss, the fern. To smell like the coyote, or the vulture. Taste like the black bear. Hear like the bobcat. My goal is to perceive the atmospheric changes and understand how the locals of our forests live in these places. Why? Because these are my neighbors and my friends. It's the respectful way to treat my friends, and it's wildly interesting.