Environments and Ecosystems (STEM Principle: Science)

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Your kids can learn best about the world's natural environments by going out and exploring them. Depending on where you are, you may be able to reach lots of different ecosystems, and helping your children identify them is a great place to start learning biology. In this lesson we'll talk about the ecosystem. The hikes you select may include a variety of ecosystems which you can point out along the way. Or one ecosystem may predominate, in which case you can delve into the various characteristics of that ecosystem as you hike.

Ecosystem is a big word with a short meaning: it is all the plants and animals of an area that work together to make a place special. An ecosystem with lots of trees would be called a forest, and a dry one with very few plants is a desert. In Washington state there are many rainforests. In Hawaii, climbing up one of the mountain ranges offers a wide variety of micro-systems with each elevation change. An ecosystem is comprised of several elements you and your junior scientists can look for while out on the trail. The first one we'll consider is water.

Water is important to all life, and most ecosystems depend on how much water they get. Being near the ocean or a stream, for example, gives animals somewhere to drink and eat fish. The coastal environments also host birds, seals, otters, and other coastal animals. If you have a beach nearby, check it out together and see what you can find. Tip over rocks and see who lives underneath. Explore tide pools. Nature is all around, and even the little critters are fascinating if you explore their secret lives. If you're near a pond, lake or river, you will notice plants and animals which seem to thrive right near the water. This is called the *riparian zone*. Here, the roots of big trees like cedars and oaks hold the soil so that the water doesn't wash it all away. Animals like raccoons, frogs, and opossums make their homes here. Dense underbrush may also provide safe passage from the forest to the water for these animals.

Trees need water to grow, and they can get it in many ways. Forests that are not near a water source collect it from rainwater. In dryer areas, plants need to rely more on moisture in the air. Dense forests tend to be home to big animals like bears, moose and reindeer. But the dryer areas will be home to smaller animals like deer, squirrels and rabbits. Why do you suppose this might be? Ask your scientist.

Deserts exist in the rain shadow of mountains. Tall mountains capture rain before the air mass crosses over to the other side. Port Townsend and Port Ludlow in Washington state are in the rain shadow of the Olympic Mountains. This is a nice place to call home in the usually damp Pacific Northwest! In deserts, life adapts to the dryness. Lizards, snakes, and small rodents are all very good at conserving water, and rarely have to drink. The cactus is a common plant here, and it is very good at saving water.

Next time you hike, think about the ecosystem you'll be visiting. Ask the kids to identify the type. Are you in a desert? The mountains? A forest? The riparian zone? Ask them what animals they think live here, and try to see some if you can!