WEEKDAY WONDERS

Content developed by the Tennessee Aquarium Education Department

TENNESSEE AQUARIUM

Wonders of Nature: Day 3

We live in a world filled with wonder! This week, young scientists invoke their innate sense of curiosity and wonder, as they explore our natural world by taking time to look up to the sky and down to the earth. They investigate natural phenomenon on a large scale, such as the phases of the moon, as well as on a more minute, less obvious scale, such as the resourceful way that plants can inhabit seemingly uninhabitable spaces and much more!

These curated activities are listed in a suggested sequence but may be done in the order that works best for you and your young scientists. Learn more about this series in the Introduction to Weekday Wonders.

Question of the Day

Have you ever wondered how plants can live in such interesting places?

Daily Nature Journal

Have your young scientist spend some time outside today completing their daily nature journal entry. Observing nature in the backyard is a great way to become aware of the beauty of the world. Use the Guide to Nature Journaling to support them in nature journaling each day.

Nature Journal

Have your young scientist take a short walk around the area to notice unusual places that plants are living. Have him or her write or draw a list of the unusual places where s/he finds plants growing.

Ask your scientist to pick two of the most interesting spots and write about how s/he thinks the plant got there and how it can survive in the spot.

Taking Root

Your young scientist may have grown plants in previous Weekday Wonders activities. Today, s/he will work to grow another plant. With careful observation, s/he will see the tiny roots that allow plants to take hold in sidewalk cracks, on stones and other places that seem impossible to sustain life.

Have your scientist gather the following materials:

- Clear jar (glass or clear plastic)
- Paper towels
- Water
- Seeds (most any seed will work, however for younger scientist, large seeds such as beans, peas, sunflower and squash may be the easiest for him/her to observe small changes)

Have your scientist work by a sink to wet paper towels. S/he should line the jar with wet paper towels then fill the center of the jar with crumpled up wet paper towels.

Ask your scientist to slide a few seeds between the paper towels and the side of the jar. A container can hold several seeds, just ask your scientist to make sure each seed has some of space between it and the next seed to allow for easier growth and observation. Help your scientist find a sunny spot for the jar to sit undisturbed for a few days.

Each day, have your scientist check the seeds. S/he should first check the paper towels to see if they are still wet. If not, your scientist can either spray them with water from a spray bottle or add a small amount of water to the jar in the middle. The paper towels should absorb the water to make the seeds moist.

Next, have your scientist observe the seeds to see if any tiny roots are growing. Have him or her record the observations in the nature journal or another notebook.

Once the roots begin growing, have your scientist look for changes each day. Roots add length at the root tip, so your scientist should observe that the smallest, thinnest part of the root is always at the tip. Share with your scientist that this smallest part of the root is what makes its way into the tiny cracks. Then as the root continues to grow from the tip, older sections of the root grow thicker.

If the root gets very large, it can crack the concrete or rock breaking down the surface. This process increases the decomposition, making new soil in the area. This then allows for the seeds of larger plants to take root.

Hit the Spot

Share the following information with your young scientist. Plants start their life as seeds. To begin growing, they need to be in a spot that gives them the water and nutrients they need. Sometimes that means landing in just the right spot. They may arrive at these places with the aid of the water, the wind, or animals.

Use sidewalk chalk to draw a target on the driveway or sidewalk or use sticks to other natural objects to create a target in the grass. Create a seed by using a small ball, rolled up socks, or a piece of wadded up newspaper.

Have your scientist stand back from the target and act as a plant. Remind him or her that this means standing in one spot! Your scientist should try to get the "seed" to land in the target, representing the perfect spot to grow. Your scientist can throw the ball to show how the seed would move by wind or an animal or roll it to show how it might move along water.

Have your scientist try to get the seed to the center of the target 10 times. For each attempt, s/he should record the results as a tally mark in a table like the one below.

Did Not Sprout (did not land in the target)	Sprouted but Lived only a Short Time (landed on the outer area of the target)	Found the Perfect Spot (landed in the center of the target)

Play another round, having your student adjust the distance from the target based on their success. If they made all seeds in the center, move farther away. If none of the seeds landed on the target move closer.

Variation: Move the fun inside by making the target on a piece of cardboard or poster board. When playing inside use a soft "seed" such as rolled up pair of socks. Scientists can adjust the distance from the target similar to playing outside.

S/he can also try dropping the seed directly on the target the way some plants simply drop their seeds. Your scientist should hold the seed above the center of the target. Have your scientist start low, bending over the target. After each seed drop, your scientist should raise the seed higher, such as the following progression.

- hold at waist height
- hold at shoulder height
- hold above his/her head
- stand on a low stool

Catching Nutrients

Share the following information with your young scientist. When plants grow in interesting places, they not only need to find a place that the seed can land and begin growing roots, but they also need to be able to get nutrients. Many plants get their nutrients through the roots. But, Venus Fly Trap and pitcher plants, like the one in the photo below, are able to catch insects to get nutrients.

Tell your young scientist that s/he is going to create a pitcher plant and try to catch an insect. Have him or her gather the following materials.

- Green construction paper, or any other color
- Glue or tape
- Yarn
- A penny

Have your scientist roll the paper into a cone and glue or tape the edges. Next, s/he should tape one end of the yarn just inside the large opening of the cone. This is the pitcher plant.

The penny will represent an insect. Your scientist may want to draw a small picture of an insect and tape it to the penny. Then s/he should tape the penny to the other end of the yarn.

Tell your scientist that it is time to catch dinner. Have your scientist hold the bottom of the pitcher plant. Use it to flip the penny into the air to represent a flying insect and catch it in the cone. Although pitcher plants cannot move to catch their prey, your scientist may need to, depending on his or her age.