WEEKDAY WONDERS

Content developed by the Tennessee Aquarium Education Department

TENNESSEE AQUARIUM

Biodiversity and Me: Day 2

This week, Weekday Wonders will help young scientists explore and appreciate the variety of living things in our world. To do this, they will discover and think about the relationship of humans to wild animals. They will delve into what resources we share, how we depend upon each other and how humans can protect biodiversity at home and away.

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

How do humans and animals rely on each other to survive?

Daily Nature Journal

Time in nature is a great mental break, has been shown to reduce stress and helps connect us with our wild neighbors. Ask your young scientists to spend some time outside (or looking out a window) completing their daily nature journal and discovering our wild neighbors. Young scientists don't have to write. They can draw what they see, hear, think, or feel. Use the Guide to Nature Journaling to support your scientist in this activity each day.

Map It Out

In yesterday's activities, your young scientist focused on identifying the four essential elements of a habitat (food, water, shelter, and space). Today, they will put that knowledge to use as they survey the area around them looking for evidence of the way wild animals are interacting with the space.

Ask your young scientist to choose a place outside that they would like to investigate to learn ways animals (including humans) use the space. Have your young scientist sketch a map of the area including

natural and human-made components. Younger scientists can simply draw the area. You can help them by labeling items on the map if they are not yet able to do it themselves.

Older scientists should create a key for their map, choosing symbols for major components. For example, rather than draw every tree, s/he could use a triangle to represent trees. In an area where there are a few trees, your scientist can draw a small triangle while in an area with many trees, s/he could draw a larger triangle. Your scientist should also include a key, or legend, on the map.

Nature Journal

Have your scientist walk around the study area again. Encourage your scientist to take time to make careful observations about the resources that are available using the questions in the table. This can help him or her make wonderful discoveries to see the space a little differently.
You may wish to write each of the following prompts on slips of paper so your scientist can focus on each one separately.

Resource	Questions to Ask	Example
Food	• What resources are available for food? • What animals may like this food source? • Is there evidence that someone has been taking advantage of this food source? Who?	An oak tree with lots of acorns might be a place animals get food. There are broken acorn shells, so animals might be eating the acorns. Squirrels and chipmunks may be the wildlife eating these nuts.
Water	• What water sources are available? • Where would animals find drinking water? • Is there evidence that animals are using the water sources?	You may see animal tracks around the water source as evidence.
Shelter	• Where might an animal find shelter? • Which animals could use which spots? • Could any spots be shared by more than one animal? • Is there evidence that any animals are making their homes in spaces?	Evidence might be that there is a bird nest in a tree or an insect under a rock.

Once your scientist has completed the observations, ask him or her to add the new information to the map from the previous activity. Then have him or her consider if all of the needs for animals are available in the space. If not, have your scientist brainstorm ways to make the area more attractive to animals.

We Rely On Each Other

Share the following information with your scientist. Humans have always been connected to wildlife. We see evidence of that connection every day. In this activity, your scientist will have an opportunity to see some of the connections.

Print and cut apart the scenarios on page 5 or write them on slips of paper, then place them in a container. Then, place three containers around the room. Give each container a label with one of the following descriptions.

- Humans Rely on Wild Animals
- Wild Animals Rely on Humans
- Wild Animals Not Necessary for Humans to Enjoy

Have your scientist draw a scenario then place it into the container around the room where he or she thinks it would fit. Emphasize that this is a learning game and that it is okay to not know. Your scientist should simply try to think through the scenario and come up with an idea about where it might belong. Once your scientist has sorted all of the scenario cards, discuss each one. First have your scientist describe why s/he chose to put the scenario in the category, then share the information from the answer key on pages 6-7. For added challenge for older scientists, you can check the answer key then pull out any scenarios that were sorted incorrectly for your scientist to consider again. For an even harder challenge, you can simply tell your scientist how many are sorted into the correct category and let him or her try to figure out which cards need to be sorted again.

When your scientist is done with the activity, emphasize that we have connections with animals and that we depend on each other. Make sure your scientist notices that there were no scenarios that did not have a connection between humans and wild animals. By protecting wild spaces and providing spaces within our yards that can give animals food, water, and shelter, we are helping to make sure we all continue to have the things we need.

Inspired By Wildlife

Ask your young scientist to go on a treasure hunt around the house and yard. Have your scientist write or draw a list of things they find that were inspired by or connect us to wildlife. The list could include things such as animal patterns on clothing, toys, books, lawn ornaments, bird feeders, foods, flowers, art work.

You may wish to challenge your scientist to find a certain number of items. For example, the youngest scientists might be asked to find 5 items while an older scientist might try to find 30 items.

Once your scientist has completed the scavenger hunt, ask him or her to reflect on what they discovered. Is s/he surprised by the number of items in your home that are inspired by wildlife? What was the easiest thing to find? Which item was most surprising?

Construction Site: Design and Build

All animals, including humans, need shelter, which we generally call their homes. Ask your scientist to draw as many different types of animal homes as come to mind. For example, a scientist might draw a house (for a human), a nest, a hole in a tree, a stack of fallen trees, and a hole in the ground.

Once s/he has had a chance to brainstorm different kinds of shelters, have your scientist go outside and try to build a shelter. (If your scientist is not able to go outside for any reason, see the indoor variation below.) Depending on resources available, your scientist can build a shelter large enough for them to seek shelter or build a small-scale model. Have your scientist gather twigs, leaves, grasses, mud, and other building materials. Then have him or her start building. Challenge your scientist to make sure the shelter is stable and protects an animal from weather and predators. If your scientist enjoys building the shelter, he or she might try building more homes like the ones from the brainstorm.

Indoor variation: If you do not have an outside area or the weather is not conducive to going outside, your scientist can build a shelter in the house using blankets, chairs, pillows, and other items. Suggest an animal that needs a shelter, such as a wolf. Have your scientist build the shelter, then pretend to be the animal using the shelter. As a wolf, your scientist would go out of the den in search of food and water, then return to the shelter when a predator comes or the wolf needs to rest.

Allow your scientist to make changes to the shelter if s/he comes up with ideas to make the shelter better. Once your scientist has finished with the shelter for the first animal, suggest a different animal. For example, you might suggest your scientist build a nest for a bird, then pretend to be the bird. You might also have your scientist build a shelter for a human and see what ideas s/he has. You can also allow your scientist to choose the animal for which they would like to build the shelter.

We Rely On Each Other Scenario Cards

Pizza dinner with friends	Beautiful bouquet of flowers	Healthy soil for growing crops
Zoo and Aquarium breeding programs	Taking allergy medications	Establish natural areas that remain undisturbed or with limited use
Going on an ecotourism adventure with your family	Rodent and insect pest control	Building bird houses, bat boxes, and bee homes as a camp project
Hosting a tea party complete with a variety of teas and honey	Following laws passed to limit light pollution especially in beach front communities	After a dinner out at your favorite restaurant, packing up your leftovers in your own containers
Opening your new toy and properly placing packaging in the trash and/or recycling	After a bad accident, an emergency medical helicopter races victims to the hospital for life-saving care	You decide to add a bird bath to your backyard
Get an adrenaline rush by participating in a BASE jumping adventure	Enjoy a cup of hot chocolate on a cold snowy day	Skip the straw when visiting your favorite fast food restaurant

Answer Key to We Rely On Each Other

Humans Depend On Wild Animals

Pizza dinner with friends: Pizza and many other favorite foods depend on insects to help pollinate the plants that are the base of the final product. Each year world-wide, pollination of over 80% of commercially grown crops depend on insect pollinators and has been estimated to have an economic value of $235-$577 billion dollars. In addition, pizza production depends on wild animals such as snakes that help to protect grains from pests such as rodents.

Beautiful bouquet of flowers: Flowers depend on pollinators such as bees and other insects are vital for flowers to continue their life cycle as without pollination, flowers would not produce seeds and we would not have the flowers to add beauty to our life.

Healthy soil for growing crops: Worms, millipedes and other decomposers help break down large organic matter such as dead leaves, dead animals and animal waste, turning them into substances such as carbon dioxide, nitrogen, phosphorus, calcium and water that are useable by plants. In addition, worms, insects, rodents and many other animals move soil around, mixing nutrients from the surface into the soil and aerating the soil making it healthier for plants.

Taking allergy medications: Allergy, heart and even cancer medications may initially be derived from skin secretions or other chemical produced by toads and other wild animals

Rodent and insect pest control: All animals are part of a food chain. Snakes, bats, hawks, opossums and many others fulfill a niche or role that benefits humans as well by eating other animals we consider pests such as rodents, mosquitos, and ticks.

Hosting a tea party complete with a variety of teas and honey: Bees make the honey that we use for tea and bees and other insects are responsible for pollinating the plants that make up our teas.

After a bad accident, an emergency medical helicopter races victims to the hospital for life-saving care: Helicopters mirror the movement of dragonflies. They have the ability to move straight up, straight down, to the left and right, hover and make quick sharp turns in midflight. Dragonfly movements may well have inspired the helicopter.

Get an adrenaline rush by participating in a BASE jumping adventure: Many items humans use for recreational activities are inspired by our wild neighbors. BASE jumping suits have a strong resemblance to the shape of the flying squirrel and sugar gliders. Like their wild neighbors, when BASE jumpers spread their arms and legs they stretch the suit material similarly to the way a flying squirrel or sugar glider expands its patagium, or membrane that helps it glide.

Enjoy a cup of hot chocolate on a cold snowy day: A tiny fly (about the size of a pin head) called midge fly are critical for the production of chocolate as they crawl into the flowers of the cacao plant allowing it to produce the seeds from which we get chocolate.

Wild Animals Depend On Humans

Zoo and Aquarium breeding programs – breeding programs at human institutions such as zoos and aquariums can benefit some of the most vulnerable species by helping maintain genetic diversity and providing a safe place for young to thrive away from other dangers. These breeding programs also help us gain a better understanding of the requirements of these animals so we can better care for their native habitats.

Establish natural areas that remain undisturbed or with limited use – establishing legally protected areas ensure that wild animal populations that are at risk or endangered have safe habitats.

Going with your family an ecotourism adventure - ecoadventures help to support local economies and encourage positive interactions with native human populations, visitors and the native wildlife. These types of activities result in human populations benefitting from protecting habitat and native wildlife.

Building bird houses, bat boxes, and bee homes as a camp project – As habitats have changed, often shelter is difficult for our wild neighbors to find. We can help wild animals by providing human-made structures for wild animals to raise young, rest, and shelter from bad weather.

Following laws passed to limit light pollution especially in beach front communities – as young sea turtles hatch, artificial light can confuse them as they try to follow the moon (the brightest light in the night sky) to the ocean where they live the rest of their life only returning to the same beaches for the females to lay eggs.

After a dinner out at your favorite restaurant, packing up your leftovers in your own containers – Bringing you own reusable containers for leftovers reduces the need for resources as well as the amount of plastics that often make their way into the environment where they can be harmful to our environment.

Opening your new toy and properly placing packaging in the trash and/or recycling – properly disposing of packaging is beneficial as it prevents plastics and other packing materials from making its way into the environment which is good for humans and the wild animals that share the space.

You decide to add a bird bath to your backyard – providing a water source in our habitats improves the habitat for all animals.

Skip the straw when visiting your favorite fast food restaurant – refusing single use, plastic straws prevents plastic from entering our ecosystems making the environment healthier for wild animals.

More information on a few of the most interesting scenarios showing how we rely on animals can be found on the following websites.

- The Beeconomy: Economics and Insect Pollination
- Decomposers
- *Why Dragonflies Would Make Brilliant Spies*