WEEKDAY WONDERS

Content developed by the Tennessee Aquarium Education Department

TENNESSEE AQUARIUM

Biodiversity and Me: Day 1

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 with wild animals, what resources we share, and how we depend upon each other. They will brainstorm how humans can protect biodiversity at home and in their community. Your scientist will learn that biodiversity is the variety of living things found in a particular habitat or ecosystem.

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

What resources do humans and wild animals share?

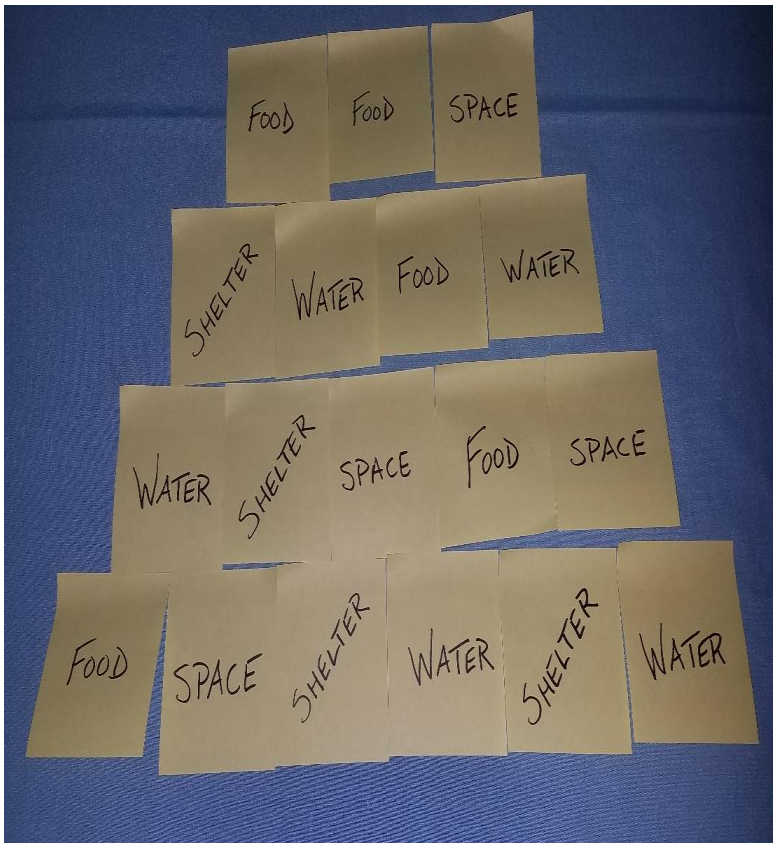
Daily Nature Journal

The best way for your young scientist to learn who his or her wild neighbors are is to sit quietly outside (or look out a window) and notice other living things there. Young scientists don't have to write. They can draw what they see, hear, think, or feel. If you need guidance on creating a nature journal entry, please refer to the Guide to Nature Journaling.

Habitat Connections

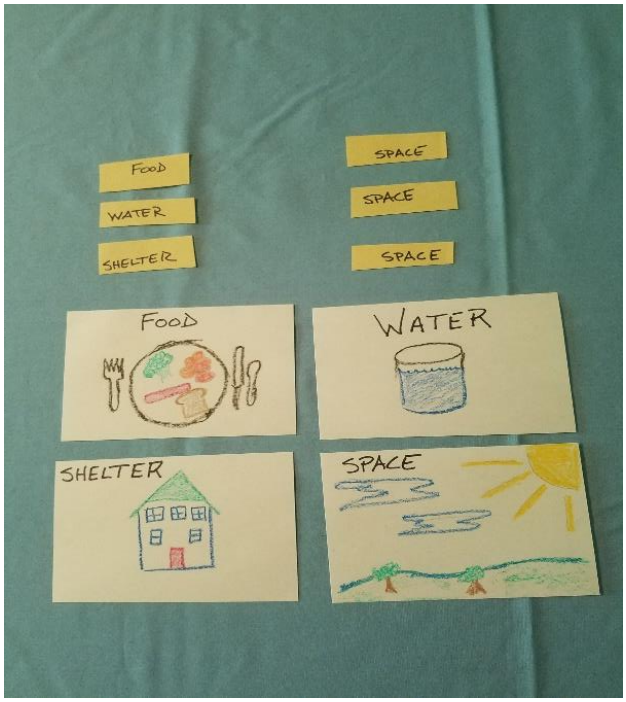
All wild animals and humans need a habitat where they can live. They need food, water, shelter, and space. All of these aspects of our habitats are interconnected. Each depends upon the others. Your scientist can see how true that is from doing the fun activity below.

With your young scientist, collect items that will stack like blocks, paper cups, or any unbreakable containers all the same size. You can also do this with post-it notes or paper cut to similar size (see photo.)



Start with 18 of these. Mark the items as food, water, shelter, space. Try to make the number of each of those habitat components as even as possible. For example, if you use 18 beverage cans, you might have 4 food, 5 water, 4 shelter and 5 space. Now, stack up the items. Start with a pyramid as shown in photo on the right. Make sure to randomly stack the habitat components instead of grouping similar ones together (for now).

Now write the name on a slip of paper for each of the habitat components. Make one for food, one for water, and one for shelter, but make three for space since wild animals can't find food and shelter if they don't have enough space to live. This will weigh the activity in favor of reality. If your scientist is not a reader yet, draw pictures on the pieces of paper (see photo). We're ready to start.



Have your young scientist draw a slip of paper and then remove that habitat component from the pyramid. What happens? Maybe nothing at first, but sooner or later habitat components will come crashing down. If your scientist is using the paper version, when she/he pulls out a habitat component that has another touching it above, the one above must "fall" too. Help your young scientist

see how closely interconnected the habitat components are. Also help your young scientist understand that the habitat hasn't been destroyed, but it IS degraded. It won't support as many animals now, and it won't support as many different kinds of animals. The biodiversity of this habitat has been reduced. Have your young scientist return the drawn slip of paper to the pile, mix them, and draw again. Now remove THAT habitat component from the pyramid. If this process continues, the habitat will be completely destroyed, but you can stack them back up and "play" again. Hold onto that thought throughout the week. We'll return to it on Day 5.

Once you've shown your young scientist how to run this simulation, s/he can do it by themselves. Below, you'll find some extensions to use this activity to make science and imagination come alive for that special young scientist.

Extension: Variety is the Spice of Life

If you are using stackable items for this simulation, suggest to your young scientist that they might experiment with stacking the habitat components in different ways. Some ideas with scrap lumber "blocks" are shown in the photo below, but you can try variations with any kind of stackable item. If your scientist feels that the new configuration is superior (or inferior) to the original, consider adding the extension below to test their hypothesis.

Extension: For the Record

Ask your young scientist to run a set number of simulations and keep records of what happens. Help the scientist brainstorm the different variables that can be measured. For example, how many of each habitat component were drawn in a random draw? How many cans fell when a component was pulled from the top tier? The second tier? How many draws did it take to reduce the pyramid to a single (bottom) row? See if your young scientist can think of others. Also, help your young scientist decide how to test a single variable at a time. Should the pyramid be set up in the same configuration for each simulation? (If so, take a photo or draw a picture in order to reset the cans in the original configuration for each simulation.) Or will the results be the same if the pyramid is reset randomly each time? What would happen if the habitat components are not EVER stacked randomly, but grouped together in some way? Have your scientist write down the plan and record the results. Encourage your young scientist to look for patterns in the data being collected. Depending upon your scientist's age, you may have to help draw a table for

recording results. There is a data table on page 6 that simulates how many animals might be able to live in various qualities of habitats. For this extension, start with a simple plan, and let your scientist suggest ways to change it to learn more.

Extension: Story Time

Your young scientist is going to tell a story. Have him or her choose an animal and its habitat for their story. Now s/he will draw slips and remove habitat components as before. Your scientist will tell what happened in the context of the story as a result of each removal until the story comes to an end or until all the habitat components are gone. This model would limit us to only sad stories, so agree with your young scientist that sometimes when a habitat component is drawn, that component may be returned to the habitat instead of being removed. Habitat recovery and restoration DO happen. Make it part of the story!

Encourage your young scientist to write, draw (perhaps in their Nature Journal), or make a voice recording of his or her story.

Habitat Twister

To help your scientist begin this movement activity, you'll need to gather a few materials. These may be different depending on your situation. If you have a sidewalk or driveway available to draw on, gather sidewalk chalk. Otherwise, you can mark off a 4x6 feet indoor space with masking or duct tape. Both options will also require a minimum of 20 slips of paper and two containers for the papers. If you have a copy of the game "Twister," this step won't be necessary.

Mark off a play space that is 4 by 6 feet. To save time (and chalk or tape), you can mark just the corners. Draw or secure 4 lines of six markers. If you're using sidewalk chalk, you can use any color and fill in the circles or you can just draw X's. Do mark the lines as food, water, shelter, and space. If you are using tape indoors, you don't need an entire circle. Just put a piece of tape where the center of each circle would be, and label it with the appropriate habitat component.

If you have a Twister game, put down the mat and label the marker lines with habitat components. Remember to adapt the spinner so that colors become habitat components temporarily.

If you don't have a spinner, take your 20 slips of paper and use 4 of them for right hand, right foot, left hand, and left foot. Put those in one container. Now, using the 16 remaining slips, make four slips each for each habitat component. Put those slips in the other container, and mix them up. Now your scientist is ready to play. Up to three players may play on the play space at a time.

If you have 1 player: Have someone pull slips for a certain number of movements, and then write them down. Now have your scientist try to do them. If s/he completes 10 successfully, challenge your scientist to go for 20 successful attempts in the next round. The player can try for a personal best or a family record or a record among friends (all playing separately).

If you have 2 players: They take turns calling and playing and try to get the most movements per round

If you have 3 players: 1 calls and 2 play

If you have 4 or more players: 1 calls movements (for example, left hand-water) and 3 play

Players may put only hands and feet down. If any other body part touches the floor/ground, that player is finished for that round. If a marker is called and a player already has that body part on that habitat component, the player must move the body part to another marker of the same habitat component.

Nature Journal

Ask your young scientist to go or look outside to choose at least one animal that s/he sees. They should write or draw what that animal uses for food, water, shelter, and space in your yard or neighborhood. If your scientist enjoys this, encourage him or her to see how many different kinds of animals can be found. This will begin to measure the biodiversity of your area. Help your young scientist to recognize that there are many small animals that are easily overlooked by less competent observers than themselves. Some favorites are snails, slugs, roly-polies, spiders, millipedes, ants, and other insects.

Habitat Connections Data Table

Habitat Components	Habitat Components Remaining				
Food	4	3	2	1	0
Water	4	3	2	1	0
Shelter	5	4	3	2	1
Space	5	4	3	2	1
Number of animals that can live in the habitat	8	6	4	2	0