

# WEEKDAY WONDERS



Content developed by the  
Tennessee Aquarium  
Education Department



TENNESSEE  
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## STEM Around Us: Day 1

We are surrounded by science, technology, engineering, and mathematics (STEM) every day. We do not always realize the extent that they play a role in our lives, but no matter your career or hobbies, STEM is involved. The more young scientists understand about STEM, the better their critical thinking, their passion, and their interest. This week, your young scientist will have opportunities to explore the connections between STEM and the world, beginning with bird wings and flight.

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 does a bird's wing help it fly?



### Daily Nature Journal

Ask your young scientists to spend some time outside completing their daily nature journal. Use the [Guide to Nature Journaling](#) to support them in nature journaling each day. They will develop a new appreciation and wonder for the world around them.



### Nature Journal

In [last week's](#) Weekday Wonders, your young scientist had a chance to learn more about how insects fly. Today, your scientist will learn more about how birds fly and how it is different from insects.

Remind your young scientist about the flattened figure 8 that insects make with their wings when they fly. Then ask your young scientist to go outside and observe birds on the ground and flying.

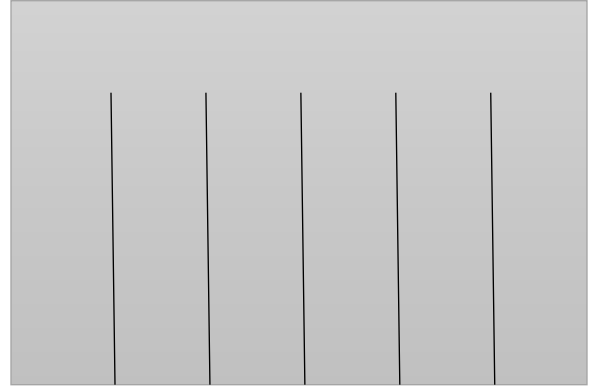
Ask your scientist to write or draw their observations. Have him or her pay particular attention to the shape of the wings and the type of flying the bird does. For example, does the bird soar high in the sky? Does it make shorter flights from the ground to the tree or from tree to tree? Does it hover?



## Exploring Wings

In [last week's](#) Weekday Wonders, your scientist also had a chance to blow on a piece of paper and see how birds fly using the air pressure both above and below the wing. Now, your scientist will have a chance to explore this idea more.

Take a piece of newspaper or other thin paper about 4" x 6". Hold one of the short sides and tear about 1 inch strips along the long side toward the short side stopping about 1.5 inch from the end. See the diagram for a visual description. Hold the attached end of the newspaper and blow across the torn strips. Blow in different directions. Make note of how the strips react.



Ask your scientist how the paper represents a bird wing and how a bird flies. The different strips represent feathers on a wing. Once your scientist has an idea of the basic representation, ask him or her to explore this idea more. Share the following ideas with your scientist and let him or her be creative from there.

- What happens if the strips are wider or narrower?
- What happens if the paper is longer or shorter so that the strips are longer or shorter?
- What happens if there are two layers of paper with strips?
- What happens if the strips are different widths?

For each "wing" design, have your scientist sketch the design and write down what happens when he or she blows on it. Then ask him or her to write what the results would mean for a bird trying to fly.



## Design a Bird

Gather a variety of square and rectangular pieces of paper. Show your young scientist how to make a paper "bird" using a paper airplane as the design. Have your young scientist try to make "birds" that are able to do different actions, such as soaring for a long time, doing acrobatics, or flying high up into the air without crashing. To do this, he or she should try different sizes of "birds" and different ways of folding them. Have him or her think about what bird wings look like and the behavior of the different "wings" in the previous activity.

Each time your young scientist comes up with a new design, have him or her go outside to test the birds s/he has made. Find a place that your scientist can fly the birds and measure which go further. Allow your young scientist to make changes to the birds or to make new ones. Remind your scientist to carefully examine how far each bird goes, either measure or mark the distance, then collect all of the birds to not leave trash.

For an extra challenge, remind your young scientist that birds often pick up food and carry it back to their homes. Add a paperclip or two to the bird and see how it changes the bird's flight. Can your scientist

design a bird that is able to fly well with or without the extra weight?