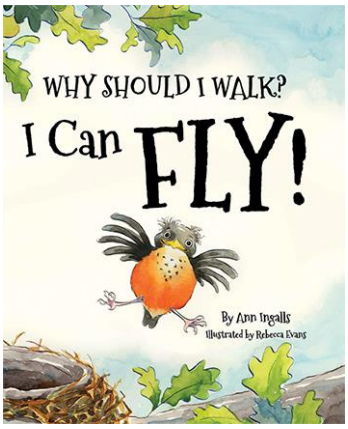
Fantastic Feathers for Flying

Introduction

Birds are the only animals that have feathers! In this hands-on activity, young children explore three ways that feathers help a bird to fly. (preK-2)

Materials



- The book *Why Should I Walk? I Can Fly!*
- Feathers (purchased from a craft store)
- Scissors
- Piece of paper
- Tape
- Hand lens or magnifying glass
- Structure of a feather handout, provided below

Procedure

Important note: It is against a federal law to collect or possess bird feathers from most wild birds in the United States. Although feathers from domestic birds and game birds, such as chickens and ducks, are OK to possess, we suggest buying feathers from a craft supply store.

1. Read aloud the book *Why Should I Walk? I Can Fly!* Explain that in order for the little bird to fly, its wings needed to be light, strong, and able to provide a broad surface to push against the air.
2. Tell children that they will explore these qualities in a feather. Give each child a feather, scissors, piece of paper, tape, and hand lens or magnifying glass.
3. **A feather is light.** Have children hold their feather in the palm of their hand. Ask: *Does it feel heavy or light?* Using scissors, have them cut through the central shaft of the feather, which is called the rachis. Ask: *What do you see?* (The thickest part of the feather is a thin tube, filled with air.)
4. **A feather is strong.** Demonstrate a feather's strength by using a sheet of paper. Have children hold the edge of a piece of paper and move the paper up and down. Ask: *What happens to the flat piece of paper?* The paper bends very easily. Then have them roll the paper into a tube and tape it so it doesn't unroll. Now have students hold the tube by one end and move it up and down. Ask: *Does the tube bend?* (The paper tube is much more resistant to bending than the flat sheet of paper and can support quite a bit more weight. A feather's hollow shaft keeps the feather light and also makes it strong.)
5. **A feather is able to push against the air**. In order to push a lot of air, feathers must form a solid wing. The part of the feather that forms this surface is called the vane. have children look closely at their feather to notice that the vane is made up of many long,

hair-like structures called barbs. For the feather to do its job, these barbs must stick together to form a continuous surface.

6. Have students hold their feather and separate the barbs by running their hand down the feather. Point out that now their feather would let the air flow through. Ask: *What would happen to a bird with many feathers in this condition?* (It would have difficulty flying.)
7. Explain that the feather is easily fixed. Have them use their fingers to smooth the barbs back into place so that they stick together and form the continuous surface that the bird needs. Using a hand lens or magnifying glass, look closely at the barbs. Each barb has many tiny hooks, called barbules. These hooks interlock with the barbules from the next barb, acting very much in the same way that Velcro does. This makes the feather easily repairable. Ask: *How does a bird keep the barbs of a feather in place?* (A bird pulls a feather through its beak to stick the barbs back together. This is called preening. Because healthy feathers are important for flight, a bird is careful to spend time preening every day.)

Extension: Feathers do much more than just help the bird fly. They trap air against the bird's skin, forming a layer of insulation. This keeps the bird warm in winter. Feathers also overlap to form a smooth, streamlined covering to help the bird's body slip easily through the air. They also give the bird its color, and male birds often use bright plumage to attract females. For more fun feather facts read the book *Feathers: Not Just for Flying* by Melissa Stewart.

Resources: Thanks to the Growing Science blog for these hands-on suggestions. Visit them at http://blog.growingwithscience.com/2014/03/feathers-not-just-for-flying-2/.
And for more information about feathers, go to the Cornell Lab of Ornithology at https://academy.allaboutbirds.org/features/all-about-feathers/#how-feathers-are-built.php.

Standards Alignment

Next Generation Science Standards (K-2)

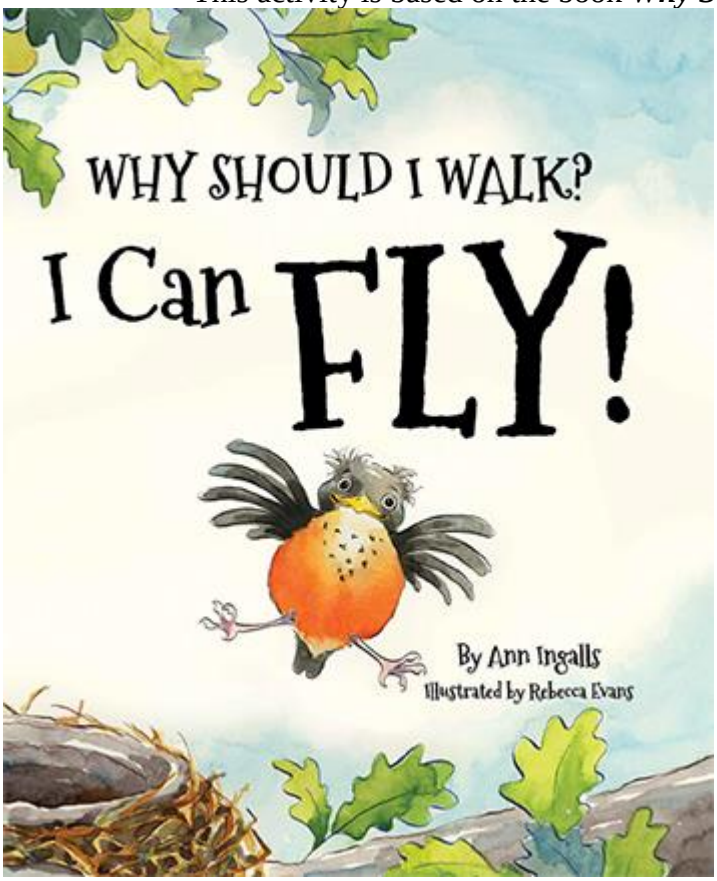
Next Generation Science Standards (DCI: K-2)

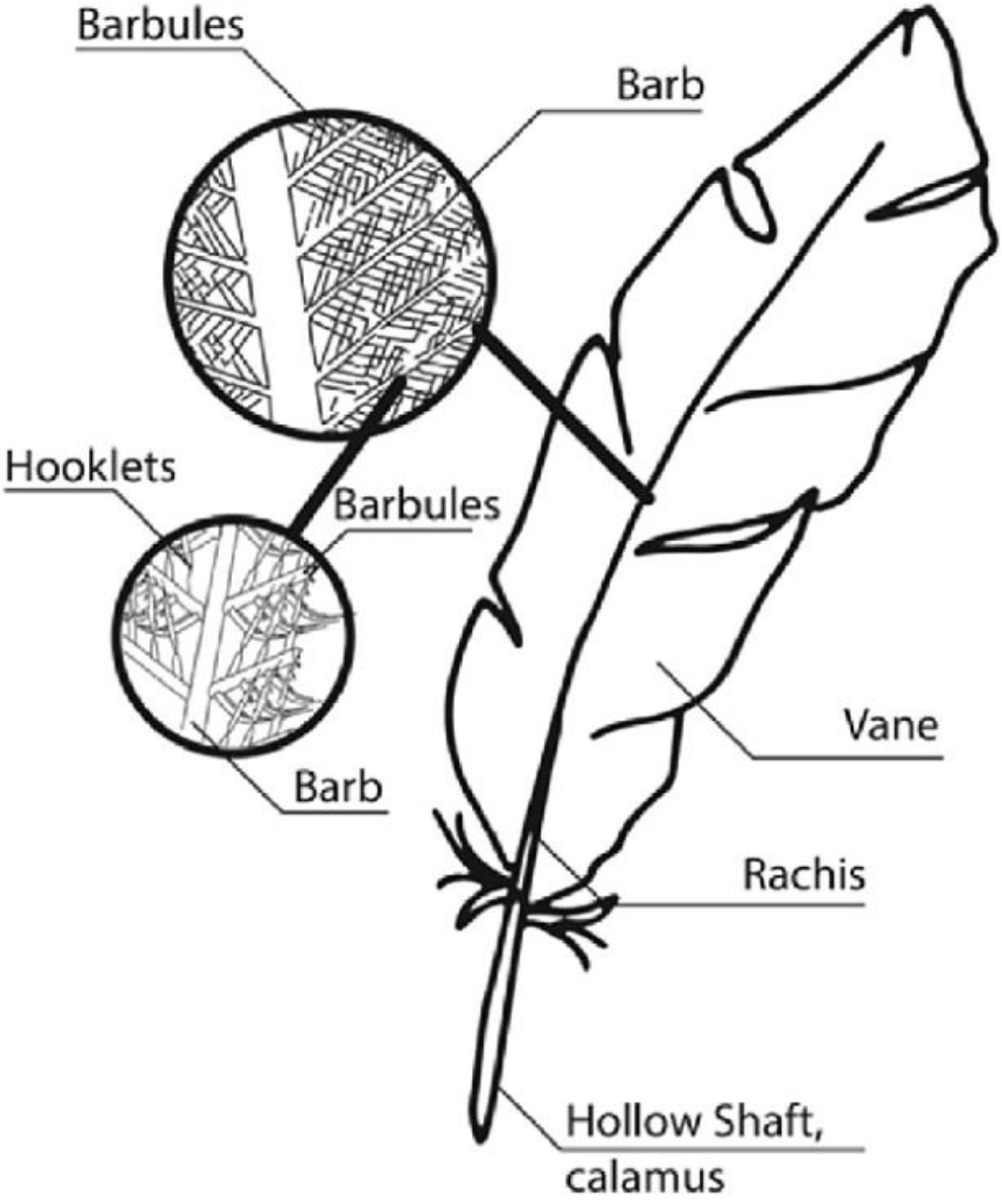
Disciplinary Core Ideas
LS1.A-- Structure and Function

Science and Engineering Practices
Make observations to construct an evidence-based account for the natural phenomena.

Crosscutting Concepts
Structure and Function

This activity is based on the book ***Why Should I Walk? I Can Fly!*** by Ann Ingalls




Barbules
Barb
Hooklets
Barbules
Barb
Vane
Rachis
Hollow Shaft,
calamus

Feathered Friends Lessons

By BirdSleuth

Feathered Friends Lessons are hands-on and easily adapted to fit your teaching, time availability, and elementary levels of student background knowledge.

Your students will:

- Practice bird identification skills
- Explore your local habitat
- Develop STEM skills

Use the below link for a free download of engaging lessons for each month of the year.
http://www.birdsleuth.org/pennington/

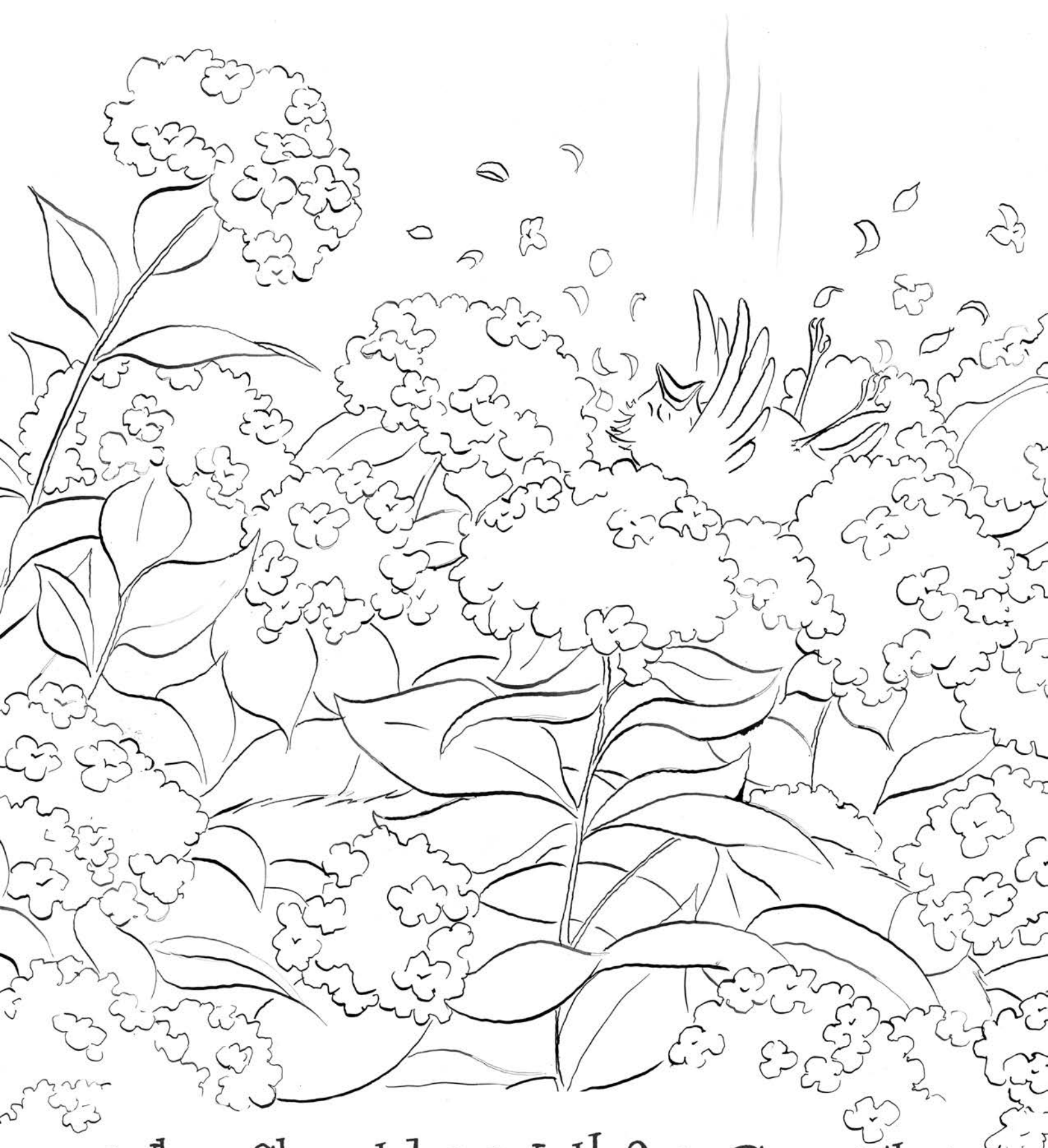
BirdSleuth is the K-12 education program of the Cornell Lab of Ornithology. Our mission is to create innovative K-12 resources that build science skills while inspiring young people to connect to local habitats, explore biodiversity, and engage in citizen-science projects. We take an inquiry-based approach to science curriculum that engages kids.

Why Should I Walk? I Can Fly!

Written by Ann Ingalls • anningallswrites.com
Illustrated by Rebecca Evans • rebeccaevans.net
Dawn Publications • dawnpub.com

Why Should I Walk? I Can Fly!

Written by Ann Ingalls • anningallswrites.com
Illustrated by Rebecca Evans • rebeccaevans.net
Dawn Publications • dawnpub.com



Why Should I Walk? I Can Fly!

Written by Ann Ingalls • anningallswrites.com
Illustrated by Rebecca Evans • rebeccaevans.net
Dawn Publications • dawnpub.com