

The Backyard Naturalist

Estimated Time: 2 hours

SUMMARY

In this activity, kids train their eyes to see nature's details. Kids draw the details of the plants and animals that they see around them like the naturalists of the past such as Charles Darwin, Carolus Linnaeus, and John James Audubon. After drawing plants and animals as a whole, kids dissect plants and/or flowers to get a detailed look at the inner workings and complex mechanisms of plant life.

WHAT YOU'LL LEARN

- Structure of plants and animals
- Critical-thinking skills
- Dissection skills
- Flowering plant botany

Materials Used	Resources Used
<p>Naturalist Drawings</p> <ul style="list-style-type: none"> • Paper • Coloring tools (colored pencils work best) • Magnifying glass (optional) • Binoculars (optional) • Camera (optional) <p>Botanical Dissections</p> <ul style="list-style-type: none"> • Paper • Coloring tools (colored pencils work best) • Magnifying glass (optional) • Microscope (optional) • Tweezers • A sharp utility knife or kitchen knife (sharp knives work much better and are safer) • Tape 	<ul style="list-style-type: none"> • Darwin Online Naturalist Drawings: http://darwin-online.org.uk/graphics/illustrations.html • Walk on the Wild Side lesson plan: http://www.siuSTEMcenter.org/walk-on-the-wild-side/ • Botany Coloring Book: https://www.harpercollins.com/9780064603027/botany-coloring-book/ • Flower Morphology: https://www.amnh.org/learn-teach/curriculum-collections/biodiversity-counts/plant-identification/plant-morphology/parts-of-a-flower

WHAT TO DO

Naturalist Drawings

1. Share some of the naturalist drawings found in the Resources section. Naturalists like Charles Darwin drew beautiful and accurate drawings of plants and animals they saw on trips around the world to share with the scholars. In fact, Darwin was actually employed as a naturalist when he took that famous trip on the HMS Beagle where Darwin drew the pictures of finches that led to his famous book, *On the Origin of Species*. Some key questions while looking at the drawings:
 - a. What details are drawn in the drawings?
 - b. What do you think the purpose of these drawings is?
 - c. How are these drawings different than a picture of the animal? (exemplar features highlighted, poses are somewhat regal, and unique features are shown)
2. Take a walk and look at organisms you come across.

- a. Look at the details of what you see. What features are indicative of the species? What's common? Robins all have orange chests. Male cardinals and female cardinals have different coloration. Parts of leaves and flowers may come in 5s or 4s.
 - b. Kids often have misconceptions about what constitutes an organism. For example, often kids think that a pine cone is an organism, rather than a piece of one.
3. After making a naturalist drawing, review the drawing.
 - a. Write a short description about the organism highlighting the more noticeable features.
 - b. While describing features, include their probable functions.
 - c. If possible, have someone look at the drawing that didn't see the organism drawn. Can the new observer pick out the key features of the organism?

Botanical Dissections

1. Collect tools and items to dissect. See the Materials section. Discuss safety.
2. Carefully perform the dissections.
 - a. For flowers and plants, either cut them in half or take apart each part that looks like it's different. For example, there are 4 parts of "perfect" flowers: sepals, petals, male parts, and female parts. Each looks somewhat different and is important.
 - b. For fruits, typically slicing them in half is best. You want to look for how seeds are arranged, if there's any radial symmetry (parts laid out identically in a circle), the outside covering, and the fleshy internal part.
3. Draw or attach the dissected parts to a piece of paper and label them. There are resources you can use for this in the Resources section. Include the probable function for each labeled part.

TIPS

- Older kids can and should annotate using scientific terms. Most reference guides include the appropriate vocabulary.
- These activities work well with the "Backyard Bioblitz" activity.
- For further learning in a similar vein, there are excellent scientific coloring books that are used at the college level. The Botany Coloring Book is linked in the Resources section, and several pages are available online for free.
- There are a wide variety of plants, flowers, and fruits that can be dissected and many of the parts are common across different organisms.
- For younger kids, even the most basic drawings and dissections can prompt discussion about structure and function in organisms. A drawing of an ant may not capture the specialized eyes or functions of antennae, but noting that they all have 6 legs, 3 body segments, and external mouth parts in front are all great first steps and something that is covered in identification in college biology courses. Simple is not the same as lacking value and practicing critical thinking and making observations is important at every age.