

Forgotten Flowers: Spring Ephemerals



Each week, we will highlight a spring ephemeral by posting an information sheet, photos, guiding questions, and enrichment activities designed for formal and informal educators, as well as life-long learners.

Week 4: Dutchman's breeches

These flowers have lacy leaves and peculiar flowers that remind us of white pantaloons hung out on a line to dry. Their amusing name comes from their resemblance to the loose-fitting bloomers worn by Europeans, including the Dutch, centuries ago.

The unusual form of the flower has spawned a variety of other colorful folk names: white hearts, eardrops, and butterfly banners to name a few. The scientific name is hardly romantic; *Dicentra cucullaria* simply means two spurred and hooded.

Dutchman's breeches actually have 4 petals despite the *Dicentra* name. Two of the petals are fused to form the double pouches which are the nectar spurs. The nectaries are located at the tips of the upturned white pant "legs". Two other yellow petals project over the "waistband" like little wings over the stamens. The upside-down blossom serves more like a rain hat than knickers, as it protects the stamen and pollen from the rain and elements.

It's only the long, strong tongues of queen bumblebees that can reach the nectar at the bottom of the spurs. As they forage and reach deep inside, the bees are dusted with pollen and fertilize the flowers. Honeybees' tongues are too short to reach the nectar, so they often "cheat" and chew holes in the spurs to bypass the anthers and steal the sweet reward. Many wasps, carpenter bees, and even bumblebees trying to save some energy will do the same.



The plant is in the **Fumitory** family which is closely related to the poppies and contains alkaloids that are toxic to humans and animals. They were a bane to early farmers as the leaves caused convulsions in cattle when they grazed on it. Those farmers called it **staggerweed**. Though harmful to us, strong toxins are beneficial to plants as they often protect them from being eaten. Good news for gardeners, the toxins also help to keep deer from eating them. Of course, you can never say never when it comes to hungry deer!

Dutchman's breeches readily reproduce from seed. Like bloodroot and so many of the spring ephemerals, ants help to disperse the seed in a process called **myrmecochory**. The seeds of Dutchman's breeches and many other spring ephemerals have a fleshy package of fats and other nutrients called the **elaiosome**. Ants often take the seeds back to their nests where they eat the fatty, nutritious part, and discard the rest of the hard seed. The following April, the seeds readily germinate where the ants left

them. The ant waste dumps make fertile ground for the seeds to grow and over time, large colonies of the white bloomers form in shady woodlands and rocky slopes.

Want to grow Dutchman's breeches in your garden? Buy seeds or plants from reputable native plant nurseries and **never collect them from the wild!** [The Native Plant Society of New Jersey](#) is a great resource to help you find where to buy them or to get more information.

More Photos



Note: all photos are from J. Vogel garden and woodland

Guiding Questions and Enrichment

1. Dutchman's breeches has a unique flower. How many petals does it actually have?

Answer: Four, but two of them are fused to look like one.

2. How does this flower get its common name?

Answer: Their name comes from their resemblance to the loose-fitting bloomers worn by Europeans, including the Dutch centuries ago.

3. Where are the nectaries located in the blossom?

Answer: At the tips of the nectar spurs, which look like the upturned pant legs.

4. How does the upside-down flower benefit the plant?

Answer: It acts like a rain hat to protect the anthers and pollen from the elements.

5. What kind of bees have tongues long enough to reach the nectar in nectar spurs in the blossom?

Answer: Bumblebees.

6. How do bees and wasps with shorter tongues get the nectar?

Answer: They cheat by chewing holes in the spurs to bypass the anthers and steal the nectar without pollinating the flower.

7. What name did early farmers give to Dutchman's breeches? Why?

Answer: Staggerweed because the plant contains toxins that caused convulsions in grazing cattle.

8. Like many spring ephemerals, an insect helps to disperse the seeds of Dutchman's breeches. Which insect does this?

Answer: Ants

9. What is seed dispersal by ants called?

Answer: Myrmecochory

Suggested reading to extend your learning...

There are many books about bees. Here are just a few to start your further study and enjoyment.

Next Time You See a Bee, Emily Morgan

This book is offered through the NSTA, National Science Teachers' Association. Included:

- The physical features of bees and related amazing characteristics;
- How bees pollinate flowers leading to fruit production;
- Demonstrates a bit of the variety of bees in North America;
- Encourages direct observation of these insects and their preservation.

Bumble Bees of North America: An Identification Guide (Princeton Field Guides)

This is a comprehensive bee guide with large photographs, range maps, and diagrams. Easy to use.

The Bees in Your Backyard: A Guide to North America's Bees, by Joseph Wilson

There are about 4,000 species in North America. Lots of great photos are in this book.

Bonus and Enrichment

Lessons and activities can be adjusted to specific goals and objectives. The following NJ Learning Standards provide ideas on how you may integrate science into ELA. If you are using this outline for the lower grades, the information sheet and Q/A may not be relevant, but by showing the photos, modifying the reading, or just by doing some of the activities as family projects, participants can enjoy learning more about these native NJ plants

Synonym Fun

Breeches – This term is not commonly used, but how many of the words below can be used adequately as synonyms?

Knickers / Shorts / Slacks / Trousers / Bermudas / Bloomers / Briefs / Britches / Chaps / Chinos / Cords / Denims / Drawers / Dungarees / Jeans / Jodhpurs / Overalls / Pantaloons / Blue Jeans / Clam Diggers / Pedal Pushers

- Can you place these terms in groups? Are some more like each other than others?
- Are some more descriptive synonyms than others?
- If you were asked to illustrate the synonyms, which ones could you illustrate accurately? Fold a paper into 8 squares and in each box, illustrate and label.
- Can you think of other words that can be used as synonyms for the word “breeches”?
- Use the information to write a funny poem using the illustrations as a guide.

Rhyme Time

Think of words that rhyme with “breeches”. A book that might come to mind is a children’s favorite, The Sneetches by Dr. Seuss, a satire on forms of discrimination between cultures, races, groups of people in general, and religions. Research how this book either parallels or is in conflict with biological systems. Provide examples and a rationale.

Tongue-tastic Animals!

On the following page, you'll find a blank graph with measurements that you can plot about the length of an animal's body versus the length of their tongue. It can be used to practice measurement, early data analysis, and you can encourage the student to research other fun features that these animals may have.

Additional Resources

- [Lady Bird Johnson Wildflower Center, Dutchman's Breeches](#)
- [USDA Plants Database](#)
- [How ants disperse seeds of spring ephemerals](#)

Sample Next Generation Learning Standards

- 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, some cannot survive at all. With their lacy leaves, do you think Dutchman's Breeches can live in other habitats? Why or why not?

New Jersey Learning Standards ELA

- NJLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- L.4.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

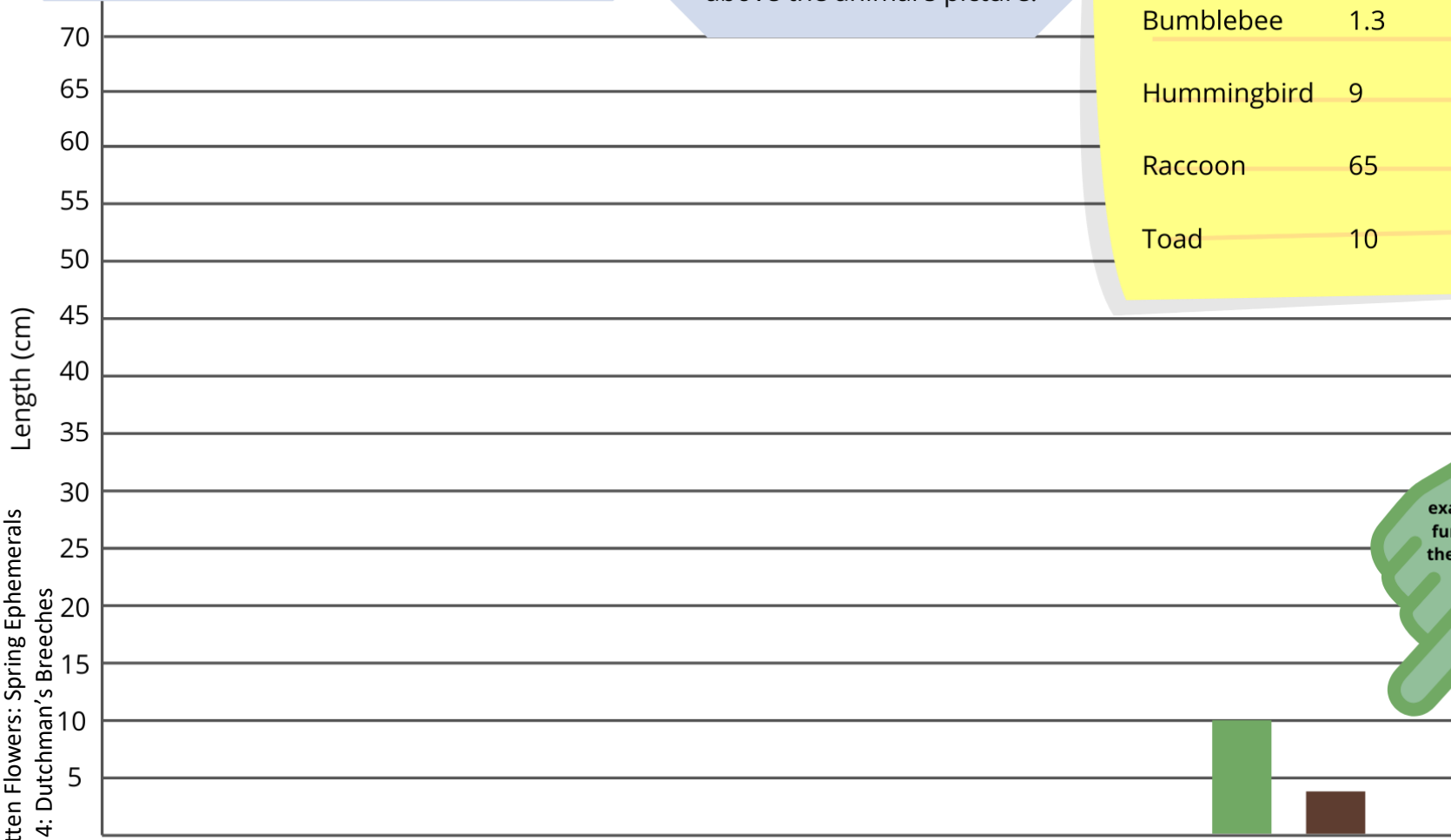
For more information about using this lesson in your classroom or with your family, contact Kate Reilly, Manager of Education, Duke Farms, at kreilly@dukefarms.org.

Tongue-tastic Animals!

Let's practice making graphs by comparing each animal's body length to the length of their tongues!

Use this information to make one color bar for the body and one for the tongue above the animal's picture:

Animal	Body Length (cm)	Tongue Length (cm)
Woodpecker	26	6
Bumblebee	1.3	0.8
Hummingbird	9	2
Raccoon	65	9.5
Toad	10	3



Here's an example! Have fun and make them any color you like!

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