Duke Farms

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 3: Bloodroot

Perhaps the most fleeting of all the woodland ephemerals is **bloodroot** (*Sanguinaria canadensis*). It's a curious name as the flowers are brilliant white with a ring of lemon yellow stamens. There's nothing bloody about them until the stems or roots of these delicate beauties are bruised or damaged. Then they secrete bright red colored sap, hence the common name.

Bloodroot pops up out of the woodland floor almost like magic. The budded stalk and plant's single leaf emerge together, looking ever so much like a white lollipop on a stick enveloped in crinkly green velvet wrapper. When the bud is ready to open, the stalk pushes the bud up above the leaf so when the petals unfurl they are still protected by the leafy envelope. The 7 to 12 white petals are so fragile that they only last a few days before they are gone.

Native Americans looked for the emergence of bloodroot. The "blood" was used as a natural red natural dye to color baskets, blankets, clothing, and even as body paint! Bloodroot was also used medicinally for a multitude of ailments. Because they "bled" like humans when injured, this ephemeral was used to treat wounds, ulcers, skin cancers, and any diseases involving bleeding. The European colonists learned of its properties from the Native Americans and continued to use bloodroot as strong medicine. However, the plant can be very dangerous as it contains toxic compounds that may have done the patients more harm than good.

Bloodroot flowers entice early spring insects with their showy flowers and fluffy anthers full of pollen at a time when not much is in bloom. But since they have no nectar, they resort to trickery to get bees and other insects to provide pollination services. As the insect flies from flower to flower searching in vain for the sweet reward, the bloodroot gets pollinated. Even though there's no nectar, the insects do come away covered with protein-rich pollen, essential food for native bee larva.

Under cold spring conditions, bloodroot may bloom before the pollinators are active. It is not uncommon for bloodroot to self-pollinate and go to seed without pollinators. However other insects then help to spread the seeds. In a process called **myrmecochory**, ants help disperse the seeds of bloodroot and other spring ephemerals. The seeds have a fleshy package of fats and other nutrients called the **elaiosome**. The ants bring the seeds back to their nest, eat the elaiosomes, and leave the

seeds intact. Bloodroot germinates readily from seeds moved around by ants and large colonies can form when left undisturbed.

Want to grow Bloodroot in your garden? Buy them 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.

Guiding Questions and Enrichment

1. How does bloodroot get its common name?
Answer: Because when the stem or root is bruised or cut, it exudes a red sap that reminds us of blood.

2. The flowers of bloodroot are truly fleeting. How long do the blossoms last?
Answer: They only last a few days.

3. How many leaves does bloodroot emerge with wrapped around its stem?
Answer: Just one.

4. Native Americans had important uses for bloodroot plants. Name two.
Answer: As a red dye for cloth, baskets, body paint and as strong medicine.

5. Because the plants seem to "bleed", Native Americans and the European colonists thought they would be useful for treating disease. What kind of ailments?
Answer: Any disease involving wounds, blood, and bodily fluids.

6. How does bloodroot trick pollinators to provide pollination services?
Answer: They have big showy flowers at a time when not much is blooming, which attracts the insects to visit and look for nectar; they spread pollen in the process.

7. Even though there's no nectar, pollinators do benefit from the visit by coming away with what?
Answer: Protein-rich pollen to feed insect larva.

8. Bloodroot readily forms seeds. What insect helps to spread the seed?
Answer: Ants.

9. What special structure do bloodroot and other spring ephemerals seeds possess?
Answer: Nutrient-rich elaiosomes.

10. What is the seed dispersal by ants called?
Answer: Myrmecochory.

Duke Farms Connection

We can still find some bloodroot popping up in the Meditation Garden and lowland woodlands of Duke Farms. Efforts are underway to help all our native beauties return to their native habitats.

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Family Activities to Do at Home

To learn more about the life cycle of ants and the essential work that they do, the following books and resources are included for family fun. As a gentle reminder, those interested in the aspect of ant farms should be reminded that ants are important to our natural environment and should be left outside.

Ant Cities – Let's Read and Find Out Books by Arthur Dorros
This book explores what certain types of ants do inside an anthill, showing the tunnels and rooms that are constructed.

To hear the book read aloud, click here.

For those interested in the book written in Spanish:

Aprende y Descubre La Ciencia

Ciudades de hormigas
¿Te preguntaste alguna vez adónde van las hormigas cuando desaparecen por el hoyo de su hormiguero? Es muy posible que debajo de ese montículo de tierra existan miles de túneles y cientos de habitaciones. ¡Lee este libro y aprende a crear tu propia granja de hormigas!

Are You an Ant? – Backyard Books by Judy Allen and Illustrated by Tudor Humphries
Backyard Books: Are You an Ant? by Judy Allen with illustrations by Tudor Humphries will give children who love to track ants an inside look at the everyday life of this fascinating insect, as they explore the similarities and differences for themselves.

To hear the book read aloud, click here.

Egg Carton Ants Using Recycled Materials

This activity is a popular fan favorite for learners. You can make an ant craft out of an egg carton using 3 cups to demonstrate the head, thorax, and abdomen. Although you can use pipe cleaners for the 6 legs and 2 antennae, try looking for sticks or other recycled materials. Don't forget the eyes!

There are many other craft tutorials available. Do a search to find ideas.

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More Photos

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Additional Resources

- How ants disperse seeds of spring ephemerals
- Lady Bird Johnson Wildflower Center
- USDA Plant Database
- YouTube video on myrmecochory

Connection to Standards:

There are many ways to integrate the information about bloodroot and ants into your lessons from a multidisciplinary standpoint.

Here are just a few examples:

- NJ Learning Standards -Social Studies
  - 6.1.4.D.1 Determine the impact of European colonization on Native American populations, including the Leni Lenape of NJ
  - Research native plants and how they were used by people throughout time.
- Next Generation Science Standards
  - K-LS1-1 Use observations to describe patterns of what plants and animals need to survive.
  - 3-LS4 -3 Construct and argument with evidence that in a particular habitat some organisms can survive well, some survive less well, some cannot survive at all.
  - Can bloodroot flourish in a different environment? Why or Why not?
- NJ Learning Standards - English Language Arts/ Literacy
  - W.K.7 Participate in shared research and writing projects.
  - Students may contribute to a book designed with illustrations they make themselves.
- NJ Learning Standards – Mathematics
  - K-MD.A.2 Directly compare two objects with measurable attributes. More and less than.
  - Compare bloodroot to another ephemeral. Compare ants to another insect. Or compare which populations of each have smaller/larger numbers.

For more ways to modify the lesson on a PK and higher level, please contact Kate Reilly, Manager of Education at kreilly@dukefarms.org.