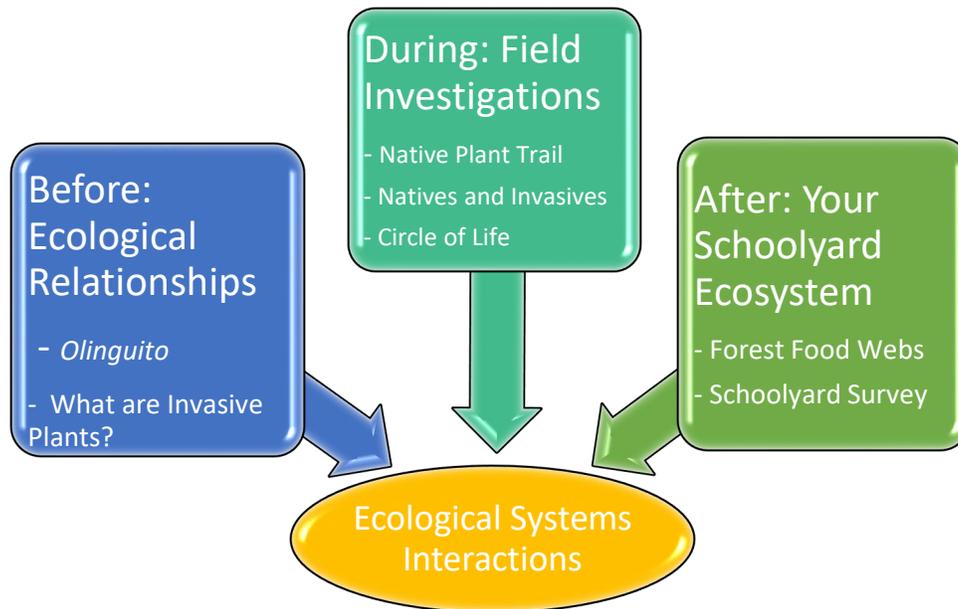


# VIVID VIRGINIA



Your students will be visiting Blandy to engage in a field investigation focused on ecological systems, interdependencies, and interactions.

To enhance classroom connections, we have developed this lesson cluster. Field investigations are more meaningful to students when they are integrated into their curriculum. This lesson cluster can be used to: introduce ecological concepts, synthesize and expand on knowledge about ecosystem components and food webs, and translate ecological understanding to the local schoolyard fostering stewardship and school community. Before-visit activities increase student awareness of the process of science, understanding of ecological systems, and create literacy connections to recent research. With the after-visit activities, students synthesize data and expand their conceptual understanding to include their schoolyards.

# VIVID VIRGINIA

## BEFORE 1: *OLINGUITO de la A a la Z!*

**Before** your visit to create a literacy connection with the natural world. Use the book *Olinguito* to learn about a cloud forest ecosystem before students explore their schoolyard for living things.

**Standards Addressed:** English 3.3, 3.4, 3.5; 4.4, 4.5

**Instructional Strategy:** Download the teacher guide to *Olinguito* here.

[https://www.leeandlow.com/books/olinguito-de-la-a-a-la-z-descubriendo-el-bosque-nublado-olinguito-from-a-to-z-unveiling-the-cloud-forest/teachers\\_guide](https://www.leeandlow.com/books/olinguito-de-la-a-a-la-z-descubriendo-el-bosque-nublado-olinguito-from-a-to-z-unveiling-the-cloud-forest/teachers_guide) . Following is an excerpt from the teacher guide.

1. Read and talk about the title of the book. Ask students what they think the title *Olinguito, de la A a la Z!*/*Olinguito, from A to Z!*, means. Then ask them what and who they think this book will most likely be about. What situations might be talked about in the text? What do you think might happen? What information do you think you might learn? What makes you think that?
2. Take students on a book walk and draw attention to the following parts of the book: front and back covers, including the blurb on the back cover; title page; dedication; acknowledgements; introductory page/text; illustrations; alphabet letters and alphabet text structure; English and Spanish text; back matter (“Discovery of the Olinguito,” “The Cloud Forest,” “The Illustrations,” “Be an Explorer!”) with photographs and map; glossary with pronunciations and scientific names; vocabulary bank; author’s sources; and author/illustrator’s bio.
3. Read the illustration note and point out the plant prints used throughout the artwork, such as the leaf prints on the letters C and D pages. Have students discuss why the creator, Lulu Delacre, uses plant materials in the book.
4. Spend time on the text structure of the book whereby the creator, Lulu Delacre, uses the alphabet to present the story and information.

### Lesson Preparation:

Assess schoolyard for any safety concerns before taking students outside. You may wish to ask parents to assist in the exploration as well.

# VIVID VIRGINIA

## BEFORE 2: What are Invasive Plants?

Before your visit to provide a foundation for understanding interactions between invasive and native plants and the human connections and impacts.

**Background:** one of the topic that students will explore while at Blandy focuses on native and invasive plants. For teacher background information <https://www.fs.fed.us/wildflowers/invasives/index.shtml> and <https://insider.si.edu/2013/04/top-six-invasive-plant-species-in-the-united-states/>.

**Standards addressed:** Science (2018) 3.5, 3.8; 4.3, 4.8. Social Studies 3.6, VS.2

### Instructional Strategy:

1. Prep: If possible, bring in specimens of common invasive plants; Honeysuckle and English Ivy are two that are common in most of the U.S.
2. Introduction: Ask student to watch this video.  
[https://www.youtube.com/watch?v=mUssO68D2eM&feature=emb\\_err\\_watch\\_on\\_yt](https://www.youtube.com/watch?v=mUssO68D2eM&feature=emb_err_watch_on_yt)
3. What were key points in the video? Generate a list on the board of key points.
4. Explain that there are many emerging invasive plants and animals. One is hydrilla or water thyme.
5. In pairs or groups of three, ask students to read the hydrilla information sheet and look at the maps.
6. This activity integrates with map reading skills in social studies. Student questions
  - a. Look at the maps: Where was hydrilla first noted in the U.S. When?
  - b. In what states was hydrilla found in 1990?
  - c. How many states has hydrilla invaded? Is that half of the state in the U.S. or less?
  - d. What do you predict will happen in the next five years? Ten years?
7. Stewardship. What can you do?
  - a. Ideas include raising awareness through information campaigns, further research into hydrilla and how to control it, asking an expert, or starting up a removal campaign.

# VIVID VIRGINIA

## DURING: Field Investigation

### VA Standards addressed:

**Science (2018):** 3.1, 3.4, 3.5, 3.8; 4.1, 4.3, 4.8

**Mathematics (2016):** 3.2, 3.7, 3.15, 3.16; 4.2, 4.7, 4.14, 4.15

**English** 3.1, 3.4, 3.5

*During* your field investigation at Blandy, your students will engage in several indoor and outdoor lessons where they explore native and non-native organisms, interactions, and roles of organisms in ecosystems just as ecologists and watershed scientists do.

Below is an overview of the “standard” program activities to assist you with integrating this field experience into the classroom experiences. Field investigations may change due to weather, volume of students, or through learning objectives reached through communications with Blandy educators.

- **NPT Woodland Investigations:** Students develop observation, data collection, and analysis skills while investigating a native ecosystem. Students classify animals according to the role that organism have in a community.
- **Circle of Life:** Students use tools such as hand lenses, quadrats, field measuring tapes, and identification guides to explore diversity in a field.
- \* **Natives and Invasives:** Students learn how invasive organisms impact a native ecosystem. Students develop an appreciation for native Virginia organisms and their role within food webs and the flow of energy.

# VIVID VIRGINIA

## AFTER 1: Food Webs in the Forest

*After your visit*, students will synthesize the data and observations they made to develop an ecosystem. Your students explored the woodland in our Native Plant Trail to find producers, consumers, and decomposers. With this activity, students review and combine their discoveries to create a more complete food web with native organisms in a local ecosystem.

**Standards Addressed:** Science (2018) 3.4, 3.5; 4.3

### **Instructional Strategy:**

1. Prepping for the activity: Since this activity is based on data collected by students, we recommend you review the student data sheets collected in the Native Plant Trail woodland to create a list of the organisms found during your Blandy visit. Create your own version of the food web based on the organisms, then look for missing links between producers, consumers, decomposers, the sun, etc. Make a list of these missing links to use if students need more guidance.
2. Prep: place large pieces of newsprint (or use large white boards) on tables. Each group of students should have one large surface and their respective data sheets from the Blandy field investigation.
3. Recap: Ask students to recall their field investigation in the Native Plant Trail. What did they investigate? Come to a classroom understanding of the organisms' roles in food chains that then compose a food web.
4. Explain that each group will review their data sheet and try to find connections between the organisms. After a few minutes, take the pulse. Ask: was anyone able to link any of their organisms together? If not, have an example prepared. Example, you saw caterpillars on a redbud tree and a bluebird in the canopy. Use your example and key vocabulary (the redbud is the primary producer, the caterpillar a primary consumer, and the bluebird a secondary consumer. If you can, note a decomposer in your chain.)
5. Either using your own or a student example, ask: is this example a food chain or a web? Explain your reasoning.
6. Is there anything missing from the chain or web? Explain your reasoning and ask class to brainstorm to as needed. Students may need to be guided to the concept that the sun is the driver of food webs on Earth.
7. Instruct students that their next step is to create a classroom food web. How this plays out in your classroom is up to you. You could place all the blank papers on the floor for students. You can use yarn to connect different organisms, students can create a diagram on a computer/tablet, students can fashion models for each organism (using crayons, paper, and other supplies of your choice), and so on.
8. End goal: Students realize the interconnections in a food web.

# VIVID VIRGINIA

## AFTER 2: Schoolyard Survey- What's your system?

**Background:** A schoolyard survey is a type of assessment to connect students to their local system and more deeply consider human interaction with the environment around them. Surveys such as this one also allow students the opportunity to communicate with members of their school community they may not typically interact with (grounds and facilities staff) and has potential for an action project.

**Safety:** Check the school grounds for areas to avoid keeping student safety at the forefront. Ask for parent volunteers or other teachers for help with guiding the students outdoors. Prep: Set up a time for buildings and/or ground maintenance to talk with students, or gather pertinent information before the activity.

**Standards Addressed:** Science (2018): 3.1, 3.8, 4.1, 4.8

### Instructional Strategy:

1. Inquire with students: How is your schoolyard part of an ecosystem? What are the different systems that your school is a part of? Generate a list of students' ideas (Choose your strategy- class discussion, submitting pieces of paper in a container, placing post its on the board, etc.) and then discuss as a class.
2. Next, ask: Now that we know the schoolyard is part of a system in these ways, is it a healthy part of the system? Is there anything we can do to increase diversity or improve the schoolyard's appearance or both?
3. Explore: Tell students that one way we can determine what is going on in their schoolyard is to go out and make observations and gather our own data to then make conclusions. We can test our schoolyard and create a score or report card based on what we observe.
4. Conduct the schoolyard report card, which can be accessed here. [https://www.cbf.org/document-library/education-resources/schoolyard\\_reportcard28aa.pdf](https://www.cbf.org/document-library/education-resources/schoolyard_reportcard28aa.pdf) Place students in small groups, giving each group a report card, clipboard and pencil. Once outside, model how to fill out the report card with your class. Then have them explore in their smaller groups.
5. Back in the classroom, each group will add up the score. Facilitate a class discussion of the scores. Were the scores all the same, can we take an average of the scores? What is the array of scores? (Put the numbers on the board to examine.)
6. Conclusion: What are our next steps? Ask students to generate ideas for schoolyard improvement. Depending on engagement and time allotted, you can conduct a class discussion of habitat improvement. Some guidelines for schoolyard improvement can be found here- Fix your bare spots <http://www.cbf.org/document-library/cbf-guides-fact-sheets/BareSpotsGuide95dc.pdf>