

## **Hungry Birds Count on Caterpillars!** **Count Caterpillars on Forest Leaves. Food for birds!**

### **Teacher Notes**

This lesson is designed for 4-6<sup>th</sup> graders and possibly younger students with extra assistance. Recommended for use in June-September.

**1. [View Training video](#).** This shows how to make the observations. You might want to show this to students, as well.

**2. Introduce students to the study and their role:** Ask the students: What do birds need when they return to their summer breeding ground in New Hampshire? (One answer: food, primarily caterpillars but also other insects and spiders). *Fun fact: How many caterpillars does it take to raise a brood of chickadees? Answer: over 6000!*

Scientists want to know whether their food source is available when needed for the parents and their young? How many caterpillars reside on tree leaves? What type of caterpillars make forest leaves their home? Does this vary from year to year?

These are all good questions that ecologists at the Hubbard Brook Experimental Forest (HBEF) seek to answer with careful annual observation. You can help answer these questions too by participating in a survey of nearby trees to help quantify the location and number of caterpillars and other insects and spiders.

We know that caterpillars are an important food source for migratory birds and are a welcome feast for nestlings. This 11 minute video, [The Birds of Hubbard Brook](#), introduces bird research at the HBEF and describes the importance of matching the timing of caterpillar availability and the return of the migrating birds. Bird ecologists at HBEF have been studying Lepidoptera (moths and butterflies) larvae abundance since 1986. Larvae are also known as caterpillars! They survey 100 leaves of 40 different species through the summer. Caterpillars are counted and their length measured to determine caterpillar nutrition available each summer for hungry baby and adult birds.

Climate change has been measured over decades in NH and it is affecting the timing of spring leaf out, emergence of insects and migratory bird activities. If the timing of these seasonal events gets out of sync, bird and nestling survival may be affected. Some years are good years and some are bad years for caterpillars and birds. You can help find out why!

**2. Brainstorm questions that the students have about birds and caterpillars.** Record questions for discussion afterwards. Students will collect data to help answer many questions, including: Do caterpillars prefer certain types of trees? Leaves on the forest edge or leaves found in the forest interior? Big leaves or small leaves? When during the summer/fall are caterpillars most abundant on woody plants?

**3. Locate two field study locations.** 1) One can be along the edge of a park or lawn away from traffic. Pick a location where there are trees or shrubs lining the open area. 2) The second study area can be along a forested trail. Pick locations where there are branches at eye level for the students to examine. Students may work in pairs if they can be safe. One can be the observer and the other the reader of the directions and recorder. They can switch roles halfway through the activity. Students can spread out along the edge or trail, probably about 20 feet apart. They will examine 4 trees following the directions in the “Become a caterpillar counter” packet. They will take notes on the “Caterpillar Count Field Data Sheet.” One side of the data sheet is for the observations along the tree edge. The other side is for the forest setting. Pages 3-4 are provided for their drawings/leaf rubbings of the two types of trees that they are observing. Some of the most common trees are shown on page 5 of the camper packet, but it is not necessary for the students to identify the trees or shrubs by species. Page 6 is for a sketch of an example of caterpillar types that they find.

**5. Provide materials to campers:**

- Clipboard, ideally with pencil attached by string
- “Become a caterpillar counter!” Camper directions and sketch sheets
- Field Data Sheet
- Magnifying glass (optional)

**6. Alert campers about safety issues** including ticks, social distancing, staying within sight of others.

**7. Conduct activity.** The observations take approximately 20 minutes per site, if campers are working in pairs. It will take longer if they work alone. Please send us a photo of your campers at work, if allowed!

**8. Wrap-up and discussion.** After you are done, if time permits, have the students compile their results (group spreadsheet provided). If you can, discuss the students’ findings with them. See if they can answer the initial questions about which locations or leaf sizes/tree types the caterpillars prefer. Please return the data sheets and your group compilation to us. We will appreciate your feedback about the activity on a survey that we will provide. Please call us if you have questions about anything. We will retool the activity based on your suggestions. Perhaps you would like to use this activity again next year!

*Activity developed by Amey Bailey, Forest Technician, US Forest Service, Hubbard Brook Experimental Forest and Sarah Thorne, Educator, Hubbard Brook Research Foundation. We wish to thank Hubbard Brook scientist, Dr. Nicholas Rodenhouse of Wellesley College, for his assistance with this lesson. Please contact us with questions or comments at [educator@hubbardbrookfoundation.org](mailto:educator@hubbardbrookfoundation.org).*