

What is Fall Phenology?

Autumn in New England is a time of change and preparation in the natural world. Plants and animals have learned to survive winter conditions and use the fall to put these strategies in place and prepare for cold temperatures and short days. Can you think of an example of plant or animal winter preparations? How do you manage the changing weather?

Fall changes happen no matter what because the days get shorter and air temperature cooler but the exact timing of specific changes varies from year to year. **Phenology is the scientific study of an organism's transition from one seasonal phase to another as controlled by background weather and habitat conditions.** People around the world have been interested in tracking the timing of seasonal activities, such as bird migration and monarch butterfly departure. How do their life cycles depend on the phenology of other organisms they depend on for food?

We can also examine how the chronology of these life cycle events changes over time. This information helps answer questions like “are our summers and the growing season getting longer in New England, as we would expect from our warming climate?” It takes many years to answer such a question and a lot of eyes on nature to document it.

Your class can help by observing trees and leaves around you for fall color change and leaf drop and documenting the dates you observe these features, as explained in this activity. Exactly when do your schoolyard or backyard broad leaved trees shut down for winter?

Learning Location: Student backyards, local street trees, or schoolyard trees

Learning Objectives: Students will be able to explain why trees change color and measure the timing of leaf color change and leaf drop.

Time Needed: outside 20 minutes at least once a week (ideally 2x/week) for a month or so, plus 1 hour for background reading, and completing the questions and graphing exercise

Ages of Learners: grades 5-8

Resources

“Why Leaves Change Color” <https://www.esf.edu/pubprog/brochure/leaves/leaves.htm>

“Science of Fall Color” <https://www.fs.usda.gov/visit/fall-colors/science-of-fall-colors>

The Hubbard Brook Research Foundation is a nonprofit organization that works to sustain and enhance the Hubbard Brook Ecosystem Study in New Hampshire, in partnership with the USDA Forest Service Northern Research Station. Visit us at <https://hubbardbrook.org>, or contact Amey Bailey or Sarah Thorne who developed this activity at amey.bailey@usda.gov or educator@hubbardbrookfoundation.org.