

Phenology as an integrating context for ecological inquiry in rural and suburban schoolyards of western Montana

Carol Brewer, Paul Alaback, Brooke B. McBride, Jen Marangelo, Alison Perkins, and Dave Oberbillig
University of Montana, Missoula, MT 59812



WHO'S IN OUR SCHOOLYARD? (FALL)

Our schoolyards are teeming with fascinating living things (besides the students)... we just have to look! To explore "Who's there?" students **make observations** and **ask questions**, the most important skills of any ecologist!



ABSTRACT

The Montana ECOS Project (Ecologists, Educators, and Schools) is a GK-12 partnership to enhance teaching skills of graduate students in the sciences and to promote hands-on science education in K-12 schools (www.bioed.org/ecos). ECOS uses rural and suburban schoolyards and adjacent open areas in western Montana as outdoor laboratories for learning about the environment. In this last year of our GK-12 grant, ECOS has initiated a yearlong Seasonal Schoolyard Science program to help teachers and their students explore seasonal change, or phenology. By the last month of school, students will use the skills they have developed throughout the year to ask their **own** questions about "What do I want to know **next** about the ecology of my schoolyard?" We have been looking at this integrated approach as a way to sustain some of our grant activities beyond the life of the funding cycle. This phenology series also was designed to link closely with Project BUDBURST! (www.budburst.org), a national citizen science campaign to monitor plant phenology. This linkage provides another mechanism for teachers and their students to do real science in their schoolyards after the ECOS Project is completed.

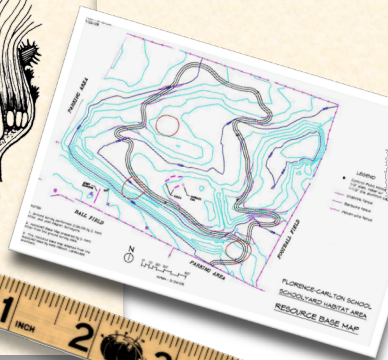
WHERE DID THEY GO? (WINTER)

Organisms have different strategies for surviving the winter months, but most of them just "hunker down." How do they do it? Building on their Fall observations, students **collect data** on how the organisms in their schoolyard are chilling out for the winter!



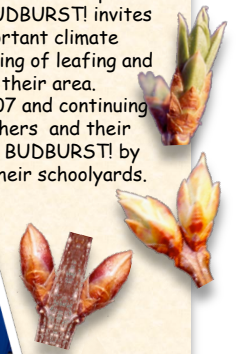
WHEN WILL THEY COME BACK? (EARLY SPRING)

Who will come back to the schoolyard first? When? Where? Students continue to **collect data** to investigate schoolyard microclimates. Then, they **make predictions** about when and where organisms will start popping up around their schoolyard.



ECOS AND PROJECT BUDBURST

Project BUDBURST! (www.budburst.org) is a national citizen science campaign targeting native tree and flower species across the country. BUDBURST! invites citizens to collect important climate change data on the timing of leafing and flowering of species in their area. Beginning in Spring 2007 and continuing this spring, ECOS teachers and their students participate in BUDBURST! by monitoring species in their schoolyards.



HOW DO WE KNOW? (LATE SPRING)

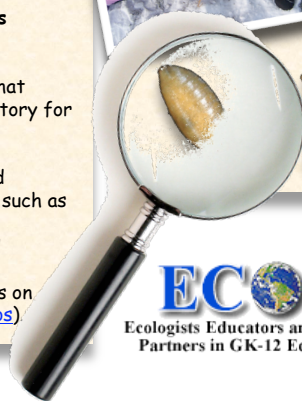
By now, the bugs are buzzing and the blossoms are blooming...time to test our predictions! Students **design fair tests** for their hypotheses about when and where organisms will re-emerge around their schoolyards, and **share their findings** with their classmates- and with people from around the country- by participating in Project BUDBURST!, a national citizen science campaign (www.budburst.org)!



ELEMENTS OF SUSTAINABILITY

The ECOS model has identified at least four elements that support sustainability of scientist-educator partnerships, to ensure continuation of the mission **No Child Left Indoors!**

- **Establishing long-term partnerships** between schools, organizations, and agencies;
- **Creating physical infrastructure** that provides a lasting schoolyard laboratory for ecological investigations;
- **Engaging the community** through investment in their local schools and participation in ecological activities such as citizen science programs;
- **Developing sustainable web-based resources** for educators, including knowledge of local ecology and hands on curriculum ideas (www.bioed.org/ecos)



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Ecologists Educators and Schools
Partners in GK-12 Education



Project BudBurst
A National Phenology Network Field Campaign for Citizen Science

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