Harvard LTER Schoolyard Program

Teacher Developed Lessons and Documents that integrate Harvard Forest Schoolyard Ecology Themes into curriculum.

Lesson Title: Forest Ecology Unit
Project: Woolly Bully; Hemlock Trees and the Invasive Woolly Adelgid
Teacher: Anne McDonald
School: Toy Town Elementary School
Level: 5th Grade
Date: April 9, 2015
Essential Questions

- What action can we take to preserve or make positive change in forest ecosystems?
- What can we learn about ecosystems in the forest?
- How do we do research in forest ecosystems?
Toy Town Elementary School Implements the Harvard Forest Schoolyard Ecology Program

Research Program: “Woolly Bully: Hemlock Trees and the Invasive Woolly Adelgid” with Dr. David Orwig, Forest Ecologist

Will the Hemlock Woolly Adelgid destroy our hemlock trees forever?

How will our forest change if the hemlock disappears?

Dr. David Orwig meets with Toy Town Fifth Graders at Harvard Forest

Hemlock tree at Harvard Forest with the Woolly Adelgid
Each of 5 fifth grade classrooms has an assigned and tagged hemlock tree in our schoolyard.

In fall, we measuring the new growth of tagged branches of our Hemlock trees.

In Spring, we make observations to see if the woolly adelgid is present or not by looking for egg sacs.

No Adelgid has been found on our trees yet, but it has been found in other towns in the same region.

Teacher and students provide data which is posted on the Harvard Forest website. Students can analyze their data and compare it to data from other schools.

Teachers attend Professional Development workshops at Harvard Forest.
Other Forest Ecology Activities
Our Fall Field Trip to Otter River State Forest
Toy Town Elementary Fifth Graders
Hiking the Wilder Mckenzie Trail,
Otter River State Park to Lake Dennison State Park
Making Observations with Journal Prompts in a Coniferous Area
Making Observations with Journal Prompts in a Deciduous Area
Integration: Classroom Writing from Journal Observations and Samples from the field
Spring PLT Field Activity

“The Fallen Log”

How does a forest ecosystem benefit from a fallen log?

Mrs. McDonald and students
Examples of Mrs. McDonald’s Fifth Grade Students’ Research Posters of Invasive Species

- European Starling
- Woolly Adelgid
- Gypsy Moth
- Zebra Mussels
Examples of Mrs. McDonald’s Fifth Grade Students’ Research of Invasive Species and Persuasive Writing

- European Starling
- Gypsy Moth
- Woolly Adelgid
Mrs. McDonald’s students with posters and persuasive letters informing and persuading people to help prevent the spread of invasive species.
Building and Extending into Water Ecosystems

What action can we take to preserve or make positive change in water ecosystems?

What can we learn about water ecosystems?

How do we do research in water ecosystems?
Spring Visit to Great Falls Discovery Center

What is a Watershed?

How Does Water Move and Collect in a Watershed?
From Estuary to the Northern Woods: What are the ecosystems in a watershed? How do organisms interact in them?
How do humans impact a watershed? *Point and non point sources of pollution. What steps can we take to minimize pollution?*
“Pollution is the Sum of the Parts” Classroom Activity from Project Wet
Visit to the Turners Falls Fish Ladder

What physical and behavioral adaptations do native and anadromous fish have that help them to survive?

*shad*  
*sea lamprey*
How does human development impact migrating paths at Turners Falls Dam?
Learning how to collect data on Lake Monomonac with NH State Limnologists in June.