



## Harvard LTER Schoolyard Program

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

- Lesson Title: Forest Ecology
- Teacher/Author: Anne McDonald
- School: Toy Town Elementary School
- Level: Fifth Grade
- Date: April, 2013

# Toy Town Elementary School

## Anne McDonald, Fifth Grade

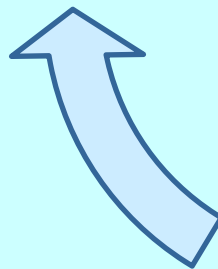
### Forest Ecology

#### 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?





**Collecting Data at Toy Town Elementary School  
on Hemlock Trees for Harvard Forest**

*Research Project: The Hemlock Tree and the  
Woolly Bully*

## **Research Study**

- 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

# 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?**

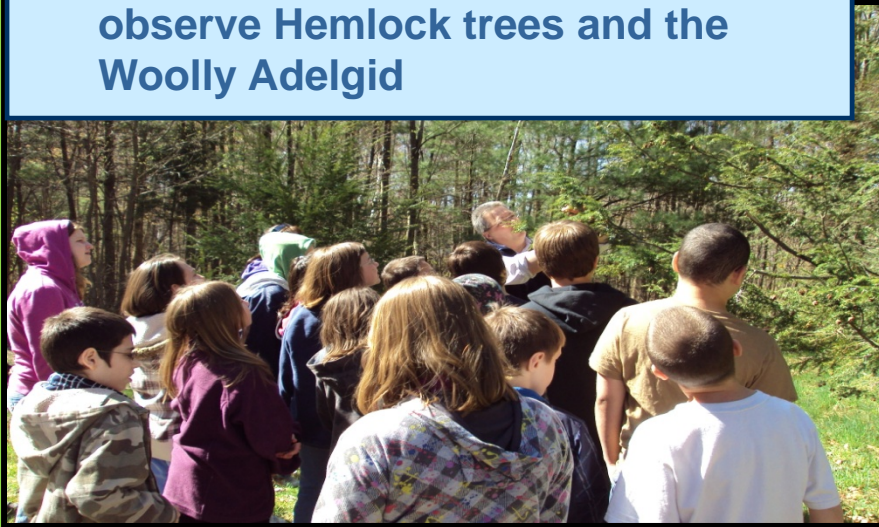
**Dr. David Orwig meets with  
Toy Town Fifth Graders  
at Harvard Forest**



**Hemlock tree at Harvard  
Forest with the Woolly  
Adelgid**

# Fifth Grade Classes Visit Harvard Forest

Dr. Orwig takes us out in the field to observe Hemlock trees and the Woolly Adelgid



Toy Town Elementary student viewing the Woolly Adelgid under the microscope



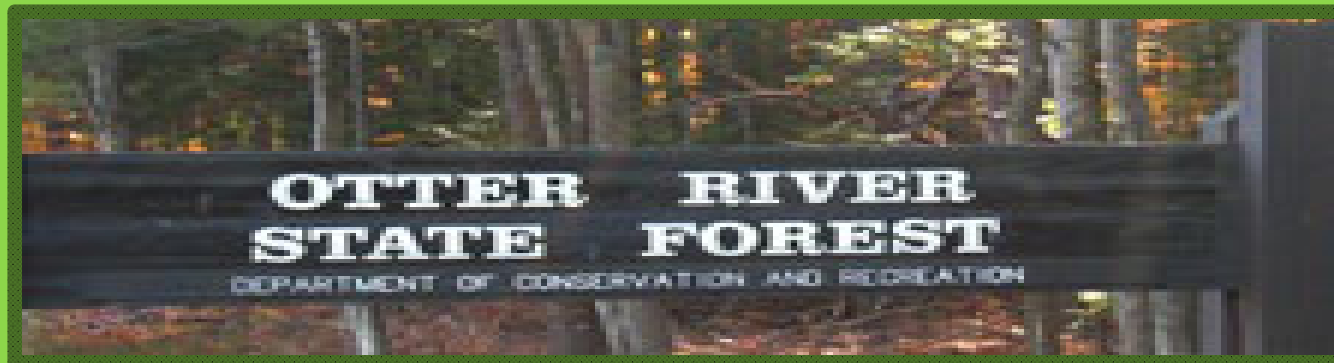
Pamela Snow, Schoolyard Coordinator tests our knowledge of cones



Volunteer, Bob Clark, shares his knowledge of the changing New England landscape as we view the famous Harvard Forest dioramas

# 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

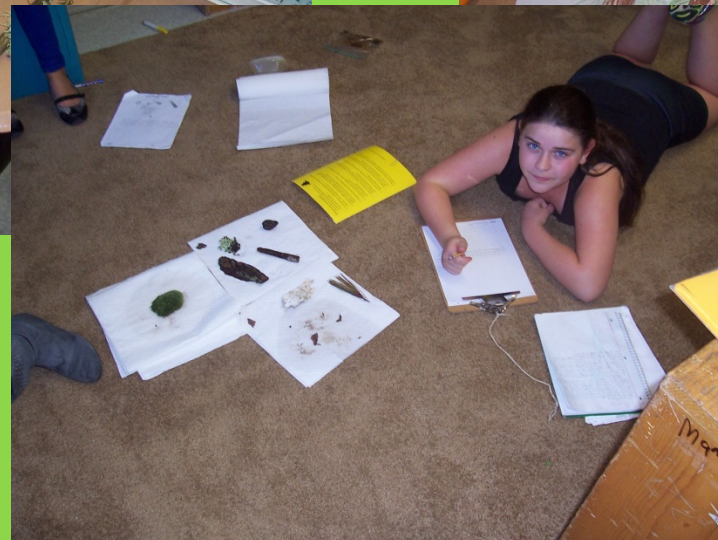
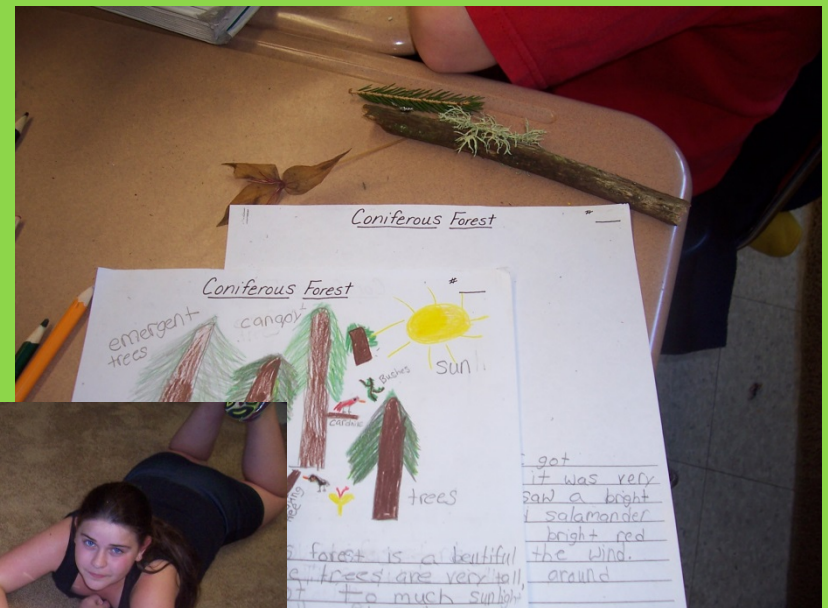




## Making Observations with Journal Prompts in a Deciduous Area



# Descriptive Writing from Journal Observations and Samples from the field



**Creative cast coverings**



**What effects did the rain have?**

**Fish Jumping right out of Lake Dennison!**



**Most creative costume designs using trash bags!**



# Spring PLT Field Activity

## *"The Fallen Log"*

How does a forest ecosystem benefit from a fallen log?

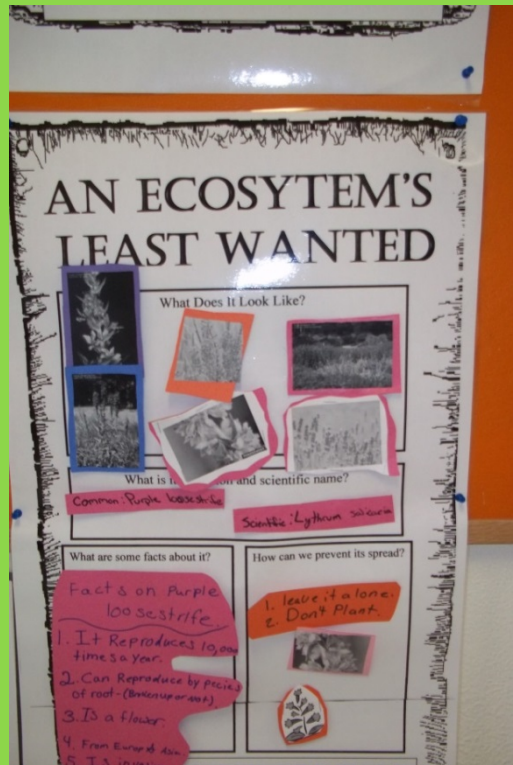
**Mrs. McDonald and students**



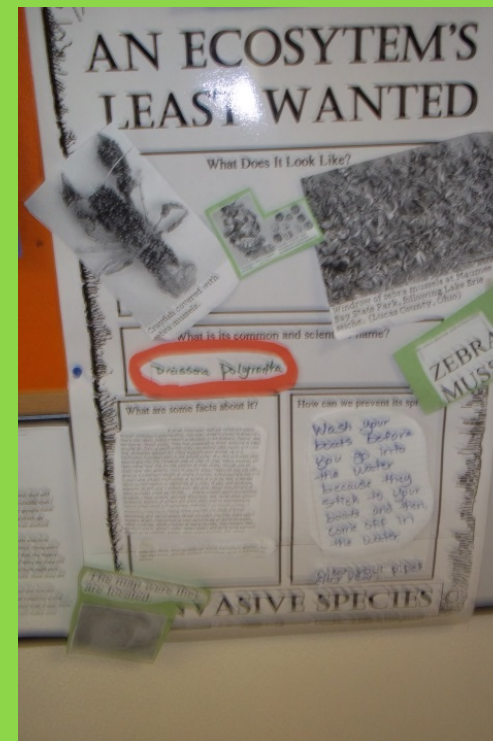
**Mrs. Duprey and students**



# Examples of Mrs. McDonald's Fifth Grade Students' Research Posters of Invasive Species

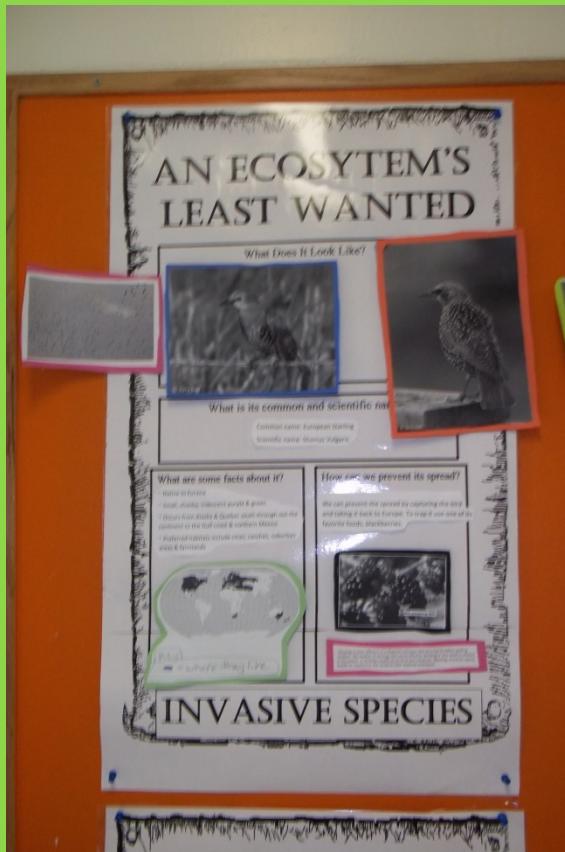


Woolly Adelgid

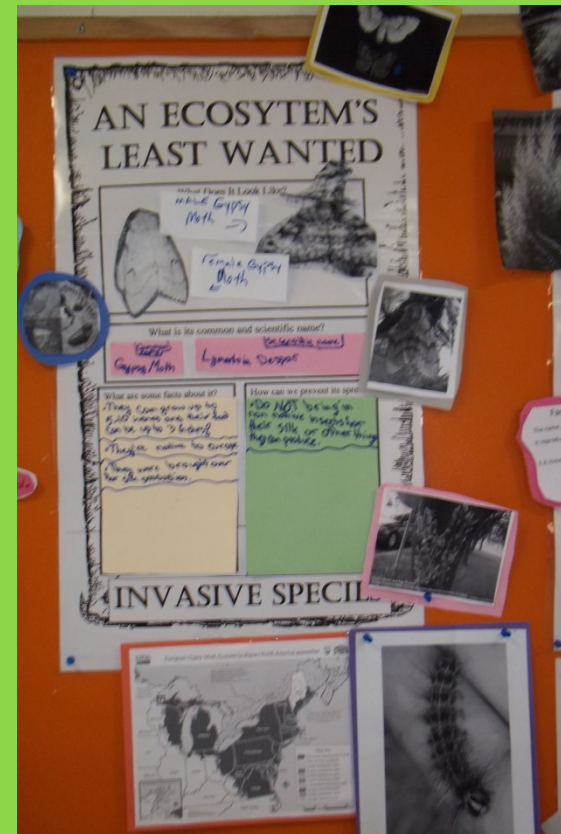


Zebra Mussels

# Examples of Mrs. McDonald's Fifth Grade Students' Research of Invasive Species and Persuasive Writing



European Starling



Gypsy Moth

