

Harvard Forest Schoolyard Ecology

LIGHTNING ROUND



April 9, 2019

Amherst Regional High School

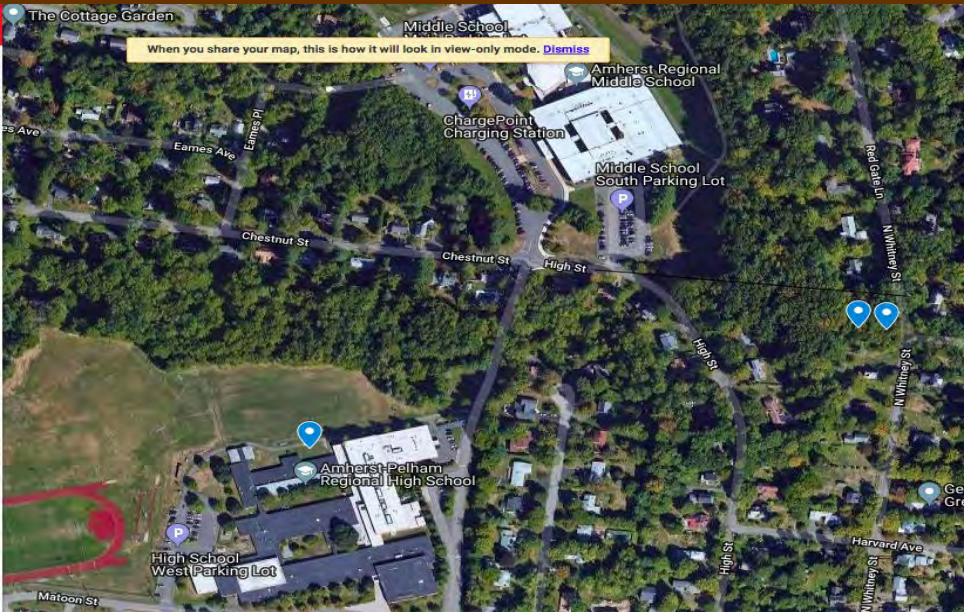
Hemlock Woolly Adelgi... 🔍 ☰

A map of the hemlock trees monitored for presence of hemlock woolly adelgid. 8 views

SHARE EDIT

Hemlock Woolly Adelgid Research Site

- 📍 Tree 1
- 📍 Line 2
- 📍 Tree 2
- 📍 Tree 3



Hemlock Woolly Adelgid Research... ⋮

A map of the hemlock trees monitored for presence of hemlock woolly adelgid. 7 views

All changes saved in Drive

➕ Add layer 👤 Share 📄 Preview

☑️ **Hemlock Woolly Adelgid Research...** ⋮

- 🔍 Individual styles
- 📍 Tree 1
- 📍 Line 2
- 📍 Tree 2
- 📍 Tree 3

🗎 Base map

Teacher: Karen Murphy

Woolly Bully

The Bement School

Jill Craig

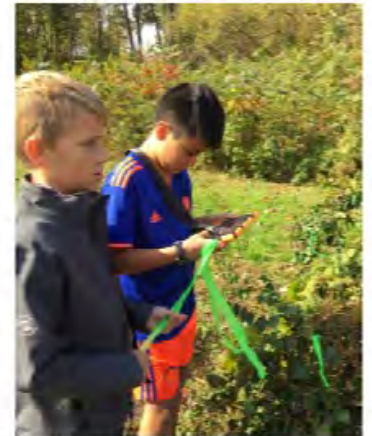
Pine Hill Outdoor Edu. Coordinator

5th Grade—26 students

Buds, Leaves and Global Warming



The Bement School



Phenology

Acton-Boxborough Regional High School

Teacher: Erin Bengiovanni

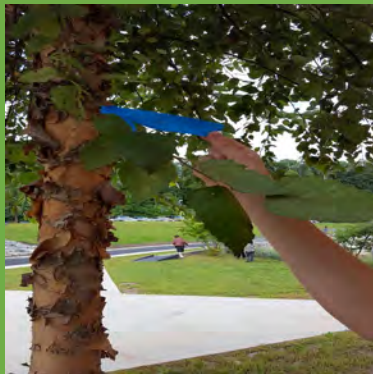
Buds, Leaves and Global Warming



Box Elder



Yellow Birch

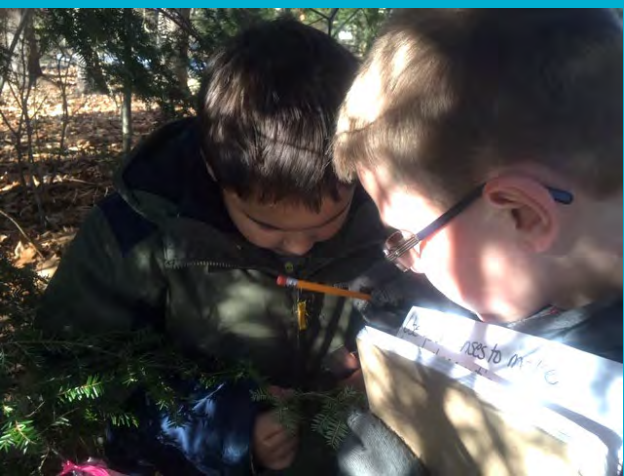


Lilac



**Flowering
Dogwood**





*Toy Town Elementary School
Anne McDonald
5- Fifth Grade Classes*

*The Woolly Bully: The Invasive Pest, The
Hemlock Woolly Adelgid Research Project*



*Fall Data Collection-
Measuring New Growth
of our Hemlocks*



*Making observations of what plants would
succeed if the Hemlocks were gone.*

Captain Samuel Brown School

Teacher:

Diane Bugler

Our
Changing
Forests

Peabody, MA



E.W. Thurston Middle School

Teacher: Michael McCarthy

Our Changing Forests And Buds, Leaves and Global Warming



Links:

[Our Changing Forests Thurston Middle School 2018](#)

[Buds, Leaves, and Global Warming Thurston Middle School 2018-19](#)

Saint Mary's Parish School

Teacher: Mary Reed

Buds, Leaves and Global Warming

Westfield, MA

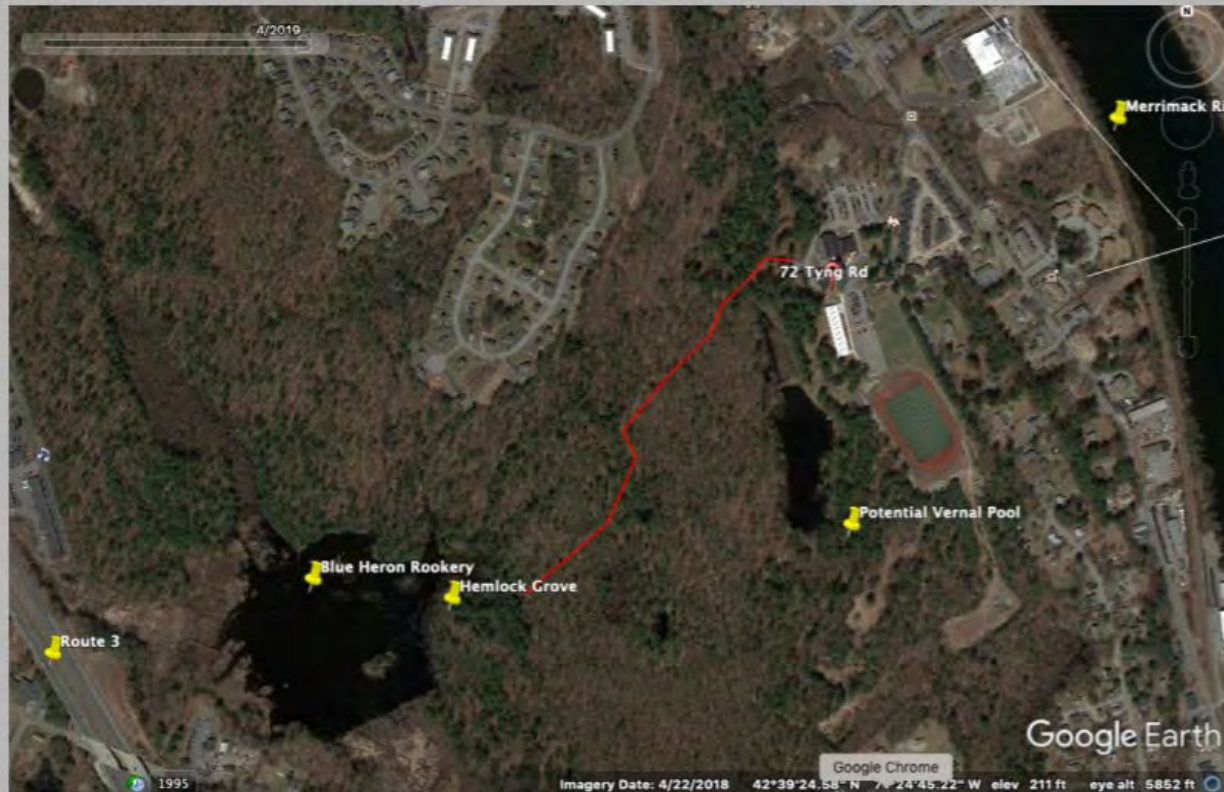


Innovation Charter School

Teacher: Katherine Hinkle

Woolly Bully

Our campus, Tyngsboro, MA

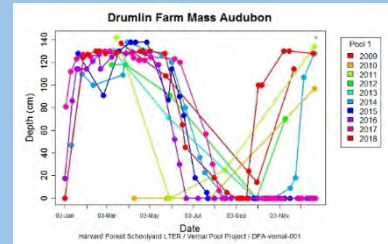
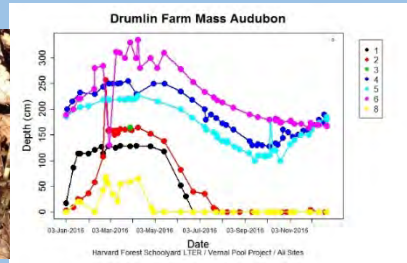
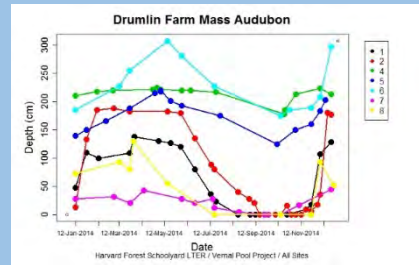
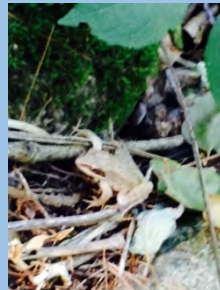


Our Hemlock Grove



The Hydrology of Ponds and Vernal Pools at Drumlin Farm

A 10 year study



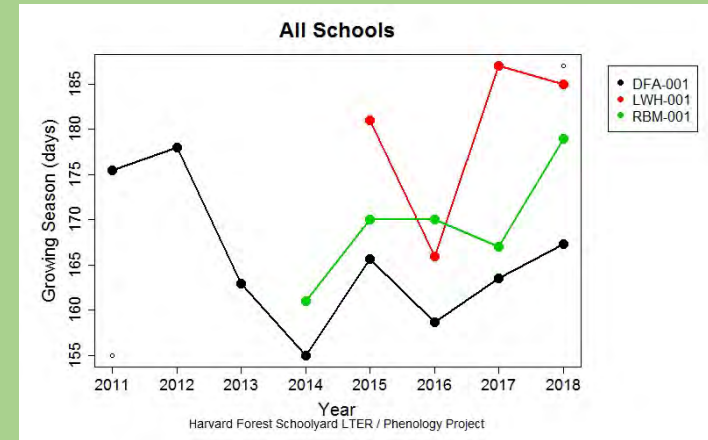
- Drought and extreme precipitation influence hydroperiods and amphibian and fairy shrimp reproduction
- Upland and wetland connections are important to amphibian survival
- Diversity of ponds and slowing the flow are important in respect to climate change
- Resiliency

Educator: Sally Farrow

Phenology at Drumlin Farm and Two sites in Lowell MA

Trees at Drumlin Farm

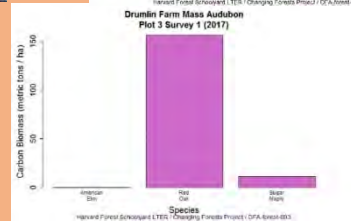
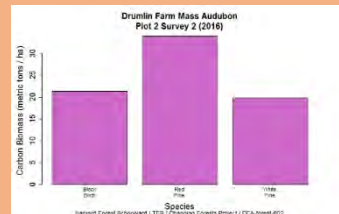
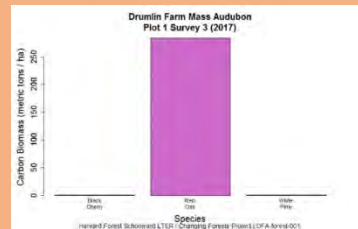
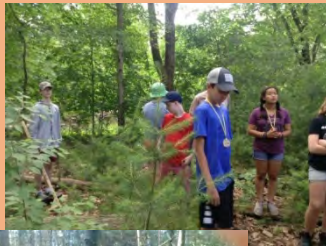
Trees in Lowell



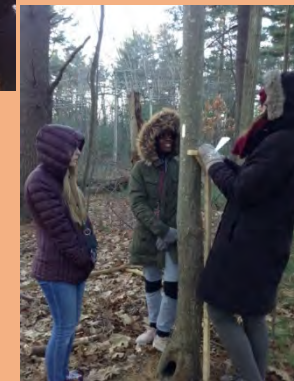
Educator: Sally Farrow

Our Changing Forest Drumlin Farm and LP&CT West Meadow Property in Lowell

Drumlin Farm



West Meadow Lowell



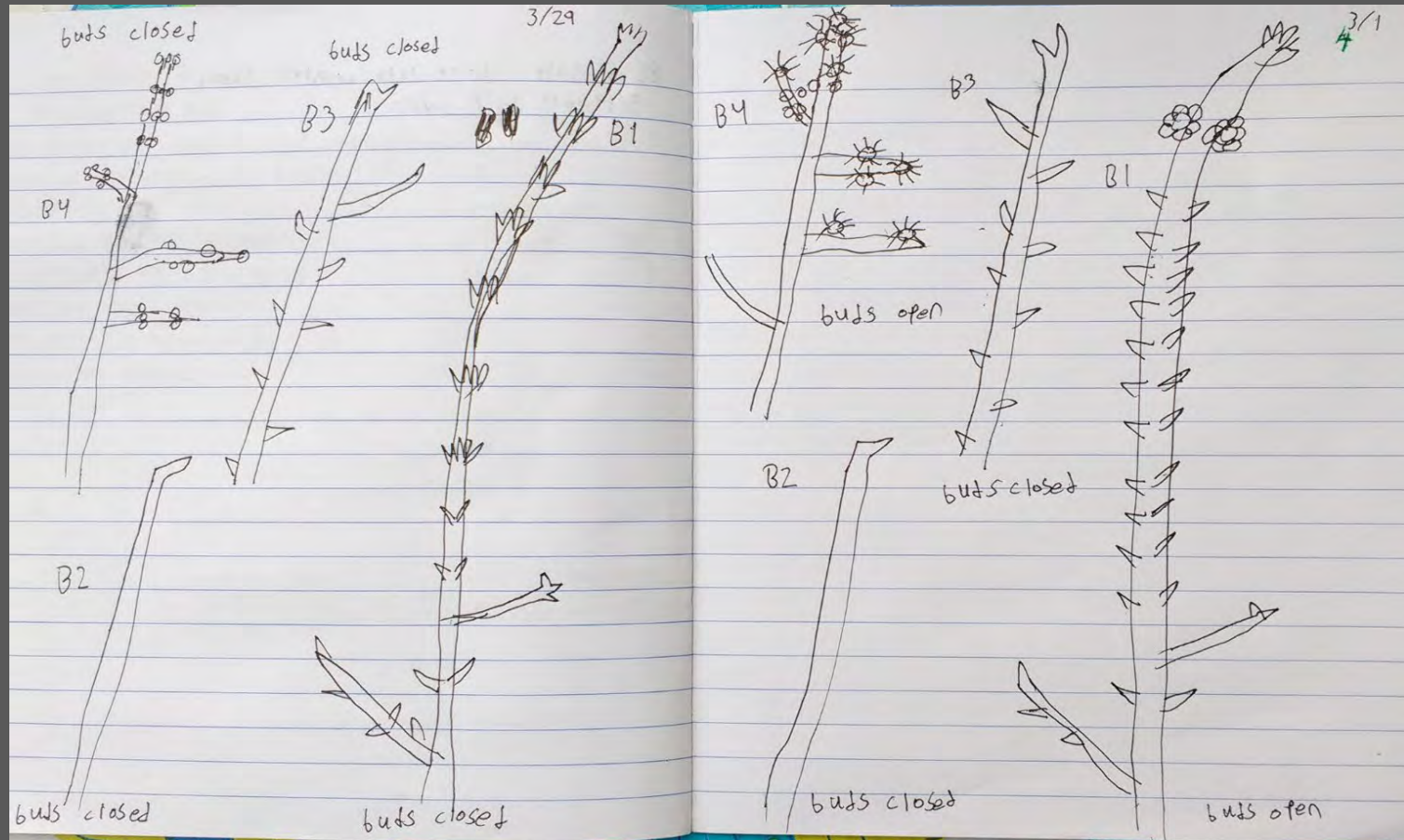
Educator: Sally Farrow

Louise Levy, Belchertown High School

Buds, Leaves and Global Warming-Year-10

Our Changing Forests-Year 3

Provide **Experiences** to Scaffold the Learning



Local opportunities in Belchertown

2nd grade field trip to Lake Wallace
Eco students run a field trip
for the entire 2nd grade



Carriage Grove:
redevelopment of 80 acres (the former Belchertown State School)
right across the street from the schools

Overlook Middle School

Teacher:
JoAnn Mossman

Year 10

Buds, Leaves and
Global Warming

SPRING PREDICTIONS

What type of tree are you observing?	<hr/> <hr/>
Thinking about the winter and beginning of spring we've had, when do you think your branch will begin to leaf out? When do you think your branch will completely finish leafing out? Why?	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Sketch a close-up of your branch. Circle any buds you think will be viable.	



O'Maley Innovation Middle School

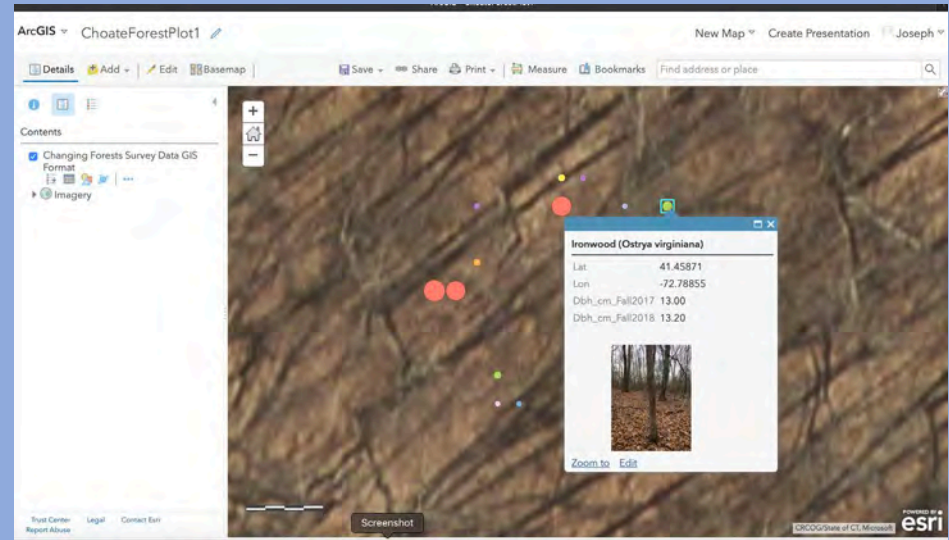
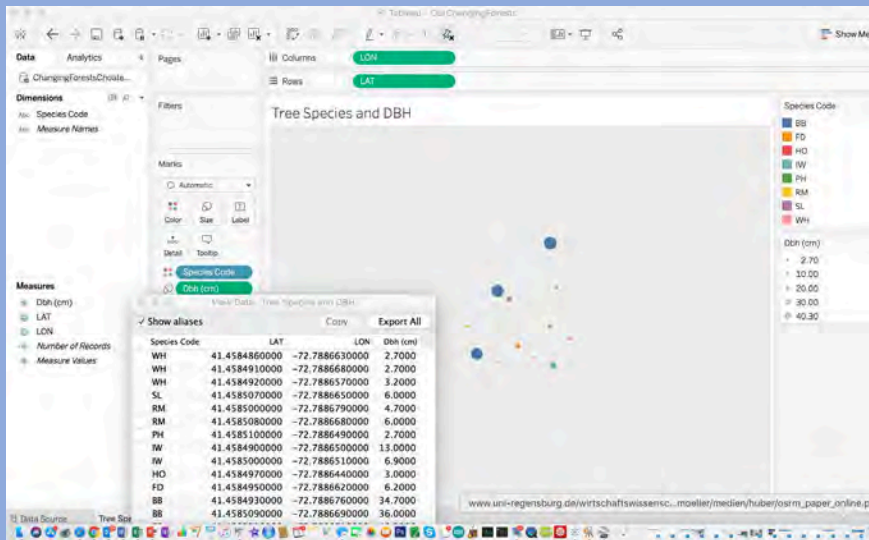


Dan Thomases
Buds and Leaves

Choate Rosemary Hall

Our Changing Forests

Joseph Scanio



Glen Urquhart School Our Changing Forests 7th Grade Science Plot #1



Leaf Spot on Norway Maple



Multi-trunked trees



Canopy Cover

Teacher: Emilie Cushing

**Trinity Catholic Academy
Grades 4 & 5**

Mrs. Colleen Casey and Mrs. Lori Primavera

Buds, Leaves, and Global Warming



Athol Royalston Middle School



Our Changing Forests Teacher: Jeff Sautter

2 Forest Plots

- Plot 1: Deep in woods relatively undisturbed
- Plot 2: Clear cut

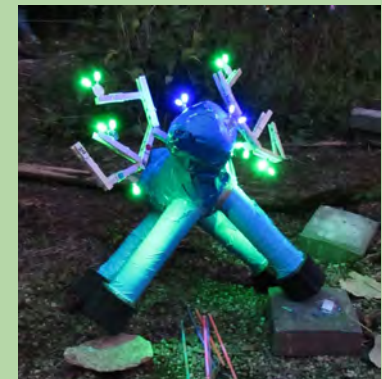
John R Briggs Elementary School

Ashburnham, Ma.

Teacher: Kate Bennett



Putting the "EA" in STEAM



Groton-Dunstable Regional HS

Our Changing Forests Project

Melanie McCracken



Before you go out to your plots and assuming you have at least one year of data, also good to have two sites to compare.

- Students look at graphs generated by Harvard Forest for local plots
- Answer questions about the graphs
- Then describe the sites
- Then they go out and see how the sites compare to their descriptions

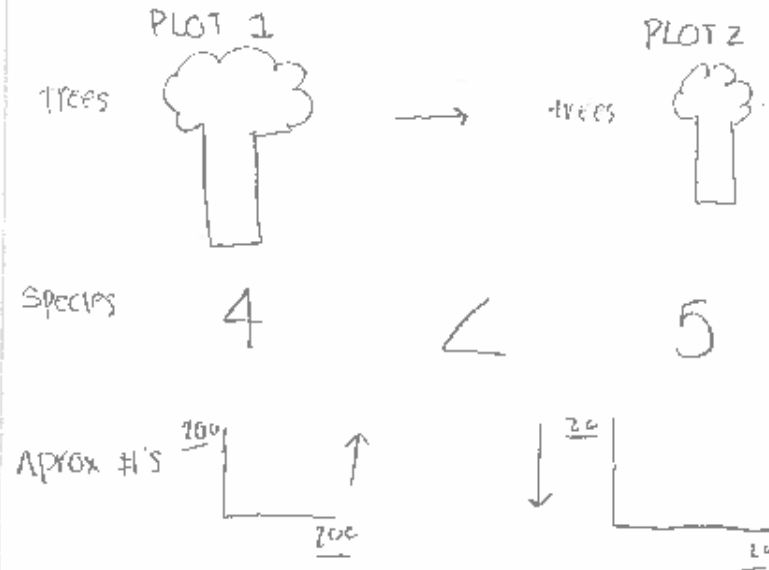
[Visualizing Forests from graphs worksheet](#)

Alexis Miller

Visualizing the forest from Graphs

1. Plot 2 has more stems. Plot 2 has more species than Plot 1 and Red Maple on both plots has the most stems.
2. Plot 1 has more basal area. Plot 1 has about 39 m²h while Plot 2 has about 10.5 m²h.
3. Red Maple always has the most stems as well as the greatest Basal Area. This is because on all plots and graphs, it is the highest bar.
4. Plot 1 contains the most Biomass. Plot 1 has about 137 metric tons and Plot 2 has about 17.5 metric tons.
5. Plot 1 has more carbon biomass because the trees on Plot 1 are larger than those on Plot 2.
6. Plot 1 has more Carbon Biomass than Plot 2 because the trees that are found on Plot 1 also have a larger diameter than the trees on Plot 2.

7.





Bartlett Community Partnership School, Lowell, MA
Teacher: Laura Schofield
Buds, Leaves and Global Warming

Goals for my students...to be curious & ask questions about their natural world, actively participate in real science and be outside.

Harvard Forest Schoolyard Ecology

Pamela Snow

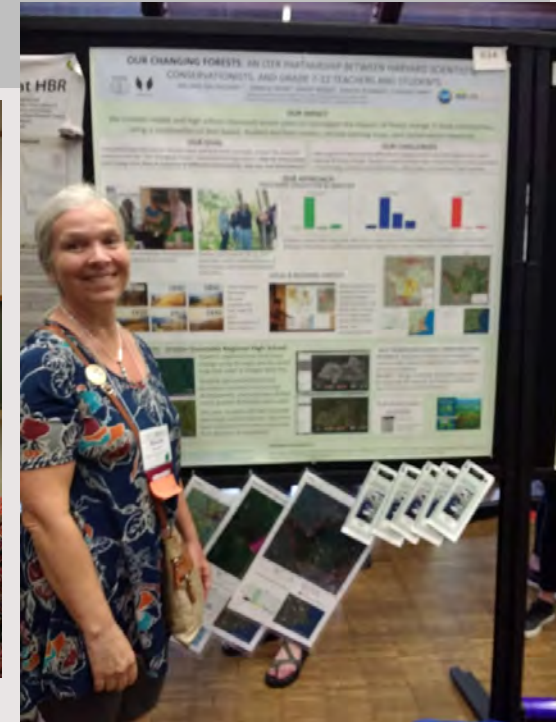
Nurturing Teacher Leaders

Mini Grants Support Curriculum Development and Conference Presentations



Harvard Forest SY Spring Workshop, April 2018

Mass. Assoc. of Science Teachers (MAST) and Ct. Science Teachers Association
November 2018



ILTER All Scientists Meeting, Ca. Oct. 2018

Harvard Forest Published First Data Nugget

Stand Alone Educational Activity through Datasets

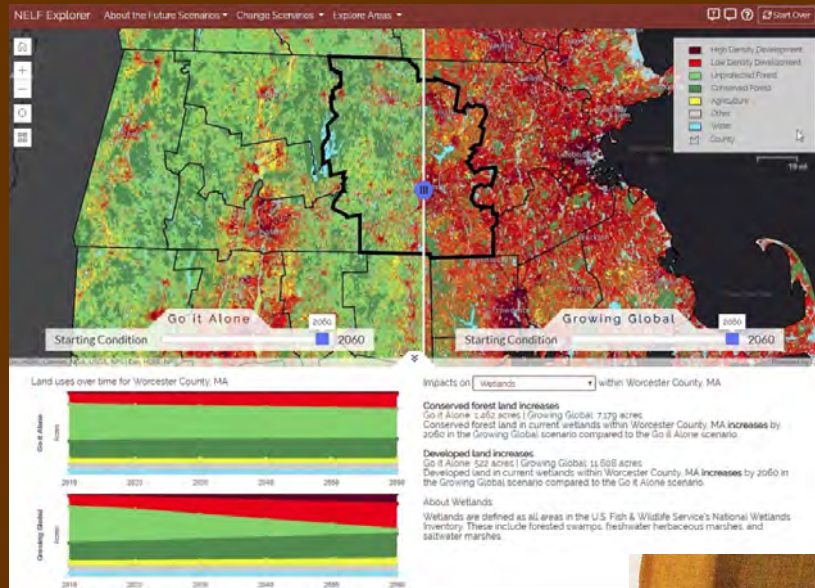
The screenshot shows the Data Nuggets website interface. At the top, there is a search bar with 'Harvard Forest' entered. Below the search bar, the website header includes the 'DATA Nuggets' logo and navigation links: HOME, WHAT ARE DATA NUGGETS?, CURRENT DATA NUGGETS, MAKING A DATA NUGGET, RESOURCES, and RESEARCH & NEWS. The search results for 'Harvard Forest' are displayed, showing a search for '15:15 Are forests helping in the fight against climate change?'. A list of activities is provided, including a Teacher Guide and several student activities at Level 3. A large image of a tree tower is visible on the right side of the search results. Below the search results, there is a 'SITE NAVIGATION' section with links for 'NEW TO DATA NUGGETS?', 'FOR EDUCATORS', 'FOR SCIENTISTS', 'FIND A DATA NUGGET', 'MAKE YOUR OWN DATA NUGGET', and 'PERMITTED USES'. A 'CONTACT US' section provides email addresses for Liz (reschultheis@gmail.com) and Melissa (kjelvikm@gmail.com). At the bottom, there is a section for 'DATA NUGGETS BY THEME'.



HF Project Coach, Fiona Jevons' Poster LTER ASM

What's New 2019-20

- More HF- developed Map and Graphing Tools; Teacher-Developed Activities
- Research Experience for Teachers (National Science Foundation) Funding for Summer 2019



3 New Mini Grants for Changing Forests Project Teachers to develop student learning activities using a new land-use planning tool, the New England Landscape Futures (NELF) Explorer

- Jeff Sautter, Athol-Royalston Regional Middle School
- Tara Alcorn, Greater Lowell Technical School
- Joseph Scanio, Choate-Rosemary Hall School

HF Senior Ecologist, Neil Pederson awarded RET funding to hire Quabbin Reg. HS teacher, Elicia Andrews

to will work in a small team to study how climate change affects growth in trees living in a “transitional zone”. RET Andrews will develop a Tree Ring Data Nugget at the conclusion of field and lab work.

