Devon MacLeod
Anna Howell

NORTHERN FOREST ECOLOGY & SCHOOLYARD HABITAT PROJECT

Overview:
As students participate in our existing Northern Forest curriculum they will engage in a newly developed community service learning project. Students will identify the needs of the school community (natural and human) and use their science skills and knowledge to addressing the needs they identify. They will use technology to document to collect input, advocate for the project and share their work with the larger community.

Year Long Essential Question:
HOW DOES WHERE WE LIVE AFFECT HOW WE LIVE?

Focusing Question for Northern Forest Curriculum:
HOW DOES THE NORTHERN FOREST PROVIDE HABITAT FOR SO MANY DIFFERENT ORGANISMS?

Focusing Question for Community Service Learning Project:
HOW CAN WE PROVIDE HABITAT FOR NATIVE ORGANISMS AND OUTDOOR LEARNING AT LINCOLN COMMUNITY SCHOOL?

Power Standards and Grade Expectations:
See ***Northern Forest Assessment Sheet***
3.9 Sustainability- Working in Community
4.6 Understanding Place
1.15 Speaking
7.13 Organisms, Evolution, Interdependence
1.18 Informational Technology
1.19 Research Technology

S3-4:1 Scientific Questioning
Students demonstrate their understanding of SCIENTIFIC QUESTIONING by…
· Identifying at least one variable that affects a system and using that variable to generate an experimental question that includes a cause and effect relationship.

S3-4:4 Conducting Experiments
Students demonstrate their ability to CONDUCT EXPERIMENTS by…
AND
· Recording relevant details of an object and its surroundings when applicable.
AND
· Drawing scientifically:
a. Recording varying degrees of color, shading or texture and consistent proportion throughout.

S3-4:5 Representing Data and Analysis
S3-4:5
Students demonstrate their ability to REPRESENT DATA by…
· Classifying objects and phenomena into sets and subsets and justifying groupings.
AND
· Displaying and labeling data for separate trials/observations.
AND
· Determining an appropriate representation (graph or table or chart or diagram) to represent their findings most accurately.

AND
· Including in tables a title, labeled rows and columns and any necessary keys.
AND
· Including in graphs a title, labels, scale, and recording data correctly.

S3-4:6 Representing Data and Analysis
Students demonstrate their ability to ANALYZE DATA by…
· Interpreting patterns or trends in data.
AND
· Relating data to the original question and prediction.
S3-4:7
Students demonstrate their ability to EXPLAIN DATA
by…
· Providing a reasonable explanation that accurately reflects data.
AND
· Identifying differences between proposed predictions and experimental data.
S3-4:7
Students demonstrate their ability to EXPLAIN DATA
by…
· Providing a reasonable explanation that accurately reflects data.
AND
· Identifying differences between proposed predictions and experimental data.

S3-4:8 Applying Results
Students demonstrate their ability to APPLY RESULTS by…
· Generating a new question to obtain additional information.
AND
· Creating a plan to investigate a scientific concept further or
connecting a classroom model to a real-world example.
AND
· Connecting the investigation or model to a real world example.

On Going Assessments:
-Pre unit Nature Trail Map
-Pre unit Northern Forest Recipe
-Journal Entries
-Stewardship badge assessment design
-Trail map contribution
-Habitat/ population game reflection
-Presentations of group schoolyard habitat projects
-Research Report about NF organism
-Create and present Northern Forest organism
-Test for stewardship badge
-Post Unit Nature Trail Map
-Post unit Northern Forest Recipe

Worthwhile Residue:
Trust
Teamwork
Power
Confidence
Resourcefulness
Skills, knowledge, disposition for navigating the world
Importance of stewardship
Voice

Content and Vocabulary:
See ***Northern Forest Assessment Sheet***
See ***Northern Forest Vocabulary*** sheet

Suggested Resources:
See ***Annotated Resource List***

Learning Opportunities and Instructional Strategies:

See ***09-10 Curriculum Plan*** This plan is a map of our curriculum for the year. It is a working document that we use to plan and collaborate with others. We highlighted the community service learning project related work that we are weaving into our Northern Forest curriculum this year.

2009-2010 Curriculum Map **HOW DOES WHERE WE LIVE AFFECT HOW WE LIVE? 7/11 Draft** Lincoln Community School Grade 3-4

Anna Howell, Devon MacLeod, Kaela Frank

Subject	Learning Opportunities	Media	Technology	Art/ Wellness
ONGOING **Journaling**: weekly entries + other observations (home, field trips) **Ecological principles and terms**				
NORTHERN FOREST & PROJECT				1st Trimester Catherine works as collaborative teacher.
9/2 – 9/4 Outdoor Classroom / Trail Get to know trail & each other (Coop. Games, population habitat game)	Pre Assessment: Trail Map and Recipe for Forest Identify Need for Trail redesign		9/3-Intro audio equipment & interview each other (Devon, Beth,Anna & Kaela)12:45-1:45	
9/8-9/11 Intro Trail Project Brainstorm: • What do we have? • What do we need? • How do we get it?	Pre- Assessment: How do we provide habitat for NF organisms & human learners?	Kids interview each other & record audio W, 1:20-	9/11 Blog intro+ reporter job- after assembly Edit and organize with Richard small groups F-1:20	9/8 Art intro
	Survey staff & students about outdoor classroom needs and record using audio		9/11 Vox pop gathering data Thurs.1:20	
9/14-9/25 Water Habitat Who lives here and how do they survive? 9/15 Collect leaves @recess 9/22 Collect leaves @recess	Classifying, Inquiry, Analysis, Interpretation of Macro-invertebrates	Library Work	9/18 Intro Reporter job- 1:20ish	9/15 Sort and disc. leaves looking vs seeing 9/22 looking vs. seeing leaves 9/29 Scientific

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Subject	Learning Opportunities	Media	Technology	Art/ Wellness
				drawings
		Library Work	9/23 9:15 Intro Word	
9/28 – 10/2 Trail Research & Tree Identification How did this trail provide habitat for NF organisms & human learners? What do we need to know about the N.F.?	10/1 1:20 Discuss what do we need to know about the Northern Forest so as to improve habitat w/ Joe Nelson before field trip Audubon Trail/Tree Field Trip (W?)	Library work		
	Visit Spirit & Nature or Robert Frost Trail to get ideas			
10/5 – 10/30 Trail Work Brainstorm: App. Mountain Club Trail Rep., Sandra Murphy, Beth Nelson, Christie Sumner * more people joining in art	Feasibility study (Tour school property with Facilities Committee)	Trail sign and booklet group work- Beth. M. W. pm 2:20 Th.	2- M,W- Doc group out on trail	10/6 Emotion Drawings 10/13*, 10/20, 10/27 Trail sense of place drawings and list of words
Possible group leaders: Beth, Devon, Anna, Christie Sumner, Annie Leadbetter, Stephen Taylor, parent volunteers	Groups: Benches?, Boardwalk (x2)?, stone wall?, stone path?, signage?, clearing?, transplanting/planting?, steps (accessibility)?, publishing?, documenters?			
11/2 – 11/6 Trail Presentation invite Joe Nelson **Begin Animal Research Intro**	Record Exit Interviews (vox pop 2)	1:20Trail Presentation Prep		11/3 found object art
11/9 – 11/13 Life Cycles/Anatomy & physiology of Trees and Plants		8:20-9:15 Animal Research Intro M,W,Th 11/9 Library Work-	11/9 Library Work- Guide Books, References- gather data on three.	11/10 found object art 11/11 WELLNESS Personal and Physical- independent

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Subject	Learning Opportunities	Media	Technology	Art/ Wellness
		Guide Books, References- gather data on three.		class
Decomposers/soil Obis 'Litter Critters' and ' Logs to Soil' packets				
11/16 – 11/24 Animal tax. Naturescope: Animal materials	classifying/sorting/analyzing	11/16 Intro to PP using Tree identification- My guide to trees at the school.	11/16 Intro to PP using Tree identification- My guide to trees at the school.	11/17 Artist intro 11/24 Artist work
Food Chain			COLLAB Richard, Beth Kaela, Dev 11/20 12-3 pm	
11/30 – 12/18 Design & Create Critters		Read Hodag-disc. Indiv creature ideas and ?		12/1 Structure with Nancy 12/8 Skin 12//details
		12/7 Individual PP on Creatures Guided PP on Hodag		Culture Journal creation
12/21 – 12/22 Critter Jury	Presentation, critique			
1/2 – 1/31 Cultural Study – Chinese Region	District activity			
2/1 – 2/28 Electricity Foss Kit/Insights Kit Guest presenter VEEP Fran Brahydt Grace Link Burlington Elec.	Independent investigation: scientific method, controlling variables, documentation	Red Clover Book Projects		2/2 Art for arts sake-color Print making Self Portraits

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Subject	Learning Opportunities	Media	Technology	Art/ Wellness
Wood Chip Burlington Elec. Hydro Site				FLYNN- Feb. 17 Grupo de Rua
VERMONT HISTORY 3/1 – 3/11 (2 weeks) **First Vermonters** Words Alive Warm-ups, Solo Acts and Duets	Small group projects make 2 villages (shelter, food, tools, clothing, recreation)			3/2 3/9 Clay Masks Abenaki Inspired Catherine – How has the Vermont diet changed over time?
Throughout: timeline showing changes in animal and human populations/distribution + prominent industries. Continually update maps of boundaries and significant places. For each time period, each student will follow a different 'strand': Clothing, shelter, food, forest cover, animal populations. Field trips to local places that resemble a period of time.	generalizing, finding evidence, geography	3/18, 3/25, 4/1, 4/8, 4/15 Make Old time photo albums (see Devon's model) – photos of projects with pen and ink drawings and plans etc. a la Eric Sloane Black paper, white ink, pockets for small post card like inserts		
3/15 – 3/25 (2 weeks) **1609 – 1775** Devon's Final Project	Small group projects make 2 giant dioramas (shelter, food, tools, clothing, recreation)			3/15 Peking Acrobats 3/16 Clay Masks Abenaki Inspired 3/23 Mask stories Catherine – cooking group
3/29 – 4/9 (2 weeks) **1775 – 1865 Statehood**	Small group projects make clay mural (shelter, food, tools, clothing, recreation)	Book Cover Project	Book Cover Project	Catherine – cooking

Subject	Learning Opportunities	Media	Technology	Art/ Wellness
Kaela's Final Project Activities: Jackson: A Green Mountain Hero (Response to Lit.?) Students write about the landscapes they paint. Students imagine (write) about what went on at abandoned hill farms. They can also write Hurwitz: Far Away Summer; Warnock: Lumber Camp Library. (Response to Lit.? / Lit. Circles?) Warnock: As Long As There Are Mountains. Students write about what makes their community unique. Yolen: House, House Writing historical fiction				group
4/19 – 4/23 (1 week) **1865 – 1945** Activities: Visit abandoned hill farms in Lincoln				Reading the forested landscape- hiking to find old roads and cellar holes with Ken Weston.
4/26 – 6/11 Interviews/Photo Project **1945 - present** Activities: ?Survey industrial				

Subject	Learning Opportunities	Media	Technology	Art/ Wellness
history of Lincoln/Bristol area?				
Culminating Activity: History of a farmstead – changes over time -	Research, interpretation; technological component (PowerPoint): scan in photos of Lincoln – produce an historical slide show?			
				CULMINATING EVENT for VERMONT history
6/16 – 6/18 Present Photo/Interviews	Present to Sr. @ Lib. on Wed. & Lincoln historical Society?			

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Northern Forest Trail Project Vocabulary List

Steward / stewardship
Habitat
Interconnectedness
Sustainability
Organism
Effect
Affect
Provide
Native
Non native
Population
Adaptation
Physical adaptation
Behavioral adaptation
Ecology
Community

Conifer / coniferous
Deciduous
Blade
Petiole
Vein
Needle
Broad leaf
Photosynthesis?
Invertebrate
Macro invertebrate
Mammal
Insect
Amphibian
Bird
Rodent
Reptile

Northern Forest Assessment Sheet

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Name Date

Vermont State Grade Expectations / Concepts	Project	Comments
Organisms have characteristics that help them find what they need to survive in their environment and provide for their survival: – Defense – Obtaining food – Reproduction – Eliminate waste	Macro Invertebrates Animal Research Report Created Critter	
Although all organisms have common stages of development, details of a life cycle are different for different organisms	Macro Invertebrates Animal Research Report Created Critter Tree Life Cycle	
Energy derived from food is needed for all organisms (plants and animals) to stay alive and grow.	Macro Invertebrates Animal Research Report Created Critter	
Food for animals can be traced back to plants.	Macro Invertebrates Animal Research Report Created Critter	
Organisms can survive best only in habitats in which their needs are met.	Macro Invertebrates Animal Research Report Created Critter	
Organisms interact with one another in various ways besides providing food (e.g., Many plants depend on animals for carrying their pollen to other plants for fertilizing their flowers).	Macro Invertebrates Animal Research Report Created Critter	
The great variety of living things can be sorted into groups in many ways using various characteristics to decide which things belong to which group.	Macro Invertebrates Animal Research Report Created Critter	
Organisms of the same kind differ in their individual characteristics (traits) (e.g., Even though all dogs are of the same species, they can have very different traits.).	Forest Plot Tree Identification	
Soil is made partly from rock, partly from plant remains and also contains many living organisms.	Soil Studies compare garden/ forest	
b. Earth materials are solid rocks, soils, water and the gases of the atmosphere.	Forest Ecosystem	
Weather changes from day to day and over the seasons. Weather can be described by measurable quantities (such as temperature, wind direction and speed, precipitation and air pressure	Forest Ecosystem Water Cycle	
The varied earth materials have different physical and chemical properties, which make them useful in different ways, for example, as building materials, as sources of fuel, for growing the plants we use as food, or supporting animal life. Earth materials provide many of the resources that humans use.	Forest as Resource	
Earth materials have chemical and physical properties that make them useful as building materials, or for growing plants or for fuel.	Forest Resources	
Use a key to identify leaves- o Margins o Compound/ simple o Needle/ broadleaf	Trees Identified in journal	
Label parts of a tree: Crown Trunk roots	Parts of Tree Assessment	

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Northern Forest Trail Project Annotated Resources

Greg Sharrow- guru gsharrow@vermontfolklifecenter.org
Erica Hilman- audio interviewing master
ericaheilman@radiohole.com
Paul-Video master paul@vexp.org
Ned- photo master nedcastle@gmail.com
Matt Dubel education for sustainability project from Shelburne Farms mdubel@ShelburneFarms.org
Tina Sharf- wildlife biologist, conservation commission (Lincoln)
Nick Mayer- biologist (Lincoln)
Annie Ledbetter- master gardener
Joe Nelson- forester, satellite photographer
Annie MacCleary- earth mother, naturalist
Sally Ober- town clerk (Lincoln)
Beth Nelson- graphic designer, librarian (Lincoln)
Debi Gray- original LCS nature trail blazer (Lincoln)
Sandra Murphy- nature trail designer
Marijke Niles- master gardener / National Wildlife Habitat Certified marijken@gmavt.net – 453-7590
Paul Bearman website- tree id
Christie Sumner- retired educator, community volunteer
Former students

Robert Frost Trail
Moosalamo Spirit in Nature Trails
Shelburne Farms Trails
Watershed Trails, Bristol

Huntington Audubon Center Trails