A person wearing a red jacket is looking down at a field notebook. The notebook is open to a page with a photograph of a lichen on a tree trunk. The background shows a forest floor with fallen leaves and a tree trunk. The text is overlaid on the notebook page.

How to Conduct a Lichen Inventory

Learning Lichens Lesson 3

Funded by: White Mountain Interpretive Association,
Kiwanis International,

Cooperating organizations: White Mountain National
Forest, Prospect Mt. High School, Alton, NH

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Lesson 3 Objectives

- Students will develop and investigate a field research question regarding lichen
- Students will lay out a belt transect
- Students will identify and inventory lichen in the forest or schoolyard
- Students will gather and analyze data
- Students will write up and present their data and research conclusions



Developing Research Questions

- Indoors, review the inventory data sheet with students
- Form groups of 3-4 students
- Have students make a list of the data that they will be collecting
- Have students brainstorm 3 questions about lichen and possible effects by these factors and agree upon one question, consult with teacher

Times New Roman 16



AaBbCcD

Emphasis

AaBbC

Heading 1

AaBbCc

Heading 2

AaBbCcI

Normal



Font

Paragraph

Styles

Lesson 3: Lichen Field Transect and Research Question*

This lesson will be conducted by groups of 3-4 students. It will require about 90-100 minutes to complete.

Objectives:

- Students will be able to conduct biomonitoring inventory
- Students will develop and investigate a research question
- Students will gather, analyze and present data to investigate their research question
- Students will be able to identify common lichen

Materials for each group:

- DBH or metric measuring tape
- Hand lens
- 2 Data sheets (double sided)
- clipboard
- Pencil
- Pins
- Compass
- 50m measuring tape
- Flagging
- Labels for trees 2 and 2 branches
- ID photos or guidebook
- Camera

Clipboard Font Paragraph Styles Editing

Times New Roman 16

B *I* U **Aa** **ab** **A**

AaBbCcI **AaBbC** **AaBbCcI** **AaBbCcI**

Emphasis Heading 1 **Normal** Strong

Find Replace Select

Names: _____ Date: _____

Lichen Lesson 3: Transect Inventory Data Sheet

Tree or branch (circle one) Tree or branch # _____ Location: _____

Tree Species: _____ Transect Bearing: _____

Tree DBH or branch length: _____ cm Tree/branch Dist. from origin: _____ m

Lower Transect Hits at .5m high	Cm mark on DBH tape	Photo #	Lichen, moss or liverwort species	Notes
1				
2				
3				
4				
5				
6				
7				

Equipment Needs?

Kit available on loan from WMNF



Laying out Belt Transect

- Each group of 3-4 students will lay out a transect within which they will collect data
- See “How to Lay out a Belt Transect” for procedure



Transect Orientation and Boundaries

- add diagram of transect
- And photo of tape



Select and flag two trees within your transect

- Ideally, use trees between 10 and 30 cm in diameter
- Select two trees of different species, if possible
- (add photo)

Measure DBH with diameter tape,
record DBH and species of tree
(add photo of diameter tape)



For a large tree, measure DBH with distance tape (add photo of distance tape)



Lower Tree Transect

(Retake photo with metric and pins every cm)



- At .5 m off the ground, measure DBH
- Push pins into tree at every cm mark around the tree

Record Hits

- On data sheet, record which pins “hit” a lichen, moss or liverwort

Names: Rosina + Mikayla Date: 4-11-14

Lichen Lesson 3: Transect Inventory Data Sheet

Tree or branch (circle one) Tree or branch # 3 Location: _____

Tree Species: white oak Transect Bearing: _____

DBH: 64.5 cm in. Tree Dist. from transect origin: 9 m

Lower Transect Hits .5m	Cm mark on DBH tape	Photo #	Lichen, moss or liverwort species	Notes
1	76	3	Flavoparmelia	
2	67			
3	63			

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Identify Cryptogams

- See “Identifying Lichen with Students” slide show
- In the field, use photos of most common lichens, mosses and liverworts
- Complete one data sheet for each tree or branch transect



Upper Tree Transect

- Measure and record DBH at 1.5m above ground level
- Repeat the steps to record “hits” and identify species



Select two downed branches



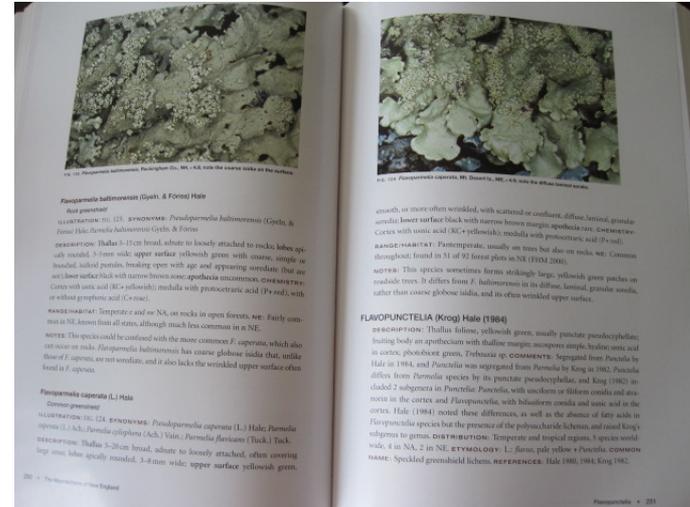
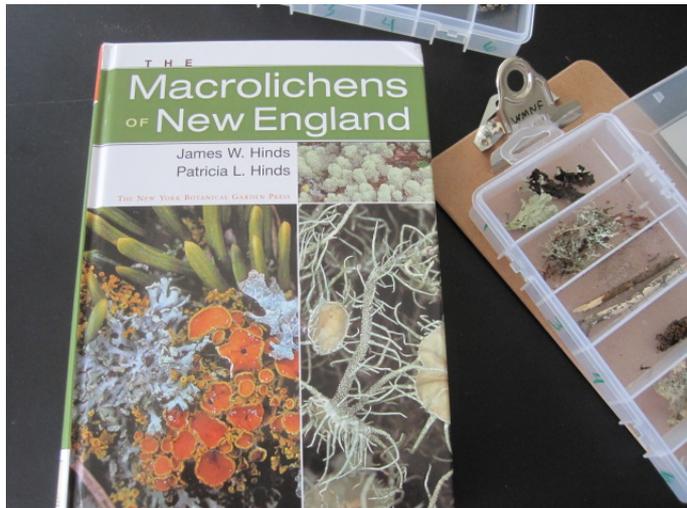
- Branches should ideally be from the canopy, which contains different lichen species from tree trunks
- Measure and record the length of the branch
- Mark “hits along the branch and record species

Collecting Samples



- If feasible, remove a sample of the lichen from a branch to bring inside, record the origin of the samples
- Removing samples from tree trunks is not recommended unless you can avoid damaging the bark

Use Hinds Guidebook to confirm identifications indoors



Do you have all the information you need to answer your research question?

