

LESSON 3: Rapid Mycological Assessment

Unit Theme: Mycology Methods

Conceptual Lens: Biogeography

Concepts: Species Diversity

Vocabulary (Students should look up these terms prior to the lesson):

[Biodiversity](#)

[Dispersal](#)

[Survey](#)

[Sampling](#)

[Scientific Method](#)

Enduring Understandings:

- A Rapid Biological Inventory (RBI) is how scientists test the overall biodiversity of a given area.
- A Rapid Mycological Assessment (RMA) determines how many species of fungi are present in a given area.
- The results of an RBI are often used to predict the overall health of an environment and determine if it should be protected.

Guiding Questions:

1. How do mycologists conduct fieldwork?
2. What types of fungi grow in our natural area?
3. Do the locations of fungi have anything to do with what species grow there?
4. Do any of the same types of fungi grow in our natural areas that grow in the Costa Rican temperate rainforests?
5. How is our natural area similar or different from the region studied by Dr. Greg Mueller?
6. How could two identical species grow in two distinctly different climates/regions?
7. Are there any other plants that we can think of that growing in our area as well in a different climate?

Critical Content: Biogeography is the science that attempts to make predictions about the spatial patterns of biodiversity. Biogeography is affected by evolution, extinction and dispersal of organisms. The Great American Faunal Interchange took place about 3.5 million years ago when the land bridge that connects North and South America was complete. This land bridge allowed for the exchange of plants and animals between the two continents. Therefore, plants, animals and fungi that are the same or similar may exist on different continents. It is important to note that evolution may have significantly affected some of these species. (There are many great resources on the Internet to help you with the concept of biogeography. Just type “Great American Faunal Interchange” into any search engine. A visual depiction may be best- you can have students draw these as a class!)

Skills:

Illinois: Science 11A, 11B, 12B, 13A; Mathematics 10C; Social Science 17A; Language Arts 5A

National: Science 9-12.1, 9-12.7; Mathematics 12.3, Social Science 12.1, 12.3; Language Arts 12.7

Instructional Activities & Methods:

1. Have students review the [Meet the Scientist](#) and [Tools](#) sections of the expedition website.
 - A) Review the steps in the Scientific Method: Observation, Hypothesis, Prediction, Testing
 - B) Discuss the process of fieldwork, have students map how steps of fieldwork correlate with the Scientific Method. If you completed Lesson 2, they're already on their way.
2. Prepare for the field survey.
 - A) Select a nearby site where your group will conduct its RMA. The best times to observe fungi in the Midwest are the early fall and late spring. Fungi grow almost anywhere there is a host (tree, dead organic matter), but you'll need to check this out prior to your RMA. If you have time to have field trip- take the class to a nearby Forest Preserve or Park- you can call ahead to see if there is a naturalist available to help your group.
 - B) Gather necessary materials: Field Guides (free posters are available from most Departments of Natural Resources, and you can also check out a Peterson's or Hunter's Field Guide to Fungi from the library, and don't forget "Eyewitness Handbooks – DK Handbooks" from Allen J. Coombes which have a version for nearly all topics) digital cameras, magnifying glasses, etc. Anything that will help you identify BUT NOT REMOVE the species!!
 - C) Instruct your students that under no circumstances are they to touch or remove any mushrooms from the site. We are simply there to observe.
 - D) Divide the class into 4 or 5 groups and distribute the RMA Survey Sheet. Explain that you will have only 30 minutes to complete the survey at the site, so they must figure out the best way to distribute roles: Data Recorder, Observers, Mappers, etc.
 - E) Meet with each group and have them explain their survey design: Who's in charge of what? What is their plan for finding the fungi? Do they have any predictions about what they might find?

Culminating Performance Assessment:

What? Rapid Mycological Assessment

Why? To determine the number of fungal species present in a given area and compare these to species in Costa Rican tropical oak forests.

How?

1. Take the student to the field site and have them conduct their survey. They should indicate on their site maps where each species was found.

2. Allow 30 minutes for students to identify, draw and map as many species of fungi as possible. Remember that getting the names right isn't what's important. Made-up descriptions or drawings are just as good.
3. Upon returning to school, have students use their resources to find the species names that they are unsure of. If you've conducted your pre-field research from Lesson 2, you should have a list of the different species that grow in our area.
4. Tally up the results: how many species were found? What area of the site had the highest concentration of species? Why do you think so? Do you think we found everything that was there?
5. Make a prediction: Does our ecoregion have any of the same species as the area the Dr. Mueller is working in? Check the [Photo Gallery](#) and keep checking the expedition website to find out.

Assessment Codes: CP, WS, O

Credits: Illinois Biodiversity Basics, adapted from Biodiversity Basics, a publication of the World Wildlife Fund's *Windows on the Wild* biodiversity education program

**RAPID MYCOLOGICAL ASSESSEMENT
STUDENT SURVEY**

Team Members

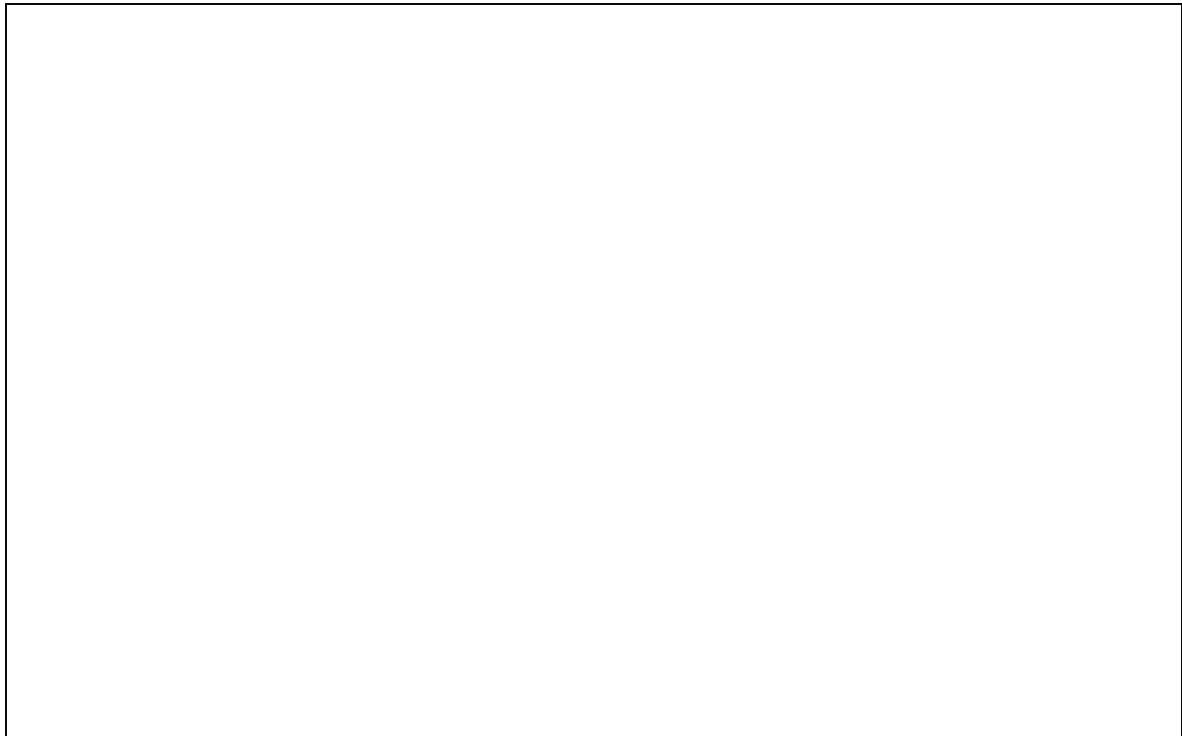
Site Location _____

Date _____ **Temperature** _____

Weather _____

Description of Area

SITE MAP



LIST and/or DESCRIBE AS MANY SPECIES OF FUNGI AS YOU CAN FIND. MAKING A DRAWING MAY BE HELPFUL AS WELL. ALSO NOTE WHERE THE SPECIES WAS GROWING. MARK THE SITE MAP WITH EACH SPECIES BY NUMBER. (example: 1. oyster mushroom, white, about 25 caps, on dead wood)