

Soil Horizons (Is it a Wetland?)

Teacher's Guide

Subject: Integrated Science (Life; Earth-Space; Physical)

Topics: Wetlands, Soil, Abiotic Factors, Classification

Summary: Students examine and classify the soil at two different locations along the nature trail to determine which site is a wetland.

Objective(s): After completing the field lab, students will be able to:

1. Identify wetland soil based upon its characteristics (moisture, texture, etc.)
2. Discuss the advantages and any disadvantages of wetland areas

Ecosystem(s): Freshwater Wetlands, Uplands

Equipment:

- soil auger
- Munsell charts (10YR)
- GPS
- Sand Gauge Card
- data sheet & pencil
- meter stick/measuring tape

Background (Pre-field Classroom Activity)

- Reference Material: Soil profiles and horizons introduction, Wetlands of Florida (poster), *Wetland Soils in Living Color, Part I*(Project WET), Fabulous Wetlands (Video)
<http://www.mbgnet.net/fresh/wetlands/why.htm>
- Equipment: Munsell Color Chart, Auger, GPS

Procedure (Engage; Explore; Explain)

1. Compare soil horizons to tree rings. What might they tell you about the ground underfoot? Have the students complete the Hypothesis and Rationale.
2. Find a ground area that is free of obvious roots. Sweep away any surface leaves, etc.
3. Each student will take a turn using the soil auger.
4. Extract soil cores/buckets and lay them horizontally on the ground until one auger length has been obtained. The handle of the auger should always be closest to you when laying down core sections.
5. Be careful to keep each soil core/bucket as close to the size extracted from the ground. This will help to prevent elongating the core once laid out.
6. Use the metric tape to mark where each horizon begins and ends.
7. Observe soil color and texture for any obvious changes and note the depth at which the change occurs. Use the Munsell Color Chart(s) and the Sand Gauge.
8. Record on your data sheet the number of horizons.
9. Complete observations for each distinct layer/horizon.
10. Put the soil back in the hole you augured. Tamp the hole to make sure it is refilled. Recover the ground with any leaf litter (as you first saw it).

Sunshine State Standards

Science: SC. A.1.3.1; SC.D.1.3.1-4; SC.G.1.3.4-5; SC.G.2.3.2-3; SC.H.1.3.4-7; SC.H.2.3.1

Language Arts: LA.A.1.3.3; LA.B.2.3.1; LA.C.1.3.1

Mathematics: MA.B.2.3.1;

Social Studies: SS.A.6.3.2; SS.B.2.3.9

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Student Data Sheet

General Information

Full Name:		Date:	
School (teacher):		Time:	

Student Hypothesis and Rationale:

If soil type is determined by color, texture and moisture, than I hypothesize that I (Choose one: **will/will not**) observe difference between an upland soil and a wetland soil because... _____

Field Observations/Measurements/Data

Location 1:

Latitude:		Longitude:	
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Table 1 (soil color and moisture)

Horizon #	Horizon Depth (cm from the surface)	Munsell Chart (value/chroma)	Munsell Chart Color Description	Moisture (wet, damp or dry)
1				
2				
3				
4				

Table 2 (soil texture and composition)

Horizon #	Texture (gritty, slippery, sticky)	Content (Sand, silt, clay, or topsoil)	Grain Size (coarse, medium, fine, or very fine)
1			
2			
3			
4			

Soil Horizons (Is it a Wetland?)

Student Data Sheet

Location 2:

Latitude:	Longitude:
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Table 1 (soil color and moisture)

Horizon #	Horizon Depth (cm from the surface)	Munsell Chart (value/chroma)	Munsell Chart Color Description	Moisture (wet, damp or dry)
1				
2				
3				
4				

Table 2 (soil texture and composition)

Horizon #	Texture (gritty, slippery, sticky)	Content (Sand, silt, clay, or topsoil)	Grain Size (coarse, medium, fine, or very fine)
1			
2			
3			
4			

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Assessment

1. What are the color, texture, and moisture of the third horizon in Location #2? (refer to your data sheets)

2. Describe the moisture of the soil of location #1 compared to location #2. What can this tell you?

3. Look at your hypothesis. Does your data support your hypothesis? Whether your hypothesis was supported or not, what conclusions can you come to based on your observations, measurements, and results?

4. In what horizons did you find the most organic (or darkest) soil?

5. Wetlands help to capture, store, and slowly release excess water in the environment. Describe what would happen if we removed wetlands from a particular area.

6. Think about what you learned in this lab; has it generated any new questions? Write a new question about something you want to learn more about.
