

SOILS & RECREATION

Learning Objectives

- 1S Recognize soil as an important and dynamic resource.
- 2S Know what soil is comprised of.
- 3S Describe basic soil properties (texture, structure, color, pH, depth to limiting layers) and soil formation factors.
- 4S Distinguish different soil horizons and describe their basic properties.
- 5S Understand the origin of soil parent materials.
- 6S Describe topographic features including names of landforms.
- 7S Know what slope gradient and slope aspect are and be able to measure them.
- 8S Understand how the properties of soil affect its response to various kinds of use and management, especially recreational activities.
- 9S Understand the nature of plant nutrients and how they are held by soil.
- 10S Know how wetlands are defined.
- 11S Recognize the characteristics of wetland (hydric) soils.
- 12S Understand soil water, its movement, storage, and uptake by plants.
- 13S Understand the effects of recreational land use on soils.
- 14S Identify types of soil erosion and discuss methods for reducing erosion.
- 15S Use a soil survey to make a soil map, determine properties of the soils on the map and how the soils respond to different uses and management.

Resources

1. Globe
<http://soil.gsfc.nasa.gov/index.html> (Web based HTML) (All)
<http://www.globe.gov/fsl/html/templ.cgi?measpage&lang=en&nav=1> (PDF Protocols)
<http://www.globe.gov/tctg/sectionAndChildren.jsp?sectionId=428> (PDF Teacher Guides)
<http://www.globe.gov/tctg/sectionAndChildren.jsp?sectionId=409> (PDF Forms) (All)
2. Power point soils lab curriculum
<http://ltpwww.gsfc.nasa.gov/globe/charts/charts.htm> (All)
3. Web Soil Survey
<http://websoilsurvey.nrcs.usda.gov> (15S)
4. NRCS Soils Website
<http://soils.usda.gov/education> (1S, 3S, 4S, 11S, 12S)
5. Conservation Technology Information Center (CTIC)
<http://www.ctic.purdue.edu/ctic/ctic.html> (1S, 8S, 10S, 13S)
6. Wetland Functions and Values (including Recreation)
<http://www.epa.gov/watertrain/wetlands/index.htm> (10S)

7. Wetlands
<http://www.epa.gov/owow/wetlands/> (10S, 11S)
8. Hydric (Wetland) Soils
ftp://ftp-fc.sc.egov.usda.gov/NSSC/Hydric_Soils/FieldIndicators_v6_0.pdf
(10S, 11S)
9. School of Geography
<http://soilerosion.net/> (14S)
10. From the Surface Down
ftp://ftp-fc.sc.egov.usda.gov/NSSC/Educational_Resources/surdown.pdf
(2S, 3S, 4S, 5S, 6S, 8S, 11S, 14S, 15S)

Suggested Core Activities

- Soil Survey Map - Using Web Soil Survey, students should make a soil map of their area. They should study the basic information about soils and recreation in the Intro to Soils Section and they should View Reports and maps about soil interpretations for recreation in the Suitabilities and Limitations section. When creating these reports, the students should check the box for Include Description, which describes how the soil properties affect the results. The Shopping Cart should be used to create a custom soil survey for their Area of Interest (AOI). When checking out the Shopping Cart, the Glossary should be added to the report as an additional resource (12S, 13S, 15S)
- Soil Texture - Using soil sifting screens or the Soil Particle Size Distribution Lab Guide from Globe, students should separate the clay, silt, sand, and organic matter from samples collected locally. By using a soil triangle, students should determine the soil classification of each sample. Students should then follow the Globe soil characterization protocol field guide to measure the soil texture of each sample, and record the data. It is suggested that the students collect their soil samples from agriculture crop land, wetland, forest, and urban area, and analyze the differences in data. (3S, 5S, 6S)
- Soil Pit - Students should dig a soil pit approximately one meter deep and about 1.5 meters wide. They should then record their observations of the soil profiles including horizon thickness, color, texture, moisture, structure, bulk density, pH and depth to restrictive layer. Along with this they should describe the site the soil occurs on. Use the pdf forms available from GLOBE to record observations. (2S, 3S, 5, 6S, 7S)

Suggested Other Activities

- Infiltration and Runoff - Students should make an erosion demonstration table to determine the effects of water run-off on various soil types and ground covers. Using the Globe Infiltration Field Guide, students should determine the rate at which water soaks into the ground as a function of time. (12S)

- Chemical Soil Tests - Students should conduct soil test experiments to determine the amounts of N, P, K, and pH. The samples should come from different locations in the local area including a forested site, an open field, and near a stream. Students should record their data, and analyze and compare their results. (9S)

Vocabulary List

bulk density
cation exchange capacity
clay
gully erosion
hardpan
hydric soil
infiltration
parent material
permeability
pH
redoximorphic (redox) feature
rill erosion
riparian
runoff
salinity
sand
silt
slope aspect
slope gradient
soil
soil compaction
soil erosion
soil horizon
soil structure
soil texture
water table
wetland

This document was created with Win2PDF available at <http://www.win2pdf.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.
This page will not be added after purchasing Win2PDF.