

2007 FORESTRY TOPIC

Forestry Key Points

- 1F Identify common trees without a key and identify specific or unusual species of trees or shrubs through the use of a key.
- 2F Understand forest ecology concepts and factors affecting them, including the relationship between soil and forest types, tree communities, regeneration, competition, and succession.
- 3F Understand the cause and effect relationship of factors affecting tree growth and forest development (climate, insects, microorganisms, wildlife, etc.).
- 4 F Understand how wildlife habitat relates to forest communities, forest species, forest age and structure, snags and den trees, availability of food, and riparian zones.
- 5F Understand how the following issues are affected by forest health and management: biological diversity, forest fragmentation, air quality, aesthetics, fire, global warming, and recreation.
- 6F Understand basic forest management concepts and tools (Clinometer, Diameter Tape, Logger's Tape, Prism, and Merritt Hypsometer) such as how various silvicultural practices are utilized, the use of tree measuring devices, and the best use of management practices.
- 7F Apply silvicultural concepts and methods to develop general management recommendations and goals for a particular situation.
- 8F Identify the complex factors that influence forest management decisions (e.g., economic, social, and ecological).
- 9F Understand the value of trees in urban/suburban settings and the factors affecting their health and survival.
- 10F Describe specific adaptations of wildlife to their environment and their role in the ecosystem.

Suggested Core Activities/Test Material

Students should identify common trees and shrubs in their local area without a plant key, and identify specific or unusual species of trees and shrubs using a key. Using plant presses, students will collect samples, and create plant identification collections for future study. 1F

Students could conduct tree ring research by using tree trunk slices to determine tree age, growing conditions, insect damage, and weather conditions. 3F

Students should use a clinometer, increment borer, diameter tape, and other forestry management tools to measure trees in their local area. Using a variety of volume tables, the students will be able to calculate the volume of lumber for each tree. 6F

Students should download the PDF file "Forest Health" from eco-links written by the Temperate Forest Foundation. Team members can present their research on how the following issues are affected by forest health and management: biological diversity, forest fragmentation, air quality, aesthetics, fire, global warming, and recreation. 5F

Using the Penn State "virtual forest tour" on their computer, students will

understand how forest practices and policy affect sustainability. Students will compare a mixed eastern hardwood forest in Pennsylvania to a douglas fir forest in Oregon. 2F, 3F, 6F, 7F, 8F

Students should create a presentation display showing the value of trees in an urban setting, and the factors affecting their health and survival. 9F

Students should make a map of their local area forest or park, including wildlife inventories, tracks, habitat, food sources, and specific wildlife adaptations. 4F, 10F

Top Resources:

- A complete glossary of forestry terms can be accessed at:
<http://www.for.gov.bc.ca/hfd/library/documents/glossary/> Natural Resource Skills
- Tree Identification
<http://gaia.flemingc.on.ca/~dhendry/nrstrid.htm> (1F)
- Dendrology at Virginia Tech, Dept of forestry. Good maps, identification and quizzes for Canada and the US.
<http://www.cnr.vt.edu/dendro/dendrology/map/zonemap.htm> (1F)
- Canadian Forestry Association
<http://www.canadianforestry.com/> (All)
- Penn State virtual forest
<http://www.virtualforest.psu.edu/> (2F 3F 6F 7F 8F)
- University of Arizona tree ring research. Students can participate in tree ring exercises.
<http://tree.ltrr.arizona.edu/dendrochronology.html> (3F)
- Canadian Forest Service
<http://www.nrcan.gc.ca/cfs-scf/> (All)
- Temperate Forest Foundation-Silviculture practices, management, and eco-links.
<http://www.forestinfo.org/> (All)
- Canadian Pulp and Paper Association
<http://www.cppa.org/english/> (All)
- Private Forest Management Team. This site includes many forest management areas including measuring, harvesting, growth, yield, pests and disease, wildlife, and many others.
<http://www.pfmt.org/default.htm> (All)
- Auburn University- Instructions and care of the increment borer.
http://www.pfmt.org/inventories/increment_borer.htm (6F)

Canada Sustainable Forest Association

<http://sfms.com/home.htm> (All)

- Tree measurement volume tables
<http://www.pfmt.org/> (6F)
- Canada measurement volume tables
http://nfi.cfs.nrcan.gc.ca/terms/procedures_e.html#volumespecs (6F)
- Idaho Forest Products Commission-Forest health and conditions, biodiversity, and management implications.
<http://www.idahoforests.org/health.htm> (3F 5F 7F 8F)
- Canada Forest Health
<http://www.atl.cfs.nrcan.gc.ca:8080/cfsnet/index-e.html> (3F 5F 7F 8F)
- Canada Wildlife
http://www.ec.gc.ca/wild_e.html (3F 4F 10F)
- Urban forestry
www.americanforests.org/resources/urbanforests/ (9F)

Forestry Extended Studies

Students should be able to recommend harvesting methods for even and uneven age stands. They will list the benefits of shelterwood, seed tree, and clearcut methods.

<http://www.forestinfo.org/Discover/reforest.htm> (2F 6F 7F)

Students should be able to list and diagram the different characteristics of the following forest types: Savanna, open, dense, understory, and complex.

<http://www.idahoforests.org/health2a.htm> (2F 5F 7F 8F)

Students should be able to map, label and define the major forest regions of California.

www.springerlink.com/index/P5PT410483K44NP3.pdf (2F 3F 5F 7F 8F)

On-line Sample Tests

The Canon Envirothon web site contains sample tests for each of the Envirothon topics and a list of issues. Many state and provincial Envirothon Web sites also contain sample tests.

<http://www.envirothon.org/competition/tests.php>

http://wps.prenhall.com/esm_wright_envisci_8/0,8543,1052446-,00.html

Energy and Solid Waste

- Students should create an educational display showing the benefits of forestry biomass resources for creating energy. The display will include pictures and descriptions of nine short rotation hardwood trees recommended for biomass use.

<http://www.eere.energy.gov/RE/biomass.html>

- Students should discuss the effects of increased paper recycling on timber harvests in North America.
<http://www.yale.edu/pswp/#inceeffect>
- Students should outline the importance of the forest products industries in Canada and the United States and make a graph comparing the net electricity use of the major manufacturing industries to the forest products industry.
http://www.eia.doe.gov/cneaf/solar.renewables/at_a_glance/wood/contents.htm
- Students should compare the energy efficiency between wood fuel and fossil fuel by analyzing the net energy output between oil burning stoves and wood burning stoves.
<http://www.energyadvocate.com/fw13.htm>
- Wood fuel provides 7% of the world's energy, but 77% of this energy is consumed by developing countries. Students should make a chart showing the importance of wood energy in the world, and compare the energy uses of the United States and Canada to world use.
<http://www.fao.org/forestry/site/14011/en>
- Students should research the amounts of wood residue and solid waste wood that is available for recovery. They will analyze the two main sources, forest residue and primary timber processing, and make a graph of their data.
<http://www.treesearch.fs.fed.us/pubs/viewpub.jsp?index=7113>
- Students should create a power point presentation comparing paper recycling facts in the United States, and Canada.
<http://www.paperrecycles.org/>
http://www.recycle.nrcan.gc.ca/background_e.htm
- Students should study the controversy over the forest management practices in the Wao Kele o Puna rain forest in Hawaii, where the drilling of geothermal wells for electricity production has been proposed. The students will divide into two groups, and debate the issues.
http://www.findarticles.com/p/articles/mi_m1016/is_n7-8_v97/ai_11012471
- Students should create an educational display showing the reduced energy costs associated with trees planted for energy conservation in our cities.
<http://www.americanforests.org/graytogreen/energy/>

ADDITIONAL REFERENCES

Georgia Pacific Forestry Education in Nature
<http://www.gp.com/EducationalinNature/subjects.html>

Canada Renewable Energy Forestry
<http://www2.nrcan.gc.ca/es/oerd/english/view.asp?x=700&mid=33>

BLM National Energy Initiatives
<http://www.blm.gov/energy/>

New Brunswick Natural Resources Forestry and Energy
<http://www.gnb.ca/0079/index-e.asp>

U.S. Dept. of Energy
<http://www.eere.energy.gov/>

Ecology at About.com

<http://ecology.about.com/science/ecology/>

Forestry at About.com

<http://forestry.about.com/>

Discovery.com Wildfires

<http://www.discovery.com/area/science/wildfires/>

Silvics of North America

http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm

Climate Information

<http://www.noaa.gov>

Basics of Tree ID

<http://www.fw.vt.edu/dendro/forsite/ldtree.htm>

SelectTree California

<http://selecttree.calpoly.edu/>

CalPhotos - Plants

<http://dlp.CS.Berkeley.EDU/photos/flora/>

Manual of California Vegetation

<http://www.ice.ucdavis.edu/cnps/site.html>

California Native Plant Society

<http://www.cnps.org/programs/plantscience.htm>

Online Biology Book

<http://gened.emc.maricopa.edu/bio/bio181/BIOBK/BioBookTOC.html>

Tree Physiology

<http://www.dsisd.k12.mi.us/mff/Environment/TreePhys.htm>

ICE Environmental Conservation Hotlinks

http://ice.ucdavis.edu/echo/habitats_and_ecosystems.html#habitats

California Environmental Resources Evaluation System

http://ceres.ca.gov/education/students/nat_sci.html

California Natural Resource Conservation Service Homepage

<http://www.ca.nrcs.usda.gov/>

Agencies/Organizations

USDA Forest Service

<http://www.fs.fed.us/>

USGS Biological Resource Division, National Biological Information Infrastructure

<http://biology.usgs.gov>

Sierra Nevada Science Report

<http://www.fs.fed.us/psw/publications/documents/other/sierra>

Environmental Protection Agency Water Quality Programs

<http://www.epa.gov>

US Fish and Wildlife Service

<http://www.fws.gov>

California Biodiversity Council

<http://www.ceres.ca.gov/biodiversity>

California Department of Conservation Land Use Planning Information Network

<http://ceres.ca.gov>

California Department of Fish and Game

<http://www.dfg.ca.gov/>

California Department of Forestry and Fire Protection

<http://www.fire.ca.gov>

Society of American Foresters

<http://www.safnet.org>

Insects and Diseases of Forest Trees

<http://www.forestpests.org>

<http://www.fs.fed.us/r6/nr/fid/index/htm>

<http://www.bugwood.org/>

<http://www.forestpathology.org>

USDA Forest Service Western Forest Insects and Diseases

<http://www.fs.fed.us/r6/nr/fid/wid.htm>

Map Information

<http://www.usgs.gov/>

<http://nationalatlas.gov/>

Federal Laws Related to the USDA Forest Service

<http://www.healthyforests.gov/>

<http://www.epa.gov/epahome/laws.htm>

California Environmental Law Information

<http://ceres.ca.gov/elaw>

USDA Forest Service History Website

<http://www.lib.duke.edu/forest/Research/usfscoll/collections/>

Miscellaneous forestry sites

<http://forestryindex.net/>

<http://www.worldforestry.org/>

<http://www.americanforests.org/>

<http://www.forestryimages.org/>

Urban Forestry

<http://www.ufe.org/>

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