

## LESSON 2: NATIVE PLANT SPECIES WEB QUEST

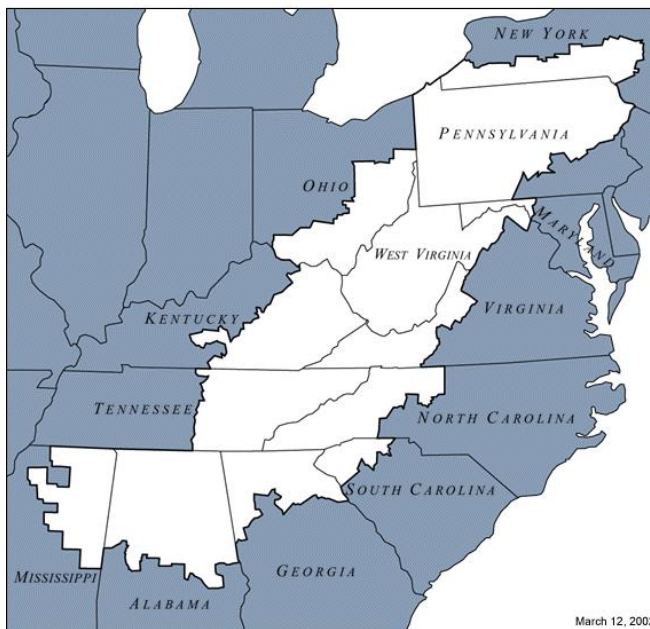
**Duration:** One or two 45-minute class periods

### **Background information:**

The Appalachian chain of mountains, hills, and highlands stretches for 1,500 miles from Quebec southwest to Alabama. The Appalachians are divided into three general regions: northern, central and southern. The southern region of the Appalachians generally stretches from Virginia to Alabama and includes parts of the Allegheny Mountains, the Blue Ridge Mountains, the Unakas, the Great Smoky Mountains, and the Cumberland Mountains.

Many spectacular areas within the Southern Appalachian Region are contained within the Great Smoky Mountains National Park. At one time, the

*The Appalachian Region*



Source: Appalachian Regional Commission

entire Appalachian system was almost entirely covered by forest. Today the Southern Appalachian Region contains six national forests (George Washington, Jefferson, Cherokee, Chattahoochee, Nantahala, and Pisgah) centered around the Great Smoky Mountains National Park. These areas form the largest contiguous expanse of wilderness remaining in the eastern U.S.

The Southern Appalachians also include Shenandoah National Park, which extends along the Blue Ridge Mountains. Overall, this region has high species diversity.

“The independent system of southern plant growth known as the ‘Appalachian forest’ is highly complex. It forms one of the great floral provinces of the Earth. There are the trees that bear luxuriant bloom, such as serviceberry, redbud, hawthorn, tulip poplar, dogwood, locus, sourwood, and many others. Among the numerous shrubs with particularly showy flowers are the rhododendron, azalea, and mountain laurel. Certain summits of the Southern Appalachians are ‘heath-balds’—open meadows or grasslands

interspersed with thick growths of heath. It is estimated that of some 2,000 species of Appalachian flora, perhaps 200 are native to and wholly confined to the Southern Appalachians” (The New Encyclopedia Britannica 1985, p. 995).

(Source: *Overview of the Southern Appalachian Mountains*, available online at <<http://www.unc.edu/~dcrawfor/overap.htm>>)

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**Objectives:**

- Identify native plant species found in healthy Southern Appalachian ecosystems.
- Briefly describe the main characteristics of native plant species found in healthy Southern Appalachian Region ecosystems.

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**Prepare in advance:**

If possible, have these links on the Invasive Species Curriculum site bookmarked on the Web browser in advance:

- Handout 1—Native Plant Species List
- Handout 2—Student Instructions for Native Species Web Quest
- Handout 3—Sample Native Species Notebook Entry

Otherwise, make a copy for each student in the class

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**Materials:**

- lab/field notebook for each student
- one computer connected to the Internet for every two students
- colored pencils

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**Description:**

Students will visit USDA Plants Database Web site at <<http://plants.usda.gov/>> to identify native species of the Southern Appalachian Region. Students will name and describe each species in general terms in their field notebooks for the purpose of plant identification.

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**Instructional sequence:**

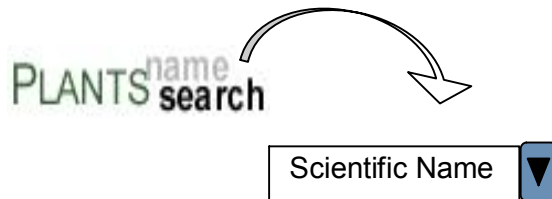
(5 – 10 minutes)

**Instruct** students to:

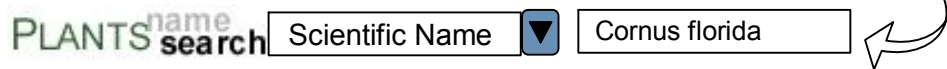
- **Choose** a plant native to the Southern Appalachian Region from the “Native Plant Species List.”

- **Find** the Web address for the *USDA Plants Database* Web site on *Student Instructions for Native Species Web Quest*.
- **Type** in this address in the address bar on the monitor screen, and press the “Enter” key on the computer keyboard. Or, activate the <http://plants.usda.gov/> link on the online PDF of the Student Instructions.

- **Find** the drop down menu:



- **Type** the scientific name of the chosen native plant in the “name search” box.



- **Click** “Go,” or press the “Enter” key on the computer keyboard.
- **Scroll down** the page, below or beside the “Plant Profile.”
- **Click** on “PDF”




There are typically 3-5 pages of information in these USDA/NRCS Plant Guides. You will see a page that looks like this:

Plant Guide

## FLOWERING DOGWOOD

*Cornus florida* L.  
Plant symbol = COFL2

Contributed by: USDA NRCS National Plant Data Center



C.W. Cook, 2003.  
Trees, Shrubs, and Woody Vines of Central North Carolina.

**Alternate Names**  
American boxwood, arrowwood, *Benthamia florida*, boxwood, cornel, cornelian tree, *Cornus candidissima*, *Cornus florida* forma *pendula*, *Cornus florida* forma *pluribracteata*, *Cornus florida* forma *xanthocarpa*, *Cornus florida* var. *pendula*, *Cornus florida* var. *rosea*, *Cornus florida* var. *rubra*, *Cynoxylon floridum*, dogwood, eastern flowering dogwood, white cornel, white dogwood.

**WARNING: The fruit of flowering dogwood is poisonous to humans.**

**Uses**  
*Ethnobotanic:* Flowering dogwood root bark was used by Native Americans as a fever reducer, skin astringent, an anti-diarrheal agent, and as a pain reliever for headaches, sores, and muscle inflammations. It was also used to counteract the effects of many poisons and as a general tonic for unspecified ailments. The bark was used for headache and backache relief, as a throat aid for hoarseness, and as an infusion for childhood diseases like worms and measles. Flowers were infused to

reduce fever and relieve colic pains. Compound infusions of several plant parts were used as blood purifiers and as medicine for blood diseases like malaria.

*Ornamental:* The showy blossoms and attractive fall foliage make flowering dogwood a valuable ornamental species. It is commonly used in landscape and street plantings. As a garden tree, it is used for shade around patios, as a shrub border or backdrop species, or as single specimens in the lawn. It is best suited for plantings receiving less than full-day sun.

*Restoration:* Flowering dogwood is a *soil improver* because its leaf litter decomposes more rapidly than most other species. For this reason flowering dogwood has been planted on abandoned strip mines and used for urban forestry projects.

*Wildlife:* Flowering dogwood is a valuable food plant for wildlife because high calcium and fat contents make it palatable. Many bird types including songbirds, forest edge species, and upland game birds (e.g. wild turkey) consume the seeds. The eastern chipmunk, white-footed mouse, gray fox, gray squirrel, black bear, beaver, white-tailed deer, and skunk readily consume flowering dogwood seeds as well. Beaver, rabbits, and deer browse the leaves and sprouts of the plant. Flowering dogwood also provides shelter and habitat for many wildlife species.

*Wood production:* The wood of flowering dogwood has been harvested for the manufacture of tool handles, charcoal, wheel cogs, hayforks, and pulleys. It is occasionally used to make specialty items like golf club heads, roller skate wheels, knitting needles, and spools. The wood is hard, strong, and shock resistant, making it suitable for wood products that need to withstand rough use.

**Legal Status**  
Flowering dogwood is endangered in Maine, exploitably vulnerable in New York, and threatened in Vermont. Please consult the PLANTS Web site (<http://plants.usda.gov>) and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Information in the Guides includes:

- General Description
  - Bark
  - Leaves
  - Flowers
  - Fruit
  - Key characteristics
- Distribution
- Habitat
- Adaptation
- Establishment
- Management

- Pests and Potential Problems
- Seeds and Plant Production

(35 – 80 minutes)

- **Instruct** students to create an entry in their field notebook, as follows:
- **Name and describe** each species on the “Native Plant Species List” (included as an attachment to this lesson) in general terms in field notebooks for the purpose of plant identification
  - **List** the plant by common name first and scientific name in parentheses, e.g., flowering dogwood (*Cornus florida*)
  - **Give a general description** of the plant and flower. Include information about the plant’s habitat and growing season. Include a line drawing—also available on the USDA Plants Database Web site. (Please refer to the “Sample Native Species Notebook Entry” included as an attachment to this lesson.)

**Optional assessment task:**

**PREPARE IN ADVANCE:** The teacher tags native plant species on the school grounds.

**Instructional Sequence:** Escort the students outside and have them use their field notebooks to identify plants from the native plant list, which the teacher tagged, and others.

*Reference Note: USDA, Plants Database <http://plants.usda.gov/>*

*The images on the USDA, Plants Database site are not copyrighted and may be freely used for any purpose. Please credit the artist, original publication if applicable, and the USDA-NRCS PLANTS Database.*

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## ***Handout 1: Native Plant Species List***

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### ***TREES***

- Red maple (*Acer rubrum*)
- White ash (*Fraxinus Americana*)
- Black walnut (*Juglans nigra*)
- Red cedar (*Juniperus virginiana*)
- Sycamore (*Platanus occidentalis*)
- Northern red oak (*Quercus rubra*)
- Sassafras (*Sassafras albidum*)

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### ***SMALL TREES***

- Flowering Dogwood (*Cornus florida*)
- Redbud (*Cercis Canadensis*)
- Silverbell (*Halesia Carolina*)
- Sourwood (*Oxydendrum arboreum*)
- Staghorn sumac (*Rhus typhina*)

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### ***SHRUBS***

- Wild hydrangea (*Hydrangea arborescens*)
- Mountain laurel (*Kalmia latifolia*)
- Rosebay Rhododendron (*Rhododendron maximum*)

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### ***FLOWERS***

- Later purple aster (*Aster patens*)
- Bleeding heart (*Dicentra eximia*)
- Solomon's seal (*Polygonatum biflorum*)
- Bird-foot violet (*Viola pedata*)

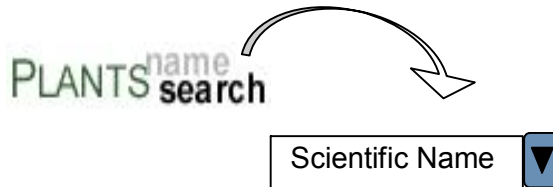
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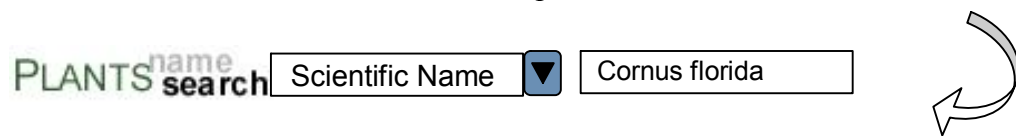
## ***Handout 2: Student Instructions for Native Species Web Quest***

1. Choose a plant native to the Southern Appalachian Region from the “Native Plant Species List.”
2. Open your Web browser, type <http://plants.usda.gov/>in the address bar, and press the “Enter” key on the computer keyboard (or activate the link).

- a. Find the drop down menu:



- b. Type the scientific name of the chosen native plant in the “name search” box.




- c. Click “Go,” or press the “Enter” key on the computer keyboard.
- d. Scroll down the page, below or beside the “Plant Profile.”
- e. Click on “PDF”



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Information in the Guides includes:

- General Description:
  - bark
  - leaves
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- Seeds and Plant Production



**FLOWERING DOGWOOD**  
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© J. Cook, 2001  
Trees, Shrubs, and Woody Vines of Central North Carolina

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American boxwood, arrowwood, *Benthamia florida*, boxwood, cornel, cornelian tree, *Cornus canadensis*, *Cornus florida* forma *pendula*, *Cornus florida* forma *pluribracteata*, *Cornus florida* forma *saxthocarpa*, *Cornus florida* var. *pendula*, *Cornus florida* var. *rosea*, *Cornus florida* var. *rubra*, *Cynoxylon floridum*, dogwood, eastern flowering dogwood, white cornel, white dogwood.

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**Wildlife:** Flowering dogwood is a valuable food plant for wildlife because high calcium and fat contents make it palatable. Many bird types including songbirds, forest edge species, and upland game birds (e.g. wild turkey) consume the seeds. The eastern chipmunk, white-footed mouse, gray fox, gray squirrel, black bear, beaver, white-tailed deer, and skunk readily consume flowering dogwood seeds as well. Beaver, rabbits, and deer browse the leaves and sprouts of the plant. Flowering dogwood also provides shelter and habitat for many wildlife species.

**Wood production:** The wood of flowering dogwood has been harvested for the manufacture of tool handles, chisel, wheel spgs, hayforks, and pulleys. It is occasionally used to make specialty items like golf club heads, roller skate wheels, knitting needles, and spoons. The wood is hard, strong, and shock resistant, making it suitable for wood products that need to withstand rough use.

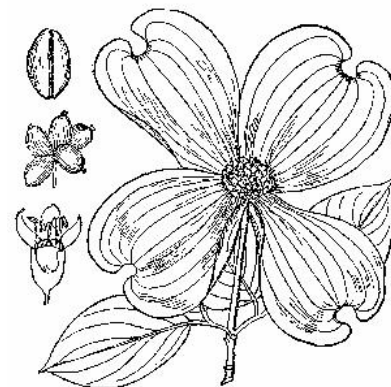
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3. Name and describe each species in general terms in field notebooks for the purpose of plant identification.
  - a. List the plant by common name first and scientific name in parentheses, e.g., flowering dogwood (*Cornus florida*)
  - b. Give a general description of the plant and flower. Include information about the plant's habitat and growing season. Include a line drawing, which is also available on the USDA Plants Database Web site. Please refer to the sample entry (Handout 3) for complete example.)

Example:

*Flowering dogwood (Cornus florida) is native to the southeastern United States. The showy blossoms and attractive fall foliage make flowering dogwood a valuable ornamental species.*

*Flowering dogwood is a small deciduous tree, characterized by branches that spread wider than its height. Flowering dogwood is typically 15 to 45 ft. tall.*



**Flowering Dogwood  
(*Cornus florida*)**

Source: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *Illustrated flora of the northern states and Canada*. Vol. 2:664.



## **Flowering dogwood (*Cornus florida*)**

Flowering dogwood is native to the southeastern United States. The showy blossoms and attractive fall foliage make flowering dogwood a valuable ornamental species.

Flowering dogwood is a small deciduous tree, characterized by branches that spread wider than its height. Flowering dogwood is typically 15 to 45 ft. tall.

Leaves are opposite, simple, medium-green in color, 3 to 5 in. long, and less than 3 in wide. The veins follow the oval curve of the leaf. Autumn foliage turns red or purple.

The flowers are yellow, very small, and clustered in the center of 4 large white (or pink) bracts. Each bract has a rounded notch on the outer edge. Flowers appear between March and June, with or before the leaves, and persist for 2 to 4 weeks.

The fruit are yellow to red berrylike drupes that contain one to two cream-colored, oval seeds. Fruits ripen in September and October. The fruit of flowering dogwood is poisonous to humans.

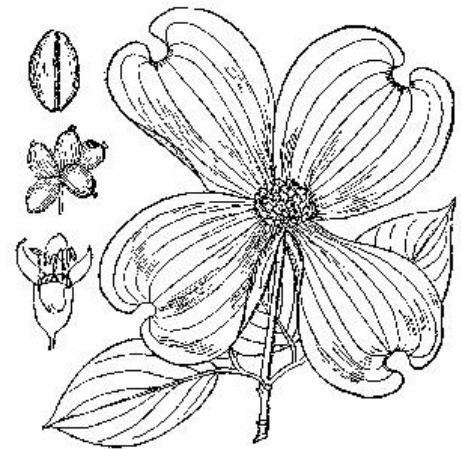
Flowering dogwood is an important understory species in the eastern deciduous and southern coniferous forests. It is also found on floodplains, slopes, bluffs, ravines, gum swamps, along fencerows, and in old-field communities.

Partial or broken shade is best, but flowering dogwood can tolerate full sun. It does best with some shade in the south and full sun in the north.

Flowering dogwood trees grow best in coarse to medium textured, well-drained soils with a pH range of 6 to 7. They are sensitive to rapidly changing soil temperature and are most abundant in temperature-consistent woodland soils.

Although they are tolerant of seasonal dry periods, they are not tolerant of severe drought or heavy, saturated soils. The inability to grow on extremely dry sites is attributed to their shallow root system.

Flowering dogwood is not tolerant of stresses such as heat, drought, pollution, or salt. These stresses make flowering dogwood more susceptible to disease, pests, and other problems.



**Flowering Dogwood  
(*Cornus florida*)**

*Source: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. Illustrated flora of the northern states and Canada. Vol. 2:664.*