

The University of Kentucky's Virtual Arboretum®

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INTRODUCTION

The University of Kentucky (U.K.) Department of Horticulture hosts an instructional activities web page (<www.uky.edu/Ag/Horticulture/teacher.html>) informally referred to as the virtual arboretum. The web site is primarily meant to help teachers expose students to outdoor classrooms where students can become excited about plants and ecology. However, others involved in gardening and wishing to know more about Kentucky's ecology will find the site interesting as well. Some of the activities direct students to the on-campus arboretum, while others can be performed at any location.

The Virtual Arboretum currently involves two broad topics, Kentucky native trees and butterfly gardening. Several learning activities are available for each topic. This paper will describe several activities of the Virtual Arboretum.

KENTUCKY NATIVE TREES

The Kentucky Native Trees topic is divided into five sections:

Walk Across Kentucky. This section includes information regarding the ecological regions of Kentucky and a table that indicates which trees are native to each region. There is also an arboretum walk that includes a schematic map of the U.K. Arboretum that indicates the location of 30 native Kentucky trees. The trees are listed by both common and scientific name and clicking on the name accesses details about each tree. The idea for this activity is that teachers and students in the area can visit the web site and download information to enhance their visit to the U.K. Arboretum. A section has just been added called Identification Keys where visitors can access a winter and summer illustrated dichotomous key for the 30 trees included in the arboretum walk. The dichotomous keys also contain links from morphological terms to an on-line illustrated glossary. In the near future, much of the Walk Across Kentucky section of the Web site will be downloaded to hand held computers for use by visitors to the Arboretum.

Tree Profiles. This section contains information on 64 native tree species listed by common and scientific names. Information for each species includes family, botanical information (native habitat, growth habit, tree size, flower and fruit characteristics, leaf description, hardiness), and selected cultivars available. In most cases, the location of the national champion tree is also given.

State Tree of Kentucky. This section allows people to vote for the state tree. Historically, the state tree of Kentucky has been the tulip poplar (*Liriodendron tulipifera*); however, in 1976 the state tree was changed to Kentucky coffeetree (*Gymnocladus dioica*), then back to tulip poplar in 1994. Visitors to the web site can record their vote for Kentucky state tree and access the current status of the voting (Table 1). The voting is meant to be an educational activity only. Designating the state tree (or changing this designation) requires legislative action.

Table 1. Results from on-line voting for the Kentucky state tree.

Choice	Number of votes ¹	Votes cast (%)
tulip poplar (<i>Liriodendron tulipifera</i>)	3356	40.4
Kentucky coffeetree (<i>Gymnocladus dioica</i>)	1933	23.3
blue ash (<i>Fraxinus quadrangulata</i>)	615	7.4
white oak (<i>Quercus alba</i>)	436	5.3
yellowwood (<i>Cladrastis kentukea</i>)	1916	23.1
white ash (<i>Fraxinus americana</i>)	44	0.5
Total votes	8300	

¹The cumulative number of votes cast, 23 Sept. 2004

Leaf Collection. This section provides a brief overview of the function of leaves, gives examples of several types of leaves (simple vs. compound), and illustrates the diversity of leaf shapes one might expect to find among Kentucky native trees.

Fruit Collection. This section gives examples of fruit types one would expect on native trees. Each type of fruit is defined and illustrated. There is also discussion regarding the ecological importance of different types of fruit, and examples of Kentucky native trees with edible fruit.

BUTTERFLY GARDENING

The Butterfly Gardening pages are divided into four sections: information about butterflies, butterflies common to Kentucky, designing a butterfly garden, and resources for further study.

Information About Butterflies. The information pages are designed in a “frequently asked questions” format. Here visitors can learn about life cycles, commonly observed activities, and characteristics (in contrasts to moths) of butterflies. A glossary is also included in this section.

Butterflies Common to Kentucky. This section begins with an index page containing thumb-nail images of butterflies (with names) that can be clicked for more information. This will allow visitors to more easily identify unknown species. Each species has a separate information page that includes a larger photo, Latin name, approximate size, host plant preference (for both caterpillar and adult), habitat preference, and interesting notes.

Designing a Butterfly Garden. This section contains a list of plants particularly suited to attracting butterflies and/or providing food for their caterpillars. Descriptions, cultural information, and photos of each plant are given as well as a sample garden design that might be used in an elementary school setting.

Resources. Finally, the resources section contains lists of various books (reference, butterfly gardening, extension publications, and children’s books), videos, links to Web sites, and organizations.

DISCUSSION

One mission of the Department of Horticulture and the University of Kentucky Arboretum is outreach education. Each year, hundreds of school children visit the Arboretum as part of school-sanctioned field trips or home-school activities. While these visits help illustrate ecological topics, many teachers are not prepared to take full advantage of plant-based environmental education without additional support material. The Virtual Arboretum web pages may provide such support material. In many cases, these materials may encourage teachers to go beyond the classroom into natural settings when they discuss ecological topics. These materials will also help improve the understanding of future Kentucky residents in the benefits of preserving existing trees and supporting urban forestry in their community.

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Effective Restoration at the Grass Roots®

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NATIVE SEED PRODUCTION

The importance of protecting and restoring native habitats within the Willamette Valley has become apparent to many public agencies, nonprofits, and private landowners. Unfortunately, there has been a lack of native seed available for restoration projects. Heritage Seedlings, hoping to fill this void, has begun the propagation of native Willamette Valley grasses and forbs for seed production. Currently, there are 9 acres in production with 67 different taxa. The taxa range from upland and wet prairie to mixed woodland. Since there has been new urgency placed on upland prairie habitat, the emphasis will be to produce seed from these taxa in large quantities. Table 1 lists the taxa in propagation. Some of the seed will be used for restorations occurring on farm property. Excess seed will be listed for sale on the Native Seed Network.

THREATENED AND ENDANGERED SPECIES PROPAGATION

Heritage Seedlings has also begun a partnership with the Institute for Applied Ecology (IAE). Heritage provides greenhouse space for IAE's threatened and endangered (T&E) propagation at no charge. Heritage is also propagating Nelson's checkermallow (*Sidalcea nelsoniana*) for the Willamette Valley Refuges and Marion County Parks. Four other T&E taxa are in grow-out in hopes of finding appropriate agency sites and/or protected private land sites. The owner of Heritage Seedlings, Mark Krautmann, hopes others in the nursery industry will begin working cooperatively with various nonprofit groups and agencies assisting in the propagation of rare, native plant species.

NATIVE HABITAT RESTORATION AT HERITAGE SEEDLINGS

Heritage Seedlings is currently restoring a 20-acre remnant prairie at the farm property on Joseph St. east of Salem. The restoration is in cooperation with the