Kentucky State Nature Preserves Commission

Report on

Kentucky's Native Flora -

Status and Trends of Rare Plants

Submitted to

Governor Ernie Fletcher and

2006 Kentucky Legislature

Kentucky Ladyslipper (Cypripedium kentuckiense)

Kentucky UNBRIDLED SPIRIT

The General Assembly finds and declares that it is the policy of the Commonwealth to recognize endangered and threatened species of plants for human enjoyment, for scientific purposes, and to ensure their perpetuation as viable components of their ecosystems for the benefit of the people of Kentucky. ~~~ Kentucky Rare Plant Recognition Act. KRS146.600

The 1994 Kentucky General Assembly passed the Kentucky Rare Plant Recognition Act (KRS 146.600 ~ 146.619) recognizing the importance of rare plants to our natural heritage and ensuring their perpetuation as viable components of their ecosystems (Appendix A). This report is required every four years pursuant to KRS 146.610(4). As the responsible agency for activities outlined in the Act, the Kentucky State Nature Preserves Commission (KSNPC) provides information to Governor Fletcher and the 2006 Kentucky General Assembly on the conditions and needs of Kentucky's rare plants. It includes information on the status of rare plants and the program focused on their protection and provides recommendations that address extinction and decline in rare plants and the conservation of the state's native flora.

KSNPC promulgated regulations in 2002 (400 KAR 3:010 to 3:040) to create lists of endangered and threatened plant species and the mechanisms by which plants may be added and removed from the lists (Appendix B). KSNPC will promulgate amendments to these lists every four years; a proposed amendment will be submitted in 2006. Dissemination of this information will hopefully be used to preserve these plants. The Act itself, and the regulations, do not create any obligation on the part of the landowner to protect the rare plants on these lists.

Status of Kentucky's Rare and Native Plant Flora

Of the 2,030 native plants reported from Kentucky, 275 are listed under 400 KAR 3:010 to 3:040. Of these endangered and threatened plants, 117 have at least one population on natural lands that are managed primarily for natural resource protection[1] (i.e. state nature preserves). Only 60 listed plants have more than one occurrence protected (and the vast majority of these

1 This also includes lands such as national parks that are specifically established to protect the natural features of the site; these lands are not designated for multiple use.

have only two). One or a few protected occurrences for these plants is far short of what is needed to ensure that they can sustain themselves in the Kentucky landscape. National guidelines suggest about 100 populations of a plant are needed to consider it secure[2]; a lesser number may be considered if there are stable populations on natural areas dedicated to its protection and management.

Of the 275 plants listed as endangered and threatened, 61 have not been seen in Kentucky for 20 or more years. This generally provides evidence that rare plants are disappearing from our flora and could be indicative of a trend toward extinction. However, the lack of botanical inventories and a sustained monitoring program may account for some of the missing species. Another 56 are listed as special concern under a state list produced by KSNPC and many more that are considered candidates for listing need to be assessed. KSNPC needs additional staff to complete this work.

Values of Native Plants to Kentuckians

Our native flora is an important natural resource that should be utilized to support other important aspects of Kentucky life.

- **Recreation Industry** –Unique rare plants and native flora are important to Kentucky's appeal as an ecotourism destination
- **Heritage** – Kentucky is proud of its natural heritage and native plants are integral in maintaining these ties to our state
- **Research** - Well over 40% of the drugs we use today are derived from native plants
- **Environmental Stability** - Rare plants are excellent indicators of state of the environment and the flora as a whole is essential for environmental stability
- **Health** - Not only do people need green space around them, they need space that is diverse and beautiful. And, they need places for relief from everyday stress.
- **Legacy** - Can we ethically permit a situation that does not leave Kentucky lady's-slipper for the next generation to see? It is an obligation that state government needs to take more seriously.

Primary threats to rare plants are: 1) habitat destruction and land development that fragments the natural landscape; 2) invasive exotic plants; and 3) disruption of ecosystem functions such as suppression of natural fire and damming of rivers and streams. Considering the changing patterns of development and resource use in Kentucky, it is clear that natural areas

[2]This standard methodology is used to assess the status of rare plants and animals by state heritage programs in all fifty states.

are being degraded and converted for other uses. It follows that the native flora is also declining in diversity and that the rare plants will be the first to disappear, simply because their low population numbers make them acutely vulnerable.

Kentucky State Nature Preserves Commission Rare Plant Program

KSNPC functions as a clearinghouse for information on Kentucky's rare flora as well as the native flora as a whole, and issues relating to the protection of native plants. A botanical database maintained by KSNPC (part of the Kentucky Natural Heritage Database) has been developed and is actively maintained with information from many sources (herbaria, literature, government reports and field botanists). From this information, and with input from other botanists, KSNPC develops the regulatory list of state rare plants. The database is an intensive effort that records specific locations of rare plant populations and their quality and is essential in developing science-based strategies for the protection of the flora.

Commission botanists and information specialists provide technical assistance to state and federal agencies and private landowners in assessing impacts to and developing protection strategies for rare plant populations. KSNPC is the only agency in state government that has employees working specifically on this issue.

KSNPC has two permanent full-time botanists. The KSNPC botany program is partially funded through a limited cooperative agreement with the U. S. Fish and Wildlife Service. This federal program provides funds (an average of about $25,000 per year) for species field inventories, population monitoring, site protection and restoration, and public education. However, these activities are focused mainly on the eight federally listed plants in Kentucky. Work completed in 2005 through this program regionwide resulted in removal of one federally listed plant, Eggert's sunflower. This funding, while an asset, may not be used to address state-listed species that are not on the federal list. KSNPC supplements the limited federal funding for the rare plant program by conducting general floristic surveys and other studies through contracts with other government agencies. Again, these funds are helpful, but result in staff botanists distracted from focusing on the protection of state-listed plants. Additional funding is needed to address the decline and loss of species in the Kentucky flora.

KSNPC has added a biologist to our staff who focuses mostly on rare plant management and recovery (although some animal protection as well) through a new federal program for private landowners, the Landowner Incentive Program (LIP). The LIP program has resulted in assistance to 27 landowners in managing rare plant locations on their lands. It is administered by the U. S. Fish and Wildlife Service federally and at the state level by the Kentucky Department of Fish and Wildlife Resources, with KSNPC and The Nature Conservancy as partners. There are two ways that a landowner may get involved. They may choose to use a management crew that is hired specifically for this program and travels from site to site. Or, the landowner may work out an arrangement to be reimbursed for work that they are able to implement on their land such as exotic pest plant removal or fence construction to exclude an area from grazing .

Contribution from other Sources to the Protection of Rare Plants

Universities and colleges continue to contribute to the knowledge of the Kentucky flora. Most notably, Dr. Ronald Jones at Eastern Kentucky University has developed the first comprehensive flora for the state with assistance from Dr. John Theiret at Northern Kentucky University. Another study at Eastern Kentucky University by Dr. Ross Clark is focusing on woody plants. In January 2002, Kentucky scientists published papers adding 21 new species to the state list, and two of these plants were determined to be species that have never been recognized. These numbers are exceptional for a state and emphasize that Kentucky remains a frontier for botanical exploration. It also points to the need for additional research and protection for native plant habitats.

Both public agencies and private conservation groups are protecting rare plants and the native flora on their land. Of the 51 nature preserves under the care of Kentucky State Nature Preserves Commission, 40 have populations of rare plants and most of these have more than one. The Heritage Land Conservation Fund (HLCF) has created incentive for governmental groups to focus efforts on the protection of endangered species. For instance, Livingston County has

acquired land through the HLCF program that protects a very rare plant species and also increases recreation opportunities. Inventory funding has also become available through the Heritage Land Conservation Fund and resulted in the discovery of many rare plant populations on public lands newly purchased through this state program. Additions to nature preserves, state parks, wild rivers, and other state, university and county lands have also added to the knowledge of the entire Kentucky flora.

Other agencies and groups that focus at least some effort on rare plant protection in their management of natural lands include the U.S. Forest Service, National Park Service, U. S. Fish and Wildlife Service, Department of Defense, The Nature Conservancy, Kentucky Natural Lands Trust and Future Fund Land Trust (Louisville). Despite the efforts of these conservation groups, there are still only two Commission permanent botanists to focus efforts on the recovery of 8 federally listed and 375 state-listed plants and monitoring our native flora.

Recommendations for Rare Plant Conservation with Annotations on Progress made 2002-2006

1. **Provide funding for Kentucky's Endangered Plant Program.** KSNPC has relied on outside funding for work on rare plants and the Kentucky flora, including implementation of the Kentucky Rare Plant Recognition Act. We need general fund dollars to support this work. With recent budget shortfalls at the Commission, the staff botanists have directed more of their time toward general botanical contracts and had less time to focus on the rare plant program. Kentucky is far behind many states in gathering information on its state flora. The information gained will improve the accuracy of the endangered and threatened plant list and lead to better use of recovery dollars. Plants have been removed from the list as accumulating information on their status indicated they were not in jeopardy. In other cases plants were removed because information on their occurrence could not be adequately verified. It is important that information establishing the legislated list is science-based and accurate.

   The lack of botanical information reduces our ability to: 1) identify vulnerable plants in our ecosystems while they are still viable; 2) take advantage of opportunities to protect

Kentucky's native flora and develop and implement protection strategies; 3) identify exotic plants that threaten natural lands as well as agricultural crops and recreational lands. Most importantly, if Kentucky can protect and restore populations of state endangered and threatened plants, then federal listing (and the accompanying federal regulations) will not be necessary.

Needs:

A. Provide funding to implement the Kentucky Rare Plant Recognition Act by establishing a botanist position dedicated to the program.

B. Train state biologists with other agencies in rare plant identification and issues through the development of materials focused on Kentucky's flora; seek opportunities to increase awareness of these issues through existing state programs.

We have conducted training sessions on plant identification and restoration needs for federal government employees (Natural Resource Conservation Service) through their invitation. We have begun to expand awareness of rare plant conservation through the LIP program as well.

C. Support efforts to systematically survey Kentucky biological resources as recommended by Smart Growth Task Force (2002) and the Biodiversity Task Force (1995).

2. Develop a public information program for Kentucky rare plants as outlined in the statute. KSNPC regularly gets requests for information on endangered species and native plants from school children and other interested people (see update information below). We have very little non-technical or even technical material that can provide answers to their questions and the information is not available anywhere else. Much more specific educational material is needed on the Kentucky flora and these materials would be a resource for the Kentucky Environmental Education Council to provide to schools.

Needs:

A. Develop educational materials on all of Kentucky's rare plants.

We plan on using federal funding to develop or adapt materials on native plant conservation for use on our website.

B. Provide Internet access to public education materials.

We have utilized federal funding to develop a web site application on rare plant conservation.

C. Provide an educational outreach program on Kentucky's rare plants coordinated with the Kentucky Environmental Educational Council.

We lack staff resources to pursue this.

3. **Provide information to landowners.** Most of the rare plants in the state occur on private lands. Landowners should be provided information about rare plants on or near their property and guidelines for voluntary protection. Landowners should be informed that there are no laws, either federal or state, that restrict their activities because rare plants occur on their land. The overwhelming experience of field biologists with the citizenry is that landowners are not only interested but willing to consider rare plant protection. If a rare plant still exists on a property, it sometimes occurs in an area that has not been, nor will be intensively used by the landowner.

   Kentucky has programs to protect animals and water, to promote game species, to help landowners with forestry resources and there is a network of professionals that carry out these natural resource needs. A few additional well-placed resource professionals with information and materials on protecting biodiversity, including rare plants, would serve an unmet need for the private landowners and serve to protect and maintain species numbers in Kentucky, and possibly obviate the need for more intensive and costly conservation programs in the future.

   At a minimum, technical materials should be developed for natural resource professionals in other fields to provide options to landowners regarding protection of native flora and fauna. Several strategies recommended by the 1995 Biodiversity Council specifically address the need for more technical assistance for both state agencies and private landowners.

Needs:

A. Provide landowners access to information and consultation on rare plant and native flora protection through a landowner contact specialist.

The federal government has provided funding to implement the landowner incentive program that focuses on both federal and state listed species. A portion of this program that KDFWR developed with KSNPC provides one permanent full-time position that has a plant conservation focus. This federal LIP funding is reviewed for budget allocation regularly and continued funding is subject to an application process through the U. S. Fish and Wildlife Service. KDFWR has continued to include KSNPC as a partner but there are no long-term guarantees that this funding will continue. Additional natural resource professionals that specialize in protecting natural lands issues are needed both for private landowners and state agency education on protection of native flora.

B. Develop materials on Kentucky rare plants and their management for use in local conservation programs.

These constituencies should be receptive to assisting in rare plant protection. Again, more staff is needed to meet this need.

4. **Regulation of indiscriminate plant collecting and sale.** Kentucky is one of only two southern states that does not have a law protecting private landowners from illegal collection. Legislation regulating the sale of selected commercially exploited native and rare plants should be enacted. Commercially exploited species, like orchids (including our namesake, the Kentucky lady's-slipper, a rare orchid), are being taken from the wild at alarming rates. Since KSNPC's 1998 report, evidence indicates illegal collection of plants on public and private lands has increased dramatically. Sales of rare plants on the internet as well as through nurseries has increased enormously. Legislation that allows some tracking of this activity through a licensing program is needed.

Needs:

A. Enact legislation restricting the collection of rare and commercially exploited plants without landowner permission. KSNPC has developed legislation providing some safeguards against wild collection of native rare plants from private lands.

B. **Regulate the sale of rare plants.** KSNPC has developed legislation to submit in the 2006 legislative session that establishes a licensing system for nurseries that choose to sell rare plant species. This is a low cost way to establish a rapport with nurseries and an opportunity to assess the impact of these sales on the conservation of these species.

5. **Biological inventories on public lands.** Most state-owned lands have not been inventoried for rare plants; very few public land managers have any idea what native plants they have on these lands. Without knowing where these species occur on publicly owned land, we are wasting easy opportunities to conserve them. We also lack management guidelines that can be provided for rare plant protection, even when the managing agency is aware of the occurrence of the species. The Biodiversity Task Force called for a statewide inventory of state lands in 1995. Biological inventories of state lands will provide information for sound and comprehensive management plans to conserve native flora and fauna.

   Needs:

   A. Develop and implement policies or law on the protection of rare plants on state lands. State agencies should follow the guidance established in the Rare Plant Recognition Act and protect rare native plants on the lands they manage.

   B. Inventory the flora of state-owned lands. As noted, the HLCF program provides funding for some newly acquired lands. Many other state properties have not been surveyed. We need one additional botanist or at least seasonally hired botanists, to get this accomplished.

6. **Educate plant nursery owners, public agencies and other groups about invasive exotic plants and/or restrict their sale.** The cost of controlling invasive exotic plants in Kentucky to protect natural resources, recreation, crop production and other agricultural industries is increasing. Exotic plant invasion is now the second most significant threat to our flora, both nationally and at the state level, following only the conversion of natural lands for other uses. Invasive plants like musk thistle, kudzu and bush honeysuckle are reducing stable and diverse natural systems to monocultures of unsightly non-native weeds. Some of these plants are escaped horticultural plants and others have been introduced through agriculture. While the agriculture industry has become more

attuned to this threat, the nursery industry rarely screens for these problem species and continues to offer known exotic pests for sale.

A chapter of the Southeast Exotic Pest Plant Council has recently been established in Kentucky that focuses on raising awareness of the threat posed by invasive pest plants to natural areas. Most state agencies that manage natural lands in Kentucky are represented on the board as well as interested nonprofit groups.

Needs:

A. Identify those exotic plants that result in significant costs to the state and restrict their sale and distribution through legislation.

B. Improve the procedure for updating the official state list of noxious plants, which is only for agricultural weeds, and expand the list to include those species that threaten natural lands.

C. Provide a newsletter or other information to plant nurseries, public agencies and agricultural groups on invasive noxious plants.

D. Support research on noxious weed control.

E. Eliminate use of exotic pest plants by state and local governments.

Conclusions

The General Assembly, through The Rare Plant Recognition Act, has mandated the protection of rare plants to KSNPC. The Commission is currently proposing the legislation to regulate their sale, require that rare plants be considered when their populations will be impacted by actions on state lands, and provide recourse for landowners to protect their lands from collectors. While a listing is the requisite first step to identify these at-risk species, a program to implement the spirit of this law through public education and focused efforts to reverse the trend of decline and extinction is needed.

The Kentucky State Nature Preserves Commission believes the recommendations set forth herein would provide the most effective and cost efficient measures to reverse the decline of Kentucky's native flora. We seek to protect beauties such as the Kentucky lady's-slipper orchid, the wood lily and numerous other plants that are not only important to our ecology and economy but are part of Kentucky's natural heritage.

This report and other information on Kentucky's rare plants and animals may be accessed at the Kentucky State Nature Preserves Commission webpage at http://naturepreserves.ky.gov.

The Environmental and Public Protection Cabinet

The Kentucky State Nature Preserves Commission

APPENDIX A

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

Department for Natural Resources

Kentucky State Nature Preserves Commission

(Proposed Administrative Regulation)

400 KAR 3:010. Definitions for 400 KAR Chapter 3.

RELATES TO: KRS 146.485, 146.610

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610 requires the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the listing of state threatened and endangered plant species. This administrative regulation will establish definitions for these provisions.

Section 1. Definitions. As used in this chapter, the following terms shall have the following meanings:

(1) "Candidate" means a plant species that appears to be rare in the state, and for which substantive evidence as to its status is not available, and has not yet been included on the state endangered or threatened lists.

(2) “Commission” is defined in KRS 146.605.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

Department for Natural Resources

Kentucky State Nature Preserves Commission

(Proposed Administrative Regulation)

400 KAR 3:020. Criteria for identifying and designating endangered and threatened species of plants.

RELATES TO: KRS 146.485, 146.610

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610 requires the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the listing of state threatened and endangered plant species. This administrative regulation will establish guidelines for identifying and designating threatened and endangered plants to accomplish these provisions.

Section 1. Plant species native to Kentucky which are listed as endangered or threatened on the "United States List of Endangered and Threatened Plants", as set forth at 50 C.F.R. 17.12, shall be considered endangered or threatened pursuant to this Chapter.

Section 2. Plant species native to Kentucky which are listed in the “Species listed in Appendices I, II, and III” to the Convention on International Trade in Endangered Species of Wild Fauna and Flora at 50 C. F. R. 23.23, as codified in the Code of Federal Regulations October 1, 2000, may be considered endangered or threatened pursuant to this Chapter.

Section 3. The Commission may identify and designate additional plant species as endangered or threatened and change or remove these designations as more information becomes available. The Commission may also develop other lists for public education purposes such as plants of special concern. In addition to the factors set forth in KRS 146.610(2)(a), the Commission shall utilize the following criteria in its identification and designation of these additional species:

(1) Only species that have been described and named in a refereed professional scientific journal and widely accepted among professional botanists shall be considered;

(2) Hybrids shall not be listed unless they are known to be naturally reproducing; and

(3) Only plant species native to Kentucky shall be considered.

Section 4. Incorporation by Reference.

(1) The following material is incorporated by reference:

(a) The published list of federally listed plants found at 50 C. F. R. 17.12, as published in the Code of Federal Regulations, October 1, 2000; and

(b) The "Species listed in Appendices I, II, and III" found at 50 C. F. R. 23.23, as published in the Code of Federal Regulations, October 1, 2000.

(2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Kentucky State Nature Preserves Commission, 801 Schenkel Lane, Frankfort, KY 40601, Monday through Friday, 8 a.m. to 4:30 p.m.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

Department for Natural Resources

Kentucky State Nature Preserves Commission

(Proposed Administrative Regulation)

400 KAR 3:030. Procedures for inclusion, removal or change of status of plant species on the state endangered or threatened list.

RELATES TO: KRS 146.485, 146.610

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610 requires the Kentucky

State Nature Preserves Commission to promulgate administrative regulations for the listing of state threatened and endangered plant species. This administrative regulation will establish procedures for nomination and inclusion of plant species to these lists.

Section 1. Candidate Nomination.

(1) Any person may nominate a candidate for inclusion, removal, or change of status on the state endangered or threatened list.

(2) The nomination shall be in writing and shall be submitted to the Director of the Kentucky State Nature Preserves Commission, 801 Schenkel Lane, Frankfort, Kentucky 40601.

(3) Prior to consideration for inclusion on a list, a candidate shall be established as occurring in the state by a voucher specimen deposited in a public herbarium or photographic documentation that has been confirmed by a botanical authority on this plant, and accompanied by written documentation as to the specific location of the collection site, date of collection, description of the habitat and population size.

(4) The Commission may consult with the Kentucky Academy of Science and other experts regarding the status of listed and candidate plant species.

Section 2. Consideration of Candidate.

(1) If the requirements of Section 1 have been satisfied, the Commission shall, utilizing the factors set forth in KRS 146.610(2)(a) and the criteria set forth in 400 KAR 3:020, Section 3, consider the candidate for inclusion, removal or change of status on the state endangered or threatened list.

(2) The Commission may conduct its own investigation as to the status of the candidate.

(3) The Commission may place a candidate into a category for which it is nominated, a category other than the one for which it has been nominated or may decline to place the

candidate on any list.

(4) The Commission shall notify the person who nominated the candidate of the Commission's decision on the listing of the species.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

Department for Natural Resources

Kentucky State Nature Preserves Commission

(Proposed Administrative Regulation)

400 KAR 3:040. Endangered and threatened plant lists.

RELATES TO: KRS 146.485, 146.610

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610 requires the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the listing of state threatened and endangered plant species. This administrative regulation establishes the lists of threatened and endangered plant species.

Section 1. Endangered Lists. The following plant species based on the factors in KRS 146.610(2)(a) and 400 KAR 3:020, Section 3, are considered endangered in the Commonwealth of Kentucky:

Scientific Name	**Common Name**
Vascular Plants	
Acer spicatum	Mountain maple
Adlumia fungosa	Climbing fumitory
Agalinus auriculata	Earleaf agalinis
Agalinis obtusifolia	Ten-lobe agalinis
Agalinis skinneriana	Pale agalinis
Angelica triquinata	Filmy angelica

Apios priceana	Price's potato-bean
Arabis missouriensis	Missouri rockcress
Arabis hirsuta var. adpressipilis	Hairy rockcress
Aster hemisphericus	Southern prairie aster
Aster radula	Low rough aster
Berberis canadensis	American barberry
Botrychium matricariifolium	Matricary grapefern
Botrychium oneidense	Blunt-lobe grapefern
Calamagrostis canadensis var.	Blue-joint reed grass
Calamagrostis porteri ssp.	Reed bent grass
Calopogon tuberosus	Grasspink
Carex aestivalis	Summer sedge
Carex atlantica ssp. Capillacea	Prickly bog sedge
Carex joorii	Cypress-swamp sedge
Carex juniperorum	Cedar sedge
Carex lanuginosa	Woolly sedge
Carex leptonervia	Finely-nerved sedge
Castanea dentata	American chestnut
Castilleja coccinea	Scarlet indian paintbrush
Cheilanthes alabamensis	Alabama lip fern
Cheilanthes feei	Fee's lip fern
Chelone obliqua var. obliqua	Red turtlehead
Chrysogonum virginianum	Green-and-gold
Chrysosplenium americanum	American golden-saxifrage
Collinsonia verticillata	Whorled horse-balm
Comptonia peregrina	Sweet-fern
Conradina verticillata	Cumberland-rosemary
Convallaria montana	American lily-of-the-valley
Corallorrhiza maculata	Spotted coralroot
Cymophyllus fraserianus	Fraser's sedge
Cypripedium candidum	Small white lady's-slipper
Deschampsia cespitosa ssp. Glauca	Tufted hair grass
Draba cuneifolia	Wedge-leaf whitlow-grass
Drosera brevifolia	Dwarf sundew
Echinodorus parvulus	Dwarf burhead
Eriophorum virginicum	Tawny cotton-grass
Eryngium integrifolium	Blue-flower coyote-thistle
Eupatorium semiserratum	Small-flowered thoroughwort
Eupatorium steelei	Steele's joe-pye-weed
Gentiana flavida	Yellow gentian
Gentiana puberulenta	Prairie gentian
Gymnopogon brevifolius	Shortleaf skeleton grass
Helianthemum canadense	Canada frostweed
Helianthus silphioides	Silphium sunflower
Heracleum lanatum	Cow-parsnip
Hexastylis contracta	Southern heartleaf
Houstonia serpyllifolia	Michaux's bluets
Hydrocotyle americana	American water-pennywort

Hydrolea ovata	Ovate fiddleleaf
Iris fulva	Copper iris
Isoetes butleri	Butler's quillwort
Isoetes melanopoda	Blackfoot quillwort
Koeleria macrantha	June grass
Krigia occidentalis	Western dwarf dandelion
Leucothoe recurva	Fetterbush
Listera australis	Southern twayblade
Lobelia appendiculata var.	Gattinger's lobelia
Lonicera dioica var. orientalis	Wild honeysuckle
Lonicera reticulata	Grape honeysuckle
Ludwigia hirtella	Hairy ludwigia
Lycopodiella appressa	Southern bog club-moss
Lycopodiella inundatum	Northern bog club-moss
Lycopodium clavatum	Running-pine
Lysimachia fraseri	Fraser's loosestrife
Lysimachia terrestris	Swamp-candles
Maianthemum stellatum	Starflower false solomon's-seal
Marshallia grandiflora	Large-flowered barbara's-buttons
Matelea carolinensis	Carolina anglepod
Melampyrum lineare var.	American cowwheat
Melanthium parviflorum	Small-flowered false hellebore
Melanthium virginicum	Virginia bunchflower
Minuartia cumberlandensis	Cumberland sandwort
Mirabilis albida	Pale umbrella-wort
Muhlenbergia bushii	Bush's muhly
Nestronia umbellula	Conjurer's-nut
Oenothera linifolia	Thread-leaf sundrops
Oenothera perennis	Small sundrops
Oldenlandia uniflora	Clustered bluets
Onosmodium molle ssp.	Hairy false gromwell
Onosmodium molle ssp. Molle	Soft false gromwell
Onosmodium molle ssp. Occidentale	Western false gromwell
Parnassia asarifolia	Kidney-leaf grass-of-parnassus
Parnassia grandifolia	Largeleaf grass-of-parnassus
Paronychia argyrocoma	Silverling
Philadelphus pubescens	Hoary mockorange
Platanthera psycodes	Small purple-fringed orchid
Poa saltuensis	Drooping blue grass
Pogonia ophioglossoides	Rose pogonia
Polygala cruciata	Cross-leaf milkwort
Polymnia laevigata	Tennessee leafcup
Prenanthes alba	White rattlesnake-root
Prenanthes aspera	Rough rattlesnake-root
Prenanthes barbata	Barbed rattlesnake-root
Psoralidium tenuiflorum	Few-flowered scurf-pea
Ptilimnium nuttallii	Nuttall's mock bishop's-weed

Pycnanthemum albescens	White-leaved mountain-mint
Rhododendron canescens	Hoary azalea
Rhynchosia tomentosa	Hairy snout-bean
Rhynchospora macrostachya	Tall beakrush
Rubus canadensis	Smooth blackberry
Rudbeckia subtomentosa	Sweet coneflower
Sabatia campanulata	Slender marsh-pink
Sagittaria rigida	Sessile-fruit arrowhead
Salvia urticifolia	Nettle-leaf sage
Sambucus racemosa ssp. Pubens	Red elderberry
Sanguisorba canadensis	Canada burnet
Saxifraga micranthidifolia	Lettuce-leaf saxifrage
Schisandra glabra	Bay starvine
Scirpus expansus	Woodland bulrush
Scirpus fluviatilis	River bulrush
Scirpus hallii	Hall's bulrush
Scirpus heterochaetus	Slender bulrush
Scirpus microcarpus	Small-fruit bulrush
Scirpus verecundus	Bashful bulrush
Scleria ciliata var. ciliata	Fringed nut-rush
Silene regia	Royal catchfly
Silphium laciniatum var. laciniatum	Compassplant
Solidago shortii	Short's goldenrod
Sparganium eurycarpum	Large bur-reed
Spiraea alba	Narrow-leaved meadowsweet
Spiranthes odorata	Sweetscent ladies'-tresses
Sporobolus heterolepis	Northern dropseed
Stachys eplingii	Epling's hedge-nettle
Streptopus roseus var. perspectus	Rosy twistedstalk
Symphoricarpos albus	Snowberry
Talinum calcaricum	Limestone fameflower
Tephrosia spicata	Spiked hoary-pea
Thermopsis mollis	Soft-haired thermopsis
Torreyochloa pallida	Pale manna grass
Toxicodendron vernix	Poison sumac
Tragia urticifolia	Nettle-leaf noseburn
Trichostema setaceum	Narrow-leaved bluecurls
Trientalis borealis	Northern starflower
Trifolium reflexum	Buffalo clover
Trillium nivale	Snow trillium
Trillium pusillum	Least trillium
Utricularia macrorhiza	Greater bladderwort
Vaccineum erythrocarpum	Highbush cranberry
Viburnum latanoides	Alderleaf viburnum
Viburnum nudum	Possum haw viburnum
Woodsia appalachiana	Mountain woodsia
Xyris difformis	Carolina yellow-eye-grass

MOSSES	
Brachythecium populeum	Matted feather moss
Bryum cyclophyllum	A moss
Bryum miniatum	A moss
Dicranodontium asperulum	A moss
Entodon brevisetus	A moss
Herzogiella turfacea	A moss
Oncophorus raui	A moss
Orthotrichum diaphanum	A moss
Polytrichum piliferum	A haircap moss
Polytrichum strictum	A haircap moss
Sphagnum quinquefarium	A sphagnum moss
Tortula norvegica	Tortula

Section 2. Threatened Lists.

The following plant species, based on the factors in KRS 146.610(2)(a) and the criteria listed in 400 KAR 3:020 Section 3, are considered threatened in the Commonwealth of Kentucky:

Scientific Name	*Common Name*
Aconitum uncinatum	Blue monkshood
Adiantum capillus-veneris	Southern maidenhair-fern
Aesculus pavia	Red buckeye
Agrimonia gryposepala	Tall hairy groovebur
Amianthium muscitoxicum	Fly-poison
Amsonia tabernaemontana var.	Eastern bluestar
Arabis perstellata	Braun's rock cress
Armoracia lacustris	Lake cress
Aster concolor	Eastern silvery aster
Aster drummondii var. texanus	Texas aster
Aster pilosus var. priceae	White heath aster
Aster saxicastellii	Rockcastle aster
Baptisia tinctoria	Yellow wild indigo
Bartonia virginica	Yellow screwstem
Berchemia scandens	Supplejack
Boykinia aconitifolia	Brook saxifrage
Cabomba caroliniana	Carolina fanwort
Calamagrostis porteri ssp. Porteri	Porter's reed grass
Calycanthus floridus var. glaucus	Sweetshrub
Carex alata	Broadwing sedge
Carex crebriflora	Coastal plain sedge
Carex decomposita	Epiphytic sedge

Carex gigantea	Large sedge
Carya aquatica	Water hickory
Castanea pumila	Allegheny chinkapin
Ceanothus herbaceus	Prairie redroot
Cimicifuga rubifolia	Appalachian bugbane
Clematis crispa	Blue jasmine leather-flower
Cypripedium parviflorum	Small yellow lady's-slipper
Delphinium carolinianum	Carolina larkspur
Deschampsia flexuosa	Crinkled hair grass
Echinodorus berteroi	Burhead
Elodea nuttallii	Waterweed
Euphorbia mercurialina	Mercury spurge
Fimbristylis puberula	Hairy fimbristylis
Forestiera ligustrina	Upland privet
Glandularia canadensis	Rose verbena
Glyceria acutiflora	Sharp-scaled manna grass
Gratiola pilosa	Shaggy hedge-hyssop
Halesia tetraptera	Common silverbell
Hedeoma hispidum	Rough pennyroyal
Helianthemum bicknellii	Plains frostweed
Helianthus eggertii	Eggert's sunflower
Heterotheca subaxillaris var. latifolia	Broad-leaf golden-aster
Hieracium longipilum	Hairy hawkweed
Hypericum crux-andreae	St. Peter's-wort
Juncus filipendulus	Long-styled rush
Juniperus communis var. depressa	Ground juniper
Lathyrus palustris	Vetchling peavine
Leavenworthia exigua var. laciniata	Glade cress
Leavenworthia torulosa	Necklace glade cress
Liatris cylindracea	Slender blazingstar
Lilium philadelphicum	Wood lily
Lilium superbum	Turk's cap lily
Limnobium spongia	American frog's-bit
Liparis loeselii	Loesel's twayblade
Listera smallii	Kidney-leaf twayblade
Lobelia nuttallii	Nuttall's lobelia
Maianthemum canadense	Wild lily-of-the-valley
Malvastrum hispidum	Hispid false mallow
Melampyrum lineare var. latifolium	American cow-wheat
Melanthium woodii	False hellebore
Minuartia glabra	Appalachian sandwort
Monotropsis odorata	Sweet pinesap
Muhlenbergia cuspidata	Plains muhly
Nemophila aphylla	Small-flower baby-blue-eyes
Oenothera triloba	Stemless evening-primrose
Orontium aquaticum	Goldenclub
Paxistima canbyi	Canby's mountain-lover

Perideridia americana	Eastern eulophus
Philadelphus inodorus	Mock orange
Phlox bifida ssp. Bifida	Cleft phlox
Phlox bifida ssp. Stellaria	Starry cleft phlox
Platanthera cristata	Yellow-crested orchid
Platanthera integrilabia	White fringeless orchid
Polygala polygama	Racemed milkwort
Pontederia cordata	Pickerel-weed
Potamogeton pulcher	Spotted pondweed
Prenanthes crepidinea	Nodding rattlesnake-root
Ptilimnium capillaceum	Mock bishop's-weed
Rubus whartoniae	Wharton's dewberry
Sagittaria graminea	Grass-leaf arrowhead
Saxifraga michauxii	Michaux's saxifrage
Schizachne purpurascens	Purple-oat
Scutellaria saxatilis	Rock skullcap
Sedum telephioides	Allegheny stonecrop
Silene ovata	Ovate catchfly
Silphium laciniatum var. robinsonii	Compassplant
Solidago albopilosa	White-haired goldenrod
Solidago curtisii	Curtis' goldenrod
Solidago roanensis	Roan mountain goldenrod
Spiraea virginiana	Virginia spiraea
Spiranthes lucida	Shining ladies'-tresses
Spiranthes magnicamporum	Great plains ladies'-tresses
Sporobolus clandestinus	Rough dropseed
Stellaria fontinalis	Water stitchwort
Talinum teretifolium	Roundleaf fameflower
Taxus canadensis	Canadian yew
Thaspium pinnatifidum	Cutleaf meadow-parsnip
Thuja occidentalis	Northern white-cedar
Trepocarpus aethusae	Trepocarpus
Trifolium stoloniferum	Running buffalo clover
Trillium undulatum	Painted trillium
Viburnum molle	Missouri arrow-wood
Viola walteri	Walter's violet
Vitis rupestris	Sand grape
Zizaniopsis miliacea	Southern wild rice