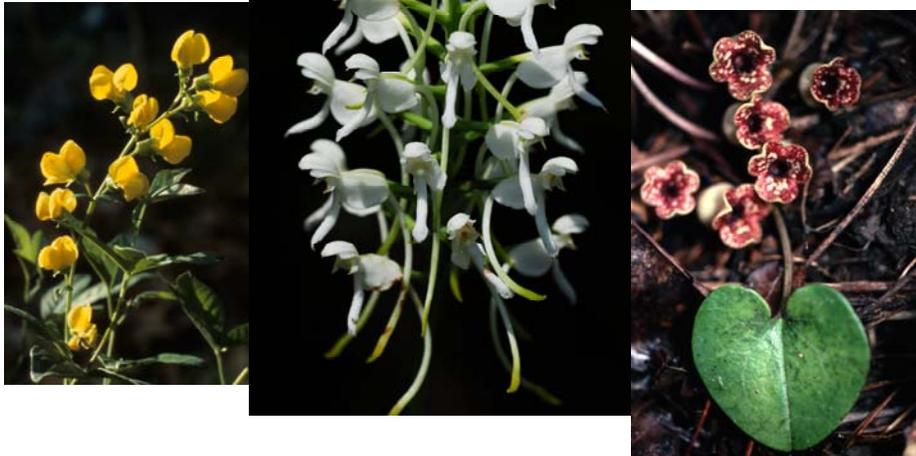


Kentucky State Nature Preserves Commission
Report on
Kentucky's Native Flora -
Status and Trends of Rare Plants

Submitted to
Gov. Steve Beshear and
2010 Kentucky General Assembly



Kentucky
UNBRIDLED SPIRIT™

Kentucky State Nature Preserves Commission is administratively
attached to the Energy and Environment Cabinet
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Photos on front cover from left to right:

Soft-haired thermopsis

(*Thermopsis mollis*) Add state listing –Endangered

White Fringeless orchid

(*Platanthera integrilabia*) Add state listing –Endangered

Southern Heartleaf

(*Hexastylis contracta*) Add state listing –Endangered

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. KRS 146.600

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. This report is third in a series and 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 Gov. Beshear and the 2010 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 updated regulations (400 KAR 3:010 to 3:040) (Appendix A) in 2006 to revise the lists of endangered and threatened plant species . KSNPC will consider promulgation of amendments to these lists every four years. The Act itself, and the regulations, do not create any obligation on the part of the landowners, either public or private, to protect the rare plants on these lists but provide an avenue to demonstrate the importance of rare plants in understanding environmental health.

Status of Kentucky's Rare and Native Plant Flora

Of the 2,030 native plants reported from Kentucky, 274 are listed under 400 KAR 3:010 to 3:040. Most (88 percent) of these species have at least one population reported from conservation lands, although the number of protected populations for many of these plants is far short of what is needed to ensure their continued existence in the state. Roughly half of the rare plants on conservation lands are represented by fewer than five occurrences statewide and about 50 of those have only one. Thirty-two do not occur on any conservation lands. Also, the degree

of awareness of the existence of rare plants on their lands by land managers and protection on these lands is variable. For instance, rare plants that are on wild river corridors and some other state lands are under no active management.

Of the 275 plants listed as endangered and threatened, 58 have not been seen in Kentucky for 20 or more years. This generally provides evidence that 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 species 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.

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 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.

The Value of Native Plants to Kentuckians

Our native flora is an important natural resource that supports Kentucky life – its unique environment, culture and livelihoods.

- ❖ **Recreation Industry** – Our native flora and unique rare plants 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.
- ❖ **Resources** – Native plants are linked to our economy. For instance, over 40 percent of the drugs used today are derived from native plants.
- ❖ **Environmental Stability** - Rare plants are excellent indicators of the state of our 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 fund more fully.

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

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.

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 \$30,000 per year) for inventories, population monitoring, site protection and restoration, and public education. However, these



Kentucky glade cross (shown here) was added as a federal candidate in 2009. It's worldwide range is Bullitt and southern Jefferson counties.

activities are focused mainly on the eight federally listed plants found in Kentucky. This federal 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 with funding from conducting floristic surveys and other studies for government agencies.

Again, these funds are helpful, but result in staff botanists with very little focus on the protection of state-listed plants. Also, presently one botanist serves as manager for the Heritage Branch of KSNPC to offset the shortage of positions in the

program as a whole, further diverting attention from the rare plant program. Additional state funding is needed to address the decline and loss of species identified in the Rare Plant Recognition Act.

Since 2006, KSNPC has lost one staff biologist position that focused on rare plant recovery. The Landowner Incentive Program (LIP) was cancelled by the U. S. Fish and Wildlife Service. The LIP program had provided direct assistance and incentives to landowners interested in managing rare plant locations on their lands. It should also be noted that plants as a group are excluded from some sources of wildlife funding, the federal State Wildlife Grant program for instance, making it more challenging to find funding for this work.

Contribution from other Sources to the Protection of Rare Plants

Universities and colleges continue to contribute to the knowledge of the Kentucky flora. In 2002, Kentucky scientists published papers adding 21 new species to the state flora and two of these plants were new to science (previously undescribed). These numbers are exceptional for any 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.

As noted, the U. S. Fish and Wildlife Service provides regular funding to KSNPC primarily focusing on federally listed plants (eight listed and three candidates). They also utilize federal programs to pursue recovery actions, oversee and coordinate activities with other federal agencies activities and those activities relating to federal funding.

Both public agencies and private conservation groups are protecting rare plants and the native flora on their land. Of the 60 nature preserves under the care of KSNPC, 44 have populations of rare plants and some of these have more than one. The Heritage Land Conservation Fund (HLCF) has increased the number of conservation lands. For instance, Jessamine County acquired land through the HLCF program that protects one of the most outstanding gorges of the Kentucky River as well as several rare plant species including mountain lover (*Paxistima canbyii*). In addition, the Jessamine Creek Gorge project provides more opportunities for recreation, protects the quality of water running directly into the Kentucky River and buffers the stream ecosystem. Funding for plant inventories through the HLCF has resulted in the discovery of rare plant populations on public lands newly purchased through this state program, adding to 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. Fish and Wildlife Service (USFWS), U.S. Forest Service, National Park Service, Department of Defense, The Nature Conservancy, Kentucky Natural Lands Trust, Future Fund Land Trust and Riverfields Inc. While KSNPC is working with these groups, especially the USFWS, very little sustained attention is dedicated to rare plant conservation. And, despite these efforts, there are still only two Commission botanists to coordinate and focus efforts on the recovery of 274 state-listed (and additional 56 special concern) plants and monitoring our native flora.

Recommendations for Rare Plant Conservation with Annotations on Progress made 2006-2010

- 1. Provide funding for Kentucky's Endangered Plant Program.** KSNPC has relied on outside funding to support 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 limited recovery dollars. For instance, some plants have been removed from the list as more information accumulated on their status indicated they were not in jeopardy. It is important that information used to prepare the list is science-based and accurate.

The lack of sufficient 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 native species 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, restoration needs and guidelines for implementing federal programs (primarily programs administered by Natural Resource Conservation Service) through their invitation.

- 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). 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 including Internet access to public education materials.**

With the use of federal funds, some progress has been made in developing a Web site that provides information on individual plants listed in the Rare Plant Recognition Act. The book, *Rare Wildflowers of Kentucky*, was published by University Press of Kentucky for the general public. It outlines the plight of rare plants in the state through text and over 200 photos taken by Dr. Thomas Barnes, University of Kentucky. KSNPC biologists were also authors.



The Commission is publishing a book through University Press of Kentucky (appropriate for middle school age and up) that provides some general materials on the importance of biodiversity and rare plant conservation. Educational materials on Kentucky's rare plants and native flora and their importance to a healthy environmental are still needed.

B. 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. It is also a source of pride that they harbor an important piece of Kentucky's natural heritage.

Kentucky has programs to protect animals and water, to promote game species, to help landowners with forestry resources with 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 private landowners, and serve to protect and maintain species numbers in Kentucky, and possibly obviate the need for more intensive and costly conservation programs and even federal listing in the future.

At a minimum, technical materials should be developed for natural resource professionals in other fields to identify options for 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.

Natural resource professionals that specialize in biodiversity protection on natural lands, especially native flora, are needed both for private landowners and state agency education.

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 does not have a law protecting private landowners from illegal collection on their lands other than laws relating to trespass. Several surrounding states, including Tennessee, and other states in the south like Mississippi and North Carolina have such legislation. Legislation regulating the collection and 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. Legislation that allows tracking of this activity through a licensing program is needed to prevent further decline of these over collected plants.

Needs:

- A. Establish legislation restricting the collection of rare and commercially exploited plants without landowner permission.** KSNPC has developed legislation providing some safeguards against illegal collection of wild native rare plants from private lands.
- B. Regulate the sale of rare plants.** KSNPC plans to develop legislation to submit in the 2011 legislative session that establishes a licensing system for commercial

nurseries that choose to sell state listed 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 their 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 (1995) and the Smart Growth Task Force (2002) called for a systematic statewide inventory of state lands. Biological inventories of state lands will provide information for sound and comprehensive management plans to conserve native flora and fauna.

As noted above, botanical surveys are being conducted on conservation lands newly purchased under the Heritage Land Conservation Fund. Additionally, KSNPC was funded by the National Park Service to survey rare plant populations at one national park, information that had not been updated for 20 years.

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 enormous and 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 as still the number one threat. Invasive plants like kudzu and bush honeysuckle are reducing stable and diverse natural systems to monocultures of unsightly non-native weeds. Some of these 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 pest plants for sale.

The Kentucky Exotic Pest Plant Council focuses on raising awareness of the threat posed by invasive pest plants to natural areas and agricultural crops. 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 and rare plants.**
- 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 and identify alternatives to the use of pest plants to revegetate disturbed areas such as road construction and logging sites.**
- E. Eliminate use of exotic pest plants by state and local governments and control invasive pest plants on state lands.**

Conclusions

The General Assembly, through The Rare Plant Recognition Act, has delegated the protection of rare plants to KSNPC. This Act provides for publishing a list of plants that are trending toward extinction in Kentucky. 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 Commission recommends the following proposals:

- Enact legislation to regulate the sale and collection of rare plants to provide recourse for landowners to protect their lands from unscrupulous collectors, and to develop a low-cost way to establish a rapport with nurseries and assess the impact of these sales on the conservation of rare native plants.
- Require that rare plants be considered in the use and management of state lands.
- Use well-placed resource professionals to work with public and private landowners on rare plant education and recovery with the goal of reducing the need for more intensive and costly conservation programs in the future.
- Increase efforts to curtail the distribution of exotic pest plants as well as the spread of these pests that will ultimately be an economic burden on the state.

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 a stable and healthy natural environment 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>.



Energy and Environmental Cabinet



Kentucky State Nature Preserves Commission

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APPENDIX A

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 authorizes the Kentucky State Nature Preserves Commission to promulgate administrative regulations for identification and designation of state threatened and endangered plant species. This administrative regulation establishes definitions for these provisions.

Section 1. Definitions. (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. (28 Ky.R. 2121; Am. 2333; eff. 5-16-2002.)

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

RELATES TO: KRS 146.485, 146.610, 50 C.F.R. 17.12, 23.23

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610(2)(a) and (b) authorizes the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the identification and designation of state threatened or endangered plant species. This administrative regulation establishes the requirements for identifying and designating threatened or endangered plants.

Section 1. In addition to the factors established in KRS 146.610(2)(a), the commission shall utilize the following criteria in its identification and designation of 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. (28 Ky.R. 2122; Am. 2334; eff. 5-16-2002; 33 Ky.R. 1634; 2278; eff. 3-9-07.)

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 authorizes the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the identification and designation of state threatened and endangered plant species. This administrative regulation establishes 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 of this administrative regulation 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 (1) 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. (28 Ky.R. 2123; Am. 2334; eff. 5-16-2002.)

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

RELATES TO: KRS 146.485, 146.610

STATUTORY AUTHORITY: KRS 146.485, 146.610

NECESSITY, FUNCTION, AND CONFORMITY: KRS 146.610(2)(a) and (b) authorizes the Kentucky State Nature Preserves Commission to promulgate administrative regulations for the identification and designation of state threatened or endangered plant species. This administrative regulation establishes the lists of threatened or 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 1, shall be considered endangered in the Commonwealth of Kentucky:

Scientific Name	Common Name
Vascular Plants	
<i>Acer spicatum</i>	Mountain maple
<i>Adlumia fungosa</i>	Climbing fumitory
<i>Agalinis auriculata</i>	Earleaf agalinis
<i>Agalinis obtusifolia</i>	Ten-lobe agalinis
<i>Agalinis skinneriana</i>	Pale false foxglove
<i>Amsonia tabernaemontana</i> var. <i>gattingeri</i>	Eastern blue-star
<i>Angelica atropurpurea</i>	Great angelica
<i>Angelica triquinata</i>	Filmy angelica
<i>Apios priceana</i>	Price's potato-bean
<i>Aralia nudicaulis</i>	Wild Sarsaparilla
<i>Berberis Canadensis</i>	American barberry
<i>Bolboschoenus fluviatilis</i>	River bulrush
<i>Botrychium matricariifolium</i>	Matricary grapefern
<i>Calamagrostis porteri</i> ssp. <i>insperata</i>	Reed bent grass
<i>Calamovilfa arcuata</i>	Cumberland sandgrass
<i>Calopogon tuberosus</i>	Grasspink
<i>Carex aestivalis</i>	Summer sedge
<i>Carex atlantica</i> ssp. <i>Capillacea</i>	Prickly bog sedge
<i>Carex jorii</i>	Cypress-swamp sedge
<i>Carex juniperorum</i>	Cedar sedge
<i>Carex leptoneura</i>	Finely-nerved sedge
<i>Carex reniformis</i>	Reniform sedge
<i>Carex roanensis</i>	Roan mountain sedge
<i>Carex tetanica</i>	Rigid sedge
<i>Castanea dentate</i>	American chestnut
<i>Castilleja coccinea</i>	Scarlet indian paintbrush
<i>Cheilanthes feei</i>	Fee's lip fern
<i>Chelone obliqua</i> var. <i>obliqua</i>	Red turtlehead
<i>Chrysogonum virginianum</i>	Green-and-gold
<i>Collinsonia verticillata</i>	Whorled horse-balm
<i>Comptonia peregrina</i>	Sweet-fern
<i>Conradina verticillata</i>	Cumberland-rosemary
<i>Convallaria montana</i>	American lily-of-the-valley
<i>Corallorrhiza maculata</i>	Spotted coralroot
<i>Cymophyllus fraserianus</i>	Fraser's sedge
<i>Cypripedium candidum</i>	Small white lady's-slipper
<i>Cypripedium kentuckiense</i>	Kentucky lady's-slipper
<i>Deschampsia cespitosa</i>	Tufted hair grass
<i>Draba cuneifolia</i>	Wedge-leaf whitlow-grass
<i>Drosera brevifolia</i>	Dwarf sundew
<i>Drosera intermedia</i>	Spoon-leaved sundew
<i>Echinodorus parvulus</i>	Dwarf burhead
<i>Eriophorum virginicum</i>	Tawny cotton-grass
<i>Eryngium integrifolium</i>	Blue-flower coyote-thistle
<i>Eupatorium semiserratum</i>	Small-flowered thoroughwort
<i>Eurybia hemisphericus</i>	Southern prairie aster
<i>Eurybia radula</i>	Low rough aster
<i>Gentiana flavida</i>	Yellow gentian
<i>Gentiana puberulenta</i>	Prairie gentian
<i>Glyceria acutiflora</i>	Sharp-scaled manna-grass
<i>Goodyera repens</i>	Lesser rattlesnake-plantain
<i>Gymnopogon brevifolius</i>	Shortleaf skeleton grass
<i>Halesia tetraptera</i>	Common silverbell
<i>Helianthemum bicknellii</i>	Plains frostweed
<i>Helianthemum canadense</i>	Canada frostweed

<i>Helianthus silphoides</i>	Silphium sunflower
<i>Hexastylis contracta</i>	Southern heartleaf
<i>Houstonia serpyllifolia</i>	Michaux's bluets
<i>Hydrocotyle americana</i>	American water-pennywort
<i>Hydrocotyle ranunculoides</i>	Floating pennywort
<i>Hydrolea ovata</i>	Ovate fiddleleaf
<i>Iris fulva</i>	Copper iris
<i>Isoetes butleri</i>	Butler's quillwort
<i>Isoetes melanopoda</i>	Blackfoot quillwort
<i>Koeleria macrantha</i>	June grass
<i>Krigia occidentalis</i>	Western dwarf dandelion
<i>Leavenworthia exigua</i> var. <i>laciniata</i>	Kentucky glade-cress
<i>Lesquerella globosa</i>	Globe bladderpod
<i>Leucothoe recurva</i>	Fetterbush
<i>Lobelia gattingeri</i>	Gattinger's lobelia
<i>Lonicera dioica</i> var. <i>orientalis</i>	Wild honeysuckle
<i>Lonicera prolifera</i>	Grape honeysuckle
<i>Ludwigia hirtella</i>	Hairy ludwigia
<i>Lycopodiella appressa</i>	Southern bog club-moss
<i>Lycopodiella inundatum</i>	Northern bog club-moss
<i>Lycopodium clavatum</i>	Running-pine
<i>Lysimachia terrestris</i>	Swamp-candles
<i>Maianthemum stellatum</i>	Starflower false solomon's-seal
<i>Marshallia grandiflora</i>	Large-flowered barbara's-buttons
<i>Matelea carolinensis</i>	Carolina anglepod
<i>Melampyrum lineare</i> var. <i>pectinatum</i>	American cowwheat
<i>Melanthium virginicum</i>	Virginia bunchflower
<i>Minuartia cumberlandensis</i>	Cumberland sandwort
<i>Muhlenbergia bushii</i>	Bush's muhly
<i>Nestronia umbellula</i>	Conjurer's-nut
<i>Oenothera linifolia</i>	Thread-leaf sundrops
<i>Oenothera perennis</i>	Small sundrops
<i>Oldenlandia uniflora</i>	Clustered bluets
<i>Onosmodium hispidissimum</i>	Hairy false gromwell
<i>Onosmodium occidentale</i>	Western false gromwell
<i>Parnassia asarifolia</i>	Kidney-leaf grass-of-parnassus
<i>Parnassia grandifolia</i>	Largeleaf grass-of-parnassus
<i>Paronychia argyrocoma</i>	Silverling
<i>Philadelphus pubescens</i>	Hoary mockorange
<i>Phlox bifida</i> ssp. <i>stellaria</i>	Starry-cleft phlox
<i>Platanthera integrilabia</i>	White fringeless orchid
<i>Platanthera psycodes</i>	Small purple-fringed orchid
<i>Poa saltuensis</i>	Drooping blue grass
<i>Pogonia ophioglossoides</i>	Rose pogonia
<i>Polygala cruciata</i>	Cross-leaf milkwort
<i>Polygala paucifolia</i>	Gaywings
<i>Polymnia laevigata</i>	Tennessee leafcup
<i>Potamogeton amplifolius</i>	Bigleaf pondweed
<i>Prenanthes alba</i>	White rattlesnake-root
<i>Prenanthes aspera</i>	Rough rattlesnake-root
<i>Prenanthes barbata</i>	Barbed rattlesnake-root
<i>Ptilimnium nuttallii</i>	Nuttall's mock bishop's-weed
<i>Pycnanthemum albescens</i>	White-leaved mountain-mint
<i>Rhododendron canescens</i>	Hoary azalea
<i>Rhynchosia tomentosa</i>	Hairy snout-bean
<i>Rhynchospora macrostachya</i>	Tall beakrush
<i>Rubus canadensis</i>	Smooth blackberry
<i>Rudbeckia subtomentosa</i>	Sweet coneflower
<i>Sabatia campanulata</i>	Slender marsh-pink
<i>Sagittaria rigida</i>	Sessile-fruit arrowhead
<i>Salvia urticifolia</i>	Nettle-leaf sage
<i>Sambucus racemosa</i> ssp. <i>pubens</i>	Red elderberry

<i>Sanguisorba canadensis</i>	Canada burnet
<i>Saxifraga micranthidifolia</i>	Lettuce-leaf saxifrage
<i>Schisandra glabra</i>	Bay starvine
<i>Schoenoplectis hallii</i>	Hall's bulrush
<i>Scirpus expansus</i>	Woodland bulrush
<i>Scleria ciliata</i>	Fringed nut-rush
<i>Scutellaria arguta</i>	Hairy skullcap
<i>Silene ovata</i>	Ovate catchfly
<i>Silene regia</i>	Royal catchfly
<i>Solidago shortii</i>	Short's goldenrod
<i>Sparganium eurycarpum</i>	Large bur-reed
<i>Spiraea alba</i>	Narrow-leaved meadowsweet
<i>Spiranthes odorata</i>	Sweetscent ladies'-tresses
<i>Sporobolus heterolepis</i>	Northern dropseed
<i>Symphoricarpos albus</i>	Snowberry
<i>Talinum calcaricum</i>	Limestone fameflower
<i>Talinum teretifolium</i>	Roundleaf fameflower
<i>Tephrosia spicata</i>	Spiked hoary-pea
<i>Thermopsis mollis</i>	Soft-haired thermopsis
<i>Toxicodendron vernix</i>	Poison sumac
<i>Tragia urticifolia</i>	Nettle-leaf noseburn
<i>Trichophorum planifolium</i>	Bashful bulrush
<i>Trichostema setaceum</i>	Narrow-leaved bluecurls
<i>Trientalis borealis</i>	Northern starflower
<i>Trifolium reflexum</i>	Buffalo clover
<i>Trillium nivale</i>	Snow trillium
<i>Trillium pusillum</i>	Least trillium
<i>Utricularia macrorhiza</i>	Greater bladderwort
<i>Vaccinium erythrocarpum</i>	Highbush cranberry
<i>Veratrum parviflorum</i>	Small-flowered false hellebore
<i>Viburnum latanoides</i>	Alderleaf viburnum
<i>Viburnum nudum</i>	Poosum haw viburnum
<i>Xyris difformis</i>	Carolina yellow-eye-grass
Mosses	
<i>Brachythecium populeum</i>	Matted feather moss
<i>Bryum cyclophyllum</i>	A moss
<i>Bryum miniatum</i>	A moss
<i>Dicranodontium asperulum</i>	A moss
<i>Entodon brevisetus</i>	A moss
<i>Herzogiella turfacea</i>	A moss
<i>Oncophorus raii</i>	A moss
<i>Orthotrichum diaphanum</i>	A moss
<i>Polytrichum strictum</i>	A haircap moss
<i>Sphagnum quinquefarium</i>	A sphagnum moss
<i>Tortula norvegica</i>	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 1, shall be considered threatened in the Commonwealth of Kentucky:

Scientific Name	Common Name
<i>Aconitum uncinatum</i>	Blue monkshood
<i>Adiantum capillus-veneris</i>	Southern maidenhair-fern
<i>Aesculus pavia</i>	Red buckeye
<i>Agrimonia gryposepala</i>	Tall hairy groovebur
<i>Amianthium muscitoxicum</i>	Fly-poison
<i>Arabis hirsuta</i>	Hairy rockcress
<i>Arabis perstellata</i>	Braun's rockcress
<i>Armoracia lacustris</i>	Lake cress
<i>Baptisia tinctoria</i>	Yellow wild indigo
<i>Bartonia virginica</i>	Yellow screwstem
<i>Berchemia scandens</i>	Supplejack
<i>Boykinia aconitifolia</i>	Brook saxifrage
<i>Cabomba caroliniana</i>	Carolina fanwort
<i>Calamagrostis porteri</i> ssp. <i>porteri</i>	Porter's reed grass

<i>Calycanthus floridus</i> var. <i>glaucus</i>	Sweetshrub
<i>Carex alata</i>	Broadwing sedge
<i>Carex appalachica</i>	Appalachian sedge
<i>Carex crebriflora</i>	Coastal plain sedge
<i>Carex decomposita</i>	Epiphytic sedge
<i>Carex gigantea</i>	Large sedge
<i>Carex rugosperma</i>	Umbel-like sedge
<i>Carex straminea</i>	Straw sedge
<i>Carya aquatica</i>	Water hickory
<i>Carya carolinae-septentrionalis</i>	Southern shagbark hickory
<i>Castanea pumila</i>	Allegheny chinkapin
<i>Ceanothus herbaceus</i>	Prairie redroot
<i>Chrysosplenium americanum</i>	American golden-saxifrage
<i>Cimicifuga rubifolia</i>	Appalachian bugbane
<i>Clematis crispa</i>	Blue jasmine leather-flower
<i>Cypripedium parviflorum</i> var. <i>parviflorum</i>	Small yellow lady's-slipper
<i>Delphinium carolinianum</i>	Carolina larkspur
<i>Deschampsia flexuosa</i>	Crinkled hair grass
<i>Echinodorus berteroi</i>	Burhead
<i>Elodea nuttallii</i>	Waterweed
<i>Eupatorium steelei</i>	Steele's joe-pye-weed
<i>Euphorbia mercurialina</i>	Mercury spurge
<i>Eurybia saxicastellii</i>	Rockcastle aster
<i>Fimbristylis puberula</i>	Hairy fimbristylis
<i>Forestiera ligustrina</i>	Upland privet
<i>Gratiola pilosa</i>	Shaggy hedge-hyssop
<i>Hedeoma hispidum</i>	Rough pennyroyal
<i>Helianthus eggertii</i>	Eggert's sunflower
<i>Heterotheca subaxillaris</i> var. <i>latifolia</i>	Broad-leaf golden-aster
<i>Hieracium longipilum</i>	Hairy hawkweed
<i>Hydrophyllum virginianum</i>	Eastern waterleaf
<i>Hypericum crux-andreae</i>	St. Peter's-wort
<i>Juncus filipendulus</i>	Long-styled rush
<i>Juniperus communis</i> var. <i>depressa</i>	Ground juniper
<i>Lathyrus palustris</i>	Vetchling peavine
<i>Leavenworthia torulosa</i>	Necklace glade cress
<i>Liatris cylindracea</i>	Slender blazingstar
<i>Lilium philadelphicum</i>	Wood lily
<i>Lilium superbum</i>	Turk's cap lily
<i>Limnobiium spongia</i>	American frog's-bit
<i>Liparis loeselii</i>	Loesel's twayblade
<i>Listera smallii</i>	Kidney-leaf twayblade
<i>Lobelia nuttallii</i>	Nuttall's lobelia
<i>Maianthemum canadense</i>	Wild lily-of-the-valley
<i>Malvastrum hispidum</i>	Hispid false mallow
<i>Melampyrum lineare</i> var. <i>pectinatum</i>	American cowwheat
<i>Minuartia glabra</i>	Appalachian sandwort
<i>Monotropsis odorata</i>	Sweet pinesap
<i>Muhlenbergia cuspidata</i>	Plains muhly
<i>Nemophila aphylla</i>	Small-flower baby-blue-eyes
<i>Oclemena acuminata</i>	Whorled aster
<i>Oenothera triloba</i>	Stemless evening-primrose
<i>Orontium aquaticum</i>	Goldenclub
<i>Paxistima canbyi</i>	Canby's mountain-lover
<i>Perideridia americana</i>	Eastern eulophus
<i>Philadelphus inodorus</i>	Mock orange
<i>Phlox bifida</i> ssp. <i>bifida</i>	Cleft phlox
<i>Platanthera cristata</i>	Yellow-crested orchid
<i>Polygala polygama</i>	Racemed milkwort

<i>Pontederia cordata</i>	Pickerel-weed
<i>Potamogeton pulcher</i>	Spotted pondweed
<i>Prenanthes crepidinea</i>	Nodding rattlesnake-root
<i>Ptilimnium capillaceum</i>	Mock bishop's-weed
<i>Quercus nigra</i>	Water oak
<i>Quercus texana</i>	Nuttall's oak
<i>Sagina fontinalis</i>	Water stitchwort
<i>Sagittaria graminea</i>	Grass-leaf arrowhead
<i>Sagittaria platphylla</i>	Delta arrowhead
<i>Saxifraga michauxii</i>	Michaux's saxifrage
<i>Schizachne purpurascens</i>	Purple-oat
<i>Scutellaria saxatilis</i>	Rock skullcap
<i>Sedum telephioides</i>	Allegheny stonecrop
<i>Silphium laciniatum</i>	Compassplant
<i>Solidago albopilosa</i>	White-haired goldenrod
<i>Solidago curtisii</i>	Curtis' goldenrod
<i>Solidago roanensis</i>	Roan mountain goldenrod
<i>Spiraea virginiana</i>	Virginia spiraea
<i>Spiranthes lucida</i>	Shining ladies'-tresses
<i>Spiranthes magnicamporum</i>	Great plains ladies'-tresses
<i>Spiranthes ochroleuca</i>	Yellow nodding ladies'-tresses
<i>Sporobolus clandestinus</i>	Rough dropseed
<i>Stenanthium gramineum</i>	Eastern featherbells
<i>Symphotrichum concolor</i>	Eastern silvery aster
<i>Symphotrichum priceae</i>	White heath aster
<i>Taxus canadensis</i>	Canadian yew
<i>Thaspium pinnatifidum</i>	Cutleaf meadow-parsnip
<i>Thuja occidentalis</i>	Northern white-cedar
<i>Trifolium stoloniferum</i>	Running buffalo clover
<i>Trillium undulatum</i>	Painted trillium
<i>Veratrum woodii</i>	Wood's bunchflower
<i>Viburnum molle</i>	Missouri arrow-wood
<i>Viburnum rafinesquianum</i> var. <i>rafinesquianum</i>	Downey arrow-wood
<i>Viola walteri</i>	Walter's violet
<i>Vitis rupestris</i>	Sand grape
<i>Zizaniopsis miliacea</i>	Southern wild rice
Mosses	
<i>Abietinella abietina</i>	Wire fern moss
<i>Anomodon rugelii</i>	A moss
<i>Cirriphyllum piliferum</i>	A moss
<i>Neckera pennata</i>	A moss

(28 Ky.R. 2124; Am. 2334; eff. 5-16-2002; 33 Ky.R. 1635; 2278; eff. 3-9-07.)