

Report on Kentucky's Native Flora

Status and Trends of Rare Plants 2014

Submitted to Governor Steve Beshear and the 2014 Kentucky General Assembly



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Images on front cover: Indian paintbrush (*Castela coccinea*) by Thomas G. Barnes

Executive Summary

The General Assembly, through The Rare Plant Recognition Act, has delegated the protection of rare plants to the Kentucky State Nature Preserves Commission (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.

Kentucky's rare plant flora continues to decline as changes in land use, pest plants, wild collecting, and other threats degrade their habitat. This report makes recommendations to implement practical measures that would be effective in conserving rare plants including:

- Funding to allow the two botanists for the rare plant program to focus on state endangered and threatened plants by working with public and private landowners on education and recovery to prevent further decline of these plants and reducing the need for more intensive and costly conservation programs in the future, including federal listing.
- Adding provisions to the law that will help in identifying unethical collection practices involving rare native plants, assisting both landowners and citizens who are impacted by these practices.
- Increase efforts to curtail the distribution and spread of invasive pest plants that will ultimately be an economic burden on the state.

The Kentucky State Nature Preserves Commission believes these recommendations provide the most effective and cost efficient measures to reverse the decline of Kentucky's native flora, preserving a healthy natural environment and its benefits to the state's economy, the well being of its citizens and its natural heritage.



Protected under the U.S. Endangered Species Act, Price's potato bean is located in western Kentucky.

Introduction

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 fourth in a series as required every four years pursuant to KRS 146.610(4). Fulfilling the charge to protect our state's native plants, particularly those that are declining, the Kentucky State Nature Preserves Commission (KSNPC) provides information to Governor Beshear and the 2014 Kentucky General Assembly to achieve this goal. The report 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 reviews and revises the list of endangered and threatened plants (400 KAR 3:010 to 3:040) (Appendix A) every four years as needed. The Act itself, and the regulations, do not create any obligation on the part of landowners, either public or private, to protect the rare plants on these lists, but they provide an educational tool to demonstrate the importance of rare plants in understanding environmental health.

Plants are essential to both wildlife and humans through provision of key services such as food, shelter, fiber, and medicine ... protecting our wild flora goes to the heart of the human condition. Yet without focused conservation attention to the growing plight of the nation's plant species, we are at risk of losing significant portions of our wild heritage and the ecological resilience that comes with that diversity.

Stein and Gravuer,
NatureServe, 2008

The Value of Native Plants to Kentuckians

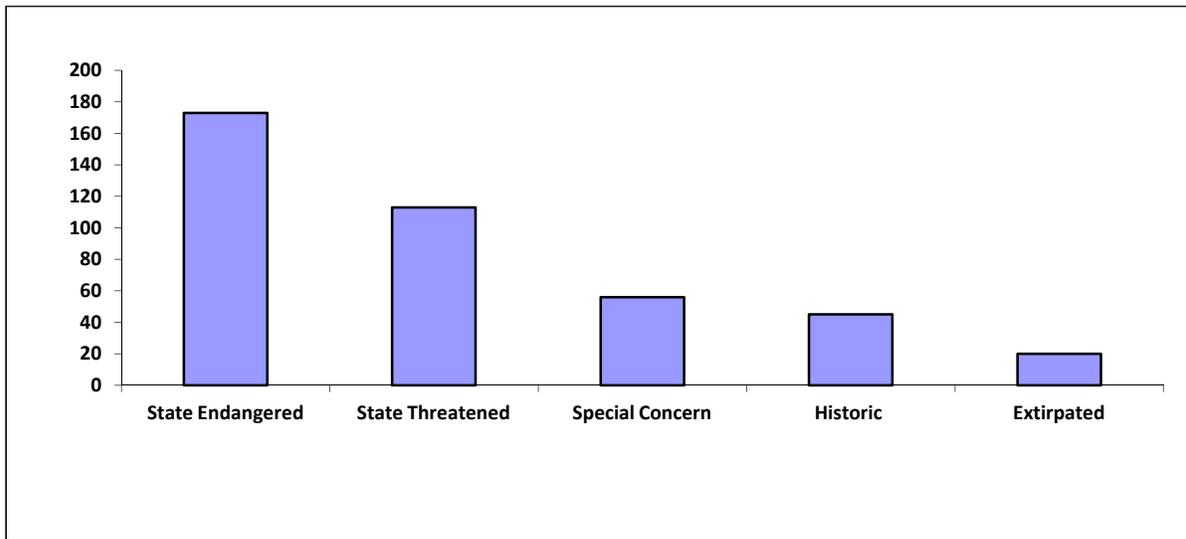
Our native flora is an important natural resource that supports Kentucky life – its unique environment, culture and livelihoods.

- ❖ **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 history and our future.
- ❖ **Resources** – Native plants are linked to our economy. 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** - Ensuring a healthy environment for future generations is a basic responsibility of those living today, as it was for our forbearers. Allowing rare gems like Kentucky lady’s-slipper (below) to disappear from the landscape would be poor stewardship indeed.



Status of Kentucky's Rare and Native Plants

Of the 2,030 native plants reported from Kentucky, 286 are listed as threatened or endangered under 400 KAR 3:010 to 3:040. In addition to the state threatened and endangered plants listed under the Rare Plant Recognition Act, KSNPC also tracks rare plants that are special concern, historic and extirpated (chart below).



Plants species assigned endangered status are the most vulnerable to decline and extinction from the state (and fewer than five occurrences statewide are known for the vast majority). Endangered is, by far, the most common designation for those plants considered rare and declining in Kentucky. Note also that 45 plant species are considered historic, meaning they have not been seen for over 20 years. Surveys need to be conducted to determine their status. Add to this, the number of 331 individual locations for endangered and threatened species in Kentucky that are “historic”, and the need for additional surveys to assess the status of both the historic species and the historic occurrences becomes more acute. KSNPC needs additional staff to complete this work.

Threats to Rare Plants

Primary threats to rare plants are:

- 1) habitat destruction and land development that fragment the natural landscape;
- 2) disruption of ecosystem functions such as suppression of natural fire and damming of rivers and streams; and
- 3) invasive exotic plants.

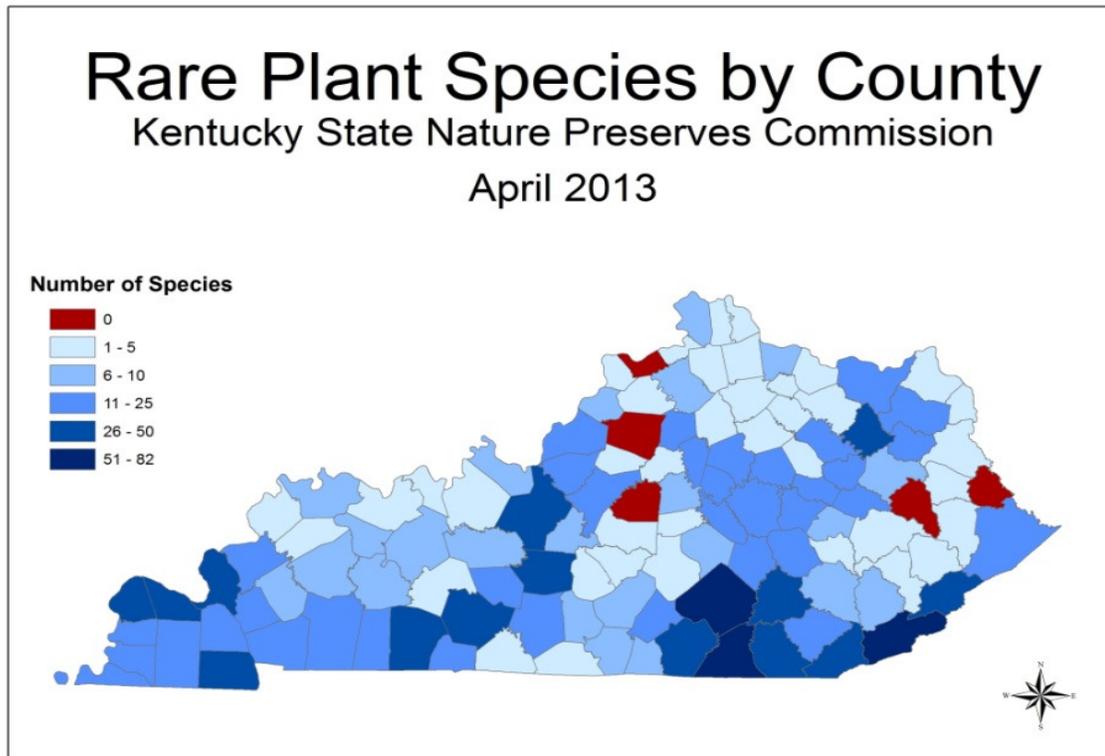


Bush honeysuckle - the green shrub dominating this hillside in early spring, is an invasive exotic originally planted for landscaping and has cost the state thousands of dollars as well as acres of natural lands.

Land development and resource use in Kentucky continue to degrade and convert natural areas to other uses. One estimate is that Kentucky is losing 105 acres per day¹. 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.

¹ Zourarakis, D. T. 2009. Land cover change entropy: the 2001-05 quadrennium in Kentucky. Fifth International Workshop on the Analysis of Multi-temporal Remote Sensing Images, Groton, Conn.

Where Do Rare Plants Occur in the State?



There are rare plants (including special concern plants) in nearly every Kentucky County. While the majority of rare plant populations occur on private lands, there are many populations that occur on conservation lands; these are lands, public or private, that are managed as natural areas. Thirty-five (35) endangered and threatened plants do not occur on any conservation land and eight-one (81) have five or fewer occurrences on conservation lands. Many more populations are needed to ensure their long term survival in the state. Further, the level of awareness by land managers of the existence of rare plants on their lands and actual protection efforts are variable, and many areas do not have the staff to manage sensitive resources, including rare plants. With reductions in staff in recent years, all agencies are having trouble controlling or eliminating exotic pest plants and other pathogens, resulting in degradation of habitat where rare plants occur, increasing their vulnerability.

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.*



Kentucky glade cress was proposed for federal listing in 2013. Its worldwide range is Bullitt and southern Jefferson counties. Image: Thomas G. Barnes

strategies for the protection of the flora.

A botanical database maintained by KSNPC has been developed and is actively maintained with information from many sources (herbaria, literature, government reports and field botanists). Using 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

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 with a 25% state match) for inventories, population monitoring, site protection and restoration, and public education. However, these 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 plants that are not on the federal list. KSNPC also accepts contract work to conduct floristic surveys and other studies for government agencies. Again, these funds are helpful, but result in staff botanists

with very little time to focus on the protection of state-listed plants. Presently one botanist serves as manager for the Heritage Branch to offset the shortage of positions in the program as a whole, further diverting time from the rare plant program. Additional state funding is needed to address the decline and loss of species identified in the Kentucky Rare Plant Recognition Act.

Since 2006, KSNPC has lost one staff biologist position that focused on rare plant recovery. The federally funded 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. This position was crucial to assisting landowners.

Contribution from other Sources to the Protection of Rare Plants

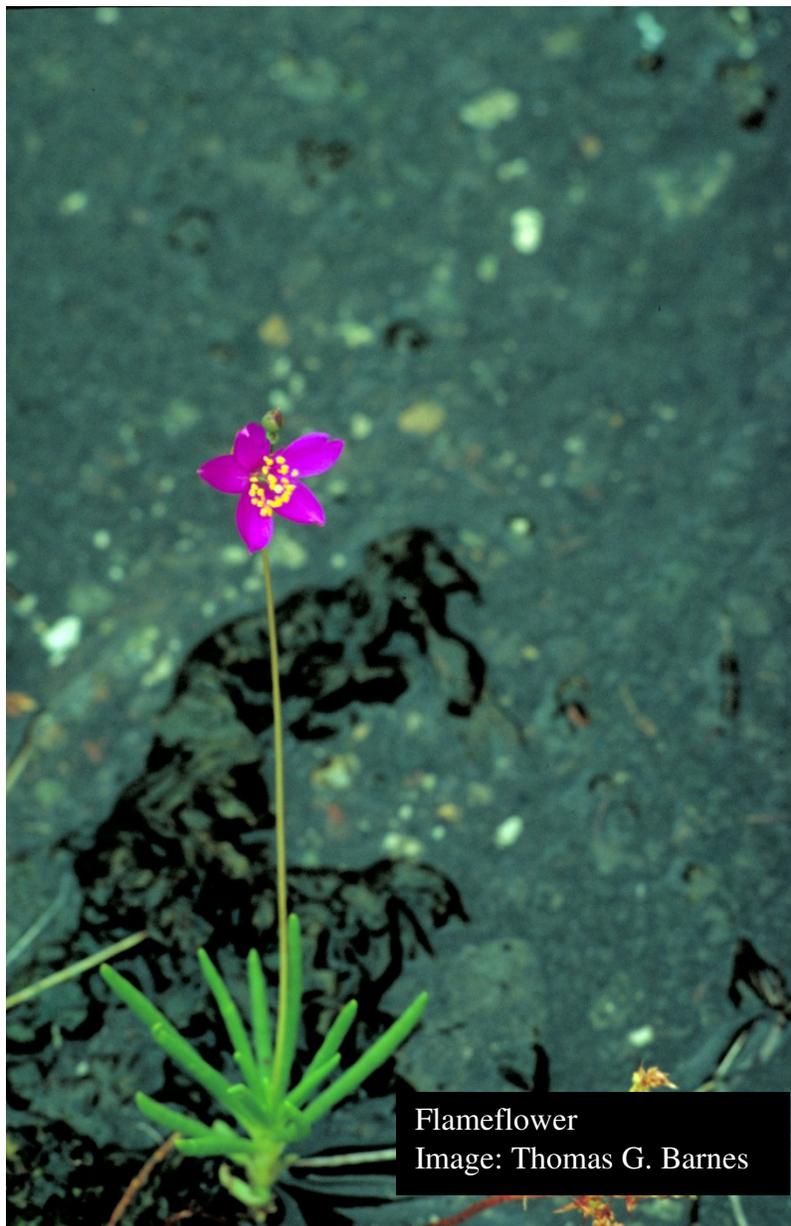
Professionals and citizens interested in botany provide information on rare plants. Dr. Julian Campbell, for instance, has completed an atlas of the flora of the state that is a remarkable contribution. Naturalists who locate rare plants send records to KSNPC botanists. Botanists working at universities continue to provide information to the Commission on rare plants either through research or technical assistance (plant identifications, etc.).



As noted, the U. S. Fish and Wildlife Service provides regular funding to KSNPC to focus on federally listed plants (eight listed and three candidates). They also utilize federal programs to pursue recovery actions for federally listed species, oversee and coordinate activities with other federal agencies such as U. S. Forest Service and National Park Service, which also manage select rare plants on their lands.

Both public agencies and private conservation groups are protecting rare plants and the native flora on their land. Of the 61 state 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 in Kentucky and some of them have populations of rare plants. 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, like The Nature Conservancy, focus some effort on rare plant protection in their management of natural lands. Recently, the Kentucky Native Plant Society donated funding to KSNPC for a restoration project for fameflower, a tiny but showy endangered plant that occurs at only one limestone glade near Bowling Green. While KSNPC is working with these groups, 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 286 state-listed (and additional 56 special concern) plants and monitoring our native flora.



Recommendations for Rare Plant Conservation, and Progress made 2010-2014

- 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 continued to use the majority of their time on general botanical contracts and have less time to focus on the rare plant program. With less focus on this work, the accuracy of Kentucky's official list of rare plants will suffer and become less science-based. Up-to-date information on endangered and threatened plants is needed to guide environmental planning by other state and federal agencies and to enable effective conservation efforts.

The lack of sufficient botanical information reduces our ability to: 1) identify vulnerable plants while they are still viable; 2) take advantage of opportunities to protect Kentucky's native flora and develop and implement protection strategies including federal programs; 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 be avoided.

Needs:

- A. Provide state funding to implement the Kentucky Rare Plant Recognition Act and enable existing staff to focus on conservation.** Additional funding would permit staff to provide technical assistance to private and public groups, and pursue effective and practical conservation actions. Staff need to focus on monitoring and identifying plants and populations that are declining. KSNPC needs to replace the landowner assistant position that was lost to reduced federal funding. Funding for seasonal positions or bidding contracts is specifically needed to assist with management, especially invasive pest control.

B. Train state biologists with other agencies in rare plant identification and conservation through the development of materials and other opportunities focused on Kentucky's flora. Funding is needed to implement this action. This would increase the state's effectiveness in addressing the loss of plant species with a relatively small investment of time and funding.

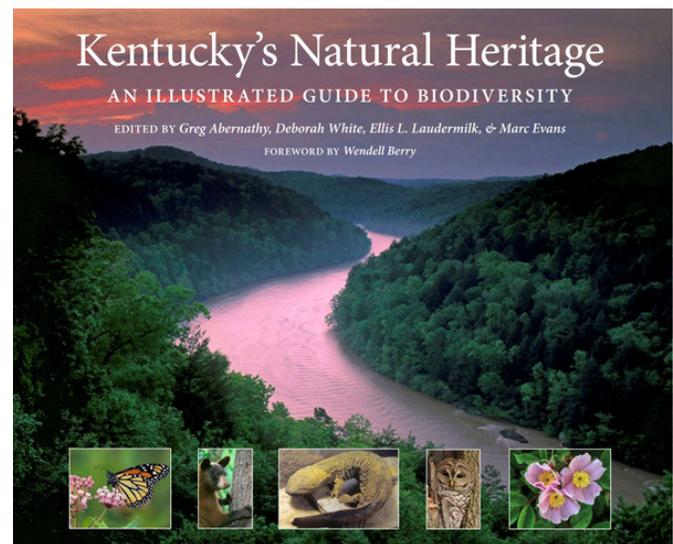
2. Develop a public information program for Kentucky rare plants as outlined in the statute. KSNPC regularly gets requests for information on endangered species and native plants from school children, private industry, and other individuals and groups. While the online rare plant database has been expanded, more educational material is needed. These materials would be a resource for the Kentucky Environmental Education Council to provide to K-12 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, a web site that provides information on plants listed in the Rare Plant Recognition Act is available including how to identify them, photographs, distribution maps, management recommendations and more. The web site needs regular updating and expansion of materials.

KSNPC published a book with the University of Kentucky Press that included information on the native and rare flora of the state and promotes conservation. A partnership with Kentucky Educational Television has produced on-line teaching resources for grades 4-12 from the book.



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.** Many of the rare plants in the state occur on private lands. The overwhelming experience of field biologists with the citizenry is that landowners are not only interested, but willing to assist in rare plant protection. It is a source of pride that they harbor an important part of Kentucky's natural heritage. A reduction in federal funds ended our private lands coordinator.

Kentucky has programs to protect animals and water, to promote game species, to help landowners with forestry resources and a network of professionals to carry out these natural resource needs. A few additional resource professionals with information and materials on protecting biodiversity, including rare plants, would serve an unmet need for private landowners. This would serve to protect and maintain species numbers in Kentucky, and help eliminate the need for more intensive and costly conservation programs and even federal listing in the future. As 94% of Kentucky's land is privately owned conservation cannot succeed without private landowner participation.

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, similar to those available for animals and other natural resources. At a minimum, funding to support these activities will enable the existing KSNPC staff to begin working in this capacity.

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

materials using federal funding that provide information on the importance of endangered species conservation, use of native plants in landscaping, and the costs, both economic and ecological, of the spread of invasive pest plants. The cost of printing will limit our ability to distribute these materials and more guides and materials are needed.

- 4. Regulation of plant poaching and sale.** Kentucky does not have a law protecting private landowners from the illegal collection of native plants 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 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. Evidence indicates illegal collection of plants on public and private lands has increased dramatically. Sale 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 select rare and commercially exploited plants without landowner permission.** KSNPC has developed legislation providing some safeguards against illegal collection of wild native rare plants from public and private lands (see attached fact sheet). We need nurseries selling select commercially exploited species to keep records of the sources for these plants.



Painted trillium is a known target for illegal collectors. This spring wildflower is a state threatened species and is only found in the Cumberland Mountains area.

Image: Thomas G. Barnes

5. Biological inventories on public lands. Most state-owned lands have not been inventoried for rare plants; public land managers may not have any idea what native plants they have on their lands. Without knowing where rare and vulnerable species occur on publicly owned land, opportunities to conserve them are missed. The Biodiversity Task Force (1995) and the Smart Growth Task Force (2002) called for a systematic statewide inventory of state lands.

Needs:

A. Provide information on public lands to the managing agency and consult on conservation of the species present. KSNPC needs sufficient staff to provide information on known occurrences of rare plants to these public land agencies and consult on practical conservation of the habitat.

B. 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 to protect rare native plants on the lands they manage.

C. Inventory the flora of state-owned lands. As noted, the HLCF program provides inventory funding for some newly acquired lands, but many existing state properties have not been surveyed. State-owned lands should be inventoried to assess state rare plants.

6. Educate plant nursery owners, public agencies and the public about invasive exotic plants and/or restrict their sale. The cost of controlling invasive exotic plants in Kentucky to protect natural resources, recreation lands, 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. Invasive plants like kudzu and bush honeysuckle are degrading stable and diverse natural systems into 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 problem species and continues to offer known exotic pest plants for sale. The quality of natural lands will be reduced as pest plants engulf forests and grasslands alike, increasing erosion, reducing property values and harming natural resources.

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.

Needs:

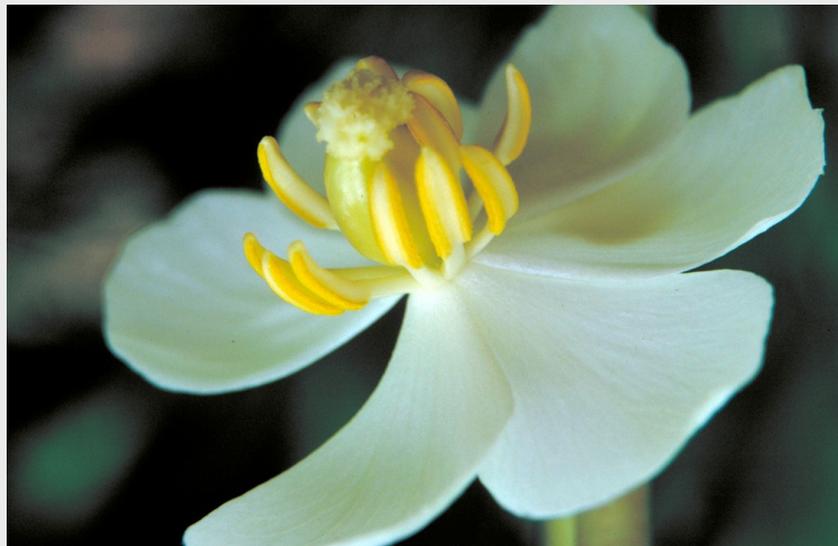
- A. **Identify those exotic plants that result in significant costs to the state and restrict their sale and distribution through legislation.** While the list of threatening pest plants was revised last year, no progress has been made in restricting sales and use of these plants for landscaping. They will continue to cost the state millions of dollars to control as long as their introduction as landscape plants provides avenues for them to escape from yards and other areas and spread across natural areas in Kentucky.
- 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.** The cooperation of the nursery industry is critical in screening and avoiding new pest plants that are being proposed for marketing. KEPPC is providing marketing and other materials. More participation is needed as well as more public education efforts.
- D. **Support research on invasive 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 invasive pest plants by state and local governments and control invasive pest plants on state lands.** The control of pest plants on state lands has become a monumental task and will become worse. A cooperative management effort or shared strike force among land management agencies is needed.

Conclusions

The Kentucky State Nature Preserves Commission presents recommendations to the Governor and the General Assembly to address declines in the health and abundance of endangered plants and the flora as whole. These are:

- Enact legislation to regulate the wild collection and sale of rare plants to reduce collection pressure on select endangered plants and work with the nursery industry to reduce unscrupulous collectors.
- Provide additional funding to KSNPC for work with public and private landowners on rare plant education and recovery, including assisting landowners in utilizing existing federal programs, with the goal of reducing the need for more intensive and costly conservation programs in the future.
- Increase efforts to curtail the distribution of invasive pest plants as well as the spread of these pest plants that will ultimately be an economic burden on the state.

The Kentucky State Nature Preserves Commission believes these recommendations provide the most effective and cost efficient measures to reverse the decline of Kentucky's native flora, preserving a healthy natural environment and its benefits to the state's economy, the well being of its citizens and its natural heritage.



Mayapple, a plant that is found in forests across the state, has a compound that is effective in cancer treatments as well as treatment for rheumatism and anti-malarial and anti-fungal agents. Taxol®, a compound found in another native and rare plant in the state (Taxus) is being used in cancer treatment. While the use of plants has been advanced by science, it developed from wisdom passed down from herbalists for generations. Every plant species is a potential source for medicine, food, new materials and technologies that improve our lives, and a resource to conserve.

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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