



## Missouri Bladderpod

### *Recovery on the Horizon*

Once a species facing extinction, the Missouri bladderpod now has a bright future due to efforts by concerned people.

The Missouri bladderpod, named for its bladder-like seedpods, was listed as endangered in February 1987. Progress toward recovery led to its reclassification to threatened in October 2003. It is a short (about 8 inches high) annual plant with beautiful yellow flowers that bloom from April through May. The bladderpod survives hot Missouri summers as seeds that germinate in fall when the temperature drops. The plant spends winter as a small cluster of leaves. In spring, stems and flowers develop, seeds are produced and shed, and the life cycle starts over again.

#### Missouri Bladderpod and Glades

The Missouri bladderpod is a species that inhabits glades. The word glade comes from the Old English word “glad,” meaning a shining place. In the Ozarks, glades are truly “sunlit islands” in the forest. A parklike bench on a hillside where the bedrock is exposed or nearly so, a glade resembles a miniature prairie perched among the hills. The old-timers referred to a hilltop glade, or “knob,” as a bald, a word that describes the glade’s most recognizable characteristic: treeless and brushless.” (Modeland, P. R. *Glades: Sunlit Islands in the Hills*. <http://www.runningriver.com/>)

In Missouri and Arkansas there are six different types of glades depending on the underlying bedrock: limestone, dolomite, sandstone, chert, igneous rock, and shale. The Missouri bladderpod is found primarily on limestone glades (although there is one collection from a dolomite glade in Arkansas).

Because glades tend to be hot and dry, some of the animals and plants found



Photo by Jim Rathert, Missouri Department of Conservation

*Prescribed burns in August help to maintain open glade habitat and invigorate glade plants like the Missouri bladderpod.*

there are more typical of southwestern deserts including scorpions, tarantulas, collared lizards and prickly pear cacti. Other plants inhabiting glades include those that are more typical of prairies, such as big and little bluestem, Indian grass, Indian paintbrush, prairie larkspur, purple coneflower, and blazing stars. Historically the open nature of glades was a result of being frequently burned by lightning-caused fires or fire set by Native Americans. Today, glades must be actively managed to maintain their unique plant and animal communities.

Typical of most endangered species recovery efforts, conservation of the Missouri bladderpod results in conserving the natural community and habitat associated with this species. The species occurs primarily on limestone glades that have a varied array of plant and animal life.

#### History

In the early 1980s concern arose about the Missouri bladderpod’s future due to low population numbers and the fact that

many of those were threatened by ongoing land uses. After it was listed as endangered, the Missouri Department of Conservation (MDOC), The Nature Conservancy (TNC), the U.S. Fish & Wildlife Service, and concerned individuals began conservation actions. As required by the Endangered Species Act, a Recovery Plan was prepared and actions needed to recover the bladderpod were identified and prioritized. Listed below are the most important actions identified in the Recovery Plan and the progress made to date in implementing those activities.

#### Surveys and Observations

When listed, the Missouri bladderpod was known from only nine sites in three counties and was thought to be Missouri’s only state endemic plant. Many areas, however, had not been surveyed for this species. Unfortunately, there is often little money available for plant and nongame animal surveys until a species is federally listed. The need for additional surveys was identified as a recovery task in the Service’s approved Recovery Plan. Surveys of glades in and

adjacent to counties where existing populations of Missouri bladderpod occurred resulted in the discovery of 52 new populations in 4 counties by 1995. Then, in 1997, the bladderpod was found in Izard County, Arkansas, during a field trip by the Arkansas Native Plant Society. Investigations following this discovery also brought to light the fact that the Missouri bladderpod had been collected in Washington County, Arkansas in 1992 and rediscovered at this site in 2002. Missouri no longer had bragging rights to its only state-endemic plant.

### Monitoring

Although knowing the range and number of populations is important when evaluating the health of a species, we also need to learn what is happening within individual populations over time. Monitoring enables us to evaluate population trends and determine whether conditions for the bladderpod are improving, declining, or stable. Monitoring showed us that wide yearly fluctuations in numbers were characteristic of this species. For example, the number of Missouri bladderpods at Bloody Hill Glade ranged from a high of 303,466 plants in 1991 to a low of 0 in 1993 and 1994. Therefore long-term monitoring is necessary to determine populations trends.

### Research

To manage for a species, we need to know what environmental conditions are necessary for the plant to survive and reproduce. With this information we can develop management guidelines best suited to the species and adequately monitor it until it is fully recovered. Research conducted to date includes seed bank ecology; factors affecting germination and seedling establishment; genetic diversity among populations; and techniques to control exotic plants in bladderpod habitat.

### Management

Research results were and are being used to develop management techniques to improve habitat conditions on sites where the Missouri bladderpod occurs. The MDOC, Missouri Department of Natural Resources, TNC, National Park Service, and private landowners use these management techniques to

improve and maintain bladderpod populations. Management tools include prescribed burns, chainsawing, and herbicides to control the woody vegetation and invasive exotic plants (herbicide use is restricted from June through August); rerouting hiking trails to reduce foot traffic impacts; and reducing or eliminating excessive livestock grazing.

Prescribed fire is a particularly effective tool for improving bladderpod habitat. Glades are burned in August to set back woody plants and aggressive invasive grasses. Bladderpods are apparently not harmed because the seeds remain dormant until conditions are favorable for germination later in the fall. The effects of prescribed burns were evident at Rocky Barrens Conservation Area. In 1992 there were about 2,000 plants on that site and in 1994, after August 1993 burns, there were over 50,000 plants.

### Protection

Ownership by a public natural resources agency or a private conservation organization is an important conservation tool to ensure that some sites are protected in perpetuity. The Nature Conservancy protected the first site when it purchased the 47-acre Greenfield Glade in 1986. One of the largest populations of bladderpod was protected when the MDOC and TNC purchased 281 acres at Rocky Barrens in Greene County, Missouri. Currently, 9 sites totaling 400 acres are in public or TNC ownership.

### Public Awareness and Support

A number of groups and agencies involved in Missouri bladderpod conservation have created outreach materials and met with individuals, landowners, and other interested parties to discuss the species and its conservation needs.

Information about Missouri bladderpod has been provided to the general public by way of a baseball-type trading card featuring the bladderpod, an MDOC Endangered Species Guide Sheet, and two articles in the MDOC's *Missouri Conservationist* (June 1995 and February 1999) highlighting the bladderpod. Other fact sheets on the bladderpod were prepared and

distributed at sites with bladderpods. The MDOC also distributed a *Best Management Practice Guide Sheet* outlining management practices that benefit the bladderpod. These were provided to other state agencies for use during environmental reviews of projects that could potentially harm the species.

To help people who may encounter the bladderpod, the MDOC conducted an identification workshop for employees of the National Resources Conservation Service and the Williams Pipeline Company in Springfield, Missouri. Information learned from the workshop led to the discovery of a previously unknown site along a powerline right-of-way in Greene County.

In 1992, the MDOC and the Service cooperated in a program to contact landowners who had Missouri bladderpods on their property. Information on habitat needs of Missouri bladderpod and suggested compatible land management techniques were discussed with landowners. Over 80 percent of the people contacted responded favorably to the protection and management of bladderpod habitat.

The Nature Conservancy has also contacted landowners through its Registry Program. The Registry Program involves a verbal agreement between TNC and a landowner to protect Missouri bladderpod and its habitat. Personnel from TNC assist landowners by providing management suggestions and alerting them to various landowner incentive programs.

### How Will This Story End?

Recovery of this once-imperiled species is on the horizon if these recovery actions are continued and expanded. We can all take pride in the Missouri bladderpod's progress toward recovery. Thanks to the combined efforts of private, State, and Federal partners, a small, colorful plant and its unique habitat will continue to grace the glades of southern Missouri and northern Arkansas.

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October 2003*