

5-YEAR REVIEW

Short Form Summary and Evaluation

Species Reviewed: Missouri bladderpod (*Physaria filiformis*)

Current Classification: Threatened

**U.S. Fish and Wildlife Service
Columbia, Missouri Ecological Services Field Office
Columbia, Missouri 65203-0057**

GENERAL INFORMATION

Lead Regional Office: Midwest Region, Carlita Payne, Ft. Snelling, MN,
(612) 713-5339.

Lead Field Office: Dr. Paul McKenzie, Columbia, MO Ecological Services Field Office
(573) 234-2132, ext. 107.

Cooperating Regional Office: Southeast Region, Kelly Bibb, Atlanta, GA,
(404) 679-7132.

Cooperating Field Office: Steve Osborne, Conway, AR Ecological Services,
(501) 513-4479.

Methodology used to complete this 5-year review: The 5-year review for the Missouri bladderpod was accomplished through the status review that supported the October 15, 2003 final rule to reclassify the species from endangered to threatened status (68 FR 59337). In addition, we reviewed the best scientific and commercial data received from the public through the *Federal Register* notice initiating the 5-year review (70 FR 41423) and information from knowledgeable individuals who could provide recent data relevant to the status of the species. The Service solicited comments on the proposed rule (68 FR 34569) from the public and from three independent peer reviewers (68 FR 59337) who had experience or expertise with the species. This 5-year review was conducted by the Columbia, Missouri Ecological Services Field Office in consultation with the Service's Conway, Arkansas Field Office, the Missouri Department of Conservation and the Arkansas Natural Heritage Commission. The Service has not received any new significant information since the reclassification that would have a bearing on the species current listing as a threatened species. The Service will continue to evaluate the rangewide status of this species as new information becomes available.

FR Notice announcing initiation of this review: July 19, 2005. Endangered and Threatened Wildlife and Plants: Initiation of a 5-Year Review of Higgins Eye (*Lampsilis higginsii*), Hungerford's Crawling Water Beetle (*Brychius hungerfordi*), Missouri Bladderpod (*Lesquerella filiformis*), and Running Buffalo Clover (*Trifolium stoloniferum*). 70 FR 41423.

REVIEW ANALYSIS

Application of the 1996 Distinct Population Segment (DPS) Policy: NA

Review Summary:

Missouri bladderpod was reclassified as a threatened species based on information known through the 2003 field season that included the discovery of 52 additional sites in Missouri and 2 sites in Arkansas since the species' listing in 1987, the protection of multiple sites in Missouri through public ownership, and management actions undertaken to benefit the species on public and private land. Please refer to the final reclassification rule (68 FR 59337) for a complete five factor analysis on the species status, information on the species biology and habitat, threats, and protection and management actions taken. In the reclassification rule of October 15, 2003, the Service summarized: "Given that (1) *Lesquerella filiformis* now occurs at 61 sites in Missouri and 2 sites in Arkansas (an increase of 54 sites since listing); (2) 6 sites in Missouri are under public ownership or under a long-term conservation agreement and are managed to benefit the species; (3) 9 additional sites in Missouri receive some degree of protection as part of TNC's Registry Program; (4) the species responds well to the proper management of its habitat, especially cedar tree removal and controlled burning; (5) minor levels of disturbance may actually benefit rather than hinder the species; and (6) significant knowledge has been gained regarding the life history requirements and population dynamics of the species, we no longer believe that this species meets the definition of an endangered species" (68 FR 59343).

The scientific name for Missouri bladderpod (*Lesquerella filiformis*) has been changed based on extensive studies completed by Al-Shehbaz & O'Kane (2002). The new combination is *Physaria filiformis* (Rollins) O'Kane & Al-Shehbaz. Al-Shehbaz and O'Kane (2002) concluded that the genus *Lesquerella* should be united with the genus *Physaria* and determined that *Physaria* was the earliest published name. These authors found that the two genera should be united based on multiple biological and ecological factors. The new combination will be adopted in the upcoming Flora of North America treatment for Brassicaceae scheduled for mid to late 2007 (Flora of North America 2006).

New information obtained since the reclassification further supports the reclassification of this species to threatened. The National Park Service moved the hiking trail on Wilson's Creek Battlefield (MO) that previously impacted a population of *Physaria*. Trampling of that population is no longer a threat.

During the FY 2005 field season, three new populations were discovered in Arkansas: one in Izard County, one in Sharp County, and one in Hot Spring County (Witsell 2007). The Sharp and Hot Spring records were new county records for *Physaria filiformis* and the Hot Spring County site was particularly noteworthy because the species was discovered on a new substrate (shale) and was about 150 miles south of its range (Witsell 2007). Due to its occurrence on a new substrate and distance from the next nearest location, voucher specimens were examined by Dr. Ihsan Al-Shehbaz, the world's

authority on species in the genus *Lesquerella*, to confirm the identification. Dr. Al-Shehbaz examined the specimens and determined that all were *Physaria filiformis* (Al-Shehbaz, pers. comm. to Dr. George Yatskievych of the Missouri Botanical Garden, May 2005).

In May 2005, Paul McKenzie and Theo Witsell of the Arkansas Natural Heritage Commission visited the only known site in Washington County, Arkansas that was rediscovered in 2002. The land is owned by the U.S. Army Corps of Engineers and management was needed to remove trees that were shading out the glade where the species occurred. Restoration of this glade (primarily involving the initial removal of larger trees) occurred in late 2003, and there was a noticeable response by Missouri bladderpod in 2004—McKenzie and Witsell observed a few hundred plants on the glade. After additional restoration work in 2005 and 2006, thousands of plants were observed on the glade on April 18, 2007 (Steve Osborne, U.S. Fish and Wildlife Service, Conway, Arkansas Field Office, pers. comm., April 24, 2007).

In April 2006, two additional sites were discovered on shale glades on U.S. Forest Service land in the Ouachita Mountains of Arkansas in Garland County (Witsell 2007). These sites were visited by Witsell and McKenzie on April 18, 2007, and the populations were much larger than observed in 2006, containing thousands of plants (T. Witsell and P. McKenzie, pers. obs.). This increased the number of known sites rangewide to 70 and the known number of counties to 9. With the discovery of the species in Garland County in 2006, Missouri bladderpod now occurs in more counties (5) in Arkansas than Missouri (4). Due to discovery of new sites in 2005 and 2006 and that plants were found on a new substrate 150 miles farther south than any previously documented occurrence, it is likely that subsequent surveys will yield additional populations. Suitable habitat (yet to be surveyed) has been identified in the following Arkansas counties: Garland, Hot Spring, Howard, Izard, Montgomery, Perry, Polk, Saline, Sharp and Yell (T. Witsell, pers. comm., August 2007). The species has now been documented on limestone, dolomite, and shale glades (T. Witsell, pers. comm., August 2007). Because there is an abundance of glade habitat between SW MO and counties in Arkansas where the species has been documented, it is likely that additional populations will be discovered with sufficient survey effort. A long-term monitoring program necessary to accurately detect population trends has not yet been established.

Surveys in suitable habitat, the development of management plans that ensure long-term maintenance of suitable habitat, and the reduction of threats from nonnative species has proven successful in furthering recovery or removing species from the Endangered Species List [e.g., Hoover's woolly-star (*Eriastrum hooveri*), 68 FR 57829]. In 2006, through coordination with Ecological Services personnel in the Conway, Arkansas Field Office, the Columbia Missouri Ecological Services Field Office received funding for a "Showing Success" proposal. The proposal included additional survey work in Arkansas, the development of a management plan in Arkansas to sustain long-term management on Federal and privately owned lands, an examination of the effectiveness of using various chemicals to control species of brome (*Bromus* spp) grasses in Missouri, and an analysis to assess if sites under private ownership near Springfield, Missouri may be potentially impacted by future urban development. It is hoped that information obtained from these

studies will support the potential delisting of the species. The Columbia, Missouri Ecological Services Field Office will work with the Southeast Region to identify new areas for survey efforts and will assist the Southeast Region in coordination efforts with the U.S. Forest Service, the U.S. Army Corps of Engineers and the Arkansas Natural Heritage Commission in the development of management plans to maintain bladderpod habitat in Arkansas. New populations discovered on U.S. Forest Service land in Garland County in 2006 were found to extend onto private land during monitoring of the sites on April 18, 2007. Management plans currently in development in Arkansas should be expanded to include additional sites on private property adjacent to U.S. Forest Service land in Garland County. Partners involved in the studies outlined above are the Arkansas Natural Heritage Commission and Missouri State University.

RESULTS

Recommended Classification

- No Change in Classification is needed**
 Delist (*Indicate reasons for delisting per 50 CFR 424.11*):
 Extinction
 Recovery
 Original data for classification in error
 Downlist to Threatened
 Uplist to Endangered

New Recovery Priority Number: No change (remains 8)

Recommendations for Future Actions:

Priority actions recommended for ongoing reviews of the species' status include the completion of: 1) additional surveys in suitable habitat in northcentral and westcentral Arkansas, 2) management plans underway for sites in Arkansas, 3) studies of the effectiveness of various herbicides to control brome grasses in Missouri, and 4) an analysis to determine the potential impact of urban development on Missouri bladderpod sites near Springfield, Missouri. These actions, funded by a 2006 "Showing Success" proposal, are progressing on schedule for completion on or before December 31, 2008. Upon completion of these actions, the Service will assess if the Missouri bladderpod still meets the definition of a threatened species.

References

- Al-Shehbaz, I.A. and S.L. O’Kane, Jr. 2002. *Lesquerella* is united with *Physaria* (Brassicaceae). *Novon*. 12:319-329.
- Flora of North America. 2006. December 2006- January 2007 Newsletter Vol. 20(1-2).
- Witsell, T. 2007. Final report on *Physaria filiformis* (Rollins) O’Kane & Al-Shehbaz [*Lesquerella filiformis* Rollins] (Missouri Bladderpod) survey and monitoring work in Arkansas, 2005 & 2006. Unpublished report to the U.S. Fish and Wildlife Service. 86 pp.

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Missouri bladderpod (*Physaria filiformis*)**

Current Classification: T

Recommendation resulting from the 5-Year Review

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change is needed

Appropriate Recovery Priority Number: 8

Appropriate Listing/Reclassification Priority Number, if applicable:

Review Conducted By: Paul M. McKenzie, Ph.D.

FIELD OFFICE/REFUGE APPROVAL:

Lead Field Supervisor/Refuge Manager, Fish and Wildlife Service

Approve Charles M. Scott Date 9/5/07

Charles M. Scott, Field Supervisor

REGIONAL OFFICE APPROVAL:

Assistant Regional Director, Ecological Services, Fish and Wildlife Service

Approve [Signature] Date 10/31/07

Cooperating Regional Director, Fish and Wildlife Service

Signature [Signature] Date 1/14/08 Concur Do Not Concur

Acting Assistant Regional Director
Ecological Services