

growth, metapopulation dynamics, and genetic diversity within and between populations (e.g., Harms 1992; Graham 1994). Lisa Potter Thomas of the NPS at Wilson's Creek National Battlefield has also conducted extensive research on the species involving life history ecology (e.g., factors influencing survivorship, plant vigor, and reproduction); the potential impacts of human foot trampling on the species; techniques useful in controlling exotic plants in bladderpod habitat; an examination of microhabitat parameters; and demographic studies that centered on germination, density of flowering stems, survivorship, and fecundity (Thomas and Jackson 1990; Thomas and Willson 1992; Thomas 1996, 1998).

Other recommended research and recovery activities include: (1) Investigating the pollination ecology of the species; (2) revising the Recovery Plan objective established in 1988 to reflect the current knowledge of the species; (3) securing funding to provide necessary information essential to complete recovery and to facilitate the removal of the species from the list of federally protected species; (4) evaluating the efficacy of different management techniques; and (5) assuring that threats such as urban development and competition from exotic plants, both of which result from rapid population growth and urbanization, do not increase (The Nature Conservancy 2002; Hickey 1988; U.S. Fish and Wildlife Service 1988; Thomas and Jackson 1990; Thomas 1996).

#### Previous Federal Actions

Section 12 of the Act directed the Secretary of the Smithsonian Institution to prepare a report, within 1 year after passage of the Act, on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Director of the Service published a notice in the **Federal Register** (40 FR 27823) of his acceptance of the report of the Smithsonian Institution as a petition within the context of section 4(c)(2) of the Act (petition acceptance is now governed by section 4(b)(3) of the Act, as amended), and of his intention thereby to review the status of the plant taxa named within. *Lesquerella filiformis* was named in the Smithsonian report as endangered and was included in the Service's 1975 notice of review. A subsequent notice of review published in the December 15, 1980, **Federal Register** (45 FR 82480)

included *L. filiformis* as a Category 1 species, indicating that we believed there was sufficient biological information to support a proposal to list the species as endangered or threatened.

The Endangered Species Act Amendments of 1982 required that all petitions, including the report of the Smithsonian Institution, still pending as of October 13, 1982, be treated as received on that date. Section 4(b)(3) of the Act, as amended, requires that, within 12 months of the receipt of such a petition, a finding be made as to whether the requested action is warranted, not warranted, or warranted but precluded by other higher priority activities involving additions to or removals from the Federal Lists of Endangered and Threatened Wildlife and Plants. Therefore, on October 13, 1983; October 12, 1984; and again on October 11, 1985, the Service made the finding that listing of *Lesquerella filiformis* was warranted but precluded by other pending listing activities. The proposed rule to list *L. filiformis* as endangered was published on April 7, 1986 (51 FR 11874), and the final rule was published on January 8, 1987 (52 FR 679). The Recovery Plan was approved on April 7, 1988 (U.S. Fish and Wildlife Service 1988).

In letters dated January 26 and February 17, 1998, the Service received a petition from the MDC to reclassify *Lesquerella filiformis* from endangered to threatened. On March 18, 1998, we responded and indicated that, based on our Listing Priority Guidance issued on October 23, 1997, we could not address the petition until we completed other higher priority listing actions. The Act requires us to make certain findings on petitions to add species to the List of Endangered and Threatened Plants, remove species from the List, or change their designation on the List. This proposed rule constitutes both our 90-day finding that the petitioned action may be warranted and our 12-month finding that the action is warranted.

#### Summary of Factors Affecting the Species

Section 4 of the Act and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for determining whether to add, reclassify, or remove a species from the List of Endangered and Threatened Plants using five factors described in section 4(a)(1). These factors and their application to *Lesquerella filiformis* Rollins (Missouri bladderpod) are as follows:

#### A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

At the time of listing, *Lesquerella filiformis* was known to occur at only nine locations in Dade, Greene, and Christian Counties, MO. As described in the BACKGROUND section, surveys and research since that time have documented 63 extant sites. Currently, this species is known to occur at a total of 61 sites in 4 counties in Missouri and 2 sites in 2 counties in Arkansas. Of these, 30 have a TNC Nature Community Rank of A, B, or AB.

Taking into consideration annual fluctuations in population, the estimated total number of plants known in Missouri has increased from approximately 550 plants in 1980 (Morgan 1980) to a potential maximum of 400,000–500,000 plants when climatic and edaphic conditions are ideal for germination, overwinter survival, seedling establishment, growth, and seed production. Additionally, a maximum of “tens of thousands” of plants have been reported at the IZARD County, AR, site (Theo Witsell, *in litt.* 2002). Given that the 2 sites in Arkansas are separated by approximately 150 miles and are about 85–100 miles from the nearest location in southwestern Missouri, the possibility exists that additional populations of *Lesquerella filiformis* are yet to be discovered in southern Missouri and northern Arkansas, especially because the IZARD County, AR, site is partially dolomitic, a geological feature previously not targeted for surveys in Missouri.

In addition, the threat of habitat loss has been reduced by the acquisition and management of occupied sites by public land management agencies and TNC (Table 2). The MDC and TNC successfully protected one of the largest known sites, Rocky Barrens in Greene County, MO, by purchasing a total of 281 acres of occupied habitat between 1988 and 1993. Another five sites in Missouri are under public ownership or a long-term conservation agreement, including approximately 29 acres at the Wilson's Creek National Battlefield in Christian and Greene Counties; 3 acres at the Nathan Boone State Historic Site in Greene County; and approximately 40 acres at the Bois D'Arc Conservation Area in Greene County, an MDC property. Additionally, TNC has secured a 100-year lease to manage 47 acres of bladderpod habitat at South Greenfield Glade in Dade County, MO (Beth Churchwell, TNC, pers. comm. 2000).