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GERMINATING SEEDS OF

Lesquerella

PERFORATA and STONENSIS

Substrate effects and mucilage production
Spring Creek bladderpod (Lesquerella perforata Rollins [Brassicaceae]) and Stones River bladderpod (L. stonensis Rollins [Brassicaceae]) are endemic to Tennessee (Rollins and Shaw 1973). Lesquerella perforata occurs along Spring, Barts, and Cedar creeks in Wilson County, and it is listed as Endangered by the US Fish and Wildlife Service and in Tennessee (Figure 1). Lesquerella stonensis is found on the East and West forks of Stones River in Rutherford County. This species was a candidate for federal listing; it is classified as Endangered in Tennessee (USFWS 1996, 1999; Shea 2001; Bailey 2004). Both species exhibit weedy tendencies by growing in pastures (Figure 2), agricultural fields, and along roadsides associated with flooding (Baskin and Baskin 1990; USFWS 1996; Shea 2001). Recently, the species were reassigned to the genus Paysonia (O’Kane and Al-Shebbazz 2002).

Each species is an obligate winter annual. At the time of dispersal, seeds are dormant and require a warm moist treatment to break dormancy (Baskin and Baskin 1990; USFWS 1996). During experiments conducted in 2003 on both species, the highest percentage of germination was only 29% following a warm moist treatment and incubation period at optimal temperatures. In contrast, seeds tested in 2002 germinated up to 100% for L. perforata and 65% for L. stonensis. Whereas the substrate used in 2002 was play sand, that in 2003 was masonry sand. Moreover, we observed that seeds in the 2003 experiment were covered with mucilage (Fitch 2004). Thus, we instigated an investigation into the effects of substrates and mucilage production on seed germination of both Lesquerella species. The purpose of the present paper is to alert propagators to potential problems in germinating seeds of L. perforata and L. stonensis.

**MATERIALS AND METHODS**

Fresh seeds of L. perforata were collected in Wilson County, Tennessee, and those of L. stonensis in Rutherford County, on 30 April 2003. Seeds of both species were given a warm, moist treatment for 18 wk and then incubated for 2 wk on commercial medium grade (masonry) sand (Quikrete® No. 1962), kept continuously moist, starting on 13 May 2003 (see Fitch 2004 for complete description of the treatment). Approximately 71 to 100% and 79 to 100% of the seeds of L. perforata and L. stonensis, respectively, remained non-germinated at the end of the 20-wk period. A subset of the seeds tested with tetrazolium (Grabe 1970) showed them to be viable.

*Figure 1. The annual Lesquerella perforata in bloom.* Photo by Jeffrey L. Walck.