

4 of the Act, including whether the benefits of designation will outweigh any threats to the species resulting from designation;

(2) Specific information on the amount and distribution of *Arabis perstellata* and its habitat, and which habitat is essential to the conservation of this species and why;

(3) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat;

(4) Any foreseeable economic or other impacts resulting from the proposed designation of critical habitat, in particular, any impacts on small entities or families;

(5) Economic and other values associated with designating critical habitat for *Arabis perstellata* such as those derived from nonconsumptive uses (e.g., hiking, camping, birdwatching, enhanced watershed protection, improved air quality, increased soil retention, "existence values," and reductions in administrative costs);

(6) Whether our approach to critical habitat designation could be improved or modified in any way to provide for greater public participation and understanding, or to assist us in accommodating public concern and comments; and

(7) The inclusion into final critical habitat of the two recently identified populations of *Arabis perstellata*, and any foreseeable economic or other impacts resulting from including the areas encompassing these two new populations into designated critical habitat.

If you wish to comment on this proposed rule and/or the draft economic analysis, you may submit your comments and materials concerning this proposal and its associated draft economic analysis by any one of several methods (see **ADDRESSES**). Comments submitted electronically should be in the body of the e-mail message itself or attached as a text file (ASCII), and should not use special characters or encryption. Please also include "Attn: Braun's rock-cross," your full name, and your return address in your e-mail message. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Respondents may request that we withhold their home address, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold a respondent's identity, as allowable by law. If you wish for us to withhold your name and/or address, you must state

this request prominently at the beginning of your comment. However, we will not consider anonymous comments. To the extent consistent with applicable law, we will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the Ecological Services Office in Cookeville, Tennessee (see **ADDRESSES**).

Copies of the proposed rule, draft economic analysis, and information regarding this proposed critical habitat designation are available on the Internet at <http://cookeville.fws.gov>.

Background

Arabis perstellata (Braun's rock-cross) is a perennial herb of the mustard family (Brassicaceae). It was originally described by E. Lucy Braun (1940) from specimens collected between 1936 and 1939 in Franklin County, Kentucky. In 1956, Braun described the growth habits of *Arabis perstellata*. This species has round stems and alternate leaves. The stems and foliage have a grayish coloration due to the large quantity of hairs. The stems arise from horizontal bases and grow up to 80 centimeters (cm) (31.5 inches (in)) long, often drooping from rock ledges. Each year, a circular cluster of leaves radiating from the center is produced close to the ground, and new flowering branches emerge from the old cluster of the previous season. The lower leaves vary from 4 to 15 cm (1.6 to 6.0 in) long and are obovate (egg-shaped) to lanceolate (lance-shaped), with the broad end at the top. The lower leaves also have slightly toothed margins and are cut to the midrib. The upper leaves are smaller—up to 3.5 cm (1.4 in) long—and have relatively rounded ends that are widest at or about the middle, but then taper to a lance shape, with the broad end at the top. The upper leaves also have coarse teeth along their margins. Both surfaces of the leaves are covered in starlike hairs. The flowering section of the plant is elongated, with numerous stalked flowers. The flowers have four petals that are 3 to 4 millimeters (mm) (0.12 to 0.16 in) long, are white to lavender, and have four pale green sepals that are 2 to 3 mm (0.08 to 0.12 in) long. There are six stamens, with two shorter than the other four. The ovary is elongate and two-chambered, and develops into an elongated fruit, much longer than it is broad. Fruiting

stalks are about 1 cm (0.4 in) long at maturity; the fruits are up to 4 cm (1.6 in) long and are covered with both simple and starlike hairs. Flowering occurs from late March to early May. Fruits mature from mid-May to early June. The oblong seeds are reddish brown, somewhat flattened, about 1 mm (0.04 in) long, and in places minutely hairy (Jones 1991). Plants are reported to live up to 5 years (Jones 1991).

Although varieties of this species are not recognized in recent taxonomic treatments (Rollins 1993), in the past, two varieties were distinguished based on size and degree of pubescence (Rollins 1960). The formerly recognized varieties are also geographically separated, with the larger variety (*Arabis perstellata* var. *ampla*) occurring in Tennessee and the smaller variety (*Arabis perstellata* var. *perstellata*) occurring in Kentucky (Rollins 1993; Kentucky State Nature Preserves Commission (KSNPC) 1996a). While the final rule for the determination of endangered status for this species recognized the two varieties, these two varieties are no longer recognized by the scientific community. Consequently, we will treat the plants that occur in both geographically separated areas as one species (*Arabis perstellata*) for the purpose of designating critical habitat.

Arabis perstellata is presently known from 41 populations in two separate sections of the Interior Low Plateaus Physiographic Province—the Blue Grass Section (Kentucky) and the Central Basin Section (Tennessee). Both areas where this species is found are predominantly underlain by sediments of Ordovician age (510–438 million years ago) (Quartermann and Powell 1978). The Kentucky populations occur in Franklin, Henry, and Owen Counties along the Kentucky River and its tributaries (primarily Elkhorn Creek). The Tennessee populations occur in Davidson and Rutherford counties, principally along the Stones River, but also along the Cumberland River several miles downstream of the Stones River confluence.

Arabis perstellata occurs on slopes composed of calcium carbonate, calcium, or limestone in moderately moist to almost dry forests. The occurrence of this species does not appear to be limited to a particular slope, aspect, elevation, or moisture regime within the slope forests. The plants survive in full shade or filtered light, but are not found in full sunlight (Jones 1991). The largest and most vigorous populations occur on moist mid- to upper-slope sites. Plants are often found around rock outcrops, in protected sites on the downslope side of