Subsequent to this notice, the Service received additional information from the North Carolina Natural Heritage Program (Alan Weakley, North Carolina Natural Heritage Program, personal communication, 1991) and the Smithsonian Institution (DePriest, personal communication, 1992); this information and additional field data gathered by the North Carolina Natural Heritage Program, the Service, and the National Park Service (Keith Langdon and Janet Rock, Great Smoky Mountains National Park, personal communication, 1992; Bambi Teague, Blue Ridge Parkway, personal communication, 1991) indicated that the addition of Gymnoderma lineare to the Federal List of endangered or threatened plants is warranted. The Service approved this species for elevation to category 1 on August 30, 1993, and proposed it for listing as endangered on December 28, 1993 (58 FR 68623).

Summary of Comments and Recommendations

In the December 28, 1993, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting public comment were published in the 'Asheville Citizen-Times'' (Asheville, North Carolina) on January 14, 1994, and the "Mountain Press" (Sevierville, Tennessee) on January 17, 1994.

Fifteen comments were received. Eleven of these expressed support for the proposal, and one presented additional information without stating a position. One additional respondent took no position on the proposal but expressed a negative view toward the potential designation of critical habitat. Two respondents opposed the proposal; one stated no reason for opposition, the other expressed the opinion that logging was not a potential threat to the lichen and that extinction is a natural process. In the proposed rule the Service stated that no populations of this species were known to have been destroyed as a result of logging operations but that this was a potential threat. This is particularly true where the lichen grows on boulder faces along stream edges in hardwood forests. Although there is no direct evidence of destruction of populations by silvicultural activities, monitoring of this species has only recently begun. Other populations have undoubtedly been lost without their

extirpation having been documented. In addition, there is a strong association of this species with watersheds where intensive logging has not occurred (Langdon, personal communication, 1993; Weakley, personal communication, 1993). Based upon this evidence, the Service believes that intensive logging is a potential threat to some of the remaining populations of this species.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that Gymnoderma lineare should be classified as an endangered species. Procedures found at section 4(a)(1) of the Act and regulations (50 CFR part 424) implementing the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to Gymnoderma lineare (Evans) Yoshimura and Sharp are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Gymnoderma lineare is a narrow endemic, restricted to high-elevation mountaintops and cliff faces and the lower-elevation gorges in the Southern Appalachians of western North Carolina and eastern Tennessee (see "Background" section for specific distributions). Although populations are declining and vanishing for reasons that are, in many cases, not clearly understood, destruction and adverse modification of habitat pose a major threat to the remaining populations of this species. Fourteen percent of the historically known populations have been completely extirpated, and many others have been severely reduced in size. Only 32 populations remain, most covering an area less than 1 square meter (1.2 square yards) in size.

Five of these populations are on privately owned lands, with one slated for residential development within the near future. Although the majority of the remaining populations are on publicly owned lands, most of these are subject to heavy recreational use, and many have been damaged as a result. Four populations contain 75 percent of the remaining plants. Three of these are located on lands administered by the National Park Service and the U.S. Forest Service, at sites where they are subjected to intense use by hikers, climbers, and sightseers. The only other relatively large population is located on

a privately owned site that has been developed as a commercial recreational facility. All the known populations combined cover a total area of approximately 142 square meters (170 square yards). All five privately owned sites are unprotected and are located in an area that is rapidly developing as a center for resorts and tourism.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Gymnoderma lineare is not currently a significant component of the commercial trade in native plants. Hale (1979) stated, "This is one of the most unusual endemic lichens in North America and should not be collected by individuals." Nevertheless, many populations have been decimated by scientific collectors. Paula DePriest (personal communication, 1992) observed that at least one population in the Great Smoky Mountains National Park was virtually wiped out by lichenologists who collected them during a field trip. Given the very small size of most colonies and the slow growth rate of this species, extirpation by collecting or by natural accident (such as slides or floods) is a distinct possibility (Weakley 1988). Many of the populations are easily accessible, being close to trails or roads. Publicity could generate an increased demand and intensify collecting pressure (see "Critical Habitat" section for reasons why critical habitat is not being designated).

C. *Disease or predation.* This taxon is not known to be threatened by disease or predation.

D. The inadequacy of existing regulatory mechanisms. Gymnoderma lineare is afforded legal protection in North Carolina by North Carolina General Statute, article 20, chapter 106, sections 202.1-202.8, that prohibits intrastate trade and taking of State-listed plants without a State permit and written permission of the landowner. Gymnoderma lineare is listed in North Carolina as threatened; it is not currently listed in Tennessee. State prohibitions against taking are difficult to enforce and do not cover adverse alterations of habitat or unintentional damage from recreational use. The Act will provide additional protection and encouragement of active management for *Gymnoderma lineare*, particularly on Federal lands.

E. Other natural or manmade factors affecting its continued existence. This taxon is rare and vulnerable due to its specialized habitat requirements for bare rock faces with a precise amount of moisture and light. As mentioned in the previous sections of this rule, most of the remaining populations are small in