mainly on two unpublished, unreviewed project reports by Harp (1991, 1992). They also stated that they felt that the habitat of the spruce-fir moss spider described in the proposed rule was too general; identified errors in the citation of the Krahl-Urban et al. (1988) document cited in the "Summary of Factors Affecting the Species," factor A, of the proposed rule; and provided additional information concerning the decline of the spruce-fir forest in the Southeast.

In enacting the Endangered Species Act, Congress required the Service to list species as endangered or threatened based on the best scientific and commercial information available. The Service has carefully assessed the best available information in determining to propose and list the spruce-fir moss spider as endangered. This included a review of literature, State and Federal data bases, and museum records; intensive surveys of historic and potential habitat; correspondence with other Federal, State, and private agencies, companies, and individuals knowledgeable about the species; and all relevant comments received throughout the review process. Although all of these information sources have been considered, most of the data for the species is contained in Coyle (1981), and in the status survey reports by Harp (1991 and 1992). The Service considers both of these investigators as highly reliable sources. The only other paper that provides any detail concerning the species, of which the Service is aware, that was not referenced in the proposed rule is a paper on the mating behavior of the spruce-fir moss spider (Coyle 1985).

Despite the fact that the status survey reports by Harp are not published documents, the information on the spider contained in these reports has been reviewed by numerous individuals. As part of the listing process for this species, the Service notified affected Federal, State, and local government agencies, landowners, and individuals knowledgeable about this or similar species and requested their review of the findings presented in Harp's status survey reports and any additional information that they may have on the species, its status, or threats to its continued existence. As stated above, no negative comments in response to the notification of status review were received and all respondents expressed support of the information presented in the notification, support of Federal listing of the species, and/or stated that they had no additional information on the species. In addition, the proposed rule

to list the spruce-fir moss spider was widely distributed and reviewed. The majority of the responses support the findings presented in the proposed rule. No factual or substantive information was received that indicates that the information concerning the species, its habitat, its biology, its past and present distribution, and decline and status of its populations and threats as presented in the proposed rule is incorrect, with the exception of those items identified above (size, age at sexual maturity, and the Krahl-Urban et al. (1988) document citation). Accordingly, the Service believes that sufficient information is currently available and has been presented that clearly shows that the species has undergone a drastic decline throughout its range, that the species' remaining habitat is significantly threatened, and that the species is in danger of extinction.

The Service does concur that a detailed characterization of the sprucefir moss spider's habitat, threats to its habitat, and additional information concerning the species biology will be necessary in order to properly manage and implement protection and recovery measures. These, as well as other research needs and activities necessary to ensure the long-term survival of the species, will be addressed by the Service in the development and implementation of a recovery plan for the spruce-fir moss spider and through other means (see "Available Conservation Measures" below). The Service has corrected the reference to the Krahl-Urban et al. (1988) document, changed the citation to the relevant chapter author (R. I. Bruck), and incorporated additional information concerning the sites where the species has been found and factors believed to be contributing to the decline of the spruce-fir forest ecosystem in the Southeast into this final rule, as requested by the TVA. The Service has also added additional citations to this final rule to support statements concerning possible factors contributing to the decline of spruce-fir forests associated with populations of the spruce-fir moss spider.

One comment opposing the proposal to list the spruce-fir moss spider was received. This individual stated that "The scientific community, and the Service in particular, need to recognize that extinction has always been a continuing process and will continue to be so." The Service agrees that extinction can be a natural process. Extinction occurs naturally as species respond by evolving into new species, or are unable to respond (become extinct) to a changing environment.

However, virtually all of the historical extinctions that have been documented are attributable either directly or indirectly to human induced environmental changes (Greenway 1967; Frankel and Soulé 1981; Soulé 1983), changes that are too new (changes that most species have not evolved the ability to cope with; i.e., exotic pests, pollutants, etc.), too rapid, and too destructive to allow the species the chance to respond. A species being eliminated by processes such as the human related introductions of exotic pests, applications of poisonous chemicals, forest clearing, etc., is far different than a species being unable to adapt to a naturally changing environment. Further, the Act requires the Service to list species that are in danger of going extinct without regard as to what factor may be inducing extinction.

This same respondent also inquired whether there is documentation that pollution is a contributing factor to the loss of forest cover. The Service recognizes that the possible role of atmospheric pollution in the decline of the high elevation spruce in spruce-fir forest ecosystem in the southern Appalachians is a controversial and highly complex topic. However, several studies have been conducted and are currently ongoing to address this issue and, while opinions vary and much more research is needed, there is field and laboratory data available that indicates that atmospheric pollution in combination with other stress factors has played a role in the deterioration of the health of high elevation red spruce in the southern Appalachians (Johnson et al., 1992).

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the spruce-fir moss spider should be classified as an endangered species. Procedures found at section 4(a)(1) of the Act and regulations implementing the listing provisions of the Act (50 CFR part 424) 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 the spruce-fir moss spider are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The spruce-fir moss spider is known to be endemic only to high-elevation spruce-fir forests of western North Carolina and eastern Tennessee. Historically, the