

[4310-55]

## Title 50—Wildlife and Fisheries

CHAPTER 1—UNITED STATES FISH  
AND WILDLIFE SERVICE, DEPART-  
MENT OF THE INTERIORPART 17—ENDANGERED AND  
THREATENED WILDLIFE AND  
PLANTSDetermination that 11 Plant Taxa are  
Endangered Species and 2 Plant  
Taxa are Threatened SpeciesAGENCY: Fish and Wildlife Service,  
Interior.

ACTION: Final rule.

SUMMARY: The Service determines 11 plant taxa to be Endangered species, and two plant taxa to be Threatened species. This action is being taken primarily because of threats to the plants from habitat destruction. Twelve States are involved: California, Georgia, Hawaii, Iowa, Maine, New York, Ohio, South Carolina, Texas, Utah, Virginia, and Wisconsin, as well as New Brunswick, Canada.

DATES: This rule becomes effective on May 27, 1978.

FOR FURTHER INFORMATION  
CONTACT:

Mr. Keith M. Schreiner, Associate Director for Federal Assistance, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C. 20240, 202-343-4646.

## SUPPLEMENTARY INFORMATION:

## BACKGROUND

On April 21, 1975, the United States Fish and Wildlife Service (hereinafter, the Service) published a notice of review for four U.S. and Canadian plants in the FEDERAL REGISTER (40 FR 17612) advising that sufficient evidence was on file to warrant a status review of the species with regard to their possible qualification for determination as Endangered or Threatened species under provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543; 87 Stat. 884; hereinafter, the Act). The Northern wild monkshood (*Aconitum noveboracense*) was one of the four plants.

Subsequently, on July 1, 1975, the Service published a notice of review for 3,187 vascular plants in the FEDERAL REGISTER (40 FR 27823), advising that the Service considered the Smithsonian Institution's "Report on Endangered and Threatened Plant Species of the United States" (House Document 94-51) as a "petition" in the context of Section 4(c)(2) of the Act, and that ample justification had been presented to warrant a review to their

possible qualification for determination as Endangered or Threatened species under provisions of the Act. Twelve of the 13 plants included herein, and a variety of the *Aconitum*, were among the 3,187 plants reviewed.

On June 7, 1976, the Service published procedural rules in the FEDERAL REGISTER (41 FR 22915) proposing prohibitions on certain uses of Endangered or Threatened plants, permits for exceptions to such prohibitions, and related items. The final rulemaking was published in the June 24, 1977, FEDERAL REGISTER (42 FR 32373).

In addition, on June 16, 1976, the Service published in the FEDERAL REGISTER (41 FR 24523) a proposal that 1,783 vascular plants known to occur in the United States were Endangered species as provided by the Act. The 13 plants in this final rule were among the 1,783 proposed. That proposal briefly summarized the factors thought to be contributing to the likelihood that the species would become extinct within the foreseeable future; specified the prohibitions which would be applicable if such a determination were to become final; and solicited relevant, written comments, and other documents from interested persons.

Critical Habitat was proposed for the Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*), Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*), and six butterflies in the February 8, 1977, FEDERAL REGISTER (42 FR 7972).

In the July 2, 1976, FEDERAL REGISTER (41 FR 27381) the Service announced that four public hearings would be held concerning the various proposals and reviews for plants. The public was invited to present their opinions either orally or in writing at the public hearings.

This rulemaking determining 13 plants to be Endangered or Threatened species is the second final rulemaking which the Service has issued based on the proposal of 1,783 plants as Endangered. The first such rulemaking included four plants from San Clemente Island, Calif., and was published in the August 11, 1977, FEDERAL REGISTER (42 FR 40682). An additional 1,404 native plants remain under review from the April 21, 1975, and July 1, 1975, FEDERAL REGISTER notices.

SUMMARY AND DISCUSSION OF  
COMMENTS

As has been previously discussed, up to July 1976 the Service published two notices of review and a proposed rulemaking concerning the determination of native plants as Endangered or Threatened species, and proposed procedural regulations for plants. In addition, the Service published a proposed rulemaking in the June 16, 1976, FEDERAL REGISTER (41 FR 24367) and a final rulemaking in the February 22,

1977, FEDERAL REGISTER (42 FR 10461) for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Many of the comments received discussed more than one of the reviews or proposed rulemakings. Included in those comments were about 425 which specifically addressed the proposed Endangered status for the 1,783 plants.

The following is a quantitative summary and general discussion of these comments received. About 200 letters were received from citizens (including professional biologists), 53 from commercial enterprises and associations, 46 from conservation groups, 63 from garden clubs, 31 from Federal agencies, and 37 from State and local agencies. Three professional botanists, four State representatives and one representative of a commercial business submitted testimony directly relevant to the listing of the 1,783 plants at the four public hearings. Some of this testimony was supplemented by written statements. Excerpts of testimony from the public hearings were featured in the September 1976 issue of the Service's *Endangered Species Technical Bulletin* and are incorporated herein.

The deadline for written comments on the proposed listing was August 16, 1976; however, additional comments received by March 18, 1977, were considered. Any further comments, data or questions concerning these plants should be addressed to the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The Service responded to many comments received and those responses often resulted in additional communications. Efforts made by the Service to elicit information from the public included the dispersal of over 6,000 copies of the proposal, announcements in the July and September 1976 issues of the *Endangered Species Technical Bulletin*, and presentations by Service botanists to professional and amateur organizations. Among the numerous newspaper articles published concerning the proposal were those in the June 18, 1976, Washington Post and Honolulu Advertiser and the June 19, 1976, Detroit Free Press.

About 400 of the comments received supported the conservation of Endangered and Threatened plants. Less than one percent opposed such conservation programs. Many comments supplied data for those plants covered by the notices of review, for those plants proposed as Endangered, and for other plants that should possibly be proposed as either Endangered or Threatened. Comments and data pertaining to specific plants will be discussed when those plants are included in final rulemakings.

**Data Required to Determine Plants as Endangered Species or Threatened Species.**—Many comments suggested that the plants in the reviews or the proposals did not have sufficient documentation to warrant their designation as either Endangered species or Threatened species. In addition, about two dozen comments expressed concern about the quality and availability of the data. One of the reasons for publishing such reviews and proposals is to solicit data. Section 4(b)(1) of the Act requires that the listing of a species as an Endangered species or a Threatened species, or its subsequent delisting, must be based on "... the best scientific and commercial data available..." The compilation and analysis of data concerning Endangered animals and plants must be a continuous process to insure the accuracy of the list and to promote efficient management practices. The Service has received data that support the designation of some taxa as Endangered species or Threatened species and data that suggests others may not qualify for such status. Although most of the 1,783 plants were considered endangered by the Smithsonian Institution in their report (House Document 94-51), at this time their data are not in a form that can be easily distributed in their entirety. The Smithsonian was under contract to the Service from July 1976 through June 1977 to consolidate and add to their data and these data are available for inspection by interested parties. Also, detailed information is being developed by many State groups, in some cases under Service contracts through our Regional offices.

**Concern and Recommendations for Plant Conservation.**—Two comments expressed concern about the small number of staff and the modicum of funds available for plant conservation in the Service's Office of Endangered Species. More than 85 comments suggested that more publicity is necessary to educate the public about the identity, habitat, and the conservation of Endangered and Threatened plants. Included were about 55 letters from members of the Garden Club of America who felt "the public could be much better informed about endangered plants if money available... was used for color posters showing the endangered plant species of every state."

Several comments urged the establishment of Cooperative Agreements for plant conservation between the Federal and State governments under Section 6 of the Act. Congress did not authorize the establishment of Cooperative Agreements for plant conservation under Section 6; however, the Service may enter into Section 6 Management Agreements with the States for the administration and management of areas established for the conserva-

tion of Endangered species or Threatened species.

**Inclusion of the 1,783 Plants in the Appendices of the Trade Convention.**—More than 35 comments have been received suggesting that the Service propose all of the 1,783 plants for inclusion in the appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Several of these comments specified Appendix III as the appendix under which these taxa should be listed. The Service anticipates proposing those U.S. plants that would benefit from such action and that meet established criteria, for inclusion in the appropriate appendices of the Convention.

**Comments Concerning the Designation of Rare Plants, Plants that have Economic Value, Plants that Produce Hallucinogens and Allergens, and Extinct Plants as Endangered Species and Threatened Species.**—Five comments questioned whether the rarity of a plant constituted justification for its designation as an Endangered species or a Threatened species. The Director, U.S. Fish and Wildlife Service, may determine a plant as an Endangered species or a Threatened species because of the comprehensive factors provided in Section 4(a)(1) of the Act. If a plant is rare, but is not affected by any of the factors, then it may not be considered for such status.

Two comments suggested that only plants with economic value should be considered for Endangered or Threatened status. In addition, a few comments expressed opposition to consideration of rare plants in general which include plants that produce hallucinogens and allergens. Section 4(a)(1) of the Act, which sets forth the criteria for listing, does not place any restrictions on the types of plants or the attributes a plant should have before it can be listed under the Act. It should be remembered that plants determined as Endangered species or Threatened species that are not already of economic or medical importance may prove to have such importance after their biology is more thoroughly understood or with the advent of new technologies.

One comment questioned the necessity of listing plants under the Act that are thought to be extinct. In contrast, another comment suggested that all extinct plants should be listed as Endangered. Concern was expressed that delays in the listing process might result in the destruction of any rediscovered species.

In their report, the Smithsonian Institution designated 100 plants as extinct, or possibly or probably extinct. These plants were among those proposed as Endangered. Since the publication of the Smithsonian Institute's report, several of the plants thought

to be possibly or probably extinct have been rediscovered. This is the case with four of the thirteen plants in this final rulemaking.

**Section 7 of the act.**—Section 7 of the Act, which sets forth conservation obligations of Federal agencies, was referred to in 16 comments. Section 7 reads as follows:

"The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States, to be critical."

Two comments supported section 7 as a good tool for the conservation of Endangered and Threatened plants. The remaining 14 comments expressed concern that the protection afforded such plants under section 7 would inhibit the utilization of the plants' habitat. One member of a mining organization noted: "While we recognize the importance of rare species of plants, we urge the Fish and Wildlife Service to recognize the problems being confronted by the United States in maintaining an adequate land base for the production of vital natural resources."

The Service recognizes that in the future some projects and activities could potentially be in conflict with section 7; however, the Service anticipates that a large majority of the plants determined as Endangered species or Threatened species can be conserved with only minor modifications in the use of their habitat, and little expense. Furthermore, the Service firmly believes that the vast majority, if not all, of these potential conflicts can be avoided through use of the consultation process under section 7. Many such plants can be conserved with the simple recognition of their existence by persons managing their habitats.

**Time available for comments.**—Fifty-six comments requested more time (up to five years) to offer comments and to provide time for the study of the status of the 1,783 plants proposed as Endangered. Six comments requested additional hearings. The Service is always interested in receiving additional comments and data that may be useful in better establishing the status of any plant, in designating Critical Habitat, or in conserv-

ing Endangered species or Threatened species. In light of this policy and the long time between the proposal and subsequent final rulemakings, the Service does not feel that an official extension of the comment period or the scheduling of additional hearings is necessary.

*Need for assessing the impacts of designating plants as Endangered or Threatened species.*—Ten organizations and two individuals submitted comments in which they suggested that the environmental or economic impact of listing plant taxa should be investigated. The Service recognizes the concern of those individuals who will be affected by conservation of plants under the Act and will fully comply with existing law, including the requirements of the National Environmental Protection Act of 1969.

*Designation of plant varieties as Endangered species or Threatened species.*—There has been some concern expressed as to whether Congress has empowered the Service through the Act to designate plant varieties as well as plant subspecies as Endangered species or Threatened species. In their report (House Document 94-51), the Smithsonian Institution noted several inadequacies in the Act for the conservation of plants. The first such inadequacy discussed was that the term "species" as defined in section 3(11) of the Act clearly includes subspecies, but not varieties.

Although the International Code of Botanical Nomenclature (Stafleu, F. A., ed. 1972. Adopted by the Eleventh International Botanical Congress, Seattle, August 1969. *Regnum Vegetabile* 82:1-426.) lists the rank variety below the rank subspecies, the Service has recognized that there has not been a precise botanical usage of these ranks. When the Service published the proposed rulemaking to designate 1,783 plants as Endangered species, numerous plant varieties were included. In that rulemaking the Service provided the following discussion: "The Service recognizes that plant taxonomy is not an exact science, that the knowledge of plants continues to develop, and that scientific nomenclature reflects such understanding. It further recognizes that the classification and nomenclatural rank given to a plant is subject to opinion, based on the specialist's knowledge of the plant in question, and his interpretation of the terms and concepts of plant taxonomy. Consequently, those plants named as 'varieties' in the Smithsonian Institution report and its revision are here considered to be subspecies and, therefore, 'species' as defined in section 3(11) of the Act."

The Service feels that there is a rational basis for this interpretation, and has received support from the botanical community for the determina-

tion of plant varieties as Endangered or Threatened. As an example, a botanist from the Smithsonian Institution supplied a discussion of the botanical usage of infraspecific ranks to the Service, in which he concluded that as the terms have historically been used interchangeably, they are essentially identical.

In addition, the usage of these infraspecific ranks has been discussed in numerous general texts in plant taxonomy. A. S. Hitchcock (1925. *Methods of Descriptive Systematic Botany*. John Wiley and Sons, Inc., New York. pp. 11-12.) noted: "The tendency, especially among most American botanists, is to recognize among wild plants only one subdivision of the species. It is evident that the subdivisions may have very unequal rank, and this inequality may be indicated by several categories of minor groups; but from the standpoint of convenience in the use of the terms and in the designation of groups, the method of having a single category below the species is preferable." Hitchcock continued by noting that the rank ". . . variety (or subspecies)" is the rank most used for designating the primary subdivisions of plant species.

George H. M. Lawrence (1951. *Taxonomy of Vascular Plants*. MacMillan Company, New York, p. 55.) also discussed the synonymy of the ranks variety and subspecies (italic supplied).

"The variety (Latin, *varietas*) has been used as a category to designate as many or more concepts as has that of subspecies. Horticulturists have used it indiscriminately for any variant of the species; botanists have considered it to be (1) a morphological variant of the species without regard for distribution, (2) a morphological variant having its own geographical distribution, (3) a morphological variant sharing an area in common with one or more other varieties of the same species, and (4) a variant representing only a color or habit phase. *From this it is clear that the same plant may be designated a subspecies by one botanist and a variety by another*, or that the variety of one author is placed in the category of forma by another author. This lack of unanimity of concept is disconcerting, but it is a factor to be recognized in any appraisal of taxonomic literature. In this regard, it is not especially important that agreement exist if by even diverse modes of evaluation the same pattern of relationship is reached. There is no historical basis for priority of usage of either the term subspecies or variety."

Lyman Benson (1957. *Plant Classification*. D.C. Heath and Company, Boston. p. 3.) emphasized the use of the rank variety as the major subdivision of species for plants: "Species are made up of varieties." Although the term variety in plant taxonomy is

often regarded by laymen as representing a trivial distinction, Benson emphasized (italic supplied): "The botanical variety is not to be confused with the horticultural 'variety,' which is not a taxon but a minor variant or hybrid of economic or aesthetic significance. *The term subspecies is used by some authors in exactly the same sense as variety*. Others employ it as a designation for a group of higher rank than variety but lower than species. The majority of botanists have not used the term, but it is in common usage in zoology."

C. L. Porter (1959. *Taxonomy of Flowering Plants*. W. H. Freeman and Company, San Francisco, p. 61.) reached a similar conclusion (italic supplied). "Unfortunately, clear distinctions are not always drawn between subspecies and varieties and the two categories are used more or less interchangeably."

In recent years there has been a tendency to use the rank subspecies to designate the major subdivisions of plant species. This tendency has been particularly prevalent in the case of morphologically distinct, allopatric populations. The rank variety in turn has become more commonly associated with individual plants that are morphologically distinct, but sympatric with other dissimilar members of the same species. Such an interpretation was made by the editors of *Flora Europaea* (1964. Tutin, T. G. et al. Cambridge University Press. Vol. I. p. xx). In that work those varieties considered to biologically represent subspecies were elevated to the rank of subspecies.

Congress has clearly indicated in Section 3(11) of the Act defining the term "species" that infraspecific taxa should be included and conserved. As the rank variety has been used by botanists as the major infraspecific subdivision for many plant species, the Service considers it appropriate to consider plant varieties for determination as Endangered or Threatened.

This interpretation has not been shared by every individual who has addressed this issue in the comments received by the Service. In a letter dated August 22, 1975, the Governor of the State of Hawaii noted ". . . the varietal level is not necessary to protect species nor is it required by the Endangered Species Act (Section 3(11))." With this letter, the Governor submitted a list of about 300 Hawaiian plants that he felt should be considered for designation as Endangered species or Threatened species under the Act. That list was examined by staff botanists at the Office of Endangered Species who discovered numerous instances where the failure to designate varieties resulted in the inclusion of plants that had not been recommended as Endangered or Threatened by the Smithsonian Institution.

The Service received several comments that supported the designation of plant varieties as Endangered or Threatened. The desirability of precision in the listing process was emphasized in a comment from an oil shale corporation: "... it is necessary that action be taken to protect endangered plants; but the law should be very specific. If even the variety name is omitted, it has a tremendous impact and changes the conservation of a rare plant to plants that are quite common."

The Service feels its resources would be best appropriated by concentrating on those plants and animals that would most benefit from the provisions in the Act for their conservation. As the Service desires to insure that major infraspecific plant taxa are considered for designation as Endangered species or Threatened species, we intend to carefully review endangered plant varieties to ascertain which should be so designated.

This final rulemaking determines one plant variety, the Contra Costa wallflower, as an Endangered species. The Contra Costa wallflower is represented by a morphologically distinct population which has unique ecological requirements.

*Comments that pertain directly to the plants in this rulemaking.*—Northern wild monkshood, (*Aconitum noveboracense*). In a petition (dated August 12, 1974) Dr. Hugh H. Iltis, among others, requested the Service to designate the Northern wild monkshood and 16 other plants as Threatened under the Act. Subsequently, the Service included the Northern wild monkshood in the two notices of review and the proposed rulemaking for 1,783 plants. In each of these publications the Service requested data concerning the subject taxon.

Fifteen comments were received concerning the Northern wild monkshood in response to these requests and to other requests by Service personnel for data. The Army Corps of Engineers submitted a report prepared by Robert H. Read on certain Driftless Area flora and cliff communities that lie primarily within the proposed impoundment area of the La Farge Dam north of La Farge, Vernon County, Wis. The comments contained data on the taxonomy, ecology, and the historical and present distribution of the Northern wild monkshood. In addition, several individuals supplied relevant scientific articles and reports.

Rydberg milk-vetch (*Astragalus perianus*) The Service received one comment concerning the locations of two populations of this species in Garfield and Piute Counties, Utah.

Hairy rattlesweed (*Baptisia arachnifera*) One comment was received with notes on the range, distribution, and status of the hairy rattlesweed. It was

noted that this plant grows on sandy soil in pine woods and some mixed woodlands in Wayne and Brantley Counties, Ga.

Virginia round-leaf birch (*Betula uber*) The two comments received concerning this species contained notes on its distribution and an account of its rediscovery in Smyth County, Va.

Santa Barbara Island liveforever (*Dudleya traskiae*) The Service did not receive any comments concerning this plant by March 18, 1977. The California Native Plant Society recently provided an article on the species from the January, 1978, *Fremontia*.

Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) and Antioch Dunes evening-primrose (*Oenothera deltooides* ssp. *howellii*) The Service did not receive any comments concerning the *Erysimum*. One comment on the *Oenothera* was received that noted over the past 30 years the habitat of this subspecies (i.e. Antioch Dunes, Contra Costa County, Calif.) had been reduced from 500 to 15 acres.

Eureka evening-primrose (*Oenothera avita* ssp. *eurekaensis*) and Eureka dune grass (*Swallenia alexandrae*) The service received numerous letters and data before the June 16, 1976, proposed rulemaking concerning these two plants and their habitat, the Eureka Valley, Inyo County, Calif. Much of the correspondence expressed concern about the use of the Eureka Dunes and other parts of the Eureka Valley by off-road vehicles. The use of the Eureka Dunes for vehicular recreation was felt to be a serious threat to the unique Eureka Dunes ecosystem. The Eureka Dunes is the major habitat for the Eureka evening-primrose, the Eureka dune grass, and several other endemic animals and plants. The Service did not receive additional comments concerning these taxa during the formal comment period. In December, 1977, a comment reported recent heavy vehicle use of the dunes.

Furbish lousewort (*Pedicularis furbishiae*) In the summer of 1976, Dr. Charles E. Richards, University of Maine, found several small colonies of the Furbish lousewort on the banks of the St. John River near the town of Allagash, Aroostook County, Maine. This was the first time that this plant had been seen in the wild in 30 years. Dr. Richards made his discovery while under contract to the Army Corps of Engineers to prepare a report on the flora that might be impacted by the proposed construction of two dams on the St. John River, the Dickey-Lincoln School Lakes Project. This report was contracted by the Corps to support their Environmental Impact Statement for this project. On October 27, 1976, the Corps submitted the report prepared by Dr. Richards to the Service.

On November 9, 1976, the Natural Resources Council of Maine submitted

a petition to the Service to designate the Furbish lousewort and Josselyn's sedge (*Carex josselynii*) as Endangered. The sedge has not been located in any of the recent surveys of the St. John River Valley. The New England Coastal Oceanographic Groups (letter dated December 1, 1976) expressed support for the petition submitted to the Service by the Natural Resources Council of Maine.

In addition, the Service received seven other comments concerning the Furbish lousewort. Two of the comments supplied data on the present and historical distribution of the plant. In a letter dated October 8, 1976, the Maine State Planning Office notified the Service that the Critical Areas Program of the State Planning Office had contracted Maine botanists to prepare reports on three plants, including the Furbish lousewort. The reports were to be used to aid their investigations to determine whether some of the habitat of these three plants should be included in their Critical Areas Program. Several comments supported the designation of the Furbish lousewort as an Endangered species. In contrast, one individual noted that although she did not like to see the plant become extinct, she felt that it should not interfere with plans to construct the Dickey-Lincoln School Lakes Project. Another comment noted that efforts would be made in the summer of 1977 to look for the Furbish lousewort along the St. John River in Canada.

Various articles on this species were published after March, 1977. The New York Botanical Garden provided the Service with one by Dr. Howard S. Irwin, from their September/October, 1977, Garden.

Persistent trillium (*Trillium persistens*) One comment was received concerning this species. Notes were included on the taxonomy, ecology, and distribution of the persistent trillium in the Tallulah-Tugaloo River System, Rabun and Habersham Counties, Ga., and Oconee County, S.C.

Hawaiian wild broad-bean (*Vicia menziesii*) The Service received one comment concerning this species. Included were notes on the distribution and size of the populations of the Hawaiian wild broad-bean on Mauna Loa, Island of Hawaii, and the major threat, feral pigs.

Texas wild-rice (*Zizania texana*) One comment was received which included notes on the distribution and size of the populations of Texas wild-rice in the San Marcos River. Relevant scientific reprints were also supplied.

CONCLUSION AND SUMMARY OF FACTORS AFFECTING THE SPECIES

After a thorough review and consideration of all the information available, the Director has determined the

following 11 plants to be Endangered species: hairy rattleweed, *Baptisia arachnifera* Duncan; Virginia round-leaf birch, *Betula uber* (Ashe) Fernald; Santa Barbara Island liveforever, *Dudleya traskiae* (Rose) Moran; Contra Costa wallflower, *Erysimum capitatum* (Douglas) Greene var. *angustum* (Greene) G. Rossbach; Eureka evening-primrose, *Oenothera avita* (W. Klein) W. Klein ssp. *eurekensis* (Munz & Roos) W. Klein; Antioch Dunes evening-primrose, *Oenothera deltoidea* Torrey & Fremont ssp. *howellii* (Munz) W. Klein; Furbish lousewort, *Pedicularis furbishiae* Watson; Eureka dune grass, *Swallenia alexandrae* (Swallen) Soderstrom & Decker; persistent trillium, *Trillium persistens* Duncan; Hawaiian wild broad-bean, *Vicia menziesii* Sprengel; and Texas wild-rice, *Zizania texana* A. S. Hitchcock. The following two plants are determined to be Threatened species: Northern wild monkshood, *Aconitum noveboracense* A. Gray; and Rydberg milk-vetch, *Astragalus perianus* Barneby.

Section 4(a) of the Endangered Species Act of 1973 states that the Secretary of the Interior may determine a species to be an Endangered species, or a Threatened species, because of any of five factors. These factors are: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, sporting, scientific, or educational purposes; (3) disease or predation (the Service considers grazing under this factor); (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting its continued existence. The plants considered above for listing as either Endangered or Threatened species relate to these factors as follows (numbers refer to factors above):

*Northern wild monkshood.* (1) Historically, this monkshood has been collected in two localities in Chenango County, N.Y.; one locality in Orange County, N.Y.; three localities in Ulster County, N.Y.; one locality in Sullivan County, N.Y.; two localities in Summit County, Ohio; one locality in Portage County, Ohio; one locality each in Allamakee, Dubuque, Jackson, and Delaware Counties, Iowa; two localities in Clayton County, Iowa; one locality in Richland County, Wis.; three localities in Sauk County, Wis.; and seven localities in Vernon County, Wis., for a total of 27 locations.

The present known distribution of the Northern wild monkshood consists of 14 colonies, including one colony in Ulster County, N.Y.; one colony in Summit County, Ohio; one colony each in Allamakee, Clayton, and Jackson Counties, Iowa; one colony in Richland County, Wis.; two colonies in Sauk County, Wis.; and six colonies in Vernon County, Wis.

The disjunct distribution probably dates from the Ice Age when glaciers apparently destroyed intervening populations. The Northern wild monkshood appears to be restricted to moist soil pockets at the bottom of sandstone or limestone cliffs with a northern or eastern exposure. As such habitats are usually small in area and widely separated, the ability for this wildflower to migrate into similar unoccupied habitats is limited.

The restricted habitats of the Northern wild monkshood have also made many of its colonies vulnerable to extirpation. The New York colony is paralleled by a road. Widening the road could have an adverse impact on this population. The Ohio colony is in an urban park where it has been surrounded by construction projects. The Jackson County, Iowa, colony is in a private pasture. Three of the nine Wisconsin colonies would be destroyed by the normal level of the lake created by the La Farge Dam if that dam is constructed. At the highest water level (25-year flood) all but four of the nine colonies (25 percent of the Northern wild monkshoods in Wisconsin) could be destroyed.

Several of the known colonies of the Northern wild monkshood occur in areas where they should receive some protection. Three of the four Wisconsin colonies that would not be impacted by the La Farge Dam are in such areas. Two colonies are in State scientific areas, Parfrey's Glen and Lodde's Mill Bluff in Sauk County, and one colony is in Wildcat Mountain State Park in Vernon County. The Clayton County, Iowa, colony is in Bixby State Park. About 475 individual plants are located in these protected areas.

*Rydberg milk-vetch.* (1) This milk-vetch was first collected in the mountains north of Bullion Creek near Marysvale, Piute County, Utah in 1905. As this was the only known collection for about 70 years, the Smithsonian Institution in 1975 noted in their report that *A. perianus* was possibly extinct. In the summer of 1975 this species was collected in Piute and Garfield Counties, Utah. The Piute County population (consisting of about 100 individual plants) was found in the same general area as the 1905 collection in the Tushar Mountains at 10,000 feet altitude, Fish Lake National Forest. This population is in an area subject to temporary road construction for mineral exploration. Such activities may result in the accidental extirpation of this population. The Garfield County population is found on Mount Dutton at 10,600 feet altitude, Dixie National Forest. The individual plants occur in an area of about one acre which is bisected by a road. Maintenance of this road or other activities promoted by its use may threaten the continued existence of this population.

(3) Both of the populations occur in areas used for grazing sheep.

*Hairy rattleweed.* (1) This species was first collected in 1942 about ten miles south of Jesup, Wayne County, Ga. The plant was abundant on low, sandy ridges in open, pine woods dispersed over an area about ten miles long, from southern Wayne County to northern Brantley County. In the area where the hairy rattleweed occurs, pines are clear-cut for lumber and pulp. The hairy rattleweed appears capable of surviving the cutting practices; however, the subsequent methods for site preparation and the replanting of the pines have greatly reduced the distribution of this species.

*Virginia round-leaf birch.* (5) This birch was first collected south of Rye Valley Station at 2,800 feet altitude in Smyth County, Va., in 1914. Since the early collections, several attempts have been made to relocate this species, none of which were successful as of early 1975 when the Smithsonian Institution published their report. Consequently the Smithsonian noted that the Virginia round-leaf birch was probably extinct.

In the summer of 1975, the Virginia round-leaf birch was rediscovered along Cressy Creek in Smyth County. Searches along Cressy Creek revealed 14 mature trees, 1 three-stemmed shoot and 21 seedlings. Most of the plants occurred on private land, but two were in the adjacent Jefferson National Forest.

The small population size of the Virginia round-leaf birch makes the continued existence of this species extremely vulnerable. Before the rediscovery, grazing by cows may have prevented some of the seedlings from reaching maturity. Since the birch was rediscovered, two trees have died, several seedlings have been removed for scientific purposes, several seedlings have been stolen, and all but two of the remaining seedling have been damaged by vandals. The private landowners have erected fences around their trees.

*Santa Barbara Island liveforever.* (1 and 3) this species is endemic to Santa Barbara Island, Santa Barbara County, Calif. The native vegetation of the island has been largely destroyed by such former practices as farming, grazing and intentional burning. In addition, the island has an introduced population of European hares which are a threat to the native plants. In 1975 the Smithsonian Institution noted in their report that the Santa Barbara Island liveforever had not been collected since 1968 and that it was possibly extinct.

In 1975 several plants were discovered regenerating from stubs that had been gnawed to the ground by the hares. This regeneration can probably be attributed to the efforts by the Na-

tional Park Service to eradicate the hares. Subsequently, a few hundred individual plants were discovered on the face of a sea cliff. Although this population is protected from the hares by its location on the cliff, the eventual recovery of this species and other plants on Santa Barbara Island will depend on the continued efforts of the National Park Service to control the hare population.

*Eureka evening-primrose and Eureka dune grass.* (1) The majority of the Eureka evening-primroses are restricted to the base of the Eureka Dunes in Inyo County, Calif. The Eureka dune grass is known from three locations in the Eureka Valley; however, most of the plants are on the Eureka Dunes.

In recent years the Eureka Dunes have been used for off-road vehicle recreation. The use of the dunes for this kind of recreation constitutes a serious threat to the animals and plants of the Eureka Dunes ecosystem. Since the Eureka dune grass and the Eureka evening-primrose were proposed as Endangered, the Bureau of Land Management has posted the dunes and part of the surrounding area closed to vehicles. Strict enforcement of the restrictions to vehicular access to the dunes will be necessary to insure the continued existence of the Endangered species found there.

*Antioch Dunes evening-primrose and the Contra Costa wallflower.* (1) These plants are endemic to the Antioch Dunes near Antioch, Contra Costa County, Calif. In their original state, the Antioch Dunes covered approximately 500 acres of the south bank of the Sacramento-San Joaquin River. Agricultural and industrial activities have reduced the original dunes by ninety percent. Dr. Paul Opler, Office of Endangered Species, U.S. Fish and Wildlife Service, found only 28 Contra Costa wallflowers when he visited the dunes on February 18, 1977.

*Furbish lousewort.* (1) This species is endemic to the St. John River Valley. Collection records document that it was found in numerous locations from Allagash Plantation, Maine to Andover, New Brunswick. Much of the former habitat suitable for Furbish louseworts below Allagash has been modified by farming and construction. In 1975 the Smithsonian Institution noted in their report that the Furbish lousewort had not been collected since 1943 and that it was probably extinct.

In 1976 the Army Corps of Engineers contracted Dr. Charles D. Richards, University of Maine, to survey the St. John River watershed for the numerous rare and unusual plants that are known to occur there. The results of his survey were to be used to support the Corps' Environmental Impact Statement for the Dickey-Lincoln School Lakes Project. Although

Dr. Richards did not find any Furbish louseworts at the localities documented by herbarium specimens at the University of Maine, he did find six populations of the species (about 200 individual plants) within the township of Allagash. Further surveys in 1977 by Dr. Richards and others under contract to the Corps led to discovery of more louseworts. Presently 880 individuals in 21 colonies are known from the St. John River Valley in Maine and New Brunswick, Canada.

Dumping, natural landslides, and construction and lumbering near the banks of the river, represent serious threats to the continued existence of this species. In addition, 350 individuals in 13 colonies lie within the proposed impoundment area of the Dickey-Lincoln School Lakes Project. If this project is completed as planned, 40% of the known individuals of the Furbish lousewort will be extirpated.

*Persistent trillium.* (1) All of the populations of this trillium are found within four miles of each other in the Tallulah-Tugaloo River System in Rabun and Habersham Counties, Georgia, and Oconee County, South Carolina. Most of the individual plants are found in the Tallulah Gorge and surrounding ravines on private land. A few individual plants occur in the adjacent Sumter National Forest.

As this species has a restricted distribution, it could be adversely impacted by development in the Tallulah Gorge or the surrounding area. In addition, some silvicultural practices at the edges of the Gorge could have an adverse impact on the persistent trillium's habitat.

*Hawaiian wild broad-bean.* (3 and 5) This wild broad-bean has been recorded as being present on both Mauna Kea and Mauna Loa at about 7,000 to 8,000 feet altitude on the Island of Hawaii. One population, consisting of about six mature vines and a dozen seedlings, is known, from the private Kilauea Forest Reserve on the southeast slope of Mauna Loa at about 5,200 feet altitude. The major threat to this species appears to be feral animals that use it as food.

As this species is represented by a small population, its continued existence is extremely precarious. The few individuals that remain may possess deleterious genes that through inbreeding could express themselves in future generations.

*Texas wild-rice.* (1 and 5) This aquatic grass is known only from the upper San Marcos River, Hays County, Texas. Currently, the grass is restricted to a 2.4 km section of the river where it was calculated in 1976 to occupy 1,131 square meters.

The primary threat to this species has been that some of the residents of the San Marcos area consider it to be a weed. Growth of the grass and other

aquatic vegetation in Spring Lake and other sections of the San Marcos River within the park system of the city of San Marcos has been controlled by mowing, and harrowing and ploughing. The debris resulting from these activities floated downstream and entangled in the inflorescences of the Texas wild-rice dragging them below water, thus precluding any sexual reproduction.

These activities have been recently stopped and are no longer threats to the wild-rice.

In addition, two commercial enterprises have removed wild-rice from the river and replaced it with plants used in home aquaria. Currently, one enterprise is engaged in this type of activity on a limited basis.

Finally, there has been some sewage pollution in the San Marcos River. This pollution may have an adverse impact on the habitat of Texas wild-rice. Although most of the threats to Texas wild-rice in the San Marcos River have been recently abated, the plants have not reproduced sexually in many years. The recovery of the grass in the river will depend on the conservation of the upper San Marcos River ecosystem and require research to identify the factors that are preventing sexual reproduction.

#### EFFECT OF RULEMAKING

The determination set forth in these rules makes all 13 species eligible for consideration provided by section 7 of the Act. Section 7 has been reprinted in the Summary and Discussion of Comments in this final rulemaking. Final regulations for section 7 appear in the January 4, 1978, FEDERAL REGISTER (43 FR 869).

Critical Habitat has only been proposed for the Antioch Dunes evening-primrose and the Contra Costa wallflower. The other provisions of section 7 are applicable for all the subject plants.

Regulations which appear in Part 17, Title 50 of the Code of Federal Regulations, were published in the FEDERAL REGISTER of June 24, 1977 (42 FR 32373) and set forth a series of general prohibitions and exceptions which apply to plant species. They provide for the issuance of permits to carry out otherwise prohibited activities concerning Endangered or Threatened plants under certain circumstances. Permits involving Endangered plants are available for scientific purposes or to enhance the propagation or survival of the species. Permits involving Threatened species are available for scientific purposes; the enhancement of the propagation or survival of the species; economic hardship; botanical or horticultural exhibition; educational purposes; or other purposes consistent with the purposes and policy of the Act.

EFFECT UPON THE STATES

The determination that 11 of these plants are Endangered species and 2 of these plants are Threatened species will enable the States of California, Georgia, Hawaii, Iowa, Maine, New York, Ohio, South Carolina, Texas, Utah, Virginia, and Wisconsin to enter into Management Agreements pursuant to section 6(b) of the Act, for the management of any area established for the conservation of these species. In addition, the determination of the Hawaiian wild broad-bean as an Endangered species under the Act will automatically include the plant as an Endangered species under the Hawaii endangered species law.

EFFECT INTERNATIONALLY

The Furbish lousewort is determined as Endangered in its entire range, including New Brunswick, Canada. In addition to the protection provided by the Act, the Service will review these 13 species to determine whether they

should be considered under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, or other appropriate international agreements.

NATIONAL ENVIRONMENTAL POLICY ACT

An Environmental Assessment has been prepared and is on file in the Service's Office of Endangered Species. It addresses this action as it involves all 13 plants. The assessment and public comments received on this rulemaking are the basis for a decision that these determinations are not major Federal actions which would significantly affect the quality of the human environment within the meaning of section 102(2)(C) of the National Environmental Policy Act of 1969.

This rulemaking is issued under the authority contained in the Endangered Species Act of 1973 (16 U.S.C. 1531-1543; 87 Stat. 884).

This rulemaking was prepared by Mr. Roger E. McManus, Dr. Raymond F. Altevoigt, and Dr. Bruce MacBryde, Office of Endangered Species, 202-343-7814.

NOTE.—The Department of the Interior has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11949 and OMB Circular A-107.

Dated: April 12, 1978.

LYNN A. GREENWALT,  
Director,  
Fish and Wildlife Service.

Accordingly Part 17, Subpart B of Title 50 of the Code of Federal Regulations is amended as set forth below:

1. Section 17.12 is amended by adding, in alphabetical order by family, genus, and species, the following plants:

§ 17.12 Endangered and threatened plants.

Species		Range		Status	When listed	Special rules
Scientific name	Common name	Known distribution	Portion endangered			
<b>Betulaceae—Birch family:</b>						
<i>Betula uber</i> .....	Virginia round-leaf birch.	U.S.A. (Virginia).....	Entire.....	E.....	39.....	NA
<b>Brassicaceae—Mustard family:</b>						
<i>Erysimum capitatum</i> var. <i>angustatum</i> .	Contra Costa wallflower	U.S.A. (California).....	.....do.....	E.....	39.....	NA
<b>Crassulaceae—Stonecrop family:</b>						
<i>Dudleya traskiae</i> .....	Santa Barbara Island liveforever.	.....do.....	.....do.....	E.....	39.....	NA
<b>Fabaceae—Pea family:</b>						
<i>Astragalus perianus</i> .....	Rydberg milk-vetch.....	U.S.A. (Utah).....	.....do.....	T.....	39.....	NA
<i>Baptisia arachnifera</i> .....	Hairy rattleweed.....	U.S.A. (Georgia).....	.....do.....	E.....	39.....	NA
<i>Vicia menziesii</i> .....	Hawaiian wild broad-bean.	U.S.A. (Hawaii).....	.....do.....	E.....	39.....	NA
<b>Liliaceae—Lily family:</b>						
<i>Trillium persistens</i> .....	Persistent trillium.....	U.S.A. (Georgia, South Carolina).	.....do.....	E.....	39.....	NA
<b>Onagraceae—Evening-primrose family:</b>						
<i>Oenothera avita</i> ssp. <i>eurekaensis</i> .	Eureka evening-primrose.	U.S.A. (California).....	.....do.....	E.....	39.....	NA
<i>Oenothera deltoides</i> ssp. <i>hovellii</i> .	Antioch Dunes evening-primrose.	.....do.....	.....do.....	E.....	39.....	NA
<b>Poaceae—Grass family:</b>						
<i>Swallenia alexandrae</i>	Eureka dune grass.....	.....do.....	.....do.....	E.....	39.....	NA
<i>Zizania texana</i> .....	Texas wild-rice.....	U.S.A. (Texas).....	.....do.....	E.....	39.....	NA
<b>Ranunculaceae—Buttercup family:</b>						
<i>Aconitum noveboracense</i> .	Northern wild monkshood.	U.S.A. (Iowa, New York, Ohio, Wisconsin).	.....do.....	T.....	39.....	NA
<b>Scrophulariaceae—Snapdragon family:</b>						
<i>Pedicularis furbishiae</i> .	Furbish lousewort.....	U.S.A. (Maine); Canada (New Brunswick).	.....do.....	E.....	39.....	NA

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