United States. Smithsonian Institution and World Wildlife Fund, Washington, DC xv + 403 pp.
Liogier, H.A., and L.F. Martorell. 1982. Flora of Puerto Rico and adjacent islands: a systematic synopsis. University of Puerto Rico, Rio Piedras, Puerto Rico. 342 pp.
Vivaldi, J.L., and R.O. Woodbury. 1981. Status report on *Chamaecrista glandulosa* var. *mirabilis* (Pollard) Irwin & Barneby. Unpublished status report submitted to the U.S. Fish and Wildlife Service, Atlanta, Georgia. 36 pp.

Author

The primary author of this final rule is Ms. Susan Silander, Caribbean Field Office, U.S. Fish and Wildlife Service, P.O. Box 491, Boquerón, Puerto Rico 00622 (809/851-7297).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations is amended, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1543; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under Caesalpiniaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Caesalpiniaceae-Cassia family:						
Cassia mirabilis	(None)	U.S.A. (PR)	E	379	NA	NA.

Dated: March 15, 1990.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 90-7810 Filed 4-4-90; 8:45 am]

BILLING CODE 4310-55-M

DEPARTMENT OF THE INTERIOR

50 CFR Part 17

RIN 1018-AB31

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Stahlia monosperma (Cóbana Negra)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines *Stahlia monosperma* (cóbana negra) to be a threatened species pursuant to the Endangered Species Act (Act) of 1973, as amended. *Stahlia monosperma* is a medium-sized evergreen tree endemic to the island of Puerto Rico and the nearby Dominican Republic. The species is found in brackish, seasonally flooded wetlands in association with mangrove communities. *Stahlia monosperma* is affected by coastal development and the elimination of these wetlands by both filling and dredging, cutting of the tree for use in furniture and as fenceposts, and grazing. This final rule will extend the Federal protection and recovery provisions afforded by the Act to *Stahlia monosperma*.

EFFECTIVE DATE: May 7, 1990.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Caribbean Field Office, U.S. Fish and Wildlife Service, P.O. Box 491, Boquerón, Puerto Rico 00622 and at the Service's Southeast Regional Office, Suite 1282, 75 Spring Street, SW., Atlanta, Georgia 30303.

FOR FURTHER INFORMATION CONTACT: Ms. Susan Silander at the Caribbean Field Office address (809/851-7297) or Mr. David P. Flemming at the Atlanta Regional Office address (404/331-3583 or FTS 242-3583).

SUPPLEMENTARY INFORMATION:

Background

Stahlia monosperma (cóbana negra) was placed in the genus *Stahlia* in 1881 in honor of Dr. Augustin Stahl, a physician and botanist of Puerto Rico who authored "Estudios sobre la flora de Puerto Rico". It is the only species in this genus. It was initially thought to be endemic to Puerto Rico and the adjacent island of Vieques, but was later collected in eastern Hispaniola. While at one time rather common on the edges of salt flats and shallow lagoons, filling or draining of these areas, cutting for use in furniture and fenceposts, and grazing have left only scattered small populations in Puerto Rico and Vieques. The largest remaining population occurs in the extreme southwest of Puerto Rico, an area currently subject to intense pressure for residential and tourist development (Department of Natural Resources 1988). Botanists from the Dr. Rafael M. Moscoso National Botanical Gardens in the Dominican Republic indicate that the species has been similarly affected in that part of the range.

Stahlia monosperma is a medium-sized evergreen tree that may reach 25 to 50 feet (8 to 16 meters) in height and 1 to 1½ feet (.3 to .5 meters) in diameter. The pinnately compound, alternate leaves have from 6 to 12 opposite leaflets with scattered black dots or glands on the lower surface. Racemes (3 to 6 inches or 7 to 15 centimeters) of yellow flowers are produced between March and May, with the exact period being dependent upon rainfall. The fruits are about 1 inch (2 to 3 centimeters) in diameter and have a thin, red fleshy covering surrounding the single, large seed. These fruits have the noticeable odor of ripe apple. Seeds are apparently animal dispersed and germinate after burial and when surface water has receded (Densmore 1987).

Only scattered populations are known to occur in Puerto Rico and the nearby island of Vieques. The largest population occurs on the southwestern coast of Puerto Rico near Boquerón. Here 23 mature trees have been observed along with a group of 35 seedlings, all on the edge of salt flats. It is found associated with black mangrove (*Avicennia germinans*) and buttonwood (*Conocarpus erectus*). Several more individuals, which have been planted, are known to occur in yards and roadways. Other mature trees are found near mangrove areas in Rio Grande on the northeast coast and on the edge of mangrove forest on Vieques.

a 52 square mile island to the east of Puerto Rico. From 30 to 40 individuals occur on Vieques, all on U.S. Navy property. These populations are threatened by encroachment of development into these wetland areas and the elimination of mature trees. Establishment of seedlings is frequently difficult as they are either trampled or browsed by cattle grazing in the area.

Stahlia monosperma was recommended for Federal listing by the Smithsonian Institution (Ayensu and DeFilipps 1978). The species was included among the plants being considered as endangered or threatened species by the Fish and Wildlife Service, as published in the **Federal Register** (45 FR 82480) dated December 15, 1980; the November 28, 1983, update (48 FR 53640) of the 1980 notice; and the September 27, 1985, revised notice (50 FR 39526). The species was designated category 1 (species for which the Service has substantial information supporting the appropriateness of proposing to list them as endangered or threatened) in each of the three candidate notices.

In a notice published in the **Federal Register** on February 15, 1983 (48 FR 6752), the Service reported the earlier acceptance of the new taxa in the Smithsonian's 1978 book as under petition within the context of section 4(b)(3)(A) of the Act, as amended in 1982. The service made subsequent petition findings in each October of 1983 through 1988 that listing *Stahlia monosperma* was warranted but precluded by other pending listing actions of a higher priority, and that additional data on vulnerability and threats were still being gathered. The Service proposed listing *Stahlia monosperma* on May 12, 1989 (54 FR 20616). That action constituted the final finding required by the petition process.

Summary of Comments and Recommendations

In the May 12, 1989, proposed rule and associated notifications, all interested parties were requested to submit factual reports of information that might contribute to the development of a final rule. Appropriate agencies of the Commonwealth of Puerto Rico, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice inviting general public comment was published in the "El Dia" on May 27, 1989. Four letters of comment were received and are discussed below. A public hearing was neither requested nor held.

The Department of the Navy, Environmental Engineering Division of Roosevelt Roads Naval Station and Vieques Island, reported that *Stahlia monosperma* could be found in both Ensenada Honda and Laguna Kiani. Both areas are classified as Class I Ecological Conservation Zones in which the cutting of vegetation, off road maneuvers, or development are not permitted. Grazing is also excluded from these areas.

The Puerto Rico Department of Natural Resources supported the designation of *Stahlia monosperma* as threatened and reported several cultivated trees from the Vega Commonwealth Forest and the Cayey Campus of the University of Puerto Rico. The U.S. Corps of Engineers, Jacksonville District, did not have civil works projects or active permit applications in the Boquerón area; however, they anticipated receiving at least one permit application during the next year.

Professor Gary Breckon, of the Mayaguez Campus of the University of Puerto Rico, supplied information on the distribution of cóbana negra in Puerto Rico and the Dominican Republic and on the reproductive biology of the species. He reported indivduals in the Boquerón area in Puerto Rico and from only one area, La Altagracia Province, in the Dominican Republic. Additional cultivated indivduals were reported. Professor Breckon reported flowering from March and April and fruit set during late June through mid July. Concern was expressed for the number and source of cultivated plants, all possibly originating from a single seed source.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Stahlia monosperma* should be classified as a threatened species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Stahlia monosperma* (Tul.) Urban (cóbana negra) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The most significant factor reducing the numbers of *Stahlia monosperma* has been the destruction and modification of habitat. Coastal development continues to encroach on coastal mangrove forests and salt flats. Both residential and tourist development complexes are proposed for southwestern Puerto Rico. Many trees are known to have been eliminated in this way. Although in many of these areas the mangroves are part of the Commonwealth Forest system, the specimens of *Stahlia monosperma* lie just inland of black mangrove and are therefore not included within the Forest boundaries.

B. *Overutilization for commercial, recreational, scientific, or educational purposes. Stahlia monosperma* is highly valued for fenceposts and the species may have been greatly reduced in number by cutting of smaller size classes for this purpose. It is also suited for use in furniture.

C. *Disease or predation.* Disease has not been documented as a factor in the decline of this species. However, seedlings are apparently often short-lived in the wild, as those accessible to cattle are usually either trampled or browsed within one year following establishment. Some large trees have also been observed to be damaged by heavy browsing (Densmore 1987).

D. *The inadequacy of existing regulatory mechanisms.* The Commonwealth of Puerto Rico has adopted a regulation that recognizes and provides protection for certain Commonwealth listed species. However, *Stahlia monosperma* is not yet on the Commonwealth list. Federal listing would provide immediate protection and, if the species is ultimately placed on the Commonwealth list, enhance its protection and possibilities for funding needed research.

E. *Other natural or manmade factors affecting its continued existence.* Other natural or manmade factors are not known to be significantly affecting the species at present.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation the preferred action is to list *Stahlia monosperma* as threatened. Since the species appears to produce large quantities of viable seed, protection from the effects of grazing may increase natural colonization. Planting of this species has been successful and propagation efforts are ongoing by the Puerto Rico Department of Natural Resources. Therefore, threatened rather than endangered status seems an accurate assessment of the species' condition. The reasons for not proposing critical habitat for this species are

discussed below in the "Critical Habitat" section.

Critical Habitat

Section 4(a)(3) of the Act requires, to the maximum extent prudent and determinable, that the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species at this time. The number of individuals of *Stahlia monosperma* is sufficiently small that vandalism could seriously affect the survival of the species. Publication of critical habitat descriptions and maps in the **Federal Register** would increase the likelihood of such activities. The Service believes that Federal involvement in the areas where this plant occurs can be identified without the designation of critical habitat. All involved parties and key landowners have been notified of the location and importance of protecting this species' habitat. Protection of this species' habitat will also be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, it would not be prudent to determine critical habitat for *Stahlia monosperma* at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, Commonwealth and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the Commonwealth, and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. No critical habitat is being proposed for *Stahlia monosperma*, as discussed above. Federal invlvement relates to the Army Corps of Engineers regulatory program in areas under jurisdiction of section 404 of the Clean Water Act, as well as internal actions taken by the Corps relative to U.S. Navy property.

The Act and its implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general trade prohibitions and exceptions that apply to all threatened plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.71, would apply. These prohibitions, in part, make it illegal for any person subject to the jurisidiction of the United States to import or export any threatened plant, transport it in interstate or foreign commerce in the course of a commercial activity, sell or offer it for sale in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. Certain exceptions can apply to agents of the Service and Commonwealth conservation agencies. The Act and 50 CFR 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances. It is anticipated that few trade permits for *Stahlia monosperma* will ever be sought or issued since the species is not known to be in commercial cultivation and is uncommon in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 3507, Arlington, Virginia 22203–3507 (703/358–2104).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Ayensu, E.S., and R.A. DeFilipps. 1978. Endangered and threatened plants of the United States. Smithsonian Institution and World Wildlife Fund, Washington, DC xv + 403 pp.

Densmore, R. 1987. Status report on *Stahlia monosperma* (cobana negra) in southwestern Puerto Rico. Unpublished report submitted to the Caribbean Field Office, U.S. Fish and Wildlife Service, Boqueron, Puerto Rico.

Department of Natural Resources, Natural Heritage Program. 1988. Status information on *Stahlia monosperma* in Puerto Rico and adjacent islands. San Juan, Puerto Rico.

Author

The primary author of this final rule is Ms. Susan Silander, Caribbean Field Office, U.S. Fish and Wildlife Service, P.O. Box 491, Boquerón, Puerto Rico 00622 (809/851–7297).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Fish, Marine mannals, Plants (agriculture).

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1543; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order, under Fabaceae to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
• • •		•	•	•	•	
Fabaceae—Pea family:						
Stahlia monosperma	Cobana negra	U.S.A. (PR) Dominican Republic.	T	380	NA	NA.
• • •		•	•	•	•	

Dated: March 15, 1990.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 90-7811 Filed 4-4-90; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB31

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Geum radiatum and Hedyotis purpurea var. montana

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service lists two plants, *Geum radiatum*, (spreading avens) and *Hedyotis purpurea* var. *montana* (Roan Mountain bluet), as endangered species under authority of the Endangered Species Act of 1973, as amended (Act). These perennial herbs, limited to 11 *Geum* populations and 6 *Hedyotis* populations in North Carolina and Tennessee, are endangered by residential and recreational development, habitat disturbance due to heavy use by hikers and climbers, collection, and natural succession. This action implements Federal protection provided by the Act for *Geum radiatum* and *Hedyotis purpurea* var. *montana*

EFFECTIVE DATE: May 7, 1990.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

FOR FURTHER INFORMATION CONTACT: Nora Murdock at the above address (704/259-0321 or FTS 672-0321).

SUPPLEMENTARY INFORMATION:

Background

Geum radiatum, described by André Michaux (1803) from material collected in North Carolina, is a perennial herb with basal rosettes of leaves arising from horizontal rhizomes. The stems grow 2 to 5 decimeters tall and are topped with an indefinite cyme of bright yellow actinomorphic flowers. Flowering occurs from June through September, with fruiting from August through October. The fruit is a hemispheric aggregate of hirsute achenes, 7 to 9 millimeters in diameter (Kral 1983, Radford *et al.* 1968, Massey *et al.* 1980). This species can be easily distinguished from other Southeastern *Geums* by its large yellow flowers and by its leaves (mostly basal), which have large terminal lobes and small laterals (Massey *et al.* 1980). *Geum radiatum* has been placed in other genera by various workers; Robert Brown (1823) placed it in the genus *Sieversia;* Bolle (1933) placed it in the genus *Acomastylis*; and Hara (1935) placed it in *Parageum*. Currently accepted taxonomic treatment places this species in the genus of Michaux's original description (Raynor 1952, Robertson 1974).

Hedyotis purpurea (L.) T. & G. var. *montana* (Small) Fosberg was first described as *Houstonia montana* in 1903 by J. K. Small from specimens collected by J. W. Chickering, Jr., in 1877 from the summit of Roan Mountain in North Carolina and Tennessee. Another synonym is *Houstonia purpurea L.* var. *montana* (Small) (Terrell 1959, Terrell 1978). This species is a shallow-rooted perennial that forms low-growing, loose tufts 1 to 1.5 decimeters tall. The inflorescence is a subsessile few-flowered cyme. The bright purple flowers appear in July and early August, followed by the many-seeded capsule (Kral 1983, Radford *et al.* 1968). *H. purpurea* var. *montana* is distinguished from *H. p.* var. *purpurea* by its larger corolla size, different corolla color (deep purple as opposed to purplish to white in *H. p.* var. *purpurea*), and its larger seed size (Kral 1983, Terrell 1978).

These two species are endemic to a few scattered mountaintops in western North Carolina and eastern Tennessee where they grow, exposed to full sunlight, in the shallow acidic soils of high elevation cliffs, outcrops, steep slopes, and gravelly talus associated with cliffs. Substrate types are variable for the species but include various igneous, metamorphic, and metasedimentary rocks such as quartz diorite, garnet-rich biotite, muscovite and quartz schist, quartz phyllite, metagraywacke, metaconglomerate, and metarkoses containing feldspar and chlorite, amphibole, hornblende, and feldspar gneiss (Massey *et al.* 1980). Common associates of these two species include *Leiophyllum buxifolium, Menziesia pilosa, Rhododendron catawbiense, Aster* spp., *Carex* spp., *Solidago* spp., *Heuchera villosa, Saxifraga michauxii,* and various grass species. Some of the sites are also occupied by *Liatris helleri* and/or *Solidago spithamaea,* species that are already federally listed as threatened. The high elevation coniferous forests adjacent to the rock outcrops and cliffs occupied by these two species are dominated by red spruce (*Picea rubens*) and another Federal candidate species, Fraser fir (*Abies fraseri*) (Massey *et al.* 1980, Morgan 1980, Kral 1983).

Sixteen populations of *Geum radiatum* have been reported historically; 11 remain in existence. Three of these populations are in Ashe County, North Carolina, with one population each remaining in Avery, Transylvania, Watauga, Buncombe, and Yancey Counties, North Carolina, and Sevier County, Tennessee; the other two populations are located on the Mitchell County, North Carolina/Carter County, Tennessee line and the Avery/Watauga County line in North Carolina. Six of the remaining populations are located on privately owned lands; four are located on public land administered by the U.S. Forest Service and the National Park Service, and one is located on State park land administered by the North Carolina Department of Environment, Health, and Natural Resources. Five additional populations were historically known for this species. The reasons for the disappearance of *Geum radiatum* at these sites are undocumented. However, most of the sites have been subjected to heavy recreational use by hikers, climbers, and sightseers.

Hedyotis purpurea var. *montana* was known historically from seven populations; six remain. Two of these are located on the line between Avery and Watauga Counties, North Carolina; one is at the juncture of the boundaries of Mitchell and Avery Counties, North Carolina, and Carter County, Tennessee; two are in Ashe County, North Carolina;

and one population remains in Watauga County, North Carolina. The seventh population was reported from Yancey County, North Carolina, but has not been found there during recent searches (Paul Somers, personal communication, Tennessee Department of Conservation, 1988; Alan Weakley, personal communication, North Carolina Natural Heritage Program). That site, like those from which *Geum radiatum* has vanished, has also been subjected to relatively heavy recreational use.

The continued existence of both species is threatened by trampling and associated soil erosion and compaction, other forms of habitat disturbance due to heavy use of the habitat by recreationists such as hikers, as well as by development for commercial recreational facilities and residential purposes. Since both species are early successional pioneers, some of the populations are also threatened by natural succession (Massey *et al.* 1980, Kral 1983). Construction of new trails, other recreational improvements, significant increases in intensity of recreational use, or intensive development without regard to the welfare of these species at any of the sites could further jeopardize their continued existence. Most of the populations occupy a very small total area. Seven of the remaining *Geum radiatum* populations have fewer than 50 plants remaining in each, with 3 of these having fewer than 10 plants each. Over the past decade, at least four of the currently extant *Geum radiatum* populations have undergone significant population declines (ranging from 67 percent to 96 percent); four others have suffered declines of lesser magnitude. Only three are known to have maintained relative stability during the same period. One of the privately owned sites for these two species has been developed as a commercial recreation facility; development of a second site as a ski resort is currently underway. The third privately owned site is owned in part by The Nature Conservancy and is therefore partially protected. The remaining three sites in private ownership are unprotected, with residential development currently underway at two of the sites. The five sites in public ownership are located in scenic areas that attract large numbers of visitors annually.

Federal government actions on *Geum radiatum* began with section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. The Service published a notice in the July 1, 1975, **Federal Register** (40 FR 27832) of its acceptance of the report of the Smithsonian Institution as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act and of its intention thereby to review the status of the plant taxa named within. *Geum radiatum* was included in the July 1, 1975, notice of review. On December 15, 1980, the Service published a revised notice of review for native plants in the **Federal Register** (45 FR 82480); *Geum radiatum* was included in that notice as a category 1 species; *Hedyotis purpurea* var. *montana* was included as a category 2 species. Category 1 species are those species for which the Service currently has on file substantial information on biological vulnerability and threats to support proposing to list them as endangered or threatened species. Category 2 species are those for which listing as endangered or threatened may be warranted but for which substantial data on biological vulnerability and threats is not currently known or on file to support proposed rules.

On November 28, 1983, the Service published a supplement to the notice of review for native plants in the **Federal Register** (48 FR 53640); the plant notice was again revised September 27, 1985, (50 FR 39536). *Geum radiatum* was included as a category 2 species in both the 1983 supplement and the 1985 revised notice. *Hedyotis purpurea* var. *montana* was included in the 1985 notice as a category 2 species. Subsequent to the 1985 notice, the Service received additional information from the North Carolina Natural Heritage Program (A. Weakley, personal communication, 1988); this information and additional field data gathered by the Heritage Program, the Fish and Wildlife Service, and the National Park Service (Keith Langdon, personal communication, Great Smoky Mountains National Park, 1988; Bambi Teague, personal communication, Blue Ridge Parkway, 1988) indicate that the addition of *Geum radiatum* and *Hedyotis purpurea* var. *montana* to the Federal List of Endangered and Threatened Plants is warranted.

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, requires the Secretary to make certain findings on pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Geum radiatum* because of the acceptance of the 1975 Smithsonian Report as a petition. In October of 1983, 1984, 1985, 1986, 1987, and 1988, the Service found that the petitioned listing of *Geum radiatum* was warranted but precluded by listing actions of a higher priority and that additional data on vulnerability and threats were still being gathered. On July 21, 1989, the Service published a proposal to list the species as endangered. Publication of that rule constituted the final finding that is required.

Summary of Comments and Recommendations

In the July 21, 1989, 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 comments. Newspaper notices inviting public comment were published in the *Asheville Citizen-Times* (Asheville, North Carolina) on August 27, 1989; *Watauga Democrat* (Boone, North Carolina) on August 25, 1989; *Transylvania Times* (Brevard, North Carolina) on August 28, 1989; *Yancey Journal* (Burnsville, North Carolina) on August 30, 1989; *Avery Journal* (Newland, North Carolina) on August 31, 1989; *Mountain Press* (Sevierville, Tennessee) on August 26, 1989; *Elizabethton Star* (Elizabethton, Tennessee) on August 27, 1989; and *Jefferson Post* (West Jefferson, North Carolina) on August 28, 1989.

Eleven comments were received. Of these, nine respondents expressed support for the proposal, including the U.S. Forest Service, the National Park Service, the Tennessee Department of Conservation, the Land-of-Sky Regional Council, the North Carolina Department of Agriculture's Plant Conservation Program, the Tennessee Valley Authority, and the mayor of Mars Hill, North Carolina. One comment was received that stated no position on the proposal. The North Carolina Farm Bureau Federation expressed concern that the listing of these two species without designation of critical habitat would result in undue restrictions on the use of agricultural pesticides in the State. The Service believes that the recent consultation with the Environmental Protection Agency has resulted in an effective program for protecting endangered species from pesticides without unduly restricting the

commercial use of such chemicals. In addition, neither of the two species in question occurs in areas immediately adjacent to farmland or commercially managed forests. Critical habitat was not designated for these species (see "Critical Habitat" section of this rule) because both are exceedingly rare and attractive to collectors; publication of site-specific maps could result in the further endangerment of these plants, especially at sites where only a few individuals remain.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Geum radiatum* and *Hedyotis purpurea* var. *montana* should be classified as endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement 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 *Geum radiatum* Michaux (spreading avens) and *Hedyotis purpurea* var. *montana* (Chickering) Fosberg (Roan Mountain bluet) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range. Geum radiatum* and *Hedyotis purpurea* var. *montana* are restricted to a few mountaintops and cliff faces 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 their habitat pose a major threat to the remaining populations of both species. Thirty-one percent of the historically known *Geum radiatum* populations have been extirpated, along with 17 percent of the *Hedyotis purpurea* var. *montana* populations. Only 11 populations of the *Geum* and 6 of the *Hedyotis* remain.

The 6 remaining *Hedyotis* populations are small and vulnerable, with two occupying a total of less than 10 square meters. Two of these populations occupy sites that have been or are being developed for commercial recreation. A third site, located on land administered by the U.S. Forest Service, contains 41 percent of the remaining individuals of this species and is subjected to heavy and increasingly intense recreational use. The other three populations, located on private land, are protected only so long as concerned and willing landowners are able to extend necessary safeguards to the species.

As detailed in the "Background" section, significant declines have been documented in many of the extant *Geum* populations during the past decade. Five of the remaining 11 *Geum* populations are located on public lands where they are subjected to heavy recreational use. One of these sites, owned by the U.S. Forest Service, currently supports 73 percent of the remaining individuals of this species; recreational pressure on this already heavily used site is steadily increasing. Of the six privately owned sites, one has been developed as a commercial recreation facility that attracts several hundred thousand visitors annually. A second site is currently being developed as a ski resort; the other four privately owned sites are currently unprotected and located in an area that is rapidly developing as a center for resorts and tourism.

The greatest damage to *Geum radiatum* and *Hedyotis purpurea* var. *montana* in the past has probably come from the commercial development of the open mountain summits where they occur. The construction of trails, parking lots, roads, buildings, observation platforms, suspension bridges, and other recreational, residential, and commercial facilities has taken its toll on the species either through the actual construction process or by trampling due to hikers and sightseers (Kral 1983). Currently, heavy trampling occurs at six of the locations where these two species are known to survive; however, all of the small habitats occupied by these species are threatened by increases in intensity of use, particularly if additional development occurs (Massey *et al.* 1980).

With anticipated increased usage by sightseers, rock climbers, and hikers at 8 of the remaining 11 localities where *Geum radiatum* occurs, and at 4 of the 6 remaining *Hedyotis purpurea* var. *montana* localities, significant impacts on these species in the form of increased soil erosion, soil compaction, and trampling could occur if protection is not provided. Likewise, additional development at any of the locales (such as expansion of trails or sidewalks, construction of additional visitor facilities, or residential development) could further threaten the species if proper planning does not occur.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Neither *Geum radiatum* nor *Hedyotis purpurea* var. *montana* is currently a significant component of the commercial trade in native plants; however, both have attractive growth habits and showy flowers and have potential for horticultural use. Some collecting from wild populations of *Geum* is already occurring. Publicity could generate an increased demand and intensify collecting pressure on wild populations of both species.

C. *Disease or predation.* These taxa are not known to be threatened by disease or predation.

D. *The inadequacy of existing regulatory mechanisms. Geum radiatum* and *Hedyotis purpurea* var. *montana* are afforded legal protection in North Carolina by North Carolina General Statute, Chapter 106, Article 19–B, 202.12–202.19, which prohibits intrastate trade and taking of State-listed plants without a State permit and written permission of the landowner. *Geum radiatum* is listed in North Carolina as threatened—special concern (currently proposed as endangered—special concern); *Hedyotis purpurea* var. *montana* is currently being added to the State's list as endangered. In Tennessee, State-listed plants are afforded legal protection by the Rare Plant Protection and Conservation Act of 1985, Tennessee Code Ann., Chapter 242, section 11–26–201 to 11–26–214, Public Acts of 1985. This statute prohibits taking of listed species without permission of the landowner or manager and regulates commercial sale and export. *Geum radiatum* is listed as endangered 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 Endangered Species Act will provide additional protection and encouragement of active management for *Geum radiatum* and *Hedyotis purpurea* var. *montana*, particularly on Federal lands.

E. *Other natural or manmade factors affecting its continued existence.* These taxa are rare and vulnerable due to their specialized habitat requirements and the limited amount of potential habitat. As mentioned in the previous sections of this rule, most of the remaining populations are small in numbers of individuals and in terms of area covered by the plants. Therefore, little genetic variability exists in these species, making it more important to maintain as much habitat and as many of the remaining colonies as possible. *Geum radiatum* and *Hedyotis purpurea* var. *montana* are early pioneer species growing on rock ledges in full sun. Depending upon the elevation and

suitability of the site for supporting woody vegetation, invasion by shrubs and trees can occur, eliminating these species by overcrowding and shading. Since this type of succession is a slow process, this is not considered an immediate threat to survival of the species. However, proper management planning for *Geum radiatum* and *Hedyotis purpurea* var. *montana* is needed to address this aspect of the species' biology. Natural rock slides, severe storms or droughts, or other natural events may also eliminate populations of these plants.

In recent years the spruce fir forests adjacent to the cliffs and rock outcrops occupied by these species have suffered dramatic declines due, at least in part, to airborne pollution and the impacts of an exotic insect, the balsam wooly aphid. The impacts of this forest decline on these two rare herbaceous species cannot be accurately assessed at this time. Even though both species are pioneers and require exposure to full sunlight, the drastic decline in the high elevation forests may result in excessive desiccation of the moist sites occupied by *Geum* and *Hedyotis*. This theory would seem to be supported by the fact that populations of *Geum*, particularly those located on drier sites, usually abort the fruiting stems before seed can be set. The rhizomes of these perennials are believed to be capable of surviving for decades (Prince and Morse 1985), but continued failure in seed production poses a definite threat to long-term survival and recovery of the species.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Geum radiatum* and *Hedyotis purpurea* var. *montana* as endangered. With 31 percent of the *Geum* and 17 percent of the *Hedyotis* populations having already been extirpated, and only 11 populations of *Geum* and 6 of *Hedyotis* remaining (all of which are subject to some form of threat), these species warrant protection under the Act. With the small number of remaining populations and the small number of individuals and area covered by these populations, and with significant declines having been documented in many of the surviving populations, these two plants are in danger of extinction throughout all or significant portions of their ranges and therefore qualify as endangered species under the Act. Critical habitat is not being designated for the reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for *Geum radiatum* or *Hedyotis purpurea* var. *montana* at this time. Publication of critical habitat descriptions and maps would increase public interest and possibly lead to additional threats for these species from collecting and vandalism (see threat factor "B" above). Both species have showy flowers and have some potential for horticultural use. Increased publicity and a provision of specific location information associated with critical habitat designation could result in increased collecting from wild populations since neither species is readily available from cultivated sources. Although taking of endangered plants from lands under Federal jurisdiction (and from privately owned lands under certain circumstances (see "Available Conservation Measures" section)) and reduction to possession is prohibited by the Endangered Species Act, taking provisions are difficult to enforce. Publication of critical habitat descriptions would make *Geum radiatum* and *Hedyotis purpurea* var. *montana* more vulnerable and would increase enforcement problems for the U.S. Forest Service and the National Park Service. Also, the populations on private lands would be more vulnerable to taking. Increased visits to population locations stimulated by critical habitat designation, even without collection of plants, could adversely affect the species due to the associated increase in trampling of the fragile habitat occupied by these plants. The Federal and State agencies and landowners involved in managing the habitat of these species have been informed of the plants' locations and of the importance of protection; therefore, it would not be prudent and no additional benefit would result from a determination of critical habitat.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The U.S. Forest Service and the National Park Service have jurisdiction over portions of the species' habitat. Federal activities that could impact *Geum radiatum* and *Hedyotis purpurea* var. *montana* and their habitat in the future include, but are not limited to, the following: construction of recreational facilities (including trails, buildings, or maintenance of these facilities), use of aerially applied retardants in fire-fighting efforts, road construction, permits for mineral exploration, and any other activities that do not include planning for the species' continued existence. The Service will work with the involved agencies to secure protection and proper management of *Geum radiatum* and *Hedyotis purpurea* var. *montana* while accommodating agency activities to the extent possible.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plants. All trade prohibitions at section 9(a)(2) of the Act, implemented by 50 CFR 17.61 apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export any endangered plant, transport it in interstate or foreign commerce in the course of commercial activity, sell or offer it for sale in interstate or foreign commerce, or remove it from areas under Federal jurisdiction and reduce it to possession.

In addition, the 1988 amendments (Pub. L. 100-478) to the Act protect endangered plants from malicious damage or destruction on Federal lands and their removal, cutting, digging up, or damaging or destroying in knowing violation of any State law or regulation, including State criminal trespass law. The 1988 amendments do not reflect this protection for threatened plants. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued since *Geum radiatum* and *Hedyotis purpurea* var. *montana* are not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 3507, Arlington, Virginia 22203-3507 (703/358-2104).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

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Author

The primary author of this final rule is Nora Murdock, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259-0321 or FTS 672-0321).

List of Subjects in 50 CFR Part 17.

Endangered and threatened species, Fish, Marine mammals, Plants (agriculture).

Regulations Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1543; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Rosaceae—Rose family:						
* * *	* *	* *	*	*		
Geum radiatum	Spreading avens	U.S.A. (NC, TN)	E	381	NA	NA
* * *	* *	* *	*	*		
Rubiaceae—Coffee family:						
* * *	* *	* *	*	*		
Hedyotis purpurea var. *montana*.	Roan Mountain bluet	U.S.A. (NC, TN)	E	381	NA	NA
* * *	* *	* *	*	*		

Dated: March 15, 1990.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 90-7812 Filed 4-4-90; 8:45 am]

BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB31

Endangered and Threatened Wildlife and Plants; Threatened Status Determined for the Arkansas Fatmucket, Lampsilis powelli

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines the Arkansas fatmucket, *Lampsilis powelli*, to be a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). This freshwater mussel is known to exist in the headwaters of the Saline River, and in the Caddo, Ouachita, and South Fork Ouachita Rivers of central Arkansas. Major threats to its continued existence

are impoundments, channel alteration, gravel dredging, sedimentation, and water quality degradation.

EFFECTIVE DATE: May 7, 1990.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Jackson Field Office, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213.

FOR FURTHER INFORMATION CONTACT: James Stewart at the above address (601/965–4900 or FTS 490–4900).

SUPPLEMENTARY INFORMATION:

Background

The Arkansas fatmucket was described as *Unio powelli* by Lea in 1852 from the Saline River, Arkansas (Johnson 1980). It was synonymized under *Actinonaias ligamentina* by Call in 1895 (Harris and Gordon 1988). In 1900, Simpson placed it in the genus *Lampsilis* (Simpson 1914). The species has been overlooked by a number of authors in reviews of Arkansas mussel fauna, including Burch (1975), Gordon, et al. (1980) and Gordon (1980). Johnson (1980), in his monograph, Stansbery (1983), and Gordon and Harris (1985), all consider *L. powelli* as a valid species. Reported collections of *L. powelli* from the Spring and Neosho Rivers, Kansas, and the Black River, Missouri, are misidentifications.

The shell of the Arkansas fatmucket is generally of medium size, but it occasionally exceeds 100 mm in length. It is elliptical to long obovate with subinflated valves. The umbos are moderately full and project slightly above the hinge line. The shall surface is generally smooth with a shiny olive brown to tawny periostracum and lacks rays. The nacre is bluish white and iridescent. There is sexual dimorphism (Johnson 1980).

The Arkansas fatmucket prefers deep pools and backwater areas that possess sand, sand-gravel, sand-cobble or sand-rock with sufficient flow to periodically remove organic detritus, leaves and other debris. It is not generally found in riffles nor does it occur in impoundments. It is frequently found with islands of *Justicia americana* (water willow) where substrate is typically depositional and water depth is about 1 meter (Harris and Gordon 1988).

The Arkansas fatmucket is known to exist in the Ouachita, Saline and Caddo River systems. In the Ouachita, Basin, this species occurs in the Ouachita River upstream of Lake Ouachita in Montgomery and Polk Counties, and in the South Fork Ouachita River upstream of Lake Ouachita in Montgomery County. In the Saline River Basin, the species occurs in Alum Fork, the Middle Fork, and the North Fork above their confluence with the Saline River, and in the Saline River from its formation downstream to about the Fall Line. The species does not occur in the South Fork of the Saline or in Hurricane Creek, a major tributary, but it probably did historically. In the Caddo River, the Arkansas fatmucket is known from three locations, all of which are in the mainstem.

Collection records on which to base historical distribution of this species do not exist. However, some assumptions can be made by examining the current distribution, current habitat types, and alterations to habitat that have occurred for various reasons. The probable historic range of this species likely included the Caddo River from Norman downstream to the Ouachita River, including at least the lower reach of the South Fork Caddo River. It seems likely that the species occupied the Ouachita River from Malvern upstream to the species' currently known range, and the South Fork Ouachita River for its entire length. In the Saline River drainage, the Arkansas fatmucket likely occurred in all four forks and the mainstem from the Fall Line upstream to the extent of permanent flowing water, and in Hurricane Creek upstream of the Fall Line. Archeological records of other Ozarkian mussels indicate these species may have historically occurred throughout the entire drainage of those systems rather than being restricted to the headwaters as they are at present.

Land use in the basins where this species occurs is predominantly silviculture with lesser amounts of crop land, grass land and urban development. Most of the forest land is owned by timber companies, although a small portion of the species' range lies within the Ouachita National Forest. The remainder of the land is privately owned in relatively small tracts (Harris and Gordon 1988).

The species was listed as a candidate (category 2) in the notice of review published on January 6, 1989 (54 FR 579). Category 2 species are those taxa for which the Service needs additional information before proposing to list the species. The proposed rule to classify *L. powelli* as a threatened species was published on July 27, 1989 (54 FR 31212).

Summary of Comments and Recommendations

In the 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. A newspaper notice inviting general public comment was published in the *Sentinel Record*, Hot Springs, Arkansas on August 12, 1989, and in the *Arkansas Democrat* and the *Arkansas Gazette*, Little Rock, Arkansas on August 13, 1989. Ten comments were received. Four State agencies commented in support of the proposed rule and two State agencies did not take a position. A Federal agency committed to supporting populations of *L. powelli* without specifically expressing a position on the proposed rule. Several issues were raised by commenters and are discussed below.

Issue 1: Impacts to *Lamsilis powelli* from silvicultural practices within the Ouachita Mountains.

Response: One commenter objected to conclusions in the proposed rule regarding the adverse impacts of silviculture to this species and provided information to support an opposing position. This information has been incorporated into the discussion under Factor A in the "Summary of Factors Affecting the Species" below.

Issue 2: Establish present extent of distribution prior to making ruling.

Response: The Service contracted for a survey of the range and based the proposed rule upon that survey. This is the best available information on the status of the species.

Issue 3: Impact of listing on potential municipal water supply.

Response: The Service must make determinations solely on the basis of the best available scientific and commercial information regarding a species' status, without reference to possible economic or other impacts of such determination.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Arkansas fatmucket (*Lampsilis powelli*) should be classified as a threatened species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listed 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 the Arkansas

fatmucket (*Lampsilis powelli*) are as follows:

A. *The present or threatened destruction, modification or curtailment of its habitat or range.* The range of this species has been curtailed and continues to be threatened by impoundments, channel alteration, gravel dredging, sedimentation and water quality degradation. On the Ouachita River, the range of this species has been reduced by the construction of Lake Ouachita, Lake Hamilton and Lake Catherine and the hypolimnetic water releases from these impoundments. On the Caddo River, the impoundment of DeGray Reservoir and resulting hypolimnetic water releases have impacted what was probably the uppermost historic habitat for the species in this system. A part of the Ouachita River Basin Comprehensive Study by the U.S. Army Corps of Engineers includes a feasibility study for one or more impoundments for flood control and other purposes on the Saline River near Benton (Harris and Gordon 1988). The Soil Conservation Service has constructed one impoundment on a tributary of the South Fork Ouachita River, has another under construction, and plans a third impoundment on the mainstem South Fork Ouachita River (Harris and Gordon 1988). While these Soil Conservation Service impoundments will not directly inundate known populations of this species, there are impacts occurring during the construction and possibly during the operation of these impoundments. During construction, there is increased threat from silt and sediment, and after completion, the control of water flows during low flow periods could expose the mussel and also result in lowered dissolved oxygen. Harris and Gordon (1988) list 16 existing impoundments, 1 under construction, and 1 planned within the known range of this mussel that undoubtedly have already impacted its existence or will in the future.

In the South Fork Ouachita River, there is evidence of adverse impacts to a population of the Arkansas fatmucket from channel alteration as a result of highway repairs occurring in 1984–85. The existing channel is filling with organic debris, and flows are apparently inadequate to flush the area. Channel modification is common at highway crossings, and habitat for this species undoubtedly has been impacted by the many road crossings within its range.

Small gravel operations are common within the range of this species, and many streams are impacted by the removal of preferred substrate and by the resulting downstream sedimentation. The Saline River downstream of Benton is severely impacted by gravel dredging (Harris and Gordon 1988).

A large majority of the watershed in rivers where this mussel occurs is in timber production, with the next most common land use being agricultural production—primarily livestock and broiler chickens. Silvicultural practices in the area have contributed to sedimentation problems. There is a difference of opinion in the literature over the degree of impact from sedimentation resulting from silviculture. Using an Arkansas Soil and Water Conservation Commission (Commission) report, Harris and Gordon (1988) estimated 214,300 tons of sediment are transported annually in the Alum Fork and Middle Fork Saline Rivers, where the best population and habitat occurs. The majority of this erosion is sheet and rill, with road- and stream-bank erosion accounting for most of the remainder.

In a nonpoint source assessment of potential erosion and siltation from silviculture, the Arkansas Department of Pollution Control and Ecology (1989) found that significant impairments to the streams in the Ouachita Mountains region had not occurred. Beasley, *et al.* (1984), developed data that cast doubt on the Commission method of predicting erosion of forest roads. Miller, *et al.* (1985 a, b), estimated the sediment rate from forest roads and lands to be about one percent of the Commission's estimated rate. Lawson (1985) considered erosion rates in Ozark-Ouachita Mountain soils to be low due to very porous soil, high filtration rates, moderate to large amounts of rock, and fibrous roots of vegetation that protect the soil surface from raindrop impact and impede flow. The use of a universal soil loss equation in the Commission's estimate for the Ouachita Mountains is apparently inadequate in light of this later research. As a result, the impact of sediment from silviculture on Ouachita Mountain streams may not be significant.

Water quality degradation apparently is responsible for the absence of the Arkansas fatmucket from a significant area within the species' probable historic range. The South Fork Caddo River receives runoff from a barite mining operation. Prairie Creek, a tributary of the Ouachita River, receives improperly treated municipal waste (Harris and Gordon 1988). Hurricane Creek and Lost Creek of the Saline River drainage receive acid mine runoff from bauxite mines. Additionally, non-point source pollution occurs in varying degrees from feedlot runoff, timber harvest, road construction, and fertilization for agriculture in all three river basins where this species is found.

Existing habitat in the Ouachita and Caddo Rivers is marginal at best. In a 1987–1988 survey of the mainstem Ouachita River, involving some 54 river miles of potential habitat, only 5 individuals of the Arkansas fatmucket were collected (Harris and Gordon 1988). In the Caddo River, the stream gradient upstream of DeGray Reservoir is such that habitat is marginal and the two known populations of this species may be in jeopardy. The only known population in the Caddo River below DeGray Reservoir may be impacted by hypolimnetic water releases.

The probable historic range of this species has been reduced by over 40 percent (138 river miles), and the optimum habitat and good populations currently occur in only about 20 percent (62 river miles) of the total estimated area of historic habitat. These calculations are based upon the historic range as described in the "Background" section. If habitat loss were based upon the range that is indicated by archeological records, the percentage would be much greater.

B. *Over-utilization for commercial, recreational, scientific or educational purposes.* This species has not been collected for scientific purposes and does not seem to be in jeopardy from over-collecting. However, this could pose a threat to the limited populations occurring in the Ouachita, Caddo, Saline or the North Fork Saline Rivers, should someone decide to collect in these areas.

C. *Disease or Predation.* There are no known diseases or predators for this species. Muskrats have not been observed to use the species for food.

D. *The inadequacy of existing regulatory mechanisms.* The State of Arkansas requires a scientific collector's permit prior to taking any species of mollusc. However, this is an almost unenforceable regulation because of limited law enforcement personnel and more urgent priorities. Other environmental regulations will not give priority to this species unless it is listed.

E. *Other natural or manmade factors affecting its continued existence.* The life history requirements for this species, including the fish host, are unknown, making it impossible to evaluate potential impacts in this regard. The remaining populations of the Arkansas fatmucket are somewhat isolated from each other, which can lead to a loss of genetic diversity and difficulty with reproduction, especially in those streams where the population is very

low. The good population in the South Fork Ouachita River (9 percent of existing habitat) is isolated from all other populations by Lake Ouachita, as is the very sparse population in the mainstem Ouachita River. The Caddo River populations are isolated from each other by DeGray Reservoir and from the Saline River populations by some 200 river miles. The Saline River drainage populations are isolated from the other populations, but they are not isolated from each other by any obvious natural barriers. However, if the fish host is not migratory, the exchange of genetic material between these populations would be a very uncommon event.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list the Arkansas fatmucket as threatened rather than endangered. Threatened status was chosen because the species still occurs in good numbers in the headwater streams of two river systems. This distribution makes it unlikely that all populations would be affected by a simultaneous action. Critical habitat is not designated for reasons discussed in that section.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary may designate any habitat of a species that is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species at this time owing to lack of benefit from such designation. No additional benefits would accrue from a critical habitat designation that do not already accrue from the listing. Precise locality data are available to appropriate agencies through the Service office described in the "ADDRESSES" section. All involved parties and landowners will be notified of the location and importance of protecting this species' habitat.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery action, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Protection needs of the Arkansas fatmucket should be considered during the following potential involvement by Federal agencies: The Environmental Protection Agency—pesticide registration and waste management actions; Corps of Engineers—project planning and operation, and during the permit review process; Soil Conservation Service—construction and operation of impoundments; Federal Highway Administration—bridge and road construction at points where known habitat is crossed; and possibly the Farmers Home Administration—various loan programs that may be associated with further urban development within the species' range.

The Act and implementing regulations found at 50 CFR 17.21 and 17.31 set forth a series of general prohibitions and exceptions that apply to all threatened wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect; or to attempt any of these), import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving threatened wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23 and 17.32. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. For threatened species, there are also permits for zoological exhibition, educational purposes, or special purposes consistent with the purposes of the Act.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

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Author

The primary author of this rule is James Stewart (see **"ADDRESSES"** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1543; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "Clams," to the List of Endangered and Threatened Wildlife.

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Clams:							
*	*	*	*	*	*		
Fatmucket, Arkansas	*Lampsilis powelli*	U.S.A. (AR)		T	382	NA	NA
*	*	*	*	*	*		

Dated: March 15, 1990.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 90–7813 Filed 4–4–90; 8:45 am]

BILLING CODE 4310–55–M