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Author

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List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and

recordkeeping requirements, and Transportation.

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. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Section 17.12(h) is amended by adding the following, in alphabetical order under FLOWERING PLANTS, to the List of Endangered and Threatened Plants to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
* <i>Cordia bellonis</i>	* None	* U.S.A. (PR)	* Boraginaceae	* E	* 601	* NA	* NA
*	*	*	*	*	*	*	*

Dated: December 6, 1996.
 John G. Rogers,
 Acting Director, Fish and Wildlife Service.
 [FR Doc. 97-564 Filed 1-9-97; 8:45 am]
 BILLING CODE 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AC64

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Cumberland Elktoe, Oyster Mussel, Cumberlandian Combshell, Purple Bean, and Rough Rabbitsfoot

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Fish and Wildlife Service (Service) determines endangered status for five freshwater mussels—Cumberland elktoe (*Alasmidonta atropurpurea*), oyster mussel

(*Epioblasma capsaeformis*), Cumberlandian combshell (*Epioblasma brevidens*), purple bean (*Villosa perpurpurea*), and rough rabbitsfoot (*Quadrula cylindrica strigillata*)—under the Endangered Species Act of 1973, as amended (Act). All five species have undergone significant reductions in range and numbers. They now exist as relatively small, isolated populations. The Cumberland elktoe exists in very localized portions of the Cumberland River system in Kentucky and Tennessee. The oyster mussel and Cumberlandian combshell persist at extremely low numbers in portions of the Cumberland and Tennessee river basins in Kentucky, Tennessee, and Virginia. The purple bean and rough rabbitsfoot currently survive in a few river reaches in the upper Tennessee River system in Tennessee and Virginia. These species were eliminated from much of their historic range by impoundments. Presently, these species and their habitats are being impacted by deteriorated water quality, primarily resulting from poor land-use practices. Because the species have such restricted

ranges, they are vulnerable to toxic chemical spills.
DATES: Effective February 10, 1997.
ADDRESSES: The complete administrative file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Asheville Field Office, 160 Zillicoa Street, Asheville, North Carolina 28801.
FOR FURTHER INFORMATION CONTACT: Mr. Richard G. Biggins at the above address, or telephone 704/258-3939, Ext. 228.
SUPPLEMENTARY INFORMATION:
 Background
 Cumberland elktoe (*Alasmidonta atropurpurea*)
 The Cumberland elktoe, described by Rafinesque (1831), has a thin but not fragile shell. The shell's surface is smooth, somewhat shiny, and covered with greenish rays. Young specimens have a yellowish brown shell, and the shells of adults are generally black. The inside of the shell is shiny with a white, bluish white, or sometimes peach or salmon color (see Clarke (1981) for a

more complete description of the species).

The Cumberland elktoe is endemic to the Cumberland River system in Tennessee and Kentucky and is considered endangered in the State of Kentucky (Kentucky State Nature Preserves Commission (KSNPC) 1991). Historic records exist from the Cumberland River and from its tributaries entering from the south between the Big South Fork Cumberland River upstream to Cumberland Falls. Specimens have also been taken from Marsh Creek above Cumberland Falls. Old records of a related species, *Alasmidonta marginata*, exist from other creeks above Cumberland Falls; and there is speculation that these specimens were probably the Cumberland elktoe (Gordon 1991). Because the area above the falls has been severely impacted by coal mining, any populations of *A. atropurpurea* that might have existed there were likely lost (Gordon 1991). A record of one fresh dead specimen exists from the Collins River, Grundy County, Tennessee. However, extensive searches of the collection site and other sites in the Collins River and adjacent rivers have failed to find another specimen. If the species did exist in the Collins River, it has likely been extirpated.

Presently, three populations of the Cumberland elktoe are known to persist. The species survives in the middle sections of Rock Creek, McCreary County, Kentucky; the upper portions of the Big South Fork Cumberland River basin in McCreary County, Kentucky; and Scott, Fentress, and Morgan counties, Tennessee; and in Marsh Creek, McCreary County, Kentucky (Gordon 1991). Marsh Creek likely contains the best surviving elktoe population (Robert McCance, KSNPC, *in litt.*, 1994).

Any Cumberland elktoe populations that may have existed in the main stem of the Cumberland River were likely lost when Wolf Creek Dam was completed. Other tributary populations were likely lost due to the impacts of coal mining, pollution, and spills from oil wells. The upper Big South Fork basin population is threatened by coal mining runoff and could also be threatened by impoundments. The Marsh Creek population has been adversely affected and is still threatened by potential spills from oil wells. The Rock Creek population could be threatened by logging. All three populations, especially Rock Creek and Marsh Creek, are restricted to such short stream reaches that they could be eliminated by naturally occurring events such as toxic chemical spills.

Oyster mussel (*Epioblasma capsaeformis*)

The oyster mussel (Lea 1834) has a dull to sub-shiny yellowish- to green-colored shell with numerous narrow dark green rays. The shells of females are slightly inflated and quite thin towards the shell's posterior margin. The inside of the shell is whitish to bluish white in color (see Johnson (1978) for a more complete description of the species). The species is considered endangered in the States of Kentucky (KSNPC 1991) and Virginia (Neves 1991; Sue Bruenderman, Virginia Department of Game and Inland Fisheries (VDGIF), *in litt.*, 1992).

This species historically occurred throughout much of the Cumberlandian region of the Tennessee and Cumberland river drainages in Alabama, Kentucky, Tennessee, and Virginia (Gordon 1991), and Ortmann (1918) considered the species to be very abundant in the upper Tennessee River drainage.

Currently, within the Cumberland River, the oyster mussel survives as a very rare component of the benthic community in Buck Creek, Pulaski County, Kentucky; and it still survives in a few miles of the Big South Fork Cumberland River, McCreary County, Kentucky, and Scott County, Tennessee (Bakaletz 1991; McCance, *in litt.*, 1994). Within the Tennessee River system, only small populations survive at a few sites in the Powell River, Lee County, Virginia; and Hancock and Claiborne counties, Tennessee; in the Clinch River system, Scott County, Virginia, and Hancock County, Tennessee; Copper Creek (a Clinch River tributary), Scott County, Virginia; and Duck River, Marshall County, Tennessee. Although not seen in recent years, the species may still persist at extremely low numbers in the lower Nolichucky river, Cocke and Hamble counties, Tennessee, and in the Little Pigeon River, Sevier County, Tennessee (Gordon 1991).

Much of the oyster mussel's historic range has been impounded by the Tennessee Valley Authority (TVA) and the U.S. Army Corps of Engineers (Corps). Other populations were lost due to various forms of pollution and siltation. The present populations are threatened by the adverse impacts of coal mining, poor land-use practices, and pollution, primarily from nonpoint sources. The Duck River population could be lost if the proposed Columbia Dam on the Duck River at Columbia, Tennessee, is completed as presently proposed. All the known populations are small and could be decimated by

naturally occurring events such as toxic chemical spills.

Cumberlandian combshell (*Epioblasma brevidens*)

The Cumberlandian combshell (Lea 1831) has a thick, solid shell with a smooth to cloth-like outer surface. It is yellow to tawny brown in color with narrow green broken rays. The inside of the shell is white. The shells of females are inflated with serrated teeth-like structures along a portion of the shell margin (see Johnson (1978) for a more complete description of the species). The species is considered endangered in the States of Kentucky (KSNPC 1991) and Virginia (Neves 1991; Bruenderman, *in litt.*, 1992) and a species of special concern in Tennessee (Bogan and Parmalee 1983).

The Cumberlandian combshell historically existed throughout much of the Cumberlandian portion of the Tennessee and Cumberland river systems in Alabama, Kentucky, Tennessee, and Virginia (Gordon 1991). Presently, it survives in the Cumberland River basin, as a very rare component of the benthic community in Buck Creek, Pulaski County, Kentucky, and in a few miles of the Big South Fork Cumberland River, McCreary County, Kentucky, and Scott County, Tennessee (Bakaletz 1991; Gordon 1991; McCance, *in litt.*, 1994). A few old, non-reproducing individuals may also survive in Old Hickory Reservoir on the Cumberland River, Smith County, Tennessee (Gordon 1991).

Within the Tennessee River basin, the species still survives in very low numbers in the Powell and Clinch rivers, Lee and Scott counties, Virginia; and Claiborne and Hancock counties, Tennessee. The Clinch and Powell river populations are very small and in decline (Neves 1991; Richard Neves, Virginia Cooperative Fish and Wildlife Research Unit, personal communication, 1991).

Many of the Cumberlandian combshell's historic populations were lost when impoundments were constructed on the Tennessee and Cumberland rivers by TVA and the Corps. Other populations were lost due to various forms of pollution and siltation. The present populations are threatened by the adverse impacts of coal mining, poor land-use practices, and pollution, primarily from nonpoint sources. All the known populations are small and could be decimated by naturally occurring events such as toxic chemical spills.

Purple bean (*Villosa perpurpurea*)

The purple bean mussel (Lea 1861) has a small- to medium-sized shell. The shell's outer surface is usually dark brown to black with numerous closely spaced fine green rays. The inside of the shell is purple, but the purple may fade to white in dead specimens (see Bogan and Parmalee (1983) for a more complete description of the species). The species is considered endangered in Tennessee (Bogan and Parmalee 1983) and Virginia (Neves 1991; and Bruenderman, *in litt.*, 1992).

The purple bean historically occupied the upper Tennessee River basin in Tennessee and Virginia upstream of the confluence of the Clinch River (Gordon 1991). Ortmann (1918) considered the species "not rare" in Virginia. Presently, it survives in limited numbers at a few locations in the upper Clinch River basin, Scott, Tazewell, and Russell counties, Virginia; Copper Creek (a Clinch River tributary), Scott County, Virginia; Indian Creek (a Clinch River tributary), Tazewell County, Virginia (the Indian Creek location information was received from the Service's Abingdon Field Office, Abingdon, Virginia, after the close of the comment period. However, the purple bean was known to occur in the Clinch River, Tazewell County, Virginia, near the mouth of Indian Creek during the open comment period, and another federally listed mussel (tan riffleshell) was also found in the same reach of Indian Creek. The Service has determined that, because this new information did not substantially affect the listing decision, extending the public comment period was not warranted); Obed River, Cumberland and Morgan counties, Tennessee; Emory River just below its confluence with the Obed River, Morgan County, Tennessee; and Beech Creek, Hawkins County, Tennessee (Gordon 1991).

The purple bean populations in the lower Clinch, Powell, and Holston rivers were extirpated by reservoirs. The decline of the species throughout the rest of its range was likely due to the adverse impacts of coal mining, poor land-use practices, and pollution; primarily from nonpoint sources. The population centers that remain are so limited that they are very vulnerable to naturally occurring events such as toxic chemical spills.

Rough rabbitsfoot (*Quadrula cylindrica strigillata*)

The rough rabbitsfoot (Wright 1898) has an elongated heavy, rough textured, yellow- to greenish-colored shell. The shell's surface is covered with green

rays, blotches, and chevron patterns. The inside of the shell is silvery to white with an iridescence in the posterior area of the shell (see Bogan and Parmalee (1983) for a more complete species description). The species is considered threatened in Virginia (Neves 1991; Bruenderman, *in litt.*, 1992) and a species of special concern in Tennessee (Bogan and Parmalee 1983).

Historically, this mussel was restricted to the upper Tennessee River basin in the Clinch, Powell, and Holston river systems (Gordon 1991). It still survives in all three of these systems, but only in limited areas and at low population levels. Populations persist in the Powell River, Lee County, Virginia; and Claiborne and Hancock counties, Tennessee; Clinch River, Scott County, Virginia; and Hancock County, Tennessee; Copper Creek (a Clinch River tributary), Scott County, Virginia; and North Fork Holston River, Washington County, Virginia (Gordon 1991).

The rough rabbitsfoot populations in the lower Clinch, Powell, and Holston river systems were extirpated by reservoirs. The decline of the species throughout the rest of its range was likely due to the adverse impacts of coal mining, poor land-use practices, and pollution, primarily from nonpoint sources. The population centers that remain are so limited that they are vulnerable to extirpation from naturally occurring events such as toxic chemical spills.

Previous Federal Action

In the Service's notice of review for animal candidates, published in the Federal Register of November 21, 1991 (56 FR 58804), the Cumberland elktoe, oyster mussel, Cumberlandian combshell, purple bean, and rough rabbitsfoot were included as Category 2 species. At that time, a Category 2 species was one that was being considered for possible addition to the Federal List of Endangered and Threatened Wildlife. Designation of Category 2 species was discontinued in the February 28, 1996, Federal Register notice (61 FR 7596). These mussels were approved for elevation to candidate status by the Service on August 30, 1993. A candidate species is a species for which the Service has sufficient information to propose it for protection under the Act. On August 25, 1992, the Service notified by mail (129 letters), potentially affected Federal and State agencies and local governments within the species' present range, and interested individuals that a status review of the above mentioned five

mussels and the slabside pearlymussel (*Lexingtonia dolabelloides*) was being conducted. (The slabside pearlymussel has not been included in this final rule. Additional populations of this species were discovered and further evaluation is needed before a decision can be made regarding the species' need for Federal protection.)

Seven agencies responded to the August 25, 1992, notification. The U.S. Natural Resources Conservation Service (formerly the U.S. Soil Conservation Service) stated: "It is not anticipated that any planned or current activities will adversely affect these species or their habitat." The KSNPC, the Kentucky Department of Environmental Protection, Tennessee Wildlife Resources Agency (TWRA), Virginia Department of Conservation and Recreation (VDCR), and VDGIF provided information on the decline and status of the species in their States.

The Duck River Agency (DRA) provided comments on the status of the oyster mussel in the Duck River. It stated that, as the Duck River population of the oyster mussel is extremely small, it is believed highly unlikely that the stream supports a viable population of *E. capsaeformis*. In contrast to DRA's statement, Don Hubbs (TWRA, *in litt.*, 1992) stated that fresh dead oyster mussel individuals (from young and older cohorts) were not uncommon in muskrat middens on the Duck River in Marshall County, Tennessee. The Service, however, currently has insufficient information to judge the species' long-term viability either in the Duck River or on a rangewide basis.

The DRA took issue with the Service's statement in the notification that the proposed Columbia Dam on the Duck River could eliminate the oyster mussel from the Duck River. It stated that current project alternatives under consideration by the DRA and TVA could result in a project that would flood less than one third of the area and would enhance the future viability of the population segment above the pool. The Service agrees that a smaller Columbia Dam pool would reduce the amount of the oyster mussel population lost to the direct effects of the dam. However, the details of these Columbia Dam alternatives have not been provided to the Service.

The DRA commented that statements in the mussel species accounts (Gordon 1991) used as an information source to prepare the August 25, 1992, notification contained language that appeared to indicate that the Service had already made a decision to list the species prior to receiving any comments

from the notification. The Service agrees that the species accounts, which were prepared by a non-Service biologist under contract to the Service, contain language regarding the need to reverse the species' decline as a means to preserve and recover the mussels. However, these statements, made by a Service contractor, do not represent a predecisional statement by the Service. Statements in the species accounts were considered along with all presently available information on these species, as well as information obtained through the notification and the proposed rule, when making the final decision regarding the status of the species.

The processing of this final rule conforms with the Service's final listing priority guidance published in the Federal Register on May 16, 1996 (61 FR 24722). The guidance clarifies the order in which the Service will process rulemakings following two related events—(1) the lifting, on April 26, 1996, of the moratorium on final listings imposed on April 10, 1995 (Public Law 104-6), and (2) the restoration of significant funding for listing through the passage of the omnibus budget reconciliation law on April 26, 1996, following severe funding constraints imposed by a number of continuing resolutions between November 1995 and April 1996. The guidance calls for giving highest priority to handling emergency situations (Tier 1) and second highest priority (Tier 2) to resolving the listing status of the outstanding proposed listings. This final rule falls under Tier 2. At this time, there are no pending Tier 1 actions.

In the development of this final rule, the Service has conducted an internal review of a draft of this rule and other Service-generated information. Based on this review, the Service has determined that there is no new information that would substantively affect this listing decision and that additional public comment is not warranted.

Summary of Comments and Recommendations

On July 14, 1994, a proposed rule was published in the Federal Register (59 FR 35901) stating that the Cumberland elktoe, oyster mussel, Cumberlandian combshell, purple bean, and rough rabbitsfoot were being considered for endangered species status under the Act. In the proposed rule, in legal notices (published in the *Kingsport Daily News*, Kingsport, Tennessee, on August 2, 1994; *Crossville Chronicle*, Crossville, Tennessee, and *Bristol Herald Courier*, Bristol, Virginia, on August 3, 1994; *Knoxville Journal*, Knoxville, Tennessee, on August 8,

1994; *Columbia Herald*, Columbia, Tennessee, on August 10, 1994; and *Nashville Banner*, Nashville, Tennessee, on August 17, 1994) and in letters dated July 26, 1994, the Service requested Federal and State agencies, local governments, scientific organizations, and interested parties to comment and submit factual reports and information that might contribute to development of a final determination for these five mussels, and provided notification that a public hearing on the proposal could be held, if requested.

In response to the above notifications, the Service received several public hearing requests from within the following counties—Fentress, Cumberland, and Marshall counties, Tennessee; and McCreary County, Kentucky. The Service held two public hearings (December 13, 1994, at the York Institute, Jamestown, Tennessee; and December 15, 1994, at the Marshall County Courthouse, Lewisburg, Tennessee), and reopened the comment period from November 23, 1994, to December 30, 1994. Notices of these hearings and the reopening of the comment period were published in the Federal Register on November 18, 1994, (59 FR 59200) and in the following newspapers—*Daily Herald*, Columbia, Tennessee, and *Bristol Herald Courier*, Bristol, Virginia, on November 20, 1994; *Knoxville News Sentinel*, Knoxville, Tennessee, and *Commonwealth Journal*, Somerset, Kentucky, on November 21, 1994; and *Nashville Banner*, Nashville, Tennessee, *Daily News of Kingsport*, Kingsport, Tennessee, and *Crossville Chronicle*, Crossville, Tennessee, on November 22, 1994. Additionally, the Service, by letters dated November 21, 1994, notified Federal and state agencies, local governments, scientific organizations, and interested parties of the public hearings and the reopening of the comment period.

The Service received nineteen written comments and eight oral comments on the proposal to list the five mussels. Numerous questions on the proposal and related issues were asked at the public hearings. Comments in support of the proposed rule were received from the Environmental Protection Agency (EPA); National Park Service, Big South Fork National River and Recreation Area; KSNPC; Kentucky Department of Fish and Wildlife Resources (KDFWR); Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University; Tennessee Department of Environment and Conservation (TDEC); VDCR; VDGF; and two private individuals. The listing of one or more of these species was opposed by the DRA; Fentress County

Utility District, Jamestown, Tennessee; and one individual. The remainder of the respondents expressed concerns over what impact these listings would have on various activities. The following is a summary of the comments, concerns, and questions (referred to as "Issues" for the purposes of this summary) regarding the proposed rule that were expressed in writing or presented orally at the public hearings. Comments of similar content have been grouped together.

Issue 1: One respondent expressed concern that listing the purple bean could significantly impact efforts to build a water supply reservoir on Clear Creek, an Obed River tributary, in Morgan County, Tennessee, and asked specific questions regarding how this reservoir project would impact the species.

Response: The purple bean is the only one of these five species that occurs in the Obed River system. However, based on available information, this species does not exist at the proposed reservoir site or in the area downstream of the site that would be significantly affected by the project. Therefore, because the Service does not anticipate that the project will have a significant impact on the purple bean, the listing will not significantly impact the reservoir project. Specific questions on how a reservoir, which will likely have only minimal, if any, impact to the species, might negatively or possibly positively affect the species cannot be fully evaluated until detailed project plans are available for review. These issues, however, would be addressed in any biological opinion that may be developed for this proposed project.

Issue 2: Several respondents expressed concern that listing these five mussels could have a significant impact on private landowners.

Response: Currently, there are 24 federally listed mussels in the Tennessee and Cumberland river systems. These species, many of which have been listed for over 10 years, have not had a significant impact on private lands activities (e.g., logging, agriculture, land development, and home construction). Therefore, based on this historic perspective, the Service does not anticipate that listing these additional species will have a significant impact on private landowners. In fact most individuals that own or farm lands along streams that are inhabited by listed aquatic species are unaware of the species' existence because their presence has never affected their activities.

Issue 3: One respondent requested information on the impact of this listing on mining activities.

Response: If a mining activity comes under the jurisdiction of a state or Federal agency and one of these five mussels or any other listed species may be in the project area, the project's impacts to the species must be considered. However, it has been the Service's experience, after dealing with hundreds of mining projects, that in nearly all cases where there is a conflict between endangered species and a mining project, the project is permitted with only minor modifications.

Issue 4: Several respondents expressed concern that the listing of the Cumberland elktoe could adversely impact the completion of a proposed water supply reservoir on Crooked Creek, a tributary of the Big South Fork of the Cumberland River, Fentress County, Tennessee.

Response: The Service does not believe the listing of the Cumberland elktoe will stop completion of the proposed Crooked Creek Reservoir. The Service is consulting with the Farm Services Agency on this project. A segment of the Cumberland elktoe population does exist at the site of the proposed reservoir. However, this population segment is small and likely is not essential to the species' survival and recovery. Therefore, based on available information, the Service does not anticipate that a jeopardy biological opinion will result from this consultation. The Service's biological opinion will outline measures to minimize incidental take of the elktoe and suggest conservation recommendations, but the project will not be blocked by the Federal listing of the elktoe.

Issue 5: Listing the Duck River population of the oyster mussel was questioned because it was felt that this population was not viable.

Response: The Duck River oyster mussel population may be currently below the number of individuals necessary to maintain long-term viability. However, that does not disqualify this population from protection under the Act. If the population is below the threshold number needed for long-term viability, the population could be augmented with juveniles produced through artificial propagation or with adults from another population.

Issue 6: In the proposed rule, the Service made reference to oyster mussels collected from a muskrat midden. One respondent questioned the Service's use of this information in its

assessment of the Duck River's oyster mussel population.

Response: It is a common practice of the Service, other Federal and state agencies, and mussel researchers to utilize information from muskrat middens. Mussels deposited in middens by muskrats can not provide a quantitative assessment of mussel density, but observations of the numbers of specimens in a midden can provide insight into a species' status in the adjacent river reach.

Issue 7: Requests were made that the Service identify—(1) those activities that will not be considered likely to result in a violation of section 9 of the Act and (2) those activities that will be considered likely to result in violation of section 9 of the Act.

Response: This issue is addressed in the "Available Conservation Measures" section of this rule.

Issue 8: One respondent wanted to know what impact these listings would have on the placement of docks and piers into rivers inhabited by these mussels.

Response: There should be minimal impact on dock and pier construction as a result of this listing. The construction of piers and docks involves work in navigable waters of the United States and includes the discharge of dredge material back into the waterway. Thus, dock and pier construction comes under the Corps' permit authority pursuant to section 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. 403) and section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Thus, a permit must be received from the Corps prior to the construction of a dock or pier. If a federally listed species may be adversely impacted by this activity, the Corps must consult with the Service to determine if the project is likely to jeopardize the species' continued existence.

It is possible that construction of a few piers or docks could be delayed due to the presence of one of these species. However, it is unlikely that any projects would be stopped. Most piers and docks are constructed in pool habitat, and these mussels primarily inhabit relatively shallow riffles. Most piers and docks constructed on the rivers and streams inhabited by these mussels would be relatively small and have only minimal impact on the mussels. Additionally, from an historical perspective, the 24 mussel species that are already listed in the Tennessee and Cumberland river systems have had little impact on the issuance of permits for these structures.

Issue 9: One respondent asked what impact these listings would have on

dredging and in-stream gravel mining projects.

Response: In-stream dredging and gravel mining involves work in navigable waters of the United States and can result in the discharge of dredge material back into the water. Thus, in-stream dredging and gravel mining comes under the Corps' permit authority pursuant to section 10 of the RHA (33 U.S.C. 403) and section 404 of the CWA (33 U.S.C. 1344). If a federally listed species may be adversely impacted by this activity, the Corps must consult with the Service to determine if the project is likely to jeopardize the species' continued existence.

It is possible that a few in-stream dredging and gravel mining projects could be impacted due to the presence of one of these species. However, it has been the experience of the Service that most of these projects can be designed in such a way (i.e., removing the gravel only from above the water line) that the project objectives and the needs of the species can be met. Additionally, as some of these newly listed species exist in areas that are already inhabited by listed mussels, the listing of these species that coexist with currently listed mussels will not add any additional permit restrictions to these areas.

Issue 10: Several respondents were concerned with the potential impacts these listings could have on water withdrawal projects.

Response: As water withdrawal projects often require construction of a structure in the water, these projects typically require a permit from the Corps under section 10 of the RHA (33 U.S.C. 403) and section 404 of the CWA (33 U.S.C. 1344). If a federally listed species may be adversely impacted by this activity, the Corps must consult with the Service to determine if the project is likely to jeopardize the species' continued existence. It is possible that a few water withdrawal projects that propose to extract a significant portion of a river's flow could be affected due to the presence of one of these species. However, if the water withdrawal project meets state water quality standards, it has generally been the Service's experience that endangered species will be protected without further significant restrictions.

Issue 11: Several respondents were concerned with the potential impacts these listings could have on waste water discharge projects.

Response: The potential exists for point discharges to impact these species, and there is an increasing demand for discharge permits in the Tennessee and Cumberland river systems. However, the States of

Kentucky, Tennessee, and Virginia, with assistance from and oversight by the EPA, set water quality standards that are presumably protective of aquatic life, including the 24 mussel species that are already listed in the Tennessee and Cumberland river systems. Thus, there should be no significant increase in regulatory burden regarding waste water discharge permits as a result of listing these five species in areas where these species coexist with one or more of the mussels that are currently listed. If new information indicates that current water quality criteria are insufficient to prevent the likelihood of jeopardy to these freshwater mussels, new standards may be needed. If revised standards are implemented, some discharge permits could be further regulated if these species are present. However, in areas where listed mussels already exist, the listing of these five mussels will not add any significant additional burden.

Issue 12: Several respondents were concerned with the degree of impact these listings might have on landowners who have erosion problems on their land.

Response: Siltation can negatively impact the aquatic environment. However, based on a historical perspective, the Act has not impacted individual landowners with erosion problems that might affect the 24 mussel species that are currently listed in the Tennessee and Cumberland river systems. Thus, the Service does not anticipate that the listing of these species will burden private landowners regarding this issue.

The Service, through a proactive and coordinated effort with other agencies, conservation groups, and local governmental bodies, is assisting willing private landowners in the restoration of riparian habitat to control siltation. This program ("Partners for Wildlife") is currently funding projects on the Clinch River (a Tennessee River tributary in eastern Tennessee and southwestern Virginia) and the Little Tennessee River (a Tennessee River tributary in western North Carolina). Both rivers have endangered fish and mussel fauna and this program has developed cooperative agreements with willing landowners to improve stream side habitat for the benefit of all aquatic species.

Issue 13: One respondent wanted to know what impact these listings would have on the use of pesticides.

Response: The EPA, during its pesticide registration process, consults with the Service to determine if a pesticide will likely jeopardize the continued existence of any federally listed species. If it is determined that the application of the chemical is likely

to jeopardize a species, the Service provides reasonable and prudent chemical application alternatives that would avoid the likelihood of jeopardy. These recommendations generally suggest some type of application restriction (i.e., prohibit pesticide application within a prescribed distance from an inhabited stream reach) that would protect the species.

Although there may be some added restrictions to pesticide use as a result of these listings, the Service believes that the resulting impacts to pesticide users should be minimal. Many of the stream reaches inhabited by these five mussels are populated with previously listed mussels that have already been assessed for pesticide restrictions; many pesticides reviewed for registration are not believed to be harmful to mussels and no restrictions are applied to their use; and if a pesticide is found to be harmful to a species, there are often unrestricted, alternative chemicals that can be used to control the same pest.

Issue 14: One respondent wanted to know if the information that these rules are based on had been peer reviewed.

Response: The information utilized in determining to propose these species has been peer reviewed. On August 25, 1992, the Service mailed a summary of the available status information on the five species to 47 agencies, organizations, and individuals familiar with the status of freshwater mussels and solicited their comments on the need to propose these species. Prior and subsequent to the August 25, 1992, notification, a copy of the status report used to make the determination to propose these five species was sent to biologists and agencies familiar with the plight of these species. With the exception of the DRA, none of the respondents questioned the need to propose these species for Federal protection. (See the last paragraph under the "Summary of Comments and Recommendations" section for further information.)

Issue 15: One respondent was concerned that these listings could restrict the farming communities' use of fords (stream crossings).

Response: There are numerous active fords in the Tennessee and Cumberland river systems used by the farming community, and many of these fords are in streams inhabited by federally protected mussels. The Act has not restricted the use of these fords, and the listing of these five mussels will not alter this situation.

Issue 16: One respondent wanted to know if the Service planned to designate critical habitat for these five mussels.

Response: The Service is not and has no plans to designate critical habitat for these species (see the "Critical Habitat" section of this rule).

Issue 17: Several respondents were concerned that these listings would affect current farming methods in the watershed.

Response: The Service will encourage the use of buffer strips along water courses, reduction of pesticide and herbicide applications, and soil conservation practices that help control soil loss and siltation.

Issue 18: One respondent questioned the statement in the proposed rule that implicated poor land-use practices as a threat to these mussels, and the individual was concerned that the farming community might have been the primary target of this statement.

Response: Siltation from soil erosion is not just or primarily an agricultural problem. Any activity that removes natural vegetated ground cover (e.g., logging, bridge and road construction, mining, and land clearing for industrial and residential construction) can cause significant stream siltation if adequate control measures are not taken. Silt can have a devastating impact on aquatic ecosystems, especially those species that evolved in a relatively silt free environment. Mussels are filter feeders and they can live in one location for most of their lives. High silt loads disrupt their ability to feed and reproduce, and at extreme silt levels, they can be smothered under deep layers of silt.

As mentioned in response to Issue 12, the Service, through its "Partners for Wildlife" program, is working with willing landowners to assist in restoration of stream side habit to control siltation. The Service also encourages the use of "Best Management Practices" to control erosion and minimize the impacts of silt to aquatic resources.

Issue 19: One respondent wanted to know how the listing of the oyster mussel would affect the completion of Columbia Dam.

Response: The Service stated in a 1979 Biological Opinion that completion of a proposed reservoir project (Columbia Dam) on the Duck River in Maury and Marshall counties, Tennessee, would likely jeopardize the continued existence of two federally listed mussels. Although our Biological Opinion included reasonable and prudent alternatives that would have allowed the project to go forward, TVA has not implemented those measures and has been reevaluating the project and considered other alternatives to meet the project objectives. (A third

mussel listed prior to the issuance of the Biological Opinion is now known from the proposed flood pool.) Although the presence of a fourth endangered mussel (oyster mussel) may somewhat complicate this issue, any measures needed to avoid a jeopardy situation for the currently listed mussels would not be expected to change significantly with the addition of a fourth listed species.

Issue 20: One respondent noted that since species go extinct because of natural causes why should these species receive special protection.

Response: It is true that natural and catastrophic events over geological time have resulted in the extinction of millions of species. However, the rate of extinctions in the past couple of centuries has accelerated dramatically as a direct result of human activities. The Act specifically states that species of fish, wildlife, and plant are of value to this nation, and the Act requires the Department of the Interior to maintain a list of endangered and threatened species. The Service believes that these five mussels meet the criteria for the Act's protection (see the "Summary of Factors Affecting the Species" section of these rules).

Issue 21: One respondent suggested that the Service should postpone the decision to list the five species until Congress reauthorizes the Act.

Response: The Act as currently written requires the Department of the Interior to maintain a list of endangered and threatened species and the Act provides five criteria to consider when determining to list a species (see the "Summary of Factors Affecting the Species" section of these rules). Based on the best available information, these five species meet these criteria and qualify for the Act's protection. The Service believes that delaying these listings to await Congressional reauthorization would be a violation of existing Federal law.

Issue 22: One respondent wanted to know if a biological survey was required when a Federal permit was needed in areas inhabited by listed species and if a survey was needed, who would conduct the survey.

Response: Often the Service or other agencies have sufficient status information on the species in a project area, and no additional site specific surveys are needed to determine project impacts to the species. However, if site-specific species information is unavailable or insufficient, a survey of the project impact area may be needed to fully assess the project's impacts. If a survey is needed, it is generally not conducted by the Service. Survey responsibility falls onto the permitting

agency. However, the permitting agency usually requires the permit applicant to obtain the needed status information as part of the application process.

Issue 23: One respondent commented that the Service should initiate a massive education effort with the farm community to help build trust and encourage community involvement regarding the protection and recovery of aquatic species.

Response: The Service agrees that local community support is essential to fully protect and recover listed species. The Service has increased its efforts in this area through "Partners for Wildlife" and other programs that work with community leaders and willing landowners to build the necessary partnerships.

Issue 24: The VDCR stated that the rough rabbitsfoot was listed as threatened by the VDGIF. Thus, they felt it might be more appropriate to list this species as threatened rather than endangered.

Response: The rough rabbitsfoot is listed as a threatened species by the VDGIF. However, this list was developed in the late 1980's and published in 1991 (Neves 1991). Since the publication of the state list, the rough rabbitsfoot has declined significantly in the Clinch River and may no longer survive in Copper Creek (Neves, personal communication, 1995). Neves (personal communication, 1995), was a primary consultant used by the VDGIF in determining state status for the rough rabbitsfoot, and he plans to recommend State endangered status for this species when the state list is revised. Additionally, he recommended Federal endangered status for this species in response to the proposed rule (Neves, *in litt.*, 1994). Based on this information and the information presented in the "Background" and the "Summary of Factors Affecting the Species" sections of these rules, the Service believes that endangered status is appropriate for the rough rabbitsfoot.

Issue 25: The EPA requested that the Service clarify what it meant by the following statement that appeared in the July 14, 1994, proposed rule:

Existing authorities available to protect aquatic systems, such as the Clean Water Act, administered by the Environmental Protection Agency (EPA) and the Army Corps of Engineers, have not been fully utilized and may have led to the degradation of aquatic environments in the Southeast Region, thus resulting in a decline of aquatic species.

Response: Through EPA's implementation of the CWA, water quality has been improved and mussel populations have benefited. However, in spite of general water quality

improvements, numerous freshwater mussel populations in the southeastern United States are continuing to decline even in areas that appear to have suitable physical habitat. The Service believes that it is likely that some insidious environmental factor(s), possibly contaminants, may be adversely affecting the growth, reproduction, or survival of these populations. Of all the potential impacts to mussels, less is known about the potential effects of contaminants on these species. The Service believes that EPA could, through the CWA, play a more active role in identifying potential contaminant impacts to mussels.

Issue 26: The EPA also requested that the Service identify in any final rule specific deficiencies and/or inadequacies in the following areas related to their implementation of the CWA in the States of Tennessee and Kentucky—state adopted narrative and numeric water quality criteria; state water use classifications by streams occupied by the five mussels; aquatic life criteria guidance values; and National Pollutant Discharge Elimination System (NPDES) permit procedures.

Response: As mentioned in response to Issue 25, little is known about the potential impacts of contaminants on freshwater mussels. Research is needed to address the lethal and sublethal effects of acute and chronic exposure of toxins to all life stages of freshwater mussels. This research will entail identifying appropriate surrogate species, devising test protocols, and conducting studies to evaluate the protectiveness of these criteria. Additionally, the Service is currently working with EPA to develop a memorandum of agreement (MOA) that will address how EPA and the Service will interact relative to CWA water quality criteria, standards, and NPDES permits within the Service's Southeast Region. Until the MOA is developed and data are available to fully evaluate the effectiveness of current national water quality criteria and standards and the need for site-specific criteria, the Service believes it is premature to attempt, in this final rule, to address any specific deficiencies and/or inadequacies that may exist in EPA's implementation of the CWA regarding the protection of water quality.

The Service also solicited the expert opinions of ten appropriate and independent mussel specialists regarding the pertinent scientific or commercial data and assumptions relating to taxonomy, population status, and biological and ecological information on these five mussels. One

response from a specialist was received, and those comments were incorporated into this final rule.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) issued to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. 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 Cumberland elktoe (*Alasmidonta atropurpurea*), oyster mussel (*Epioblasma capsaeformis*), Cumberlandian combshell (*Epioblasma brevidens*), purple bean (*Villosa perpurpurea*), and rough rabbitsfoot (*Quadrula cylindrica strigillata*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Mussel populations throughout the Central and Eastern United States have been declining since modern civilization began to significantly alter aquatic habitats. The Ohio River drainage, which includes the Tennessee and Cumberland rivers, was a center for freshwater mussel evolution and historically contained about 127 distinct mussel species and subspecies. Of this once rich mussel fauna, 11 mussels are extinct, and 33 mussels (including the 5 species covered in this final rule) are classified as Federal endangered species. In less than 100 years, 35 percent of the Ohio River system's mussel fauna has either become extinct or federally endangered. No other wide-ranging faunal group in the continental United States has experienced this degree of loss within the last 100 years.

The mussel fauna in most streams of the Ohio River basin has been directly impacted by impoundments, siltation, channelization, and water pollution. Reservoir construction is the most obvious cause of the loss of mussel diversity in the basin's larger rivers. Most of the main stem of both the Tennessee and Cumberland rivers and many of their tributaries are impounded. For example, over 2,300 river miles or about 20 percent of the Tennessee River and its tributaries with drainage areas of 25 square miles or greater are impounded (TVA 1971). In addition to the loss of riverine habitat within impoundments, most impoundments also seriously alter downstream aquatic habitat; and mussel populations upstream of reservoirs may be adversely affected by changes in the

fish fauna essential to a mussel's reproductive cycle.

Coal mining-related siltation and associated toxic runoff have adversely impacted many stream reaches. Numerous streams have experienced mussel and fish kills from toxic chemical spills, and poor land-use practices have fouled many waters with silt. Runoff from large urban areas has degraded water and substrate quality. Because of the extent of habitat destruction, the overall aquatic faunal diversity in many of the basins' rivers has declined significantly. As a result of this destruction of riverine habitat, 8 fishes and 24 mussels in the Tennessee and Cumberland river basins have already required the Act's protection, and numerous other aquatic species in these two basins are currently considered species of concern and could warrant listing in the future.

The mussel fauna in the Tennessee and Cumberland rivers has been extensively sampled, and much is known about the historic and present distribution of this rich fauna. Gordon (1991) provided an extensive review of the literature regarding the past and present ranges of the Cumberland elktoe, oyster mussel, Cumberlandian combshell, purple bean, and rough rabbitsfoot. Based on Gordon's (1991) review and personal communications with numerous Federal, State, and independent biologists, it is clear that these five mussel species have undergone significant reductions in range and that they now exist as only remnant isolated populations. (See "Background" section for a discussion of current and historic distribution and threats to the remaining populations.)

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* These five mussels are not commercially valuable; but as they are extremely rare, they could be sought by collectors. The specific areas inhabited by these species are presently unknown to the general public. As a result, their overutilization has not been a problem to date. Most stream reaches inhabited by these mussels are extremely small. Thus, populations of the species could be easily eliminated or significantly reduced using readily available toxic chemicals. Although scientific collecting is not presently identified as a threat, take by private and institutional collectors could pose a threat if left unregulated. Federal protection of these species will help to minimize illegal and inappropriate take.

C. *Disease and predation.* Disease occurrence in freshwater mussels is virtually unknown. However, since 1982, biologists and commercial mussel

fishermen have reported extensive mussel die-offs in rivers and lakes throughout the United States. The cause(s) of many of these die-offs is unknown, but disease has been suggested as a possible factor.

Shells of all five species are often found in muskrat middens. The species are also presumably consumed by other mammals, such as raccoons and mink. While predation is not thought to be a significant threat to a healthy mussel population, Neves and Odum (1989) suggest it could limit the recovery of endangered mussel species or contribute to the local extirpation of already depleted mussel populations. Predation would be of particular concern to oyster mussel, Cumberlandian combshell, and purple bean, which exist only as extremely small, remnant populations.

D. *The inadequacy of existing regulatory mechanisms.* The States of Kentucky, Alabama, Tennessee, and Virginia prohibit the taking of fish and wildlife, including freshwater mussels, for scientific purposes without a State collecting permit. However, enforcement of this permit requirement is difficult. Also, State regulations do not generally protect these mussels from other threats.

Existing authorities available to protect aquatic systems, such as the CWA, administered by the EPA and the Corps, may not have been fully utilized. This may have contributed to the degradation of aquatic environments and the decline of aquatic species in the Southeast (see response to Issue 25 in the "Summary of Comments and Recommendations" of this final rule). As these mussels (Cumberland elktoe, Cumberlandian combshell, oyster mussel, purple bean, and rough rabbitsfoot) coexist with other federally listed species throughout most or all of their range, some of the habitats of these species are indirectly provided some Federal protection from Federal actions and activities through section 7 of the Act. However, Federal listing will provide additional protection for all five species throughout their range by requiring Federal permits to take the species and by requiring Federal agencies to consult with the Service when activities they fund, authorize, or carry out may specifically adversely affect these species.

E. *Other natural or manmade factors affecting its continued existence.* The populations of these species (Cumberland elktoe, oyster mussel, Cumberlandian combshell, purple bean, and rough rabbitsfoot) are small and geographically isolated. This isolation prohibits the natural interchange of genetic material between populations,

and the small population sizes reduce the reservoir of genetic variability within the populations. It is likely that some of the populations of the Cumberland elktoe, oyster mussel, Cumberlandian combshell, purple bean, and rough rabbitsfoot may be below the level required to maintain long-term genetic viability. Also, because most of the extant populations of these mussels are restricted to short river reaches, they are very vulnerable to extirpation from a single catastrophic event, such as a toxic chemical spill or a major stream channel modification. Because the populations of each species are isolated from one another because of impoundments, natural repopulation of any extirpated population is impossible without human intervention.

The invasion of the exotic zebra mussel (*Dreissena polymorpha*) into the Great Lakes poses a potential threat to the Ohio River's mussel fauna. The zebra mussel has recently been reported from the Tennessee and Cumberland rivers, but the extent of its impact on the basin's freshwater mussels is unknown. Zebra mussels in the Great Lakes have been found attached in large numbers to the shells of live and freshly dead native mussels, and zebra mussels have been implicated in the loss of entire mussel beds.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these mussels in determining to make this rule final. Based on these evaluations, the preferred action is to list the Cumberland elktoe (*Alasmidonta atropurpurea*), oyster mussel (*Epioblasma capsaeformis*), Cumberlandian combshell (*Epioblasma brevidens*), purple bean (*Villosa perpurpurea*), and rough rabbitsfoot (*Quadrula cylindrica strigillata*) as endangered species. The Cumberland elktoe, purple bean, and rough rabbitsfoot are known from three populations each, and the Cumberlandian combshell and oyster mussel are known from five populations each. These five species and their habitat have been and continue to be impacted by habitat destruction and range reduction. Their limited distribution also makes them very vulnerable to possible extinction from toxic chemical spills. Because of their restricted distributions and their vulnerability to extinction, endangered status appears to be the most appropriate classification for these species.

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's regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other activity and the identification of critical habitat can be expected to increase the degree of threat to the species or (2) such designation of critical habitat would not be beneficial to the species. The Service finds that designation of critical habitat is not prudent for these species. Such a determination would result in no known benefit to these species, and designation of critical habitat could pose a further threat to them through publication of their site-specific localities.

Section 7(a)(2) and regulations codified at 50 CFR Part 402 require Federal agencies to ensure, in consultation with and with the assistance of the Service, that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or destroy or adversely modify their critical habitat, if designated. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in the destruction or adverse modification of proposed critical habitat. (See "Available Conservation Measures" section for a further discussion of section 7.) As part of the development of this final rule, Federal and state agencies were notified of the mussels' general distributions, and they were requested to provide data on proposed Federal actions that might adversely affect the species. Should any future projects be proposed in areas inhabited by these mussels, the involved Federal agency will already have the general distributional data needed to determine if the species may be impacted by its action; and if needed, more specific distributional information would be provided.

Each of these mussels occupies very restricted stream reaches. Thus, because any significant adverse modification or destruction of these species' habitat would likely jeopardize their continued existence, no additional protection for the species would accrue from critical habitat designation that would not also accrue from listing these species. Therefore, habitat protection for these

species would be accomplished through the section 7 jeopardy standard and section 9 prohibitions against take.

In addition, these mussels are rare, and taking for scientific purposes and private collection could pose a threat if specific site information were released. The publication of critical habitat maps in the Federal Register and local newspapers, and other publicity accompanying critical habitat designation could increase the collection threat and increase the potential for vandalism, especially during the often controversial critical habitat designation process. The locations of populations of these species have consequently been described only in general terms in this rule. Any existing precise locality data would be available to appropriate Federal, state, and local governmental agencies from the following offices—the Service office described in the ADDRESSES section of these rules; the Service's Cookeville Field Office, 446 Neal Street, Cookeville, Tennessee 38501; the Service's White Marsh Field Office, P.O. Box 480, Mid-County Center, U.S. Route 17, White Marsh, Virginia 23183; the Service's Southeastern Virginia Field Office, P.O. Box 2345, 332 Cummings Street, Abingdon, Virginia 24212; KDFWR; KSNPC; TWRA; TDEC; VDGIF; and VDCR.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the 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 Act provides for possible land acquisition and cooperation with the states and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act 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)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of

proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a 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 Service notified Federal agencies that may have programs which could affect these species. One major Federal project, a proposed TVA impoundment on the Duck River, Columbia, Tennessee, could have a significant impact on the oyster mussel. Construction of Columbia Dam was suspended in the late 1970's after the Service issued a Biological Opinion stating that the dam's completion would likely jeopardize the continued existence of two federally listed mussels. Although our Biological Opinion included reasonable and prudent alternatives that would have allowed the project to go forward, TVA has not implemented those measures and has been reevaluating the project and considered other alternatives to meet the project objectives. (A third mussel listed prior to the issuance of the Biological Opinion is now known from the proposed flood pool.) Although the presence of a fourth endangered mussel (oyster mussel) may somewhat complicate this issue, any measures needed to avoid a jeopardy situation for the currently listed mussels would not be expected to change significantly with the addition of a fourth listed species (see response to Issue 19 in the "Summary of Comments and Recommendations" section of these rules).

A water supply reservoir is under consideration on Crooked Creek in the upper Big South Fork of the Cumberland River watershed, Fentress County, Tennessee. This project would inundate and adversely impact a portion of the Cumberland elktoe population that exists in the upper Big South Fork basin. This water supply project, proposed by the Fentress County Utility District, is one of a series of water supply alternatives currently under review for a permit pursuant to section 404 of the CWA. However, the Service does not believe the listing of the Cumberland elktoe will stop completion of the Crooked Creek Reservoir (see response to Issue 4 in the "Summary of Comments and Recommendations" of these rules).

Another water supply reservoir is under consideration by the Catoosa

Utility District for Clear Creek, an Obed River tributary, Morgan County, Tennessee. The purple bean occurs in the Obed River system. However, based on available information, this species does not exist at the proposed reservoir site or in the area downstream of the site that would be significantly affected by the project. Therefore, as the Service does not anticipate that the project will have a significant impact on the purple bean, the listing will not have any significant impact on this reservoir project (see response to Issue 1 in the "Summary of Comments and Recommendations" of this rule).

Since the close of the comment period on this rule, the Southeastern Virginia Field Office has become involved in an informal section 7 consultation regarding a proposed Federal prison in Lee County, Virginia, and its potential impacts to eight federally listed mussels that live in the Powell River. The Cumberlandian combshell, oyster mussel, and purple bean are also known from the Powell River and will now need to be considered in this consultation. However, since the eight listed mussels are already being considered with regard to this project, the outcome of the consultation should not be affected by the addition of these three more listed mussels. Based on this review, the Service has determined that there is no information that would substantively affect these listing decisions and that additional public comment is not warranted.

No other specific proposed Federal actions were identified that would likely affect any of the species. Federal activities that could occur and impact the species include, but are not limited to, the carrying out or the issuance of permits for reservoir construction, stream alterations, waste water facility development, water withdrawal projects, pesticide registration, mining, and road and bridge construction. However, it has been the experience of the Service that nearly all section 7 consultations have been resolved so that the species have been protected and the project objectives have been met.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered 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 commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also

illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. 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.

It is the policy of the Service published in the Federal Register on July 1, 1994, (59 FR 34272) to identify at the time of listing, to the maximum extent practicable, those activities that would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness as to the effects of these listings on proposed and ongoing activities within a species' range. During the public comment periods, comments were received questioning the effect these listings would have on private landowners (see response to Issue 2 and 12 in the "Summary of Comments and Recommendations" section of this rule), pesticide application (see response to Issue 13), use of existing river fords by the farming community (see response to Issue 15), and traditional farming practices (see response to Issue 17). The Service believes, based on the best available information as outlined in the "Summary of Comments and Recommendations" section of this rule, that the aforementioned actions will not result in a violation of section 9 provided the activities are carried out in accordance with any existing regulations and permit requirements. In addition, the Service also believes that certain other activities will not result in a section 9 violation. They include use of the river by boaters, anglers, and other existing recreational uses.

Activities that the Service believes could potentially result in "take" of these mussels, include, but are not limited to, the unauthorized collection or capture of the species; unauthorized destruction or alteration of the species' habitat (e.g., in-stream dredging, channelization, discharge of fill material); violation of any discharge or water withdrawal permit; and illegal discharge or dumping of toxic chemicals or other pollutants into waters supporting the species.

Other activities not identified in the above two paragraphs will be reviewed on a case-by-case basis to determine if a violation of section 9 of the Act may

SPECIES			Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name							
* Rabbitsfoot, rough	* <i>Quadrula cylindrica strigillata.</i>	*	* U.S.A. (TN and VA)	* NA	* E	* 602	* NA	* NA
*	*	*	*	*	*	*	*	*

Dated: December 6, 1996.

John G. Rogers,

Acting Director, Fish and Wildlife Service.

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