

Dated: September 14, 1989.

**Bruce Blanchard,**

*Acting Director, Fish and Wildlife Service.*

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BILLING CODE 4310-65-M

## 50 CFR Part 17

RIN 1018-AB23

### Endangered and Threatened Wildlife and Plants; Designation of the Cracking Pearly-Mussel as an Endangered Species

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** The Service designates the cracking pearly mussel (*Hemistena* (= *Lastena*) *lata*) as an endangered species under the Endangered Species Act of 1973, as amended (Act). This species, which was once known from the Ohio, Cumberland, and Tennessee River systems, is presently known to survive only at a few shoals in the Clinch, Powell, and Elk Rivers, and possibly a short reach of the Tennessee and Green Rivers. The species' range has been seriously restricted by the construction of impoundments and by other impacts to its habitat. Due to the species' limited distribution, any factors that adversely modify habitat or water quality in the river reaches it now inhabits could further threaten the species.

**EFFECTIVE DATE:** October 30, 1989.

**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's Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

**FOR FURTHER INFORMATION CONTACT:** Mr. Richard G. Biggins at the above address (704/259-0321 or FTS 672-0321).

#### SUPPLEMENTARY INFORMATION:

##### Background

The cracking pearly mussel (*Hemistena* (= *Lastena*) *lata*) was initially described by Rafinesque (1820). This freshwater mussel has a thin, medium-size, elongated shell (Bogan and Parmalee 1983). The shell's outer surface is brownish green to brown and often has broken dark green rays. The nacre (inside of shell) color is pale bluish to purple. Because of its rarity, little is known of the mussel's biology. The species inhabits moderate-size streams on gravel riffles where it is often deeply

buried in the substrate (Bogan and Parmalee 1983). Like other freshwater mussels, it feeds by filtering food particles from the water. It has a complex reproductive cycle in which the mussel larvae parasitize fish. The mussel's life span, fish species its larvae parasitize, and other aspects of its life history are unknown.

The cracking pearly mussel has undergone a substantial range reduction. It was historically distributed in the Ohio, Cumberland, and Tennessee River systems (Stansbery 1970, Kentucky Nature Preserves Commission 1980, Bogan and Parmalee 1983, Bates and Dennis 1985). The loss of populations occurring in these river systems was probably due to direct impacts of impoundments, pollution and habitat alteration, and the indirect impacts associated with the reduction or elimination of its larval host species by these same factors. Based on personal communications with knowledgeable mussel experts (Steven Ahlstedt and John Jenkinson, Tennessee Valley Authority, 1987; Arthur Bogan, Philadelphia Academy of Sciences, 1987; Richard Neves, Virginia Polytechnic Institute and State University, 1987; David Stansbery, Ohio State University, 1987) and a review of current literature on the species (see above, plus Ahlstedt 1986), the species is definitely known to survive in only three river reaches—the Clinch River, Hancock County, Tennessee, and Scott County, Virginia; the Powell River, Hancock County, Tennessee, and Lee County, Virginia; and the Elk River, Lincoln County, Tennessee.

Although the species has not been collected in the Green River since 1966, and a survey of the Green River in Hart and Edmonson Counties in 1987 failed to collect the species, there is a possibility that an isolated population may still exist in the Green River (Richard Hannan, Kentucky Nature Preserves Commission, personal communication, 1988). Another small population may also still exist in the Tennessee River below Pickwick Dam in Hardin County, Tennessee (Paul Yokley, Jr., University of North Alabama, personal communication, 1988). Live specimens have not been taken below Pickwick Dam since the 1970s, but a few relic shells have been taken in the 1980s, indicating that a small population may still be holding on in a short reach of the Tennessee River.

All of the known populations and the populations that may exist in the Green and Tennessee Rivers are threatened and are located in areas bordered primarily by private lands. The Powell River is severely threatened by the

impacts of coal mining. The Clinch River, although in much better condition, is also impacted by coal mining, and in the past has experienced extensive fish and mussel kills caused by toxic spills from a riverside power plant. The Elk River mussel fauna has been impacted by cold-water discharges from Tims Ford Reservoir, and the Green River has had a history of water quality problems from oil and gas production in the watershed. The Tennessee River below Pickwick Dam has been impacted by gravel dredging, channel maintenance work, and the upstream reservoir.

The cracking pearly mussel was recognized by the Service in the May 22, 1984, *Federal Register* (49 FR 21664) as a category 2 species that was being considered for possible addition to the Federal List of Endangered and Threatened Wildlife and Plants. Category 2 is for those species for which the Service has some information indicating that the taxa may be under threat, but sufficient information is lacking to prepare a proposed rule. The service has met and been in phone contact with various Federal and State agency personnel concerning the species' status and the need for the protection provided by the Endangered Species Act. On January 14, 1988, and May 16, 1988, the Service also notified appropriate Federal, State, and local governmental agencies by mail that a status review was being conducted and that the species might be proposed for listing. No negative comments were received.

On February 17, 1989, the Service published in the *Federal Register* (54 FR 7225) a proposal to list the cracking pearly mussel as an endangered species. That proposal provided information on the species' biology, status, and threats to its continued existence.

#### Summary of Comments and Recommendations

In the February 17, 1989, proposed rule and associated notifications, all interested parties were requested to submit factual reports and information that might contribute to development of the final rule. Appropriate Federal and State agencies, county governments, scientific organizations, and interested parties were contacted and requested to comment. A legal notice was published in the following newspapers: "Elk Valley Times," Fayetteville, Tennessee, March 1, 1989; "Kingsport Times News," Kingsport, Tennessee, March 5, 1989; "Hart County News," Munfordville, Kentucky, March 9, 1989; and "Savannah Courier," Savannah, Tennessee, March 9, 1989.

A total of eight comments was received. Six respondents (Tennessee Valley Authority, Kentucky Department of Fish and Wildlife Resources, Kentucky Nature Preserve Commission, Ohio Department of Natural Resources, Virginia Commission of Game and Inland Fisheries, and one petition containing 96 signatures) supported the proposed rule. Two Federal agencies, the U.S. Soil Conservation Service and the Department of the Army, Corps of Engineers, indicated that the listing would not likely affect their activities.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information, the Service has determined that the cracking pearly mussel should be classified as an 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 endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to the cracking pearly mussel (*Hemistena (=Lastena) lata*) are as follows:

##### A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

The cracking pearly mussel was once fairly widely distributed in the Ohio River Basin. It ranged in the Ohio River from Ohio downstream to Illinois (Bogan and Parmalee 1983). In Indiana and Illinois it was historically known from the White, Wabash, and Tippecanoe Rivers (Kevin Cummings, Illinois State Natural History Survey Division, and Max Henschen, Mollusk Technical Advisory Committee, personal communications, 1988). Kentucky records (Kentucky Nature Preserves Commission 1980; Richard Hannan, personal communication, 1988) show that the species once inhabited the upper Cumberland, Big South Fork, Green, and Kentucky Rivers. The cracking pearly mussel has historically been taken in Tennessee from the Tennessee, Cumberland, Powell, Clinch, Holston, Elk, Duck, and Buffalo Rivers (Bogan and Parmalee 1983, Ahlstedt 1986, Bates and Dennis 1985). In Alabama, this mussel existed in the Tennessee River (Bogan and Parmalee 1983). Portions of the Powell, Clinch, and Holston Rivers in Virginia are also reported to have supported the species (Bogan and Parmalee 1983; Charles Sledd, Virginia Commission of Game

and Inland Fisheries, and Michael Lipford, Virginia Department of Conservation and Historic Resources, personal communications, 1988).

Based on a literature review (see above) and personal contacts with knowledgeable Federal, State, and independent biologists, the species is presently known to be surviving only in the Clinch River, Hancock County, Tennessee, and Scott County, Virginia; the Powell River, Hancock County, Tennessee, and Lee County, Virginia; and the Elk River, Lincoln County, Tennessee. The species may also still survive in the Green River, Hart and Edmonson Counties, Kentucky (Richard Hannan, personal communication, 1988), and in a short reach of the Tennessee River below Pickwick Dam, Hardin County, Tennessee (Paul Yokley, Jr., personal communication, 1988).

The Powell River's population was sampled in 1979 by the Tennessee Valley Authority (Ahlstedt 1986). They surveyed 78 sites over about 97 river miles and found the cracking pearly mussel at only three sites. The Powell River watershed is mined extensively for coal, and coal mining impacts to the river are evident. The upper reaches of the Powell River are significantly impacted. The lower river reaches, which still contain a relatively diverse mussel fauna, have large deposits of coal fines and silt (Ahlstedt 1986). In 1973 the section of the Powell River inhabited by the cracking pearly mussel experienced a mussel kill that may have resulted in a loss of 5 percent of the mussel population (Ahlstedt and Jenkinson 1987).

The Clinch River population of the cracking pearly mussel is the largest and covers the greatest river length. Ahlstedt (1986) reported the species from 16 of the 141 sites sampled in a 1978-83 Tennessee Valley Authority survey that covered about 174 river miles. Although this river and its mussel fauna are apparently healthier than the Powell, the Clinch River has been adversely affected by pollution. Charles Sledd (personal communication, 1988) stated that land use practices along the Clinch have contributed to the loss of water quality and decline in mussel populations. The Clinch River also experiences some impacts from coal mining, and the river has been subjected to two mussel kills that resulted from toxic substance spills from a riverside coal-fired power plant.

The cracking pearly mussel was taken at only 2 of 108 sites over the 172 miles of the Elk River surveyed in 1980 by the Tennessee Valley Authority (Ahlstedt 1986). The river, according to Ahlstedt

(1986), has a considerable amount of suitable habitat for freshwater mussels, and a large number of relic shells was present. However, Ahlstedt (1986) reported that cold-water releases from Tims Ford Reservoir and pollution from an unknown source in the lower Elk River have impacted the mussel fauna, and mussel density has been reduced.

The cracking pearly mussel has not been taken since 1966 from the Green River, and a 1987 mussel survey did not find the species (Ronald Cicerello, Kentucky Nature Preserves Commission, personal communication, 1988). However, suitable habitat appears to be available in the Green River, and an isolated population may still exist there (Richard Hannan, personal communication, 1988). In the Tennessee River, live specimens were taken in the 1970s below Pickwick Dam, but only relic shells have been taken in recent years. According to personal communication with Dr. Paul Yokley, Jr. (1988), this species, which apparently existed only in small numbers in this river reach, could possibly still survive there.

If populations still persist in the Tennessee River below Pickwick Dam in Tennessee and the Green River in Kentucky, these populations are at risk. The Green River's mussel fauna has been seriously depleted. Ortmann (1926) reported finding 66 species of mussels in the Green River. Isom (1974) reported only 27 species present. The Green River has been degraded by oil and gas exploration and production and by alterations of stream flow from an upstream reservoir. Any population below Pickwick Dam in the Tennessee River is potentially threatened by gravel dredging, channel maintenance, and operation of Pickwick Dam. This river reach also experienced a mussel die-off in 1985 and 1986 (Ahlstedt and Jenkinson 1987).

##### B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

This freshwater mussel species is not commercially valuable, but because of its rarity it could be sought by collectors. Thus, because of the species' restricted range, taking could be a threat to its continued existence. Federal listing would help control any indiscriminate taking of individuals.

##### C. Disease or Predation

Although the cracking pearly mussel is undoubtedly consumed by predatory animals, there is no evidence that predation threatens the species. However, freshwater mussel die-offs,

possibly due to disease, have been reported in recent years throughout the Mississippi River basin, including the Tennessee River and its tributaries (Ahlstedt and Jenkinson 1987). Significant losses have occurred to some populations.

#### *D. The Inadequacy of Existing Regulatory Mechanisms*

The States of Kentucky, Tennessee, and Virginia prohibit taking fish and wildlife, including freshwater mussels, for scientific purposes without a State collecting permit. However, these States' laws do not protect the species' habitat from the potential impacts of Federal actions. Federal listing would provide the species additional protection under the Endangered Species Act by requiring a Federal permit to take the species and by requiring Federal agencies to consult with the Service when projects they fund, authorize, or carry out may adversely affect the species.

#### *E. Other Natural or Manmade Factors Affecting Its Continued Existence*

The Powell River and Elk River populations are small, and if the species continues to exist in the Green River and Tennessee River, these populations must also be very limited. All the populations are geographically isolated from each other. This isolation restricts the natural interchange of genetic material between the populations, and the small population size reduces the reservoir of genetic variability within the populations. It is likely these populations, with the possible exception of the Clinch River, are now below the generally accepted level (Soulé 1980) required to maintain long-term genetic viability.

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 cracking pearly mussel (*Hemistena* (= *Lastena*) *lata*) as an endangered species. Historical records reveal that the species, although now rare, was once widely distributed in the Ohio River drainage. Presently only three small, isolated populations, and possibly two others, are known to survive. These populations are all threatened by a variety of factors, including gravel dredging, coal mining, oil and gas resource development, and other factors that adversely impact the aquatic environment. Due to the species' history of population losses and the vulnerable nature of the populations, threatened status does not appear appropriate for

this species. See the following section for a discussion of why critical habitat is not being proposed for the cracking pearly mussel.

#### **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 a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for the cracking pearly mussel, owing to the lack of benefits from such designation. The U.S. Army Corps of Engineers, the Tennessee Valley Authority, and the National Park Service are the three Federal agencies most involved, and they, along with the State natural resources agencies in Tennessee, Kentucky, and Virginia, are already aware of the location of the remaining populations that would be affected by any activities in these river reaches. These Federal agencies have conducted studies in these river basins and are knowledgeable of the fauna and of their projects' impacts.

No additional benefits would accrue from critical habitat designation that would not also accrue from the listing of the species. In addition, this species is so rare that taking for scientific purposes or private collections could be a threat. The publication of critical habitat maps and other information accompanying critical habitat designation, such as the location of inhabited river reaches, could increase that threat. The location of populations of this species has consequently been described only in general terms in this proposed rule. More precise locality data is available to appropriate Federal, State, and local governmental agencies through the Service office described in the "ADDRESSES" section.

#### **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. The protection required of Federal agencies and the prohibition 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. The Service has notified Federal agencies which may have programs that affect 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 hydroelectric facility construction and operation, reservoir construction, river channel maintenance, stream alteration, wastewater facilities development, and road and bridge construction. It has been the experience of the Service, however, that nearly all section 7 consultations have been resolved so that the species has been protected and the project objectives have been met. In fact, the areas inhabited by the cracking pearly mussel are also inhabited by other mussels that have been federally listed since 1976. The Service has a history of successful section 7 conflict resolutions that have protected the species and provided for project objectives being met throughout these areas.

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, 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 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 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.

**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**

Ahlstedt, S.A. 1986. Cumberland Mollusk Conservation Program. Activity 1: Mussel Distribution Surveys. Tennessee Valley Authority, Norris, Tennessee. January 1986. 125 pp.  
 Ahlstedt, S.A., and J.J. Jenkinson. 1987. A Mussel Die-off in the Powell River, Virginia and Tennessee, in 1963. In: Proceedings of the Workshop on Die-offs of Freshwater Mussels in the United States. June 23-25, 1986. Davenport, Iowa. Richard Neves, Editor. Pp. 21-23.  
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 Soule, M.E. 1980. Threshold for Survival: Maintaining Fitness and Evolutionary Potential. Pages 151-159 In: M.E. Soule and B.A. Wilcox (eds.), Conservation Biology. Sinauer Assoc., Inc., Sunderland, Massachusetts.  
 Stansbery, David H. 1970. Eastern Freshwater Mollusks (I) The Mississippi and St. Lawrence River Systems. Malacologia, 10(1):9-22.

Wildlife Service, Asheville Field Office, 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).

**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) \* \* \* \* \*

**Author**

The primary author of this proposed rule is Richard G. Biggins, U.S. Fish and

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
<b>CLAMS</b>							
Pearly mussel, cracking.....	<i>Hemistena</i> (= <i>Lastena</i> ) <i>lata</i> .....	U.S.A. (AL, IL, IN, KY, OH, TN, and VA).....	NA	E	365	NA	NA

Dated: September 13, 1989.  
 Richard N. Smith,  
 Acting Director, Fish and Wildlife Service.  
 [FR Doc. 89-22847 Filed 9-27-89; 8:45 am]  
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**50 CFR Part 17**

RIN 1018-AB 23

**Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Rhus Michauxii* (Michaux's Sumac)**

**AGENCY:** Fish and Wildlife Service, Interior.  
**ACTION:** Final rule.

**SUMMARY:** The Service determines *Rhus michauxii* (Michaux's sumac), a dioecious shrub limited to 16 populations in North Carolina and

Georgia, to be an endangered species under the authority of the Endangered Species Act of 1973, as amended (Act). *Rhus michauxii* is endangered by suppression of fire, conversion of habitat for silviculture and agriculture, industrial and residential development, highway construction and improvements, hybridization with other species, and geographic isolation of small, single-sex populations. This action implements Federal protection provided by the Act for *Rhus michauxii*.

**EFFECTIVE DATE:** October 30, 1989.

**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:** Ms. Nora Murdock, at the above address (704/259-0321 or FTS 672-0321).

**SUPPLEMENTARY INFORMATION:**

**Background**

*Rhus michauxii*, described by C. S. Sargent (1895) from material collected in North Carolina, is a rhizomatous shrub. It is sometimes called "false poison sumac" because of its superficial resemblance of *Rhus vernix*. The erect stems grow from 0.2 to 0.4 meter in height, and the entire plant is densely pubescent. The narrowly winged or wingless rachis supports 9 to 13 sessile, oblong to oblong-lanceolate leaflets that are each 4 to 9 centimeters long, 2 to 5 centimeters wide, and acute to acuminate. The bases of the leaflets are rounded, and their edges are simply or doubly serrate. Flowering in this dioecious species occurs in June. The small flowers are borne in a terminal, erect, dense cluster, with each one being four- to five-parted and greenish-yellow to white. The fruit, which is a red,