50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Species Status for the Little-wing Pearly Mussel

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service designates the little-wing pearly mussel (*Pegias fabula*) as an endangered species under the Endangered Species Act of 1973, as amended. This freshwater mussel has been reported historically from 27 river reaches in Alabama, North Carolina, Kentucky, Tennessee, and Virginia. Only six small populations are known to survive—three in Kentucky, one in Tennessee, and two in Virginia. The species' decline has resulted primarily from habitat and water quality deterioration caused by impoundments and by pollution and siltation resulting from mining, agriculture, and construction activities. Owing to the species' limited distribution, any factor that adversely modifies habitat or water quality in the short river reaches that the species inhabits could threaten its survival. This final rule extends the protection provided by the Endangered Species Act to the little-wing pearly mussel.

EFFECTIVE DATE: December 14, 1988.

ADDRESSES: A complete file of this rule is available for public inspection, during normal business hours, at the Asheville Field Office, U.S. Fish and Wildlife Service, 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 little-wing pearly mussel (*Pegias fabula*) was originally described by Lea (1838) as *Margaritana fabula*. Simpson (1900) placed the species by itself in his new genus *Pegias* and listed previous scientific name combinations that had been applied to this species. Ortmann (1914) considered *Pegias* to be a subgenus of *Alasmidonta;* that change has been followed by few subsequent authorities. The Service follows Simpson (1900) and Clarke (1981) in considering *Margaritana curreyiana* Lea, 1840, to be a synonym of *Pegias fabula*.

The little-wing pearly mussel has been recorded historically from 27 river reaches in Alabama, North Carolina, Kentucky, Tennessee, and Virginia. All of the reported localities are in either the Tennessee or the Cumberland River drainages (Ahlstedt 1986, Bakaletz *in litt.*, Clarke 1981, Stansbery 1976). Based on a recently completed Service-funded survey involving extensive field studies of potential and historic habitat in Cumberland and Tennessee River tributaries (Ahlstedt 1986), the results of a study funded by the U.S. Army Corps of Engineers (Corps) (Bakaletz *in litt.*), and the results of a survey conducted by Virginia Polytechnic Institute and State University (Richard Neves, Virginia Polytechnic Institute and State University, personal communication, 1987), the little-wing pearly mussel is now apparently restricted to six short stream reaches—three in southeastern Kentucky, two in southwestern Virginia, and one in central Tennessee. The Kentucky populations are on both public and private lands, while the Tennessee and Virginia populations are primarily on private lands. Habitat loss and water quality deterioration, attributable to impoundments, to industrial and municipal pollution, and to siltation

resulting from mining, agriculture, large land disturbances, and construction activities, are the primary reasons for the species' decline. However, some losses are apparently due to other factors or to less drastic changes in water and habitat quality, as some populations have been extirpated from stream reaches that still contain mussel communities comprising other species (Stansbery 1976).

Horse Lick Creek in Jackson and Rockcastle Counties, Kentucky, presently contains the most extensive little-wing pearly mussel population, but it is threatened by surface coal mining activities and oil and gas exploration (Ahlstedt 1986). The Big South Fork Cumberland River, McCreary County, Kentucky, contains a restricted population (Bakaletz *in litt.*). This population occurs in a short river section that is limited both upstream and downstream by deteriorating water quality resulting from poor land use practices and the impact of coal mining. The population in the Little South Fork Cumberland River, McCreary and Wayne Counties, Kentucky, once contained a substantial number of individuals; but recent mussel collections in this stream reach (Ahlstedt 1986; Skip Call, Kentucky Department for Environmental Protection, personal communication, 1985; Robert Anderson, Tennessee Technological University, personal communication, 1988) have revealed large numbers of dead little-wing pearly mussels and other species, including a federally listed endangered species, the Cumberland bean pearly mussel (*Villosa trabalis*).

The Virginia populations of the little-wing pearly mussel are restricted to a single shoal in the North Fork Holston River in Smyth County and a short river reach in the Clinch River in Tazewell County. These populations are small and are vulnerable to toxic chemical spills and siltation from land use changes and construction.

The Tennessee population is in Cane Creek, Van Buren County. This population is also very small (probably inhabits less than 2 river miles) and vulnerable to toxic chemical spills.

The little-wing pearly mussel, the only species in the genus *Pegias*, is small, not exceeding 1.5 inches (3.8 centimeters) in length and 0.5 inches (1.3 centimeters) in width. The shell's outer surface (periostracum) is usually eroded, giving the shell a chalky or ashy white appearance. When present, however, the periostracum is light green or dark yellowish brown with dark rays of variable width along the anterior portion of the shell (Ahlstedt 1986). The species inhabits small, cool, high-to-moderate gradient streams, where it is usually found in the transition zone between pools and riffles. Like other freshwater mussels, it feeds by filtering food particles from the water; and like most species in its family (Unionidae), its reproductive cycle probably includes a larval stage that parasitizes a host fish. The mussel's life span, host fish species, and many other aspects of its life history are unknown.

The little-wing pearly mussel was recognized by the Service in the May 22, 1984, Federal Register (49 FR 21664) as a species that was being considered for possible addition to the List of Endangered and Threatened Wildlife. On June 22, 1987, the Service notified Federal, State, and local governmental agencies by mail (State fish and wildlife agencies were also contacted by telephone) that the species' status was being reviewed and that the species could be proposed for listing. The Service received 16 responses to the notification. Support for Federal protection was expressed by all three States involved, and no party voiced any objection to proposing Federal protection. The little-wing pearly mussel was proposed for listing as endangered on April 21, 1988 (53 FR 13226).

Summary of Comments and Recommendations

In the April 21, 1988, proposed rule and associated notifications, all interested parties were requested to submit factual reports and information that might contribute to development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and interested parties were contacted and requested to comment. A newspaper notice was published in the following papers: *News-Messenger*, Saltville, Virginia, May 12, 1988; *McCreary County Record*, Whitley City, Kentucky, May 10, 1988; *Commonwealth-Journal*, Somerset, Kentucky, May 8, 1988; *Expositor*, Sparta, Tennessee, May 9, 1988; and *Clinch Valley News*, Tazewell, Virginia, May 11, 1988.

All eight respondents—the U.S. Department of the Interior's Office of Surface Mining; the U.S. Forest Service; the Tennessee Valley Authority; the States of Kentucky, Tennessee, and Virginia; and two private individuals supported the listing.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the little-wing 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 little-wing pearly mussel (*Pegias fabula*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Of the 27 river reaches reported to have supported little-wing pearly mussel populations (Ahlstedt 1986, Clarke 1981, Stansbery 1976), only six (three in Kentucky, two in Virginia, and one in Tennessee) are known to still support the species (Ahlstedt 1986; Bakaletz *in litt.*; Richard Neves, personal communication, 1987) (see "Background" section). The species has apparently been extirpated from Alabama (two historic populations lost) and North Carolina (one historic population lost). Although it still survives in Kentucky, Tennessee, and Virginia, three populations in Kentucky, nine in Tennessee, and six in Virginia are believed to have been extirpated. The loss of some populations can be linked to specific causes, such as the impacts of coal mining, industrial and municipal pollution, and impoundments. However, other populations have apparently been lost to the general deterioration in aquatic habitat quality. Stansbery (1976) states, concerning this species, "Its disappearance from several sites which still retain populations of other species indicates a form highly sensitive to current changes."

Ahlstedt (1986) surveyed 55 potential and historic habitats but was able to find a total of only 17 live specimens. Seven live and three dead specimens were found in Horse Lick Creek in Jackson and Rockcastle Counties, Kentucky. This population, which extends over at least 10 creek miles, is one of the healthiest of the surviving populations. Horse Lick Creek, identified by the Kentucky Division for Environmental Protection as one of Kentucky's Outstanding Resource Waters, has good habitat and water quality and a complex mussel fauna. The Horse Lick Creek watershed is remote, not extensively developed, and partially within the Daniel Boone National Forest. However, the watershed has oil, gas, and coal deposits, and the exploration and development of these resources has already begun. This population can be protected only if the survival of the

species is considered during the development of these resources.

In a recent study funded by the Corps (Bakaletz *in litt.*), a small population of the little-wing pearly mussel was discovered in a 2.1-mile (approximately) section of the Big South Fork Cumberland River (McCreary County, Kentucky) within the Big South Fork National River and Recreation Area administered by the National Park Service. Much of the Big South Fork Cumberland River is impacted by siltation and acid mine drainage from coal mining activities. However, the short reach inhabited by this species is in a river section that has recovered from upstream impacts and is above the coal mining and impoundment impacts that degrade the lower river. Fourteen other mussel species also occur in this river reach including the federally listed Cumberland bean pearly mussel (*Villosa trabalis*). However, the little-wing pearly mussel, possibly due to its greater sensitivity to environmental degradation, does not inhabit the entire river reach (more than 10 miles) populated by the Cumberland bean pearly mussel.

Sampling in the Little South Fork Cumberland River, McCreary and Wayne Counties, Kentucky, produced 3 live and 126 dead specimens. This population, which extends over about 10 river miles, was once relatively large, but recent deterioration in water quality has had a severe impact on the river's mussel community. Studies by the Kentucky Department for Environmental Protection (Sherri Evans and Skip Call, Kentucky Department for Environmental Protection, personal communications, 1986) indicate that the lower portion of the river section inhabited by the species is being impacted by drainage from abandoned mined lands. Lick Creek, a tributary in this river reach, was found to have substantially elevated concentrations of dissolved solids, sulphates, aluminum, iron, and manganese in November 1985 (Sherri Evans, personal communication, 1986). Although 52 dead specimens were found below Lick Creek, no live little-wing pearly mussels were encountered in this river reach.

Four live and three dead specimens were taken from Cane Creek, Van Buren County, Tennessee. This river has very limited mussel habitat, with the species apparently limited to less than 2 river miles. Downstream from the population, Cane Creek is impounded by Great Falls Lake on the Caney Fork River, while upstream from the population the large boulder substrate is unsuitable habitat for this species, and at some points upstream the creek goes underground. Some siltation is apparent downstream from a recently constructed bridge.

The population in the North Fork Holston River (three live and three dead specimens collected), Smyth County, Virginia, is small. The North Fork Holston River has been sampled at a number of sites, and, except for one individual taken near Saltville, Virginia, all specimens past and present have been taken at one shoal near Nebo, Virginia.

A small population (six relic shells and one live animal collected) exists in the Clinch River in Tazewell County, Virginia. This population, like the North Fork Holston and Cane Creek populations, is apparently small and extends over only a short river reach.

Potential threats to the species and its habitat could arise from development of coal and/or gas reserves in the watersheds of Horse Lick Creek, Big South Fork Cumberland River, the Little South Fork Cumberland River, and Cane Creek. However, it should be noted that the Service has issued a no-jeopardy biological opinion under Section 7 of the Endangered Species Act to the Office of Surface Mining with respect to its approval of the coal mining regulation program of the Commonwealth of Kentucky. Although no final determination of impact can be made until the little-wing pearly mussel is listed and a consultation undertaken, the Service has no evidence that mining activities conducted in accordance with State and Federal regulations are a threat to the species. Rather, past unregulated activities have contributed to the species' decline, and current activities not in compliance with appropriate regulations may be a threat to the species. All six populations could potentially be impacted by such actions as road construction, stream channel modifications, logging activities, impoundments, sewage treatment plant discharges, land use changes, and other projects in the watershed if such activities are not planned and implemented with the survival of the species and the protection of its habitat in mind. As these populations inhabit only short stream reaches that are all within 1 to 5 miles of bridges and fords, they are all vulnerable to toxic spills.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* The specific areas inhabited by the species are presently unknown to the general public. As a result, overutilization of the species has not been a problem. However, through listing and the publicity it brings to a species, the problem of vandalism could arise, especially if maps of specific occupied habitat areas were identified through critical habitat designation. (See "Critical Habitat" section for reasons why critical habitat is not being designated.)

C. *Disease or predation.* Although the little-wing pearly mussel is undoubtedly consumed by predatory animals, there is no evidence that predation threatens the species. However, freshwater mussel die-offs have recently been reported throughout the Mississippi River basin, including the Tennessee River and its tributaries (Richard Neves, personal communication, 1986). The cause of the die-offs has not been determined, but significant losses have occurred in some populations. If this problem spreads to river reaches containing this species, significant losses could occur and further endanger the species' survival. Disease is one of the possible explanations for these die-offs.

D. *The inadequacy of existing regulatory mechanisms.* The States of Kentucky, Tennessee, and Virginia prohibit taking wildlife and fish, including freshwater mussels, for scientific purposes without a State collecting permit. However, these State laws do not protect the species' habitat from the potential impacts of Federal actions. Federal listing will 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 affect the species.

E. *Other natural or manmade factors affecting its continued existence.* All six known populations are small and isolated. This isolation blocks the natural interchange of genetic material between populations, and small population size reduces the reservoir of genetic variability within the populations. The lack of genetic diversity could adversely affect, over time, the species' ability to evolve and respond to natural habitat changes. The sizes of the little-wing pearly mussel populations are unknown; but considering the limited extent of available habitat and the densities of individuals (no little-wing pearly mussels were taken in 30 quantitative quadrat samples [Ahlstedt 1986]), it is likely these populations, with the possible exception of that in Horse Lick Creek, 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 little-wing pearly mussel (*Pegias fabula*) as an endangered species. Historical records reveal that the species, although rare, was once widely distributed in many cool-water tributaries of the Tennessee and Cumberland Rivers. Now only six small, isolated populations are known to survive. Four are threatened by coal mining and/or oil and gas resource development, and all six populations, owing to their small size, are vulnerable to toxic spills. This species is also apparently very sensitive to environmental change, as it has been extirpated from many streams that still contain diverse mussel communities. Owing to the species' history of population losses, its apparent sensitivity to environmental change, and the vulnerable nature of all six populations, threatened status does not appear appropriate for this species. (See "Critical Habitat" section for a discussion of why critical habitat is not being proposed for the little-wing pearly mussel.)

Critical Habitat

Section 7(a)(2) of the Endangered Species Act, as amended, 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. Section 4(a)(3) requires that critical habitat be designated, to the maximum extent prudent and determinable, concurrent with the determination that a species is endangered or threatened. The Service finds that a determination of critical habitat for the little-wing pearly mussel is not prudent. Such a determination would result in no known benefit to the species. As part of the development of the proposed and final rule, Federal agencies have been notified of the little-wing pearly mussel's distribution and have been requested to provide data on proposed Federal projects that might adversely affect the species. No specific projects were identified. Should any potential adverse effects arise from future projects, the involved Federal agencies will already have the species' distributional data needed to determine if the species may be impacted by their action. The listing of a species and the publicity that arises as a consequence creates the potential for vandalism. Through the designation of critical habitat and the requirement for maps and specific habitat descriptions, the threat to the species from vandalism increases. Therefore, the Service believes that designation of critical habitat would not be prudent because no benefit to the species has been identified that would outweight the potential threat of vandalism or collection, which would be exacerbated by publication of detailed critical habitat maps and descriptions.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against 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 adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The Service is aware of only three Federal agencies (U.S. Forest Service, Office of Surface Mining, and National Park Service) that are presently involved with programs that may affect the species. The Service has been in contact with them concerning the potential impacts of their activities on the species and its habitat. Other Federal activities that could impact the species and its habitat include, but are not limited to, the carrying out of or the issuance of permits for surface mining, hydroelectric facilities, reservoir construction, stream alterations, wastewater facility development, and road and bridge construction. It has been the experience of the Service, however, that nearly all section 7 consultations are resolved so that the species is protected and the project objectives can be 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, 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 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. A status survey of the little-wing pearly mussel (*Pegias fabula*) (Lea 1838). Report submitted in fulfillment of U.S. Fish and Wildlife Service Contract No. 14-16-0004-84-927. 38 pp.

Clarke, A.H. 1981. The Tribe Alasmidontini (Unionidae: Anodontinae), Part I: *Pegias*, *Alasmidonta*, and *Arcidens*. Smithsonian Contributions to Zoology, No. 326. 101 pp.

Lea, I. 1838. Descriptions of new freshwater and land shells. Transactions of the American Philosophical Society, New Series, 6:1-154, plates 1-24. (Reprinted in 1838 in Observations on the Genus Unio, 2:1-154, plates 1-24.)

Ortmann, A.E. 1914. Studies in naiades (in part). The Nautilus 28:41-47, 65-69.

Simpson, C.T. 1900. Synopsis of the naiades, or pearly freshwater mussels. Proceedings of the U.S. National Museum 22(1205):501-1004.

Soulé, M.E. 1980. Thresholds for survival: maintaining fitness and evolutionary

potential. Pages 151–169 IN: M.E. Soulé and B.A. Wilcox (eds.), Conservation Biology. Sinauer Assoc., Inc., Sunderland, MA.

Stansbery, D.H. 1976. Status of endangered fluviatile mollusks in central North America: *Pegias fabula* (Lea, 1838). Report submitted in fulfillment of U.S. Fish and Wildlife Service Contract No. 14–16–0008–755. 6 pp.

Author

The primary author of this final rule is Richard G. Biggins, 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 wildlife, 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: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99–625, 100 Stat. 3500 (1986), 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.

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(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CLAMS:							
*	*	*	*	*	*		
Pearly mussel, little-wing	*Pegias fabula*	U.S.A. (AL, KY, NC, TN, VA)	NA	E	342	NA	NA.
*	*	*	*	*	*		

Dated: October 26, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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