

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service
50 CFR Part 17**

RIN 1018-AB31

**Endangered and Threatened Wildlife
and Plants; Designation of the
Freshwater Mussel, the Fanshell as an
Endangered Species****AGENCY:** Fish and Wildlife Service,
Interior.**ACTION:** Final rule.

SUMMARY: The Service designates a freshwater mussel, the fanshell (*Cyprogenia stegaria* (= *C. Irrorata*)), as an endangered species under the Endangered Species Act of 1973, as amended (Act). This freshwater mussel historically occurred in the Ohio River and many of its large tributaries in Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kentucky, Tennessee, Alabama, and Virginia. Presently, the fanshell is believed to be reproducing in only three rivers—the Green and Licking Rivers in Kentucky, and the Clinch River in Tennessee and Virginia. Additionally, small, apparently nonreproducing populations (based on the collection of a

few old specimens in the 1980s) may still persist in the Muskingum River, Ohio; the Kanawha River, West Virginia; the Wabash River system in Illinois and Indiana; Tygarts Creek, Kentucky; and the Tennessee and Cumberland Rivers in Tennessee. The distribution and reproductive capacity of this species has been seriously impacted by the construction of impoundments and navigation facilities, dredging for channel maintenance, sand and gravel mining, and water pollution.

EFFECTIVE DATE: July 23, 1990.**ADDRESSES:** The complete file for this rule is available for inspection, by

appointment, during normal business hours at the U.S. Fish and Wildlife Service, 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 872-0321).

SUPPLEMENTARY INFORMATION:

Background

The fanshell (*Cyprogenia stegaria* (= *C. Irrorata*)) was described by Rafinesque (1820). This freshwater mussel is characterized as a medium to large river species (Bates and Dennis 1985). The mussel has a medium-size shell (seldom exceeding 3.2 inches [80 millimeters] in length) that is subcircular in outline (Johnson 1980). The shell exterior has green rays on a light green or yellow surface ornamented with green mottling. The inside surface of the shell (nacre) is usually silvery white. Like other freshwater mussels, this animal feeds by filtering food particles from the water. It has a complex reproductive cycle in which the mussel's larvae likely parasitize fish. The mussel's life span, parasitic host, and most aspects of its life history are unknown.

Since the turn of the century, the fanshell has undergone a substantial reduction in its range. It was historically widely distributed in the Ohio, Wabash, Cumberland, and Tennessee Rivers and their larger tributaries in Pennsylvania, Ohio, West Virginia, Illinois, Indiana, Kentucky, Tennessee, Alabama, and Virginia (Johnson 1980, Kentucky State Nature Preserves Commission 1980, Ahlstedt 1986, Bates and Dennis 1985, Lauritsen 1987, Cummings *et al.* 1987 and 1988, Starnes and Bogan 1988). The loss of many historic populations was likely due to the impacts of impoundments, navigation projects, pollution, and habitat alterations (such as gravel and sand dredging) that directly affected the species and reduced or eliminated its fish host.

Based on a review of current literature on the species (see above) and on the following personal communications and letters involving knowledgeable individuals and State and Federal agency personnel, it is believed that reproducing populations are now present in only three rivers—the Clinch River, Hancock County, Tennessee, and Scott County, Virginia; the Green River, Hart and Edmonson Counties, Kentucky; and the Licking River, Kenton, Campbell, and Pendleton Counties, Kentucky (S. Ahlstedt and J. Jenkinson, Tennessee Valley Authority, personal

communication, 1988; R. Anderson and M. Gordon, Tennessee Cooperative Fishery Research Unit, personal communication, 1988; C. Becker, Illinois Department of Conservation, *in litt.*, 1988; C. Bier, Western Pennsylvania Conservancy, *in litt.*, 1989; R. Connor and W. Sinozich, U.S. Army Corps of Engineers, *in litt.*, 1989; K. Cummings, Illinois Natural History Survey, *in litt.*, 1989; R. Cicerello and R. Hannan, Kentucky State Nature Preserves Commission, *in litt.*, 1988; W. Haag, Ohio State University Museum of Zoology, *in litt.*, 1988; E. Hansen, Indiana Division of Fish and Wildlife, *in litt.*, 1989; P. Jones, Ohio Department of Natural Resources, *in litt.*, 1988; R. Neves, Virginia Cooperative Fish and Wildlife Research Unit, *in litt.*, 1988; B. McDonald and M. Zeto, West Virginia Department of Natural Resources, *in litt.*, 1988 and 1989; J. Sickle, Murray State University, personal communication, 1989; C. Shiffer, Pennsylvania Fish and Game Commission, personal communication, 1989; W. Tolin, U.S. Fish and Wildlife Service, personal communication, 1988; and P. Yokley, University of North Alabama, personal communication, 1988).

Additionally, small remnant, apparently nonreproducing populations (based on collections of a few old individuals in the 1980s) may still persist in the Muskingum River in Morgan and Washington Counties, Ohio; the Wabash River in White and Wabash Counties, Illinois, and Posey County, Indiana; the East Fork White River, Martin County, Indiana; the Tippecanoe River, Tippecanoe County, Indiana; the Kanawha River, Fayette County, West Virginia; Tygarts Creek, Greenup and Carter Counties, Kentucky; the Cumberland River, Smith County, Tennessee; and the Tennessee River, Rhea, Meigs, and Hardin County, Tennessee.

The population in the Green River is likely the best of the three remaining reproducing populations. Fresh-dead fanshells of various age classes from juvenile to adults have been recently (1987 and 1988) found in muskrat middens (piles of mussel shells left by feeding muskrats) along the Green River (R. Cicerello, personal communication, 1988). However, the Green River, which lies partially within the Mammoth Cave National Park, is not free from threats. The river's mussel fauna have been seriously depleted. Cicerello (personal communication, 1988), based on his 1987 and 1988 surveys of the Green River within and above the Mammoth Cave

National Park, believes that about 40 mussel species still survive in the area. Ortmann (1926) reported finding 66 species of mussels in the Green River. The Green River has been degraded by runoff from oil and gas exploration and production sites and by alteration of stream by an upstream reservoir.

The Clinch River fanshell population extends over about 86 river miles (Ahlstedt 1986). However, a Tennessee Valley Authority (1988) survey reported that the fanshell comprised less than 1 percent of the mussels collected at 11 Clinch River quantitative sampling sites in 1979 and 1988. The Tennessee Valley Authority (1988) also reported that overall mussel abundance in the Clinch River has decreased from an average of 11.64 mussels per square meter in 1979 to 6.00 per square meter in 1988. The Clinch River also has environmental problems. Sledd (Virginia Commission of Game and Inland Fisheries, personal communication, 1988) stated that land use practices along the Clinch River have contributed to a decline in water quality and mussel populations. The Clinch River has experienced some adverse impacts from coal mining, and the river has been subjected to two mussel kills caused by toxic substance spills from a riverside coal-fired power plant.

The Licking River also supports a reproducing fanshell population (R. Cicerello, personal communication, 1989). Live and fresh-dead individuals of several year classes have been collected. However, despite collections made throughout the drainage by Kentucky State Nature Preserves Commission biologists, the species is only known from the lower portion of the Licking River. This population could potentially be threatened by some of the water supply development alternatives presently under preliminary review for the Licking River watershed.

The fanshell was recognized by the Service in the May 22, 1984, *Federal Register* (49 FR 21664) and the January 6, 1989, *Federal Register* (54 FR 554) as a category 2 species. (A category 2 species is one that is being considered for possible addition to the Federal List of Endangered and Threatened Wildlife and Plants.) On December 6, 1988, the Service notified by mail (150 letters) Federal and State agencies within the species' historic range, local governments within the species' present range, and interested individuals that a status review was being conducted

specifically to determine if the fanshell should be protected under the Act. A total of 22 written responses was received as a result of the December 6, 1988, notification. No objections to the potential listing of the fanshell were received, and much information on the species' status and its former and present distribution was provided.

On October 2, 1989, the Service published in the *Federal Register* (54 FR 40450) a proposal to list the fanshell 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 October 2, 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 by letter dated October 6, 1989, and requested to comment. A legal notice was published in the following newspapers: *Lebanon Democrat*, Lebanon, Tennessee, October 18, 1989; *Savannah Courier*, Savannah, Tennessee, October 19, 1989; *Bedford Times-Mail*, Bedford, Indiana, October 20, 1989; *Daily News of Kingsport Inc.*, Kingsport, Tennessee, October 20, 1989; *Daily Republican-Register*, Mt. Carmel, Illinois, October 20, 1989; *Ashland Independent*, Ashland, Kentucky, October 21, 1989; *Carmi Times*, Carmi, Illinois, October 21, 1989; *Charleston Gazette*, Charleston, West Virginia, October 21, 1989; *Marietta Times*, Marietta, Ohio, October 21, 1989; *The Kentucky Post*, Covington, Kentucky, October 21, 1989; *Daily News*, Bowling Green, Kentucky, October 22, 1989; and *Oak Ridge*, Oak Ridge, Tennessee, October 22, 1989.

A total of 11 written comments was received. All 11 respondents (National Park Service, Mammoth Cave National Park; Tennessee Valley Authority; U.S. Army Corps of Engineers, Nashville District; U.S. Forest Service; Illinois Natural History Survey Division; Kentucky Department for Environmental Protection; Kentucky State Nature Preserves Commission; Ohio Biological Survey; West Virginia Department of Natural Resources; Virginia Department of Conservation and Recreation; and Virginia Cooperative Fish and Wildlife Research Unit) expressed support for designating the fanshell as an endangered species.

Summary of Factors Affecting the Species

After the thorough review and consideration of all information available, the Service has determined that the fanshell 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 fanshell (*Cyprogenia stegaria* [= *C. irrorata*]) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The fanshell was apparently once widespread in the Ohio River and its larger tributaries in Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, Illinois, Tennessee, Alabama, and Virginia (Johnson 1980). Johnson (1980) reported that the species was formerly known from at least 26 rivers. Many of these historically known populations were evidently lost when riverine habitat in the Ohio River system was converted to a species of large reservoirs. These reservoirs and other habitat-altering factors (e.g., navigation projects and gravel and sand dredging) have diminished the species' preferred riverine gravel/sand habitat and eliminated or reduced the availability of the mussel's fish host. As a result, this species' distribution has been substantially reduced.

The following is a review by State of the species' status (see "Background" section for additional information on the species' status).

Pennsylvania: No definitive study of Pennsylvania's mussel fauna has been conducted in more than 50 years. However, based on the mussel survey data that are available and the documented history of habitat degradation that has occurred in the Pennsylvania rivers where the species was found early in this century, it is presumed that the species has been extirpated from the State (C. Shiffer, personal communication, 1989; and C. Bier *in litt.*, 1989).

West Virginia: In 1982 one old fresh-dead fanshell was collected below Kanawha Falls on the Kanawha River (W. Tolin, personal communication, 1988). This is the only recent record of the species in West Virginia, and the species is believed to be very rare in the State (B. McDonald and M. Zeto, *in litt.*, 1988 and 1989).

Ohio: Based on letters from Wendal Haag (1988) and Patricia Jones (1989), the only recent (1980s) records for Ohio are from the Muskingum River, and these were all large old individuals. C. Lakes (Ohio Department of Natural Resources, *in litt.*, 1988) stated: "We believe *Cyprogenia stegaria* should be protected under the 1973 Federal Endangered Species Act."

Indiana: The species was found at a few sites in the Wabash River system during 1987 and 1988 (K. Cummings, *in litt.*, 1989; J. Engel, U.S. Fish and Wildlife Service, *in litt.*, 1989). However, these collections were presented by only a few live or fresh-dead old individuals. Hansen (*in litt.*, 1989) stated that the fanshell was historically common in the Wabash River system but that recent surveys (1987 and 1988) document a dramatic decline in the species. The State of Indiana has classified the species as endangered, and the Indiana Division of Fish and Wildlife supports protection of the species under the Endangered Species Act.

Illinois: The fanshell (based on the collection of a few old specimens) is presently known in Illinois only from the Wabash River (K. Cummings, *in litt.*, 1989). The species was added to the Illinois list of endangered species in March 1989 (C. Becker, personal communication, 1989). Becker further stated: "The Wabash River experienced heavy commercial musseling pressure from the mid-1950s to the mid-1960s. Since that time, none of the river's mussel population seem to have recovered very well."

Kentucky: The Kentucky State Nature Preserves Commission, which classifies the species as threatened (Warren *et al.* 1986), reported that the fanshell was historically taken from 10 reaches of Kentucky rivers (R. Hannan, *in litt.*, 1988). Presently, the species is known to survive in only three Kentucky rivers and to reproduce in only two.

Tennessee: In Tennessee, a few old specimens apparently still survive in the Cumberland and Tennessee Rivers (B. Anderson, S. Ahlstedt, M. Gordon, and P. Yokley, personal communication, 1989); however, there is no indication that the species is reproducing in either of these rivers. The only known Tennessee population that is believed to still be reproducing is in the Clinch River above Norris Reservoir (S. Ahlstedt, personal communication, 1989). The Tennessee Wildlife Resources Agency (R. Hatcher, *in litt.*, 1989) stated, " * * * we support any appropriate means of protecting this species and its habitats."

Alabama: Johnson (1980) reported that the species historically was taken in Alabama from the Tennessee River and one of its tributaries, the Flint River. Based on literature records and personal communications with species experts (see "Background" section of this rule), the species is believed to be extirpated from the State of Alabama.

Virginia: The only historic record of the fanshell for Virginia is from the Clinch River (Johnson 1980), although rare, the species still survives as a reproducing population in the Clinch River (Tennessee Valley Authority 1988). The Virginia Commission of Game and Inland Fisheries supports consideration of the species for protection under the Act (C. Sledd, *in litt.*, 1988).

B. Overutilization for commercial, recreational, scientific, or educational purposes. Although the species is not commercially valuable, it does exist in small numbers within some harvested mussel beds, and the species can therefore sometimes be taken by mussel fishermen. Also, the species is rare and prized by private and institutional collectors. Thus, take does pose some threat to the species. Federal protection could help to minimize the take of individuals.

C. Disease or predation. Although the fanshell is undoubtedly consumed by predatory animals, there is no evidence that predation threatens the species. However, freshwater mussel die-offs have recently (early to mid-1980s) been reported throughout the Mississippi River basin, including the Tennessee River and its tributaries (R. Neves, personal communication, 1986). The cause of the die-offs has not been determined, but significant losses have occurred to some populations.

D. The inadequacy of existing regulatory mechanisms. States within the species' range prohibit taking fish and wildlife, including freshwater mussels, for scientific purposes without a State collecting permit. However, the species is generally not protected from other threats. Federal listing will provide additional protection for the species under the Endangered Species Act from mussel collectors by requiring Federal permits 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. Only 3 of the 12 remaining populations are believed to be reproducing. Therefore, unless methods can be developed to maintain the nonreproducing populations, about 75 percent of the

known populations will be lost in the foreseeable future due to their inability to reproduce.

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 fanshell (*Cyprogenia stegaria* (= *C. irrorata*)) as an endangered species. Historical records reveal that the species was once much more widely distributed in many of the large rivers of the Ohio River system. Presently only three isolated, reproducing populations are known to survive. Due to the species' history of population losses and the vulnerability of the three remaining reproducing populations, endangered status appears to be the most appropriate classification for this species. (See "Critical Habitat" section for a discussion of why critical habitat is not being designated for the fanshell.)

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires, to the maximum extent prudent and determinable, that the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the fanshell at this time, owing to the lack of benefits from such designation. The National Park Service, Mammoth Cave National Park; U.S. Army Corps of Engineers; and the Tennessee Valley Authority are the three Federal agencies most involved, and they, along with the State natural resources agencies within the species' range, are already aware of the location of the remaining populations within their respective jurisdictions that would be affected by any activities in these river reaches. These Federal agencies have conducted numerous studies in these river basins and are knowledgeable of the fauna and of their projects' potential 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 and private collection could be a threat. The publication of specific critical habitat maps and other publicity accompanying critical habitat designation could increase that threat. The locations of populations of this 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 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 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 requested information from Federal agencies to determine if they have active or proposed projects that might affect the species. No specific proposed Federal actions were identified. 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 alterations, wastewater facility development, and road and bridge construction. It has been the experience of the Service, however, that nearly all section 7 consultations can be resolved so that the species is protected and the project objectives are met. In fact, many of the areas inhabited by the fanshell are also inhabited by other mussels that have been federally listed since 1976, and the Service has a history in many of these areas of successful section 7 conflict resolutions that protect federally listed

mussels and provide for project objectives to 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 (which 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 of 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 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

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Author

The primary author of this final rule is Richard G. Biggins (see Addresses above) (704/259-0321 or FTS 672-0321).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, exports, imports, reporting and record-keeping requirements, and transportation.

Regulation Promulgation

PART 17—[AMENDED]

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

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.

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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							
Fanshell.....	<i>Cyprogenia stegaria</i> (= <i>irrorata</i>).	U.S.A. (AL, IL, IN, KY, OH, PA, TN, VA, WV).	NA.....	E	391	NA	NA

Dated: May 23, 1990.

Bruce Blanchard,

Director, Fish and Wildlife Service.

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