

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

## Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the California Freshwater Shrimp

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

**ACTION:** Proposed rule.

**SUMMARY:** The Service proposes to determine the California freshwater shrimp (*Syncaris pacifica*) to be an endangered species. The species is threatened by introduced predatory fish and deterioration or loss of habitat resulting from water diversion and impoundments, agricultural activities and development, urbanization, and water pollution. The California freshwater shrimp is known from only eleven streams in Napa, Marin, and Sonoma Counties, California. Determination of this animal as endangered would implement the protection provided under the Endangered Species Act of 1973, as amended. The Service seeks comments and relevant data from the public on this proposal.

**DATES:** Comments from all interested parties must be received by June 22, 1987. Public hearing requests must be received by June 8, 1987.

**ADDRESSES:** Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, 500 NE Multnomah Street, Suite 1692, Portland, Oregon 97232. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

**FOR FURTHER INFORMATION CONTACT:** Mr. Wayne S. White, Chief, Division of Endangered Species, at the above address (503/231-6131 or FTS 429-6131).

**SUPPLEMENTARY INFORMATION:****Background**

The California freshwater shrimp, *Syncaris pacifica* (Holmes), is a decapod crustacean of the family

Atyidae. Samuel J. Holmes first described *S. pacifica* as *Miersia pacifica* in 1895. In 1900, Holmes erected a new genus, *Syncaris*, for the California atyids based on notable differences in the chelae (pinchers) and rostrum (horn-shaped structure between the eyes). *S. pacifica* can be distinguished from *Palaemonias*, the only other atyid genus in the United States, by its well-developed, stalked eyes. It is the only surviving species in the genus *Syncaris*.

Adults may reach 5 centimeters (cm) (2½ inches) in length. Nearly transparent in water, the adults appear out of water to be greenish-gray to almost black with pale blue uropods (tail fins). An adult female lays relatively few eggs, (50-70, Hedgpeth 1975; 100-120, Eng 1981). While she carries the eggs on her body for 8 to 9 months, slow overwintering development of the eggs occurs. During this period, many larvae die due to adult female death and genetic or embryonic developmental problems. As a result, the number of embryos emerging from the eggs during May are reduced typically by 50 percent. During the first summer, larval growth is rapid, but sexual maturity is not reached until the second summer.

The California freshwater shrimp is endemic to gentle gradient (less than 1 percent), low elevation (below 115 meters [380 feet]), freshwater streams in Marin, Napa, and Sonoma Counties, California. The species, a true freshwater shrimp, inhabits quiet portions of tree-lined streams with underwater vegetation and exposed tree roots. Once common in the streams of the three counties, *S. pacifica* now occurs only within restricted portions of 11 streams. The shrimp's transparency, secretive habits, and rapid escape behavior contribute to its inconspicuousness and make it difficult to capture. The California Department of Fish and Game (CDFG) attributed the decline in shrimp populations primarily to degradation and loss of their habitat resulting from increased urbanization, overgrazing, agricultural development, dam construction, and water pollution (CDFG 1980). Essentially compatible with native fish species, *S. pacifica* is threatened by the introduction of exotic predators, especially fishes of the sunfish family. Because of the species' low reproductive potential, slow maturity, restricted distribution, and specialized habitat requirements, *S. pacifica* is particularly vulnerable to habitat loss and predation by exotic species against which its natural defense mechanisms are ineffective.

On June 4, 1974, the Service entered into a contract with the Sierra Club

Foundation to investigate the status of freshwater shrimps in Pacific drainages. A final report under this contract was submitted in September 1975 by Dr. Joel W. Hedgpeth. Dr. Hedgpeth concluded in his report that *Syncaris pacifica* had been extirpated in some streams and was reduced in distribution and abundance in other streams. This report cited dredging, streambed gravel stockpiling, stream diversion, and building of summer gravel dams as the major factors responsible for the decline of the California freshwater shrimp. Larry Serpa (1985) reported the species inhabited 11 streams in the Russian River, San Francisco Bay, and other coastal drainages. These streams are East Austin, Salmon, Lagunitas, Big Austin, Sonoma, Huichica, Green Valley, Jonive, Walker, Yulupa, and Blucher.

The California freshwater shrimp was proposed as a threatened species on January 12, 1977, in the Federal Register (42 FR 2507). That proposal was withdrawn on December 10, 1979 (44 FR 70796), under a provision of the 1978 amendments to the endangered Species Act of 1973, which required withdrawal of all pending proposals if they were not finalized within two years of the proposal. On March 23, 1980, the Service received from CDFG a series of annotated maps delineating the known, current distribution of the California freshwater shrimp. These maps summarize the distribution data collected by CDFG in 1979 and 1980. Additional distributional data were received by the Service from the CDFG on October 30, 1980. CDFG later sent to the Service detailed information on the distribution, life history, and status of the shrimp in 1981 (Eng 1981, Serpa 1985). These maps and additional data constitute significant new information on which to propose endangered status for the California freshwater shrimp.

**Summary of Factors Affecting the Species**

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 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 California freshwater shrimp (*Syncaris pacifica* (Holmes)) are as follows:

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

The preferred habitat of the California freshwater shrimp is quiet, tree-lined pools and undercut banks along small, free-flowing, permanent streams. Livestock, agricultural activities and development, water pollution, heavy earth-moving equipment, and residential development have encroached upon and/or threaten these stream banks. Siltation from poor soil conservation practices, sand and gravel mining, and the building of temporary summer dams have destroyed shrimp habitat. Water diversions from the streams resulting in intermittent stream flow are also detrimental to the species. Many streams currently or historically harboring the shrimp maintained a permanent flow. Various combinations of the above activities have extirpated the species from the Semple Creek, Laguna de Santa Rose Creek, Santa Rose Creek, Atascadero Creek, and the Napa River. These extirpations probably represent more than half of the historic range of the shrimp. The concrete lining of streams and rivers for flood control caused the extinction of *Syncaris pasadenae*, a species historically known from southern California. This flood control technique has extirpated the California freshwater shrimp in Santa Rosa Creek. The channelization and lining is likely to continue and increase as this area experiences rapid urban growth.

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

Not applicable.

**C. Disease or Predation.**

Predation by fish significantly threatens the California freshwater shrimp, especially in altered habitats where cover from tree roots and underwater vegetation has been reduced or is absent. Introduced bluegill (*Lepomis*) exist in portions of Huichica Creek. Predation significantly threatens the California freshwater shrimp in East Austin Creek where temporary summer dams confine steelhead (*Salmo gairdneri*) Sacramento squawfish (*Ptychocheilus grandis*), and Tule perch (*Hysterocarpus traski*) with the shrimp in artificial pools (Bill Cox, CDFG, pers. comm. 1985). The effect of these dams on shrimp and steelhead populations is now being studied.

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

The California State Fish and Game Commission lists the California freshwater shrimp as endangered. However, State law provides no protection on privately-owned lands. The species receives some protection in those portions of its range within Samuel P. Taylor State Park and Golden Gate National Recreation Area.

**E. Other Natural or Manmade Factors Affecting its Continued Existence.**

In the past, the shrimp was capable of recovering from environmental extremes, such as drought and spring floods, that resulted in localized extirpations. Historic silvicultural practices may have reduced the range of the species by altering the normal hydrologic regime. Today, these natural events devastate populations of the shrimp because the current loss of suitable habitat makes it difficult to effectively repopulate affected areas.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the species in determining to propose this rule. Based on this evaluation, the preferred action is to list the California freshwater shrimp as endangered. The continued degradation and loss of suitable habitat by the threats discussed under Factor A in the "Summary of Factors Affecting the Species" could result shortly in a substantial loss of the remaining populations, especially those colonies in East Austin Creek. Because of conflicts with long standing economic interest and recreational practices in those streams harboring the California freshwater shrimp, the shrimp may shortly become extinct, as was the case with its, *Syncaris pasadenae*. Provided with protection from habitat degradation and loss, local isolated colonies may repopulate many portions of its historic range. Critical habitats are not being designated for the species at this time for the reasons discussed below.

**Critical Habitat**

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for the California freshwater shrimp at this time. As discussed under "Summary of Factors Affecting the Species," this species and

its habitat are vulnerable to several activities, some of which could be carried out by a single individual, which makes the species vulnerable to acts of vandalism. These activities are difficult to regulate and control because the habitat of the shrimp predominantly occurs on privately-owned land. The precise pinpointing of localities that would result from publication of critical habitat descriptions and maps in the Federal Register, would make this species and its habitats more vulnerable to vandalism and would increase enforcement problems. The U.S. Army Corps of Engineers (COE), the Federal agency most involved with the shrimp, is aware of known localities and all other involved parties and land owners will be notified of the location and importance of this species' habitat. Therefore, it would not be prudent to determine critical habitat for the California freshwater shrimp at this time.

**Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, 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)(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) 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

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 only known Federal activity that may affect the California freshwater shrimp is the authorization of temporary summer dams on East Austin Creek (by the COE). These gravel structures are built by local residents to impound water for swimming. The COE has issued an individual permit to a private organization authorizing three of these structures on East Austin Creek. This permit does not expire until 1990, provided that the permittee adheres to the general and special conditions of the permit such as consultation with the appropriate State and Federal agencies. Special permit conditions require the permittee to reduce the number, size, and height of these dams, including the amount of water impounded, and to reduce the number and size of beaches by 1990. The COE may modify, suspend, revoke, or cancel the permit at any time before 1990 if any of these conditions are not met by the permittee.

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. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be

suffered if such relief were not available.

#### Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of this proposal are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) The location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range and distribution of this species; and

(4) Current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulation on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests must be made in writing and addressed to the Regional Director (see **ADDRESSES** section).

#### 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

- California Department of Fish and Game. 1980. Unpublished range maps for *Syncaris pacifica*.
- Eng, L.L. 1981. Distribution, life history, and status of the California freshwater shrimp, *Syncaris pacifica* (Holmes). Inland Fisheries Endangered Species Special Publication 18-1. Sacramento, Calif.
- Hedgpeth, J.W. 1975. California fresh and brackish water shrimps, with special reference to the present status of *Syncaris pacifica* (Holmes). Report submitted to the Office of Endangered Species, U.S. Fish and Wildlife Service.
- Holmes, S.J. 1895. Notes on west American crustacea. Proc. Calif. Acad. Sci. 4:563-588.
- Holmes, S.J. 1900. Synopsis of California stalk-eyed crustacea. Occas. Pap. Calif. Acad. Sci. 7:7-262.
- Serpa, L. 1985. *Syncaris pacifica*. Unpublished document developed for The Nature Conservancy.

#### Author

The primary author of this proposed rule is Dr. Jeurel Singleton, Sacramento Endangered Species Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E-1823, Sacramento, Calif. (916/978-4866 or FTS 460-4866).

#### List of Subjects in 50 CFR Part 17

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

#### Proposed Regulation Promulgation

##### PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

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.*).

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under "CRUSTACEANS," 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						
Crustaceans							
Shrimp, California freshwater	<i>Syncaris pacifica</i>	U.S.A. (CA)	NA	E		NA	NA

Dated: March 24, 1987.

Susan Rocca,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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