

50 CFR Part 17

RIN 1018-AB73

Endangered and Threatened Wildlife and Plants; Proposal To List the Lee County Cave Isopod (*Lirceus usdagalun*) as an Endangered Species**AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Proposed rule.

SUMMARY: Unlike most other members of its genus, *Lirceus usdagalun* has adapted to a totally subterranean aquatic existence. It is an eyeless, unpigmented isopod (a kind of crustacean) originally known from two cave systems in Lee County, Virginia. It has been extirpated from one of these systems by pollution of the underground stream it inhabited. In its remaining cave system, the isopod is potentially threatened by the proposed construction of a prison facility and an airport in the cave vicinity. These construction projects could degrade groundwater quality sufficiently to threaten the isopod's survival, unless construction plans provide for its protection. The isopod is also potentially threatened by a landowner's plan to use the cave's stream to generate electricity for a cabin proposed to be built above the cave. This project would require careful planning, to avoid adversely affecting the isopod. This proposal, if made final, would implement protection provided by the Endangered Species Act of 1973, as amended (Act), for *Lirceus usdagalun*. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by January 14, 1992. Public hearing requests must be received by December 30, 1991.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Annapolis Field Office, U.S. Fish and Wildlife Service, 1825 Virginia Street, Annapolis, MD 21401. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Ms. Judy Jacobs at the above address, telephone (301) 269-5448, during normal business hours.

**SUPPLEMENTARY INFORMATION:
Background**

Among the rare creatures discovered by Dr. John Holsinger, during his extensive investigations of the caves in the central Appalachian region, was a freshwater isopod crustacean of the genus *Lirceus*. Unlike any of the other 13 species known to comprise the genus at that time, this species was troglolitic—that is, an obligate cave-dweller. In adapting to the lightless, unchanging cave environment, this species, over evolutionary time, lost its eyes and pigmentation. The species was named "usdagalun", the Cherokee word for "cave" or "hole under rock" (Holsinger and Bowman 1973).

Animals in the genus *Lirceus* occur in parts of the eastern and mid-western United States and the Great Lakes region of southern Ontario, Canada, in a variety of aquatic habitats, including springs, seeps, streams, ponds, sloughs, and drain outlets (Williams 1972). Some other species have been found in cave streams, but all species described prior to *L. usdagalun* have eyes and pigment and none are considered obligate cave-dwellers (Hubricht and Makin 1949). Subsequent to the discovery of *L. usdagalun*, an additional troglolitic species has been described (Estes and Holsinger 1976).

Lirceus usdagalun is an eyeless, unpigmented species measuring 4 to 7.5 millimeters (0.2–0.3 inches) in length. The body is about 64% longer than wide, and the head is about 1/3 as long as wide, with deep incisions on its lateral margins. The species was known historically from two cave systems, located approximately 10 kilometers (6 miles) apart, in Lee County, Virginia (Holsinger and Culver 1988).

The caves originally inhabited by *L. usdagalun* are developed in a band of low-dipping, middle-Ordovician limestone on the southern flank of the Cedar Syncline (Holsinger and Bowman 1973). This broad band of limestone, which extends through south-central Lee County, is riddled with caves, sinks and ravines, typical for an area underlain by a water-soluble, limestone substrate. Such areas are particularly susceptible to contamination of groundwater from surface contaminants leaching through the porous substrate (Holsinger 1979).

Lirceus usdagalun has been extirpated from one of the two cave systems it originally occupied by groundwater pollution. This pollution resulted when large quantities of sawdust, by-product of a local sawmill operation, were piled on the ground surface over the cave. Rainwater leached tannins and other toxins from the sawdust and transferred these

through the porous substrate into the underlying groundwater. Fortunately, the sizeable population of *L. usdagalun* in the other cave system was unaffected and is extant. Prior to the pollution, a scientific study (Estes and Holsinger 1982) compared the populations in the two cave systems, and found that they differed in numerous parameters. The unique characteristics (and genotypes) exhibited by the extirpated population have been lost to the species forever.

The Lee County cave isopod was first recognized by the Federal government in the Federal Register Notice of Review published on May 22, 1984 (49 FR 21664). That notice, which covered invertebrate wildlife under consideration for endangered or threatened status, included *Lirceus usdagalun* as a Category 2 species. Category 2 includes those taxa for which proposing to list as endangered or threatened is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently available to support proposed rules. In the Federal Register Animal Notice of Review published on January 6, 1989, *L. usdagalun* was retained as a Category 2 species, since available information indicated that its status was essentially unchanged from 1984; it was rare, but there were no known threats to its survival. Since that time, numerous threats to the species' continued existence have appeared. One of these, the above-mentioned sawdust stockpiling, has already resulted in the extirpation of the species from half its originally known range. Several additional factors, described below, threaten the isopod in its one remaining cave system.

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 Lee County cave isopod (*Lirceus usdagalun*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* *Lirceus usdagalun* has been extirpated from half of its known historic range by the degradation of its aquatic habitat at one of the two cave systems it was known to

occupy. Sawdust was piled on the ground surface above the cave. Leachate from the sawdust entered the cave's stream system, stripping oxygen from the water and severely contaminating both the water column and the stream bed. In May of 1990, the cave was intensively surveyed, but no *Lirceus* or other aquatic cave organisms were found. The stream system within the cave is presently too polluted to support any of its original aquatic fauna (J.R. Holsinger, Old Dominion University, pers. comm., 1991).

A number of projects are under consideration that could seriously impact the fragile habitat on which the isopod depends in the remaining cave system. The most immediate of these would be construction of a cabin directly over one of the three caves in the cave system occupied by the isopod, and use of the cave stream flow to generate electricity for the dwelling. Drilling an additional opening into the cave system could change the airflow, temperature, humidity and other ambient conditions (Tuttle and Stevenson 1977), an abrupt change in the cave environment that could eliminate the isopod, which is adapted to an essentially changeless environment. Breaching the system could also allow the invasion of surface organisms, including potential predators and competitors that could disrupt the relatively simple and stable faunal cave community (Culver 1976). It is also very likely that the construction process itself would introduce sediments and degrade water quality of the cave's stream system. Any septic field of the cabin could also influence the stream's water quality, especially in light of the porosity of the local substrate.

Also of concern are two major development projects, an airport and a prison facility, proposed to be constructed in the vicinity of the isopod's remaining cave system. Some of the alternatives under consideration would locate these facilities over or adjacent to large sinkholes. Such a location would facilitate sediments or pollutants entering the groundwater during construction or operation phases potentially affecting the isopod.

B. Overutilization for commercial, recreational, scientific, or educational purposes. *Lirceus usdagalun* is of no perceived value to hobbyist collectors. The only interest in collection of the species would be for purely scientific purposes, and these would be coordinated with State and Federal authorities.

C. Disease or predation. This isopod is undoubtedly a food item in the diet of certain natural predators, including cave

salamanders and possibly crayfish (Holsinger pers. comm., 1991). However, this naturally occurring predation is not currently considered a threat to the isopod's continued existence. There are no known diseases affecting the species.

D. The inadequacy of existing regulatory mechanisms. The Commonwealth of Virginia's Cave Protection Act (Title 10, chapter 12.2 section 10-150.11-10.150.18) states that it is "unlawful to remove, kill or otherwise disturb any naturally occurring organisms found in any cave." However, under certain circumstances, this law may not apply to the owner of a cave. There are no other known local, State or Federal laws protecting this species.

E. Other natural or manmade factors affecting its continued existence. Although not presently a problem, *L. usdagalun* could be adversely affected by an increase in human foot traffic through their cave. The isopods could be affected directly, or indirectly, by increased siltation of the stream they occupy.

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 propose this rule. Based on this evaluation, the preferred action is to list *Lirceus usdagalun* as endangered. The species has been extirpated from one of the two caves systems it was known to occupy, and it faces several threats that, without Federal protection and careful planning, could extirpate it from its remaining cave system. In the view of the Service, the isopod is in imminent danger of extinction throughout the remainder of its known range. To list this species as threatened would not accurately reflect the immediacy of the threats it faces. Clearly, endangered status is the most appropriate designation for *Lirceus usdagalun*.

Critical Habitat

Section 4(a)(3) of the Act as amended, requires that, to the maximum extent prudent and determinable, the Secretary propose critical habitat at the time the species is proposed to be endangered or threatened. The Service finds that designation of critical habitat is neither prudent nor beneficial for *Lirceus usdagalun*.

As noted under Factor E above, the isopod and its habitat could be adversely affected by an increase in foot traffic through the stream it inhabits. The location of the cave system is not widely known at present. Publication of a precise map and locality description could increase the incidence of unauthorized visitation to the cave

system, with possible adverse consequences for the isopod and its habitat. Such unauthorized intrusion would be extremely difficult to regulate owing to the remote location of the cave system and to the existence of multiple entrances. For this reason, the Service concludes that it is not prudent to designate critical habitat for *Lirceus usdagalun*.

In addition to the possible adverse consequences of designating critical habitat, the Service believes that in this case, the isopod would receive no additional protection from the designation of critical habitat. All involved local, State and Federal agencies and principal landowners have been notified of the isopod's location and importance of protecting its habitat. Because the isopod is now known from only a single cave system, any adverse modification of this system would be likely to jeopardize the continued existence of the species. The Service believes that habitat protection for this species will be best accomplished through the section 7 jeopardy standard and the section 9 prohibitions against take. In summary, it would be of no benefit, and it is not considered prudent, to determine critical habitat for this species.

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 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. 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 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 prison and the airport proposed to be constructed in the vicinity of the isopod's habitat are under the jurisdiction of the Federal Bureau of Prisons and the Federal Aviation Administration, respectively. These agencies are aware of the existence of the isopod and of the need to incorporate groundwater protection measures into their project plans.

The listing of this isopod would also bring sections 5 and 6 of the Endangered Species Act into full effect on its behalf. Section 5 authorizes the acquisition of lands for the purpose of conserving endangered and threatened species. Pursuant to section 6, the Service may grant funds to affected States for management actions aiding the protection and recovery of the species.

The Act and its implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap or collect; or to attempt any of these), import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, any listed species. It is also illegal to possess, sell, deliver, carry, transport or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances, namely, for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. Regulations governing permits are at 50 CFR 17.22 and 17.23.

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or

suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule 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, distribution, and population size 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 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 received within 45 days of the date of publication of the proposal. Such requests must be made in writing and addressed to the Annapolis Field Office (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

- Culver, D.C. 1976. The evolution of aquatic cave communities. *Amer. Nat.* 110(976): 945-957.
- Estes, J.A. and J.R. Holsinger. 1976. A second troglotic species of the genus *Lirceus* (Isopoda, Asellidae) from southwestern Virginia. *Proc. Biol. Soc. Wash.* 89(42): 481-490.
- Estes, J.A. and J.R. Holsinger. 1982. A comparison of the structure of two populations of the troglotic isopod crustacean *Lirceus usdagalun* (Asellidae). *Pol. Arch. Hydrobiol.* 29(2): 453-461.

- Holsinger, J.R. 1979. Freshwater and terrestrial isopod crustaceans. IN: D.W. Linzey, ed. *Proceedings of a Symposium on Endangered and Threatened Plants and Animals of Virginia*. Blacksburg, Virginia: Virginia Polytechnic Institute and State University. pp.130-148.
- Holsinger, J.R., and T.E. Bowman. 1973. A new troglotic isopod of the genus *Lirceus* (Asellidae) from southwestern Virginia, with notes on its ecology and additional cave records for the genus in the Appalachians. *Int. J. Speleol.* 5 (1973): 261-271.
- Holsinger, J.R., and D.C. Culver. 1986. The invertebrate fauna of Virginia and a part of eastern Tennessee: Zoogeography and ecology. *Brimleyana* 14: 1-162.
- Hubricht, L. and J.G. Makin. 1949. The freshwater isopods of the genus *Lirceus* (Asellota, Asellidae). *Amer. Midl. Nat.* 42(2): 334-349.
- Tuttle, M.D., and D.E. Stevenson. 1977. Variation in the cave environment and its biological implications. IN: R. Zuber, J. Chester, S. Gilbert and D. Rhoades, eds. *National Cave Management Symposium Proceedings*. Albuquerque, NM: Adobe Press. pp. 108-121.
- Williams, W.D. 1972. Freshwater isopods (Asellidae) of North America. *Biota of Freshwater Ecosystems Ident. Manual No. 7*, U.S. Environmental Protection Agency, 45 pp.

Author

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List of Subjects in 50 CFR Part 17

Endangered and threatened species. Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend part 17, subchapter B of chapter 1, 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: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625; 100 Stat. 3500; unless otherwise noted.

2. 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							
Lee County cave isopod	<i>Lirceus usdagatum</i>	U.S.A. (VA)	NA	E		NA	NA

(Proposal: Lee County Cave Isopod—
Endangered)

Dated: October 10, 1991.

Bruce Blanchard,

Acting Director, Fish and Wildlife Service.

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