

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Loach Minnow

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service has determined that a fish, the loach minnow (*Tiaroga cobitis*), is a threatened species. This determination includes a special rule allowing take for certain purposes in accordance with New Mexico and Arizona State laws and regulations. Historically, the loach minnow occurred in the Gila River system upstream from Phoenix, Arizona. Presently it is found only in Aravaipa Creek, Graham and Pinal Counties, Arizona; portions of the Gila River upstream from the Middle Box canyon, Grant and Catron Counties, New Mexico; the San Francisco and Blue Rivers upstream from their confluence, Greenlee County, Arizona, and Catron County, New Mexico; the lower Tularosa River, Catron County, New Mexico; the lower 1.5 kilometers (1 mile) of Whitewater Creek, a tributary of the San Francisco River, Catron County, New Mexico; and a small section of the White and East Fork of the White Rivers at their confluence, Navajo County, Arizona. The historic range of the loach minnow included the upper San Pedro River in Sonora, Mexico, but habitat no longer exists there due to dewatering of the river. The distribution and numbers of the loach minnow have been reduced by habitat destruction due to impoundment, channel downcutting, substrate sedimentation, water diversion, groundwater pumping, and the spread of exotic predatory and competitive fish species. The species continues to be threatened by proposed dam construction, water losses, habitat alteration, and exotic species. Of the approximately 2,600 kilometers (1,600 miles) of stream habitat historically occupied by the loach minnow, 2,220 kilometers (1,364 miles) no longer supports the species. The determination of critical habitat included in the proposed rule is postponed until June 1987. This rule implements the full protection provided by the Endangered Species Act of 1973, as amended, for the loach minnow.

DATE: The effective date of this rule is November 28, 1986.

ADDRESS: The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service Regional Office, 500 Gold Avenue SW., Room 4000, P.O. Box 1306, Albuquerque, New Mexico 87103.

FOR FURTHER INFORMATION CONTACT: Mr. Gerald L. Burton, Endangered Species Biologist, Office of Endangered Species, U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico (see ADDRESSES above) (505/766-3972 or FTS 474-3972).

SUPPLEMENTARY INFORMATION:**Background**

The loach minnow, *Tiaroga cobitis*, was first collected in 1851 from the Rio San Pedro in Arizona, and was described from those specimens in 1856 by Girard. It is the only species in the genus *Tiaroga*. It is a small (less than 80 millimeters [3 inches]), slender, elongated fish, olivaceous in color with dirty white spots at the base of the dorsal and caudal fins. It has a highly oblique terminal mouth and its eyes are markedly upward directed. Breeding males develop vivid red-orange markings. The loach minnow inhabits small to large perennial streams, using shallow turbulent riffles with primarily cobble substrate, swift currents, and growths of filamentous algae. Recurrent flooding is very important to *Tiaroga* biology, keeping the substrate free of embedding sediments, and helping to maintain the competitive edge over invading exotic fish species (Minckley 1973).

The loach minnow was once locally common throughout much of the Verde, Salt, San Pedro, San Francisco, and Gila (upstream from Phoenix) River systems, occupying both the mainstream and perennial tributaries up to about 2,200 meters (7,200 feet) elevation (Minckley 1973). Because of habitat destruction, and competition and predation by exotic fish species, its range has been reduced and it is now restricted to approximately 24 kilometers (km) (15 miles) of Aravaipa Creek, Graham and Pinal Counties, Arizona; approximately 93 km (57 miles) of the upper Gila River, upstream from the Middle Box canyon through the Cliff-Gila Valley and the area of the confluence of the East, West, and Middle Forks of the Gila, Grant and Catron Counties, New Mexico; approximately 167 km (103 miles) of the San Francisco and Tularosa Rivers, Catron County, New Mexico; the lower 1.5 km (1 mile) of Whitewater Creek, a tributary of the San Francisco River, Catron County, New Mexico; approximately 95 km (59 miles) of the

Blue River, Greenlee County, Arizona; and a short stretch at the confluence of the East Fork and the mainstream of the White River, Navajo County, Arizona (Anderson 1978, Barber and Minckley 1966, Britt 1982, Silvey and Thompson 1978, Propst in prep., Propst et al. 1985, USDA 1979). The 380 km (236 miles) of range presently occupied by *Tiaroga* represents approximately 15 percent of its former range.

Land ownership in existing *Tiaroga cobitis* habitat is mixed and is as follows:

Aravaipa Creek—(1) USDI Bureau of Land Management—About 75 percent of the perennial length of the stream, most of which is designated as the Aravaipa Canyon Wilderness. (2) Defenders of Wildlife—Most of the perennial stream upstream and downstream from the wilderness area is owned or leased as the George Whittell Wildlife Preserve. (3) Other privately owned—A few scattered parcels along the perennial stream length.

Gila River—(1) Privately owned—Most of the Cliff-Gila Valley, also near Gila Hot Springs, and along the East Fork. (2) The Nature Conservancy—A small portion of river upstream from the town of Gila. (3) New Mexico Department of Game and Fish—Approximately 6 km (3½ miles) of river on the West and Middle Forks near their confluence. In addition, the New Mexico State Land Office has land along ½ km (¼ mile) of river in the Cliff-Gila Valley. (4) National Park Service—Approximately 1 km (0.6 mile) on the West Fork. This is the Gila Cliff Dwellings National Monument, which is currently being administered by the U.S. Forest Service. (5) U.S. Forest Service—A large portion of the river is in the Gila National Forest with sections flowing through the Gila Wilderness, the Lower Gila River Bird Habitat Management Area, and the Gila River Research Natural Area.

San Francisco and Tularosa Rivers and Whitewater Creek—(1) Privately owned—Substantial areas near the towns of Cruza, Glenwood, Reserve, and Alma. (2) U.S. Forest Service—The major portions of these rivers flow through the Gila and Apache-Sitgreaves National Forests.

Blue River—(1) U.S. Forest Service—The river is almost entirely contained within the Apache-Sitgreaves National Forest, with a large portion flowing through the Blue Range Primitive Area. (2) Privately owned—Interspersed inholdings within Forest Service lands.

White River and East Fork of the White River—Fort Apache Indian Reservation.

The native fish fauna of the Gila River system, including the loach minnow, has been drastically affected by man's alteration of that system, with 35 percent of the native fish presently federally listed as endangered and another 35 percent considered to be threatened or endangered by the States of Arizona and New Mexico and/or the American Fisheries Society. *Tiaroga* has been extirpated from much of the system and was last found in the San Pedro River (except Aravaipa Creek) in 1961, and the Verde River drainage in 1938. It has also retreated at least 60 km (37 miles) upstream in the Gila River in the last 50 years.

The continuing decline in the distribution of the loach minnow has evoked concern from many sources over its survival. It was included by the American Fisheries Society's Endangered Species Committee on their 1979 list (Deacon *et al.* 1979) as a species of special concern due to habitat destruction and to competition/predation from exotic species. Prior to that it was listed as rare and endangered on a 1972 list of threatened freshwater fish of the United States, published by the American Fisheries Society and the American Society of Ichthyologists and Herpetologists (Miller 1972). It has also been listed by the International Union for Conservation of Nature and Natural Resources in its *Red Data Book* (Vol. 4) in 1977. Both the States of Arizona and New Mexico include *Tiaroga cobitis* on their lists of threatened and endangered species (New Mexico State Game Comm. 1985; Arizona Game and Fish Comm. 1982). Because of concern over survival of and to provide protection for native species, including the loach minnow, land has been acquired on the upper Gila River by The Nature Conservancy and on Aravaipa Creek by the Defenders of Wildlife. *Tiaroga cobitis* was included in the Service's December 30, 1982, Vertebrate Notice of Review (47 FR 58454) in category 1. Category 1 includes those taxa for which the Service currently has substantial information to support the biological appropriateness of proposing to list the species as endangered or threatened. A proposed rule to list this species was published on June 18, 1985 (50 FR 25380).

Summary of Comments and Recommendations

In the June 18, 1985, proposed rule (50 FR 25380) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. The original comment period closed on August 19, 1985, but

was reopened on October 7, 1985 (50 FR 37703), to accommodate the public hearings and remained open until November 8, 1985. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting general public comment were published in the *Courier* in Prescott, Arizona, on July 5, 1985; in the *Daily Press* in Silver City, New Mexico, on July 13, 1985; and in the *Eastern Arizona Courier* in Safford, Arizona, on July 10, 1985. Ninety-five letters of comment were received from 89 separate parties and are discussed below. Six requests for a public hearing were received. Public hearings were held in Silver City, New Mexico; Safford, Arizona; and Phoenix, Arizona; on October 7, 8, and 9, 1985, respectively. Interested parties were contacted and notified of those hearings, and notices of the hearings were published in the *Federal Register* on September 17, 1985 (50 FR 37703); in the *Daily Press* in Silver City, New Mexico, on September 24, 1985; in the *Eastern Arizona Courier* in Safford, Arizona, on October 2, 1985; in the *Courier* in Prescott, Arizona, on September 27, 1985; and in the *Arizona Republic* in Phoenix, Arizona, on September 25, 1985. Comments received in these hearings are summarized below.

Sixty-seven letters were received in support of the proposal, from 66 separate parties. Twelve letters were received in opposition to the proposal, from 10 separate parties. An additional 16 letters expressed neither support nor opposition, or contained only economic information for use in economic analysis of the critical habitat designation. Many of the letters of comment addressed concerns regarding specific water development or flood control projects and how they would affect or be affected by this proposal. These comments will not be addressed here, unless they requested or resulted in specific changes to the proposal or the rule procedure. All comments received are available for public inspection (see ADDRESSES).

Because of the complexity of the economic analysis that must accompany the final rule designating critical habitats and the large number of comments and data received on these habitats, the Service has decided to make final only the listing portion of this rule at this time so that immediate protection of the loach minnow would be possible. Section 4(b)(6)(C)(ii) of the Act allows the Service to postpone designation of critical habitat for up to

one year (June 18, 1987, in this case). Hence, the comments pertaining to designation of critical habitat or the potential economic impacts of such designation will not be discussed here but will be addressed in the final rule on critical habitat. Only comments addressing the issue of listing this species are responded to here.

Summaries of all comments addressing the issue of listing the loach minnow and the Service's response to those comments and questions follow:

1. Support for the proposal was received from the Bureau of Land Management, the Desert Fishes Council, the American Society of Ichthyologists and Herpetologists, the International Union for Conservation of Nature and Natural Resources, three Commissioners of the New Mexico Interstate Stream Commission, the Defenders of Wildlife, the Prescott Audubon Society, the Rio Grande Chapter of the Sierra Club, the Tucson Audubon Society, the Maricopa Audubon Society, the Huachuca Audubon Chapter, the Apache County Chapter of the Arizona Wildlife Federation, the Southern New Mexico Sierra Club, the Yuma Audubon Society, the Arizona State University Chapter of the Wildlife Society, the George Whittell Wildlife Trust, the Northern Arizona Paddlers Club, the Rocky Mountain Heritage Task Force of The Nature Conservancy, the Arizona Nature Conservancy, the New Mexico Nature Conservancy, and 42 biologists and private citizens.

2. Dr. John Rinne, of the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station, supports the proposal. Dr. Rinne also suggests that further survey work be done on the upper Salt River system to confirm the loss of *Tiaroga* from that area. The Service replies that such work was conducted in May 1985 (Propst *et al.* 1985), and a small population of *Tiaroga cobitis* was found in the White and East Forks of the White River at their confluence.

3. Dr. Dean Hendrickson, of the Arizona State University Department of Zoology, supports the proposal. At Dr. Hendrickson's suggestion, information regarding the possibility of adverse effects of predation by adult *Notropis lutrensis* on larval *Tiaroga cobitis*, has also been added to the final rule.

4. Dr. Robert R. Miller, of the University of Michigan Museum of Zoology, supports the proposal. Dr. Miller points out that *Tiaroga cobitis* historically occurred in the upper San Pedro River in Sonora, Mexico. That information has been added to the final rule.

5. The Arizona Game and Fish Department supports the proposal, and offered the following comments (C=comment, R=Service response): C. The Department thinks that federally-permitted water diversions and cattle grazing in riparian areas have had, and will continue to have, serious effects on *Tiaroga* and should be included in the Federal activities considered under "Available Conservation Measures." R. Livestock grazing on U.S. Forest Service lands is included in the "Available Conservation Measures" section of the rule, as a Federal activity which might be affected by the proposal. It is not included for Bureau of Land Management (BLM) lands, since none of the BLM lands within the present range of the species are currently grazed. Other than the Bureau of Reclamation's Upper Gila Water Supply Study, water diversions involving Federal funding, permits, or actions are generally located on private lands and are included in the paragraph addressing potentially affected activities on private lands. C. The Department points out that upstream pesticide use is an additional potential threat to the Aravaipa Creek population. R. This has been added to the final rule. C. The Department questioned the absence of red shiner in the Gila River in New Mexico prior to 1978. R. The red shiner was first collected in the Gila River in New Mexico by Buddy Jensen in 1978.

6. Opposition to the proposal was received from the Southwest New Mexico Industrial Development Corporation, and 2 private citizens.

7. Kirby Kline, of Silver City, New Mexico, opposes the proposal, and recommends that habitat improvement practices, particularly on Federal lands, be initiated in lieu of listing. The Service responds that unless habitat improvement practices can immediately alleviate all threats to all of the populations to the point where the species no longer meets the requirements for listing as threatened or endangered, the Service is required under the Act to list the species. Too little is known about the specific habitat needs of *Tiaroga cobitis* to ensure that habitat improvement practices alone would secure the survival and recovery of this fish, particularly in the face of the many threats to this species which cannot be alleviated by habitat improvements.

8. The Pleasanton Eastside Ditch Company requests that "our stretch of river be deleted from this act due to the presence of our private land, dams and ditches." The Service responds that the proposal to list is made strictly on

biological grounds, and populations of a species cannot legally be excluded from the listing based on land ownership or resource uses. The existing dams and ditches have been in operation for many years and are presently coexisting with the species. In addition, Section 7 provisions do not apply to private lands or actions unless they are federally funded, authorized, or constructed.

9. The Hooker Dam Association, of Silver City, New Mexico, opposes the proposal and submitted 2 letters with the following comments (C=comment, R=Service response): C. The Association feels that this proposal has only one focal point, which is to stop the construction of Conner Dam. R. The loach minnow has been under consideration by the Service for nearly a decade as part of the continuing program to identify and list endangered and threatened species, and the specific proposal has been in progress since 1982. The Conner Dam alternative of the Upper Gila Water Supply study is only one of many considerations in the proposal and is not the reason for the proposal. C. The 380 km (236 miles) of remaining range for *Tiaroga cobitis* provides sufficiently dispersed habitat that the species does not merit listing as threatened. R. The remaining range of *Tiaroga* may seem large; however, the species is not uniformly spread over that range. Some of the area, particularly in the San Francisco River, contains interspersed stretches of unsuitable habitat and sparse populations of *Tiaroga*. C. The Association thinks that there may be other unsurveyed areas, including the White River and many tributaries of the upper Gila River and East Fork of the Gila River, where *Tiaroga* still exists and which are not included in the proposal. In addition, the Association contends that *Tiaroga* probably exists in the Gila River between the mouth of the East Fork and Mogollon Creek. These assumptions are based, in part, on distributional information on the species given in the Proposed Gila National Forest Plan. R. Most of the distributional information on *Tiaroga cobitis* in New Mexico, as used in the proposal for listing, is based on studies done by the New Mexico Department of Game and Fish from 1982 to 1984 (Propst in prep.). That intensive survey and habitat study of the fishes of the upper Gila and San Francisco River drainages in New Mexico included all of the tributaries of those drainages that had a potential for supporting *Tiaroga*. However, no *Tiaroga* were found outside of the known occupied area, as outlined in the "Background" section of this rule, and no *Tiaroga* were found in

the Gila River between the mouth of the East Fork and Mogollon Creek. Information on the upper Salt River drainage, including the White River, is sketchy due to the remoteness, rugged terrain, and the need for collecting permission from the White Mountain Apache and San Carlos Indian Tribes. However, many of these areas were surveyed in May 1985, and *Tiaroga* were found only in one small area at the confluence of the White River and East Fork of the White River. This new location is included in the final rule. The differences in distributional information between the listing proposal and the Proposed Gila National Forest Plan reflect the fact that the Forest Plan was compiled prior to the availability of the New Mexico Department of Game and Fish study data, and therefore contains some outdated information. C. The Association believes that the 85 percent loss of historic range for *Tiaroga cobitis* is an unintentional exaggeration, due to the scarcity of early collections, poor sampling methods and equipment in early surveys, and to the natural population fluctuations and elusiveness of the species. It feels that large gaps probably existed in the historic range, as represented by the Service, and that the loss of range may be more in the "50 to 60 percent range (or less)." The Association concludes that this smaller range reduction combined with the present numbers of the species is sufficient to show that the species does not meet the criteria for threatened status. R. The Service agrees that the historic data are spotty, and that some unoccupied areas may have occurred in the historic range. However, the very elusiveness, fluctuations, and meager sampling that the Association cites as evidence of historically fewer *Tiaroga* and smaller historic range could also be interpreted as indicating a high probability that there were actually more historic *Tiaroga* and a larger historic range than is presently assumed. If the few surveys, using poor equipment, could easily locate an elusive species that fluctuates highly in numbers, then the assumption must be that that species was indeed quite common, and that it most probably extended quite a distance upstream and downstream from range limits as shown by collection records. As for gaps within the historic range, there were undoubtedly areas within that range in which the habitat was not suitable for *Tiaroga*. Canyon areas and areas with slow moving or pooled water were and are scattered along all of the Gila basin rivers, and such areas exist within the limits of what the Service defines as

presently occupied *Tiaroga* range. However, to calculate specific lengths of non-continuous habitat would require intensive mapping of streams and would fail to recognize the importance of the intervening non-habitat areas for migration and gene flow, for food production and transport, and for maintenance of water and channel characteristics such as sediment, temperature, flow moderation, chemistry, and others. C. The Association recommends that "positive action" to improve the habitat and numbers of this species be taken for this species rather than listing as threatened. R. The Service's response is the same as that for a similar recommendation under item 7 above.

10. The Arizona Cattle Growers Association and the Arizona Mining Association both question the appropriateness of the proposal and submitted similar comments: C. *Tiaroga cobitis* occurred historically in northern Sonora, Mexico. Listing as threatened is not appropriate if the species still occurs in Mexico and the status in Mexico should be determined before final listing. R. *Tiaroga cobitis* was historically found in Mexico only in the upper San Pedro River. However, habitat is no longer found there due to habitat destruction and dewatering. C. The Mining Association points out that many of the identified non-native predators that threaten *Tiaroga cobitis*, such as catfish and trout, provide recreation for residents of these areas, as well as creating revenue from sport fishing recreation. R. The State of Arizona does not stock warmwater fish in the San Francisco or Blue Rivers, and the State of New Mexico has only occasionally in the past stocked channel catfish into the Gila River. The warmwater fisheries that exist in those rivers are self-sustaining, and do not need stocking in order to continue. The stocking of trout into the higher elevation headwater streams does not appear to have a significant impact on *Tiaroga cobitis*. The areas of such stocking overlap only slightly with that of *Tiaroga* and the stocked fish are primarily rainbow trout which feed more heavily on insects and other invertebrates than on fish. In addition, many of the stocked trout often do not feed at all in the short time they remain in the streams before being caught or dying.

11. The Soil Conservation Service, New Mexico State Office, opposes the proposal and feels that designation of threatened status without a management and statutory effort to control undesirable introduced fish

species, is not justified. It also suggests that the final rule clarify the "inferred biological impacts" of agricultural water diversions and include documentation on the effects of water pumping on stream flows. The Service is presently working with the State Game and Fish Departments on the problem of controlling predation by introduced fish species. As was explained under item 10, little or no stocking of warmwater species is now occurring. The existing populations of predatory warmwater species are self-sustaining. Presently available management techniques are not sufficient to allow complete removal of the existing warmwater non-native populations. Regarding the "inferred biological impacts" of agricultural water diversions and the effect of water pumping on stream flow, the statements on such impacts and effects refer to the large areas of the historic range and may or may not apply to each specific area of existing range. In addition, inclusion of extensive data into a published rule would be prohibitively expensive and would not be in keeping with the purpose of a rule, which is to summarize the necessary information. This information, or references to it, is available from the Service (see ADDRESSES).

12. J.E. Allensworth, of Silver City, New Mexico, opposes the proposal and submitted the following comments: C. The fact that *Tiaroga cobitis* is still found in several streams in two States, and "the sheer numbers of these fish now on record" precludes the need for listing. R. See item 9 above. C. There has been no attempt by any agency to reintroduce *Tiaroga* into its original range; therefore it should not be listed. R. The first step in the process for protecting species under the Endangered Species Act is to place them onto the Federal List of Endangered and Threatened Wildlife as either threatened or endangered. Attempts by the Service to reintroduce listed species back into their historic range are part of the recovery process which is initiated following listing. C. Continued introduction of non-native species by the New Mexico Department of Game and Fish has caused the decline of this species. If this practice was corrected no further danger would exist for *Tiaroga cobitis*. R. As was pointed out in the proposal, much of the habitat in the historic range of *Tiaroga* has been destroyed by stream alterations, and potential water development threatens to cause further habitat losses. These threats alone would be sufficient to necessitate the listing of *Tiaroga cobitis* as a threatened species. Predatory and

competitive interactions with non-native fish are secondary problems. As has been explained under item 10 above, very little stocking of non-native fish now occurs in the areas occupied by *Tiaroga*. The previously introduced non-native fish have become self-sustaining and will continue to be a problem to *Tiaroga*. C. Mr. Allensworth feels that the proposal is an attempt by the Service and the New Mexico Department of Game and Fish to slow or stop construction of Conner Dam. He requests that the area of the Conner Dam project be excluded from "further study" because of the economic value of the Conner Dam project and the lack of threat of extinction to *Tiaroga cobitis*. R. See item 9 above. C. Mr. Allensworth charges that the Service has been remiss by failing to move *Tiaroga* populations away from the Conner Dam project area to other parts of its historic range. R. See item 9.

13. Agencies and organizations with land or project involvement in the area affected by this proposal who did not comment on the proposed listing, but submitted economic information for use in the Economic Analysis of critical habitat, include: the U.S. Forest Service; the New Mexico Department of Game and Fish; the Soil Conservation Service, Arizona State Office; the Salt River Project; the Federal Emergency Management Agency; the U.S. Army Corps of Engineers; the Federal Highway Administration; the Bureau of Reclamation; the Environmental Protection Agency; and the New Mexico State Engineers Office.

The three public hearings held were attended by 107 people, with 33 oral or written statements given, 16 in support of the proposal, 12 in opposition, and 5 neither in support nor opposition. These public hearings accepted formal oral and written statements, and included an informal question and answer session. Transcripts of the hearings are available for inspection (see ADDRESSES).

The public hearing held in Silver City, New Mexico, was attended by 68 people, including representatives of the Silver City Town Council, the New Mexico Department of Game and Fish (NMGF), the U.S. Forest Service (USFS), the New Mexico Interstate Stream Commission, the New Mexico State Engineer Office, the Bureau of Reclamation (BR), the Southwest New Mexico Council of Governments, the Southwest New Mexico Industrial Development Corporation, the Gila Fish and Gun Club, the Hooker Dam Association, the *Silver City Daily Press*, the *El Paso Times*, the Prospectors Organization of the Grant County-Silver

City Chamber of Commerce, Old West Country, the Mimbres Archeological Foundation, and the Southern New Mexico Conservation Coalition. Sixteen oral statements were made, 5 of which were accompanied by written statements. Two additional written statements were submitted. Of the statements given or submitted, 7 were in support of the proposal, 8 were in opposition to the proposal, and 3 neither opposed nor supported the proposal. Summaries of substantive statements follow:

1a. Steve May, Mayor of the Town of Silver City, New Mexico, speaking on behalf of the Town Council, opposed the proposal. Mr. May was concerned regarding his and the Council's understanding that the "management decision" to be made at the hearings was an "approximately 50-year plan", which they felt would unnecessarily lock up Silver City's options for water development on a long-term basis. Service representatives explained that the meetings from which he had gathered that understanding were not in relation to the proposed listing of this fish species, but were meetings specifically regarding BR's Upper Gila Water Supply Study. If *Tiaroga cobitis* is listed, the listing would not have a specified time-period, but would remain in force until such time as the species was delisted due to recovery or extinction. No specific management actions are required by this proposed listing. Any such actions would be a result of the Section 7 consultation process or the recovery planning and implementation process, and would be subject to varying time frames.

2a. Richard Johnson, President of the Hooker Dam Association, presented both oral and written statements in opposition to the proposal. Some of his comments repeated earlier comments made by the Association and these have already been addressed under item 9 above. Other specific comments were: C. Mr. Johnson asked for clarification of the effects of flooding on *Tiaroga cobitis*. R. *Tiaroga* in general escapes being washed out by flooding by moving outward with the spreading water, thus keeping out of the heaviest flows. Non-native fish do not generally have such an adaptive mechanism to protect them from damage by the typically severe Gila basin floods. However, under certain conditions flooding can also be detrimental to *Tiaroga*. Much of the Gila River watershed has been damaged by land use practices, and is very susceptible to further damage during flooding, primarily from erosion. A healthy aquatic/riparian system can

normally withstand severe flooding with only minor and localized damage. An already damaged system is often severely eroded by flooding and habitat for native fish is lost, as was the case with the lower end of the East Fork of the Gila River in 1978. C. Reports by the Service's Albuquerque Ecological Services Office have stated that the area of the Middle Box (proposed site of Conner Dam and Reservoir) has the lowest habitat value for aquatic species and general ecology in that portion of the Gila River from Mogollon Creek downstream through the Red Rock area. That office has also stated that the greatest habitat value to the native fishes is found in the Cliff/Gila/Riverside Valley, where the greatest concentration of existing manmade structures is also found. On this basis, Mr. Johnson asks for clarification of the contradiction between the high habitat rating of the Cliff/Gila/Riverside area and the statements in the proposed rule regarding the destruction of *Tiaroga cobitis* habitat by human activities. R. The Service's analysis of the aquatic system habitat values is correct. The Middle Box itself does indeed provide less overall general habitat quality than other stretches. However, the upper end of the Middle Box reach supports a large, healthy population of *Tiaroga cobitis*. The high habitat value of the Gila/Cliff/Riverside Valley is not inconsistent. All manmade structures are not equally destructive of habitat values. Most of the structures in the Cliff/Gila/Riverside area are small and have only minor, localized impacts on the aquatic habitat. In the localized areas of those impacts *Tiaroga* generally do not exist.

3a. Clyde Birkla, President of the Gila Fish and Gun Club, spoke in opposition to the proposal, and stated that his organization felt that the proposed listing was simply a ploy to stop construction of Hooker Dam or suitable alternative (Upper Gila Water Supply Study). The Service has already addressed this question under item 9 above.

4a. Fred Trauger, of Geohydrology Associates, Inc. of Albuquerque, New Mexico, made a statement in opposition to the proposal. Mr. Trauger addressed issues of water supply availability and use. He also stated that evolution and extinction are natural processes, and that the decline of *Tiaroga cobitis* is more likely a natural event, due to climatological changes, than it is a man-caused event. The Service feels that the very rapid decline of *Tiaroga cobitis* removes it from the realm of natural extinctions. Natural extinction, except in

rare instances of major, widespread catastrophic events, is a slow process, involving hundreds or thousands of years. The loss of large portions of *Tiaroga* habitat within the past 100 years by conversion to reservoirs or by the complete drying up of the river by diversion or damming can hardly be termed a natural event.

5a. Steve E. Reynolds, Secretary of the New Mexico Interstate Stream Commission, submitted oral and written statements in opposition to the proposal. Mr. Reynolds gave extensive information on water rights, uses, and needs in southwestern New Mexico, and submitted the following suggestion and comment: C. Mr. Reynolds suggested that habitat could be enhanced through predator control and reintroduction of *Tiaroga* from Dexter National Fish Hatchery. R. Habitat enhancement through predator control and reintroduction are measures which will be considered in the recovery of this species, once it becomes listed. Extensive study will be needed to ensure the success of these techniques for the loach minnow. Control of introduced predaceous fishes will likely be part of the habitat enhancement program for this species. While reintroduction may also play a roll in the recovery of this species the Dexter National Fish Hatchery does not presently maintain stocks of *Tiaroga cobitis*. Space at that facility is limited, and priority is given to species whose survival depends heavily upon artificial propagation. *Tiaroga* is not yet at that point. Before stocks of *Tiaroga* are placed into Dexter National Fish Hatchery for propagation, several years may be needed to develop the techniques required to successfully propagate this species in captivity.

6a. Keith LeMay, President of the Prospectors Organization of the Silver City-Grant County, New Mexico, Chamber of Commerce, made oral and written statements in opposition to the proposal. Mr. LeMay commented on the already addressed topics of the Service's habitat evaluations of the Gila River area (item 2a above) and the use of habitat enhancement in lieu of listing (item 7 above).

7a. J.C. Grimes, President of Old West County, a tourist promotion organization in Silver City, New Mexico, and Allen K. Kaufman, of the Mimbres Archeological Foundation, addressed water development and availability in the area.

8a. George Jackson, Silver City, New Mexico, questioned the ability of *Tiaroga cobitis* to survive in the river during periods of drought when portions

of the river become dry. The Service has extensive data documenting the historic occupation of most of the Gila River basin in New Mexico and Arizona by *Tiaroga cobitis*. There are also data available on the water flows in the upper Gila River since the 1930's, and written accounts of droughts since the early 1800's. *Tiaroga cobitis* was able to survive and thrive historically despite those droughts and periodic drying of portions of some of the occupied streams. Survival during drought periods depended upon movement into pools where water remained, until flow recommenced. Areas where pools were not available, or where dry periods continued for long periods, were probably repopulated from large upstream and downstream populations. The widespread abundance of the species buffered it against localized population losses. That abundance no longer exists, and the consequences of drought are increasingly severe on the species.

9a. The Southwest New Mexico Industrial Development Corporation, of Silver City, New Mexico, submitted a written statement opposing the proposal, and giving information on water uses and economics in the Silver City area.

10a. Seven biologists and private citizens gave oral and written statements in support of the proposal and other wildlife values of the Gila River area, and opposing the need for and construction of a dam on the Gila River in New Mexico.

The public hearing held in Thatcher, Arizona, was attended by 20 people including representatives of the Arizona State Division of Emergency Services, the Upper Gila River Association, the City of Safford, the Graham County Board of Supervisors, the George Whittell Wildlife Preserve, the Graham County Republican Party, the Arizona Nature Conservancy, the Arizona Game and Fish Department, the Greenlee County Board of Supervisors, the Arizona Department of Commerce Advisory Board, the Bureau of Reclamation, the Soil Conservation Service, and the Bureau of Land Management. Five oral statements were made, 4 of which were accompanied by written statements. Much of the comments and discussion concerned flood control problems in the Safford Valley, and those comments will not be summarized here. Of the statements given or submitted, 1 was in support of the proposal, 2 were in opposition to the proposal, and 2 neither opposed nor supported the proposal. Summaries of the statements follow:

1b. Richard A. Colson, Director of the Arizona State Division of Emergency Services, and Carol MacDonald, Mayor of the City of Safford, Arizona, gave an oral and written statement in opposition to the proposal and discussed flood control needs and damages in the Duncan and Safford Valleys.

2b. Kenyon Udall, Chairman of the Upper Gila River Association, submitted oral and written statements discussing flood costs in the Safford Valley and adjacent areas, and challenging the proposal's conclusion that human alterations to the habitat are the primary cause of the decline of *Tiaroga cobitis*. Mr. Udall contends that all dams and diversions in the area were in place and were more numerous, and grazing was heavier in the area, before 1960 which was about when *Tiaroga* began to decline. He also questions the reasons for the loss of the species in Eagle Creek, where he states there are no dams and only one small diversion, no mining or timbering, and only very reduced grazing. It is Mr. Udall's premise that the primary cause of the decline of this species is increased flooding since 1967, and secondarily predation by non-native fish. He proposes that floods be controlled to stay within a range determined to cause the least channel damage, for the benefit of both man and *Tiaroga cobitis*. The Service's response is that the decline of *Tiaroga* began well before 1960, although it was only widely recognized later. The species has been gone from the Verde River drainage since about 1938. There is often a lag time between the adverse modifications to the species' habitat and the decline of the species itself, particularly when there are numerous individual modifications involved. Present use of the habitat is often only one of many factors in the decline of the species. Cumulative effects of numerous adverse habitat modifications over time play a significant part in the decline of many species. In addition, somewhat modified conditions that might have been acceptable to a healthy population of a species may not be sufficient, although improved, for a damaged population to recover. Once this species is listed, planning should be undertaken not only for the recovery of the species but also to develop measures compatible with flood control and recovery of the species.

3b. Joe Carter, County Manager of the Graham County, Arizona, Board of Supervisors, made oral and written statements in opposition to the proposal. Mr. Carter also discussed flood damages, occurrence, and control, and

suggested that reintroduction of *Tiaroga cobitis* be carried out in lieu of listing. In addition, speaking for both Graham County and its local governments, he suggested that action on the proposal be postponed until final work and feasibility studies have been completed with respect to the proposed dam sites on the Gila and San Francisco Rivers. The Service's response to both of these requests has been addressed under items 7 and 5a above.

4b. John C. Luepke, Manager of the George Whittell Wildlife Preserve on Aravaipa Creek, Arizona, spoke in support of the proposal and associated wildlife values.

Informal questions raised at the Thatcher hearing were addressed to Service personnel and representatives of other agencies present. Many of these questions were informational in nature and did not request or result in any changes to the proposal, and therefore will not be summarized here. One substantive question was raised at the Thatcher hearing (Q=question, R=response): Q. If *Tiaroga cobitis* has been declining since the 1960's, why was nothing done to help it earlier? R. *Tiaroga* has been declining since well before 1960, however little work was being done on this species and the extent of decline was not generally recognized. Prior to the Endangered Species Act, which was passed in 1973, little or no funding or authorization was available for work on nongame fish. With the passage of the Act, work began on rare native fishes, but with limited funds and manpower it was necessary to concentrate on those fish closest to extinction. Now that the most needy fish have been protected we are beginning to turn our attention to those, like *Tiaroga*, which are not so close to extinction.

The public hearing held in Phoenix, Arizona, was attended by 19 people including representatives of the City of Prescott, The Nature Conservancy, the Arizona Cattle Growers Association, the Maricopa Audubon Society, the Arizona Game and Fish Department, the Salt River Project, the Bureau of Reclamation, and the *Phoenix Gazette*. Nine oral statements were made, 4 of which were accompanied by written statements. One additional written statement was submitted. Of the statements given or submitted, 8 were in support of the proposal, 1 was in opposition to the proposal, and 1 addressed only the other proposal under consideration. Summaries of the statements follow:

1c. The Nature Conservancy, the Arizona Game and Fish Department, and five private citizens submitted oral

and written statements in support of the proposal and addressed water development issues.

2c. Lynn Anderson read a statement by John M. Olson, Executive Vice President of the Arizona Cattle Growers' Association, in opposition to the proposal. This statement was identical to that submitted by the Association as a letter of comment and is addressed under item 10 above.

3c. Herbert Fibel, President of the Maricopa Audubon Society, spoke in support of the proposal. Mr. Fibel also read into the record the letter of comment submitted by his organization.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Tiaroga cobitis* should be classified as a threatened 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 an endangered or threatened species due to one or more of the five factors described in Section 4(a)(1) of the Act. These factors and their application to *Tiaroga cobitis* (loach minnow) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Much of the historic native habitat of *Tiaroga cobitis* has been drastically altered or destroyed by human uses of the rivers, streams, and watersheds. These alterations include: Conversion of flowing waters into still waters by impoundment; alteration of flow regimes (including conversion of perennial waters to intermittent or no flow, and the reduction, elimination, or modification of natural flooding patterns); alteration of water temperatures (either up or down); alteration of silt and bed loads; loss of marshes and backwaters; and alteration of stream channel characteristics from well-defined, surface level, heavily vegetated channels with a diversity of substrate and habitats, into deeply cut unstable arroyos with little riparian vegetation, uniform substrate, and little habitat diversity. Causes of such alterations include: Damming, water diversion, channel downcutting, excessive groundwater pumping, dropping water tables, channelization, riparian destruction, erosion, mining, timber harvest, grazing, and other watershed disturbances. Of the approximately 2,600 km (1,600 miles) of

stream habitat historically occupied by *Tiaroga*, 2,220 km (1,364 miles) no longer support populations of this fish. This loss reduces the range of *Tiaroga* by approximately 85 percent.

The biology of *Tiaroga cobitis* is not well enough understood to determine what specific effects each of these habitat changes or losses have had on the survival of the species. However, the conversion of a large portion of the habitat into intermittent or lacustrine waters or totally dewatered channels has had an obvious effect on *Tiaroga* populations by totally eliminating usable habitat in those portions of the streams. Because it lives among the cobble on the stream bottom, *Tiaroga cobitis* is also sensitive to the sedimentation that is a common feature of the habitat alteration occurring throughout historic and existing *Tiaroga* habitats. These habitat changes, together with the introduction of exotic fish species (see factors C and E) have resulted in the extirpation of *Tiaroga cobitis* throughout much of its historic range.

Some of the major reasons for specific *Tiaroga* habitat losses are easily identifiable. The San Pedro River, once a perennial stream, is now severely downcut and has only intermittent flow. The lower Salt and Verde Rivers now have a very limited flow or no flow during portions of the year, due to agricultural diversion and upstream impoundments, and both rivers have multiple impoundments in their middle reaches. The Gila River, after leaving the Mogollon Mountains in New Mexico, is affected by agricultural and industrial water diversion, impoundment, and channelization, and has been subjected to use of chemicals for fish management from the Arizona border downstream to San Carlos Reservoir. The San Francisco and Tularosa Rivers have suffered from erosion and extensive water diversion and at present have an undependable water supply in much of their length. The Blue River has been subjected to channel downcutting and erosion, particularly in its lower reaches.

Remaining *Tiaroga cobitis* habitat is still threatened with further habitat destruction. Aravaipa Creek is relatively protected from further habitat loss because of its status as the USDI Bureau of Land Management Aravaipa Canyon Wilderness. Access and land uses are limited in the canyon and it is managed primarily for natural values and recreation. However, extensive groundwater pumping is occurring upstream in the watershed resulting in a continued lowering of the water table that could eventually reduce or eliminate perennial flow in Aravaipa Creek. Channelization

and mesquite clearing that is occurring upstream and heavy recreational use within the canyon create excessive sediment which is detrimental to *Tiaroga* habitat. In addition, pesticide use on the agricultural lands upstream from Aravaipa Canyon could have serious adverse effects on *Tiaroga cobitis*, particularly if flows become depleted.

Lands along the Gila, San Francisco, Blue, and Tularosa Rivers are primarily owned by the U.S. Forest Service; however, there are significant stretches of privately owned land. *Tiaroga* habitat receives some protection on Forest Service lands that are designated for special uses and thus subject to access and use restrictions. These are the Gila Wilderness and Primitive Areas, the Blue Range Primitive Area, the Lower Gila River Bird Habitat Management Area, and the Gila River Research Natural Area. Habitat in multiple use Forest Service portions of these rivers is affected, often adversely, by many past and present uses in the watershed and riparian zone, and by water diversion and water development projects. Substantial increases in timber harvest on steep slopes, as called for in the Proposed Gila National Forest Plan (USDA 1985), may have significant impacts on *Tiaroga cobitis* through increased sedimentation. On privately owned lands along the river there is no statutory control of habitat alteration or destruction. Agricultural use, water diversion, highway and bridge construction, and flood control measures in these areas impact the habitat. At present, the San Francisco River often goes dry near the town of Glenwood, due to upstream diversion. The U.S. Army Corps of Engineers has recently completed some work in the Cliff-Gila and Glenwood-Reserve areas on the Gila and San Francisco Rivers, under its Emergency Authority, which allows it to replace or restore damaged flood control structures. Other flood control alternatives considered for this area in the past by the Corps have been set aside; the only current plans for flood control in the New Mexico portion of the Gila Basin are in cooperation with the Bureau of Reclamation's Conner Dam study (U.S. Army Corps of Engineers 1984).

Of particular importance to survival of *Tiaroga cobitis* in the Gila River is the proposed construction of a dam on the Gila River mainstream, as part of the Central Arizona Project Upper Gila Water Supply Study by the U.S. Bureau of Reclamation (USDI 1972). Currently the Bureau of Reclamation is studying six alternatives (USDI 1985a): A high

dam and reservoir at the Conner site on the mainstream Gila River near the lower end of the Middle Box canyon; a slightly smaller dam and reservoir at the Conner site; a small dam at the Hooker site on the mainstream Gila River just downstream from Turkey Creek, with an off-mainstream storage reservoir on Mangas Creek; two levels of direct pumping from the river in the Cliff-Gila Valley to an offstream storage reservoir on Mangas Creek; and a no Federal action alternative. A former alternative, which included a dam on the San Francisco River just downstream from its confluence with the Blue River, has been dropped from current planning. A high dam at the Conner site on the Gila River could have major negative impacts on *Tiaroga cobitis*. Up to 29 km (18 miles) of river, 31 percent of the existing range in the Gila River, would be inundated and thus would no longer support *Tiaroga cobitis*, which lives only in flowing waters. The presence of a dam on the river could also adversely alter habitat downstream from the dam by changing the temperature, bedload, and flow regimes, including the elimination of natural flooding, which is an important factor in riparian and channel maintenance and in the maintenance of the competitive edge of native fish over exotic fish species. Major dam and reservoir construction in the past, on the Salt, Verde, and Gila Rivers, has resulted in the complete extirpation of all *Tiaroga cobitis* downstream of the dam and for up to 65 km (40 miles) above the reservoir. Even with extensive planning for natural flow and temperature maintenance downstream, the construction of a dam on the upper Gila would have a strong impact on *Tiaroga cobitis*, affecting 40 percent of the existing range in the Gila River. A small dam at the Conner site would inundate an estimated 14 km (8½ miles) of river, and would also affect populations upstream and downstream from the reservoir. A small dam at the Hooker site would not affect *Tiaroga cobitis* directly through inundation; however, populations downstream, occupying 40 percent of the range in the Gila River, might be affected. The effects of direct pumping from the river to offstream storage are not completely known, but may include entrapment of fish in pipelines, impingement of fish on intake screens, and depletion of stream flow below the diversion point.

B. Overutilization for commercial, recreational, scientific, or educational purposes. No threat from overutilization of this species is known to occur at this time.

C. Disease or predation. Historically, predation probably was not a significant factor affecting *Tiaroga cobitis* populations; however, in the past 100 years, introduction of exotic predatory fishes has increased the role that predation plays in *Tiaroga* biology. In Aravaipa Creek, there are only two potential predators—the native roundtail chub and the exotic green sunfish, the latter being primarily restricted to side channel pools and kept at low density levels by frequent flooding. Neither are known to be having a significant effect on *Tiaroga cobitis*. Potential predators known to exist in the Blue River are few and include brown trout in the upper reaches and channel catfish near the mouth. In the Gila, San Francisco, and Tularosa Rivers, the native roundtail chub and several exotic fish (black and yellow bullhead, channel catfish, green sunfish, flathead catfish, small and large mouth bass, and brown trout) are probable predators on *Tiaroga cobitis*. Although predation does not seem to be a threat to *Tiaroga* in good habitat conditions, it is probably a negative factor under the altered conditions present in much of the existing habitat. The depletion of native fishes in the East Fork of the Gila River, noted in 1983–84 by Propst (in prep.), is probably due, in part, to increased numbers of smallmouth bass and catfish in that portion of the river. Propst found abundant smallmouth bass and catfish in the East Fork, but few native species. In 1985, after two years with heavy fall/winter flooding, he found fewer exotic species, and higher levels of native species. Construction of dams and reservoirs exacerbates the predation problem by increasing the habitat favorable to exotic predators, decreasing the habitat suitable for *Tiaroga cobitis*, and supplying a ready source of exotic predators from the reservoir. The impact of predation on *Tiaroga* in the Gila River could increase significantly if a mainstream dam is constructed as part of the Upper Gila Water Supply Project.

D. The inadequacy of existing regulatory mechanisms. *Tiaroga cobitis* is protected by the States of New Mexico and Arizona. It is listed by New Mexico as an endangered species, Group 2 (New Mexico State Game Comm. 1985), which are those species "... whose prospects of survival or recruitment within the State are likely to be in jeopardy within the foreseeable future." This provides the protection of the New Mexico Wildlife Conservation Act (Section 17–2–37 through 17–2–48 NMSA 1978) and prohibits taking of such species except under the issuance

of a scientific collecting permit. *Tiaroga cobitis* is listed by the State of Arizona as a threatened species, Group 3 (Arizona Game and Fish Comm. 1982), which are those species "... whose continued presence in Arizona could be in jeopardy in the foreseeable future." This listing does not provide any special protection to the species. Protection provided in the Arizona Game and Fish regulations prohibits taking of *Tiaroga cobitis*, except by angling, an unlikely possibility. Neither State provides any protection for the habitat upon which the species depends.

New Mexico water law does not include provisions for the acquisition of instream water rights for protection of fish and wildlife and their habitat, and Arizona water law has only recently recognized such rights. This deficiency has been a major factor in the survival of those species dependent on the presence of instream water.

State Game and Fish regulations in New Mexico and Arizona allow the use of the red shiner and other live minnows as bait fish in the Gila and San Francisco Rivers in areas containing *Tiaroga cobitis*. This encourages the spread of detrimental exotic species, specifically the red shiner, which appears to replace *Tiaroga cobitis* under certain conditions (see factor E).

E. Other natural or manmade factors affecting its continued existence. Existing populations of *Tiaroga cobitis* are threatened by the continued introduction and dispersal of exotic species, particularly *Notropis lutrensis* (red shiner), throughout the Gila River system. Although it is not known by what mechanisms these exotic species affect *Tiaroga*, it is known that the spread of exotic species throughout the Gila system correlates closely to the declining numbers and distribution of *Tiaroga cobitis* and other native species. It has been demonstrated with other native fish that competitive and/or predatory interactions with exotic species have been a major factor in the declining numbers and distribution of those natives. Although *Notropis lutrensis* and *Tiaroga cobitis* generally utilize different habitats, it appears they compete for some habitat factors (Minckley and Carufel 1967). It is also thought that *Notropis lutrensis* may be a significant predator on larval *Tiaroga* (D. Hendrickson, Arizona State Univ., letter, July 8, 1985). In suitable unaltered habitat, it is possible that *Tiaroga* is able to hold its own against invasion of *Notropis lutrensis* or other exotic species; however, this balance may be destroyed in extensively altered habitat where *Tiaroga* populations are already

under stress. A major factor in the displacement seems to be the alteration of natural flooding patterns, since native species such as *Tiaroga cobitis* are adapted to and thrive under a regime of frequent moderate to severe flooding, and *Notropis lutrensis* and other exotic species do not. The controlled flow of flood waters, resulting from impoundment, interrupts this natural pattern in downstream reaches and encourages the spread of *Notropis lutrensis* and other exotics at the expense of *Tiaroga cobitis*. A 1983-84 study for the Bureau of Reclamation found that flooding in the fall of 1983 increased the proportion of native fish in the San Francisco River from 30 percent of the total fish collected to 90 percent (USDI 1985b). The presence of reservoirs also increases the likelihood and rapidity of the spread of *Notropis lutrensis* and other exotics by supplying a ready source of exotic species from the reservoir and its fishery. At present, *Notropis lutrensis* is not found in Aravaipa Creek or the Blue River, but is found in the San Francisco River as far upstream as Kelly Canyon, and is found in the upper Gila River as far upstream as the Highway 180 bridge near Cliff, New Mexico. In 1978, *Notropis lutrensis* had not yet been found in the Gila River in New Mexico.

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 *Tiaroga cobitis* as threatened. Threatened status seems appropriate because of the greatly reduced and fragmented range of the species, and because of the threats to this fish and its remaining habitat. However, since this species is still extant in 380 km (236 miles) of stream it does not appear to be in danger of extinction within the foreseeable future and thus endangered status would not be appropriate. The reasons for postponing the designation of critical habitat are given in the following section. The designation of critical habitat will be through a subsequent and separate rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time a species is determined to be endangered or threatened. Section 4(b)(6)(C) further indicates that a concurrent critical habitat determination is not required if the Service finds that a prompt determination of endangered or

threatened status is essential to the conservation of the involved species.

The Service believes that a prompt determination of threatened status for the loach minnow is essential. If the loach minnow were only proposed, but not listed, it would be eligible only for the consideration given under the conference requirement of Section 7(a)(4) of the Act, as amended. This does not require a limitation on the commitment of resources on the part of the concerned Federal agencies. Therefore, in order to ensure that the full benefits of Section 7 and other conservation measures under the Act will apply to the loach minnow, prompt determination of threatened status is essential.

Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of designating a particular area as critical habitat. The Service is in the process of evaluating the information on economic impacts of designating critical habitat that was submitted during the comment period. However, because of the complexities and extent of the activities being assessed, the Service has not completed the evaluation. The Service is, however, currently performing the economic and other impact analyses required for a determination of critical habitat for the species, and plans to make such a determination in the near future. The decision on designation of critical habitat for the loach minnow must be made by June 18, 1987, pursuant to section 4(b)(6)(C)(ii) of the Act, as amended.

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 have been revised and are published at 51 FR 19926; June 3, 1986. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

No Federal activities are expected to be affected on Bureau of Land Management lands on Aravaipa Creek, because the Aravaipa Canyon Wilderness is presently being managed to protect and enhance natural values, including *Tiaroga cobitis*. However, if existing or increased recreational use within the canyon results in streambank degradation and increased sediment or pollution load in the stream, Section 7 consultation may be necessary.

On U.S. Forest Service lands, little effect is expected from Federal activities from this rule; however, Section 7 consultation may be needed if changes occur in current grazing, mining, timbering, recreational, and other activities affecting *Tiaroga cobitis* and its habitat, or if continuation of present activities are determined to be adversely affecting the species. On the Fort Apache Indian Reservation no existing activities are known that would be affected by this listing action. Future actions by the Bureau of Indian Affairs in the vicinity of the *Tiaroga cobitis* population may become subject to Section 7 consultation.

Proposed dam construction or alternative water projects on the upper Gila River, which have been authorized for study as part of the Bureau of Reclamation's Central Arizona Project Upper Gila Water Supply Study, could be affected by this rule. Any such project would become subject to Section 7 consultation and changes in proposed operations, proposed sites, or choice of alternatives may be necessary to comply with the Act. Proposed projects could be constructed only if the activities were determined not to jeopardize the species or adversely impact its critical habitat.

Known Federal activities on private lands that might be affected by this proposal would be future flood control work funded by the Federal Emergency Management Agency, or carried out by the U.S. Army Corps of Engineers on the Gila River in the Cliff-Gila Valley or on the San Francisco and Tularosa Rivers and Whitewater Creek; federally funded

highway and bridge construction; or future federally funded irrigation projects. Federal funding has been used in the past and is expected to be used in the future for pipeline, water diversion, and land-leveling projects on private agricultural lands in the Cliff-Gila Valley, and along the Tularosa and San Francisco Rivers.

The Act and its implementing regulations found at 50 CFR 17.21 and 17.31 set forth a series of general prohibitions and exceptions that apply to all threatened wildlife. The 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, 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.

The above discussion generally applies to threatened species of fish or wildlife. However, the Secretary has the discretion under section 4(d) of the Act to issue special regulations for a threatened species that are necessary and advisable for the conservation of the species. *Tiaroga cobitis* is threatened primarily by habitat disturbance or alteration, not by intentional direct taking or by commercialization. Since the States currently regulate direct and intentional taking of the species through the requirement of State collecting permits, the Service has concluded that the States' scientific collection permit system is adequate to protect the species from excessive taking so long as such taking is limited to: Educational purposes, scientific purposes, the enhancement of propagation or survival of the species, zoological exhibition, and other conservation purposes consistent with the Endangered Species Act. A separate Federal permit system is not required to address the current threats to this species; therefore, a special rule is designated which allows taking to occur for the above stated purposes without the need for a Federal permit, if a State collection permit is obtained and all other State wildlife conservation laws and regulations are satisfied. The special rule also acknowledges the fact that incidental take of the species by State licensed recreational fishermen is not a significant threat to this species. In fact, angling is an unlikely mode of capture of this species. Therefore, such incidental take is not a violation of the

Act if the fisherman immediately returns the individual fish taken to its habitat. It should be recognized that any activities involving the taking of this species not otherwise enumerated in the special rule (including, but not limited to, take resulting from habitat disturbance or alteration) are prohibited. Without this special rule, all of the prohibitions of 50 CFR 17.31 would apply. This special rule allows for more efficient management of the species, thus enhancing its conservation. For these reasons, the Service concludes that this special rule is necessary and advisable for the conservation of the species.

General regulations governing the issuance of permits to carry out otherwise prohibited activities involving threatened animal species, under certain circumstances, are set out at 50 CFR 17.22, 17.23, and 17.32.

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).

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Author

This rule was prepared by S.E. Stefferud, Endangered Species Biologist, Region 2, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-3972 or FTS 474-3972).

List of Subjects in 50 CFR Part 17
 Endangered and threatened wildlife,
 Fish, Marine mammals, Plants
 (agriculture).
 Regulations 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: 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. Amend § 17.11(h) by adding the
 following, in alphabetical order under
 "Fishes," to the List of Endangered and
 Threatened Wildlife:
 § 17.11 Endangered and threatened
 wildlife.
 * * * * *
 (h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
FISHES							
Minnow, loach.....	<i>Tiaroga cobitis</i>	U.S.A. (AZ, NM), Mexico.....	Entire.....	T	247	NA	17.44(q)

3. Section 17.44 is amended by adding
 a new paragraph (q) as follows.

§ 17.44 Special rules—fishes.

(q) Loach minnow, *Tiaroga cobitis*
 (1) No person shall take the species,
 except in accordance with applicable
 State fish and wildlife conservation
 laws and regulations in the following
 instances: (i) For educational purposes,
 scientific purposes, the enhancement of
 propagation or survival of the species,
 zoological exhibition, and other

conservation purposes consistent with
 the Act or, (ii) incidental to State
 permitted recreational fishing activities,
 provided that the individual fish taken is
 immediately returned to its habitat.

(2) Any violation of applicable State
 fish and wildlife conservation laws or
 regulations with respect to the taking of
 this species is also a violation of the
 Endangered Species Act.

(3) No person shall possess, sell,
 deliver, carry, transport, ship, import, or
 export, by any means whatsoever any
 such species taken in violation of these

regulations or in violation of applicable
 State fish and wildlife conservation
 laws or regulations.

(4) It is unlawful for any person to
 attempt to commit, solicit another to
 commit, or cause to be committed, any
 offense defined in subparagraphs (1)
 through (3) of this paragraph.

Dated: October 4, 1986.

P. Daniel Smith,
 Deputy Assistant Secretary for Fish and
 Wildlife and Parks.

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