

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

RIN 1018-AF33

**Endangered and Threatened Wildlife and Plants; Proposal to List Nine Bexar County, Texas Invertebrate Species as Endangered**

AGENCY: Fish and Wildlife Service Interior.

ACTION: Proposed rule.

**SUMMARY:** We, the Fish and Wildlife Service, propose to list nine cave-dwelling invertebrates from Bexar County, Texas as endangered species under the Endangered Species Act of 1973, as amended (Act). *Rhadine exilis* (no common name) and *Rhadine infernalis* (no common name) are small, essentially eyeless ground beetles. *Batrisesodes ventyivi* (Helotes mold beetle) is a small, eyeless mold beetle. *Texella cokendolpheri* (Robber Baron Cave harvestman) is a small, eyeless harvestman (daddy-longlegs). *Cicurina baronia* (Robber Baron cave spider), *Cicurina madla* (Madla's cave spider), *Cicurina venii* (no common name), *Cicurina vespera* (vesper cave spider), and *Neoleptoneta microps* (Government Canyon cave spider) are all small eyeless, or essentially eyeless, spiders. These species (referred to in this proposed rule as the "nine invertebrates") are known from karst features (limestone formations containing caves, sinks, and fissures) in north and northwest Bexar County. Threats to the species and their habitat include destruction and/or deterioration of habitat by construction; filling of caves and karst features and loss of permeable cover; contamination from such things as septic effluent, sewer leaks, run-off, and pesticides; predation by and competition with non-native fire ants; and vandalism. This proposal also constitutes our 12-month finding on a petition to list these nine invertebrates. This proposal, if made final, would implement Federal protection provided by the Act for these species.

**DATES:** Comments from all interested parties must be received by April 29, 1999. Public hearing requests must be received by February 16, 1999.

**ADDRESSES:** Send comments and materials concerning this proposal to the Field Supervisor, U.S. Fish and Wildlife Service, Hartland Bank Building, 10711 Burnet Road, Suite 200, Austin, Texas 78758. Comments and materials received will be available for public inspection, by appointment,

during normal business hours at the above address.

**FOR FURTHER INFORMATION CONTACT:**

Alisa Shull, Supervisory Fish and Wildlife Biologist (see ADDRESSES section) (telephone 512/490-0057; facsimile 512/490-0974).

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

*Rhadine exilis* and *Rhadine infernalis* were first collected in 1959 and described by Barr and Lawrence (1960) as *Agonum exile* and *Agonum infernale*, respectively. Barr (1974) assigned the species to the genus *Rhadine*. *Batrisesodes ventyivi* was first collected in 1984 and described by Chandler (1992). *Texella cokendolpheri* was first collected in 1982 and described in Ubick and Briggs (1992). *Cicurina baronia*, *Cicurina madla*, *Cicurina venii*, and *Cicurina vespera* were first collected in 1969, 1963, 1980, and 1965, respectively. They were all described by Gertsch (1992). *Neoleptoneta microps* was first collected in 1965 and described by Gertsch (1974) as *Leptoneta microps*. The species was reassigned to *Neoleptoneta* following Brignoli (1977) and Platnick (1986).

These nine invertebrates are obligate cave-dwelling species (troglobites) of local distribution in caves in Bexar County, Texas. The life habits of the species are not well known. They probably prey on the eggs, larvae, or adults of other cave invertebrates.

We funded a status survey (Veni 1994a; Redell 1993) of all nine species through a grant under section 6 of the Act to the Texas Parks and Wildlife Department (TPWD). Researchers obtained landowner permission to study and assess threats to 41 caves in north and northwest Bexar County, Texas. Landowners denied permission to access an additional 36 caves that were believed likely to contain species of concern. All 77 caves had been described to some extent before the status survey was conducted. Four were already known to contain at least one of the nine invertebrates.

During the status survey, the researchers made a collection of the invertebrate fauna at each cave studied, assessed the condition of the cave environment and threats to the species, and collected geological data. They used this information to prepare two reports. One report discusses the overall karst geography in the San Antonio region and the potential geologic and geographic barriers to karst invertebrate migration and limits to their distribution (Veni 1994a). The other report (Reddell 1993) details the fauna

of each cave visited during the study and presents information obtained from invertebrate collections.

Veni's (1994a) report delineates six karst areas (hereafter referred to as karst fauna regions) within Bexar County. The karst fauna regions he discusses are Stone Oak, UTSA (University of Texas at San Antonio), Helotes, Government Canyon, Culebra Anticline, and Alamo Heights. The boundaries of these karst fauna regions are geological or geographical features that may represent obstructions to troglobite movement (on an evolutionary time scale) that have resulted in the present-day distribution of endemic (restricted in distribution) karst invertebrates in the San Antonio region.

The harvestman *Texella cokendolpheri*, Robber Baron Cave harvestman, is known only from Robber Baron cave in the Alamo Heights karst fauna region on private property. The cave entrance has been donated to the Texas Cave Management Association (George Veni, Veni & Associates, pers. comm. 1995), which will likely be interested in protection and improvement of the cave habitat. However, this cave is relatively large, and the land over and around the cave is heavily urbanized. The cave has also been subject to extensive commercial and recreational use (Veni 1988). No confirmed specimens of *T. cokendolpheri* were collected during the 1993 status survey, but one *Texella* harvestman collected at Robber Baron Cave since completion of the status survey is highly likely to be this species (James Reddell, Texas Memorial Museum, and Dr. Darrell Ubick, California Academy of Sciences, pers. comm. 1995).

*Batrisesodes ventyivi*, the Helotes mold beetle, is known from only three caves in the vicinity of Helotes, Texas, northwest of San Antonio. Two of these caves are located in the Helotes karst fauna region on private property. The owner of one of the caves within the Helotes karst fauna region has denied access in recent years, so *Batrisesodes ventyivi*'s status there is unknown. However, the cave is known to have been heavily infested with fire ants (*Solenopsis invicta*) in the past (Reddell 1993). The owner of the second cave is very interested in protecting the cave and the unique species inside. However, fire ants are also present in the second locality. The collector of the specimen from the third cave has declined to give us a specific site collection record, but this cave may be located in the UTSA karst fauna region and likely lies on private property (James Reddell, pers. comm. 1997).

*Rhadine exilis* is known from 33 caves in north and northwest Bexar County. Nineteen are located on Department of Defense (DOD) land. The remainder are distributed among the Helotes, UTSA, and Stone Oak karst fauna regions, while one location lies in the Government Canyon region. One is located in a county road right-of-way, one is located in a state-owned natural area, and the remainder are located on private property. Ongoing efforts by the DOD to locate and inventory karst features on Camp Bullis and to document the karst fauna communities in caves on Camp Bullis resulted in discovery of 18 of the 33 caves mentioned above (Veni 1994b; James Reddell, pers. comm. 1997).

*Rhadine infernalis* is known from 25 caves. This species occurs in five of the six karst fauna regions—Helotes, UTSA, Stone Oak, Culebra Anticline, and Government Canyon. Three subspecies have been delineated so far (*Rhadine infernalis ewersi*, *Rhadine infernalis infernalis*, *Rhadine infernalis* ssp.). Two of these have been described and named in scientific literature (Barr 1960, Barr and Lawrence 1960). The third has recently been characterized as a distinct subspecies, but not named, in a report (Reddell 1998). Only three caves contain the subspecies *Rhadine infernalis ewersi* and all are located on DOD land. Sixteen caves contain the subspecies *Rhadine infernalis infernalis* and lie in the Government Canyon, Helotes, UTSA, and Stone Oak regions. Six caves in the Culebra Anticline region contain the *Rhadine infernalis* ssp.

*Cicurina venii* is known from only one cave located on private property in the Culebra Anticline karst fauna region. The species was collected in 1980 and 1983, but the cave itself was not initially described until 1988 (Reddell 1993). The cave entrance was filled during construction of a home in 1990. Without excavation, it is difficult to determine what effect this incident had on the species; however, there may still be some nutrient input, including that from a reported small side passage.

*Cicurina baronia*, the Robber Baron cave spider, is known only from Robber Baron Cave in the Alamo Heights karst fauna region. Although the cave entrance is owned and operated by the Texas Cave Management Association, it is located in a heavily urbanized area.

*Cicurina madla*, the Madla's cave spider, is known from five caves. One cave is within the Government Canyon karst fauna region in Government Canyon State Natural Area, three are located in the Helotes karst fauna region on private property, and one is located

on private property in the UTSA karst fauna region.

*Cicurina vespera*, the vesper cave spider, has been found in only two caves. One is Government Canyon Bat Cave in the Government Canyon State Natural Area, and the other is a cave 5 miles northeast of Helotes, the location and name of which has not been revealed to us.

*Neoleptoneta microps* is known only from the Government Canyon karst fauna area from two caves within Government Canyon State Natural Area.

Threats to these species and their habitats include destruction and/or deterioration of habitat by commercial, residential, and road construction; filling of caves, and loss of permeable cover; potential contamination from such things as septic effluent, sewer leaks, run-off, and pesticides; predation by and competition with non-native fire ants; and vandalism.

In the course of conducting the 1993 status survey, Veni contacted landowners and requested access to as many caves as possible that were believed to be potential habitat for the nine invertebrates. It is possible that these species occur in some of the caves that could not be visited and that new locations of the nine invertebrates will be discovered in the future. Although these new discoveries may increase the number of locations where the species are found, they are expected to fall within the same general range and expected to face the same threats as the known occurrences of these species. The proposed listing of these species is not based on a demonstrable decline in the number of individuals or the number of known locations of each species, but rather on reliable evidence that each of these species is subject to threats to its continued existence throughout all or a significant portion of its range.

#### Previous Federal Action

On January 16, 1992, we received a petition dated January 9, 1992, to add the nine invertebrates to the List of Threatened and Endangered Wildlife. Patricia K. Cunningham of the Helotes Creek Association and individuals representing the Balcones Canyonlands Conservation Coalition, the Texas Speleological Association, the Alamo Group of the Sierra Club, and the Texas Cave Management Association submitted the petition. On December 1, 1993, we announced in the **Federal Register** (58 FR 63328) a 90-day finding that the petition presented substantial information that listing may be warranted. We received over 200 letters from citizens, businesses, and elected

officials in response to the 90-day finding. Most of the comments were similar in form, opposed the listing, and requested that we delay making a 12-month finding until the results of status surveys conducted under section 6 of the Act were made available. Some commenters raised questions and issues regarding the status of the nine invertebrates and the validity of the science on which we based the 90-day finding. We considered these comments and information in preparing this proposed rule.

Eight of the nine invertebrates were added to the Animal Notice of Review as category 2 candidate species in the **Federal Register** on November 15, 1994 (59 FR 58982). *Rhadine exilis* was presented with the other eight species in February of 1994 to be added to the November 15, 1994, notice of review, but an oversight occurred and it did not appear. Category 2 candidates were those taxa for which we had data indicating that listing was possibly appropriate, but for which we lacked substantial data on biological vulnerability and threats to support proposed listing rules. Beginning with our combined plant and animal notice of review published in the **Federal Register** on February 28, 1996 (61 FR 7596), we discontinued the designation of multiple categories of candidates and only taxa meeting the definition of former category 1 candidates are now recognized as candidates for listing purposes. Category 1 candidates were defined as those taxa for which we had sufficient information on biological vulnerability and threats to support proposed listing rules. Although the nine invertebrates were not included in the February 28, 1996, notice of review (61 FR 7596) or in the following September 19, 1997, notice of review (62 FR 49398), we have now obtained additional information that supports a proposal to list these species.

The endangered species listing program was disrupted by a listing moratorium (Public Law 104-6, April 10, 1995) and rescission of listing program funding in Fiscal Year 1996. The moratorium was lifted and listing program funding restored on April 26, 1996. On May 16, 1996 (61 CFR 24722), we issued guidance for priorities in restarting the listing program that included four tiers. New proposed listings and petition findings fell under tier three, the second-lowest priority.

The petition finding and publication of the proposed rule was precluded by the listing priority guidance for fiscal year 1997, finalized December 5, 1996 (61 CFR 64475). In the 1997 guidance, we determined that, given limited

resources, highest priority would be processing emergency listing rules. Second priority would be processing final determinations on proposed additions to the list. Processing administrative findings on petitions and processing new proposals to add species to the lists were again a tier three priority.

With the publication of listing priority guidance for Fiscal Years 1998 and 1999 on May 8, 1998 (63 CFR 25502), we returned to a more balanced listing program. Processing administrative findings on petitions to add species to the lists became a tier two priority, and we resumed work on this petition finding.

In 1994, we began discussions with a coalition of landowners, developers, and other interested parties about creating a conservation agreement that might preclude the need for listing these species. We have been working since then with interested parties to develop a conservation strategy and agreement. However, all the measures necessary to accomplish this goal have not yet been agreed to. These issues relate primarily to determining what is needed for species conservation, responsibility and commitment for implementation and funding, and the amount of time required to implement the conservation measures. If these issues are resolved before a final listing decision is made, the final listing decision may differ from that proposed here for some or all of these species.

### Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act 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 nine invertebrates are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The range of the nine invertebrates is limited to limestone karst strata in the northern portion of Bexar County, which includes a portion of northern San Antonio, Texas. Their historical range is unknown, but is expected to have been similar to the present range with the understanding that some caves within the species' range have been destroyed and other caves have suffered adverse impacts due to the factors discussed in this proposed rule.

The proximity of the caves and karst features inhabited by these species to the City of San Antonio makes them vulnerable to being filled, capped, destroyed, or otherwise negatively impacted as a result of continuing expansion of the San Antonio metropolitan area. Destruction of caves in Bexar County and throughout central Texas is common (Elliott 1990, Veni 1991). Veni (1991) estimates that about 26 percent of known caves in Bexar County have been destroyed through filling with dirt, rocks, concrete, or other materials; capping or covering by roads or buildings; and blasting by construction and quarrying operations.

Several sources of information from 1991 to 1997 illustrate the considerable development that has occurred and is expected to continue in the San Antonio area in general and the karst faunal regions in particular. For example, a report prepared by the City of San Antonio (1991) indicates that 69 percent of the increase in human population that occurred in Bexar County between 1980 and 1990 occurred in the northwest and northeast quadrants, which is where the nine invertebrates occur. The report describes this period as characterized by "tremendous growth" in the residential sector with significant increases also occurring in non-residential growth. During the 1980s Bexar County saw a 26 percent increase in the single family housing market (88 percent of which occurred in the northwest and northeast quadrants), a 46 percent increase in the multi-family housing market, and an approximate 150 percent increase in square feet availability of non-residential space (City of San Antonio 1991).

Overall, the northwest and northeast quadrants of Bexar County contain 69 percent of the county's population and 73 percent of the available housing (City of San Antonio 1991). From 1980–1990, changes in population for the specific census tracts where the nine invertebrates occur (census tracts numbering in the 1200s, 1700s, 1800s, and 1900s) range from a 2.4 percent decrease (tract 1208, Alamo Heights) to a 201 percent increase (tract 1720, Culebra Anticline area). For the 1200, 1700, 1800, and 1900 census tracts the average increase has been 35.4 percent, 13.1 percent, 54.3 percent, and 24.1 percent, respectively. The majority of the increase in development and population during that period occurred during the early 1980s with a drastic decline by 1989.

A report by the City of San Antonio (1993) shows a steady increase in building permit activity, number of plats approved, number of acres and lots

platted, and new electrical connections during the period from 1990–1992. This may indicate a growing economy and a subsequent increase in growth and development. This report also indicates that the majority of the growth (about 81 percent, as measured by new electrical connections) is occurring in the northwest and northeast quadrants.

The recent revitalization of the real estate market and the construction industry has intensified the threat to the nine invertebrates. A review of new electrical connections for all Bexar County census tracts from 1990–1996 (San Antonio Planning Department 1997) reveals that tracts within the northwest and northeast quadrants of the city continue to be the fastest growing areas in the county in the present decade. Census tracts numbering in the 1200s, 1700s, 1800s, and 1900s accounted for 21 percent, 10 percent, 31 percent, and 21 percent, respectively, of the new electrical connections in the county from 1990 to 1996 (San Antonio Planning Department 1997). Further review of the data reveals that the majority of the fastest growing sub-tracts are located in karst areas.

Plotting cave locations on land use maps prepared by the Bexar County Appraisal District for northwest Bexar County and the Edwards Aquifer recharge zone shows that most of the privately owned caves lie on land classified as one of the following: single family residential, vacant platted, vacant mixed-use, tax exempt, or ranchland (Table 1). Land classified as single family residential is currently occupied by single family dwellings. Land classified as vacant platted is mostly interspersed with or surrounded by single family residential areas and, since plats have been approved, can be developed at any time. Vacant mixed-use land is land with no agricultural exemption or where rollback taxes have been paid in preparation for a change in land use. Caves located on single family residential, vacant platted, or vacant mixed-use land are most vulnerable to negative impacts related to development. Ranchland is land with an existing agricultural exemption and may be vulnerable to fire ant infestations, siltation due to overgrazing, or to chemicals such as pesticides. Exempt land is government-owned or otherwise tax exempt, and is owned primarily by Federal, State, and local governments or church groups. These caves may be subject to any of the threats associated with other land-use types, depending on the landowner and current land use practices. The DOD has indicated an interest in conserving caves located on its property and is currently

inventorying its cave resources. The TPWD, owners of Government Canyon State Natural Area, should provide

habitat protection for caves on their property; however, fire ants are present

in some of the caves and throughout the property.

TABLE 1.—NUMBERS OF KARST FEATURES CONTAINING THE NINE INVERTEBRATES BY LAND USE  
[Land use according to Bexar County Appraisal District maps for northwest Bexar County and the Edwards Aquifer recharge zone]

| Species                     | Single-family | Vacant platted | Vacant mixed-use | Ranch-land     | Tax exempt                                     | Unknown | Total |
|-----------------------------|---------------|----------------|------------------|----------------|--|---------|-------|
| Rhadine exilis .....        | 2             | 1              | 3                | 1 <sup>2</sup> | 19 DOD<br>1 GCSNA<br>1 Co.<br>ROW <sup>2</sup> | 4       | 33    |
| Rhadine infernalis .....    | .....         | .....          | .....            | .....          | .....  | .....   | 25    |
| R. I. ewersi .....          | .....         | .....          | .....            | .....          | 3 DOD  | .....   | ..... |
| R. I. infernalis .....      | 2             | .....          | 6                | 2              | 4 GCSNA<br>1 Church                            | 1       | ..... |
| R. I. new species .....     | 2             | .....          | 1                | 3              | .....  | .....   | ..... |
| Batrissodes ventyivi .....  | 1             | 3 <sup>1</sup> | .....            | 1              | .....  | .....   | 3     |
| Texella cokendolpheri ..... | 1             | .....          | .....            | .....          | .....  | .....   | 1     |
| Cicurina baronia .....      | 1             | .....          | .....            | .....          | .....  | .....   | 1     |
| Cicurina madla .....        | 1             | .....          | 2                | 1              | 1 GCSNA  | .....   | 5     |
| Cicurina venii .....        | 1             | .....          | .....            | .....          | .....  | .....   | 1     |
| Cicurina vespera .....      | .....         | .....          | .....            | .....          | 1 GCSNA  | 1       | 2     |
| Neoleptoneta microps .....  | .....         | .....          | .....            | .....          | 2 GCSNA  | .....   | 2     |

<sup>1</sup> 1 in county road right-of-way and 1 across the street from residential neighborhood.

<sup>2</sup> Dept. of Defense, Government Canyon State Natural Area, county road right-of-way.

<sup>3</sup> Exact location unknown.

A number of the caves containing the nine invertebrates occur within the recharge zone for the Edwards Aquifer. The Edwards Underground Water District (1993) presents data suggesting that the Edwards Aquifer recharge zone in northwest Bexar County is "poised for explosive development as the economy rebounds." Spills, leaking storage tanks, and other sources of surface and groundwater pollution can harm cave and karst communities as pollutants pass through the karst. The Texas Water Commission (TWC), now part of the Texas Natural Resource Conservation Commission (TNRCC), reported that in 1988 within the San Antonio segment of the Edwards Aquifer 28 oil and chemical spills occurred in Bexar County. This represented the greatest number of land-based spills in central Texas that affect surface and/or groundwater (TWC 1989). As of July 1988, Bexar County had between 26 and 50 confirmed leaking underground storage tanks (TWC 1989), placing it second among central Texas counties in the number of confirmed underground storage tank leaks. The TWC estimates that, on average, every leaking underground storage tank will leak about 500 gallons per year of contaminants before the leak

is detected. These tanks are considered one of the most significant sources of groundwater contamination in the State (TWC 1989).

Increasing urbanization in Bexar County will increase the risk that leaks and spills may harm karst ecosystems. TNRCC (1994) summarizes information on groundwater contamination and lists contaminant spills on a county-by-county basis as reported by TNRCC, the Texas Department of Agriculture, the Railroad Commission of Texas, the Texas Alliance of Groundwater Districts, and the Interagency Pesticide Database. Table 1 in TNRCC (1994) lists 350 groundwater contamination cases that have occurred in Bexar County within the past 2 decades. The majority of these cases involve spills or leaks of petroleum products, and many of them remain unresolved at present.

While a number of the cave entrances concerned may not be in imminent danger from development at the entrance site, cave environments can be negatively impacted by runoff, chemical spills, sewer leaks, pesticide use, and septic effluent associated with development on nearby properties within the karst zone. Many of these caves are situated within the porous limestone that forms the Edwards

Aquifer and are susceptible to contamination originating on properties containing the cave entrances, as well as on properties that lie above and adjacent to subterranean reaches of the caves.

Attributes of cave environments that are conducive to occupation by karst invertebrates include a relatively constant high humidity, stable temperature, and some energy input (Howarth 1983; Holsinger 1988; Elliott and Reddell 1989). Nutrient availability and moisture are critical limiting factors for karst fauna occupying terrestrial cave environments (Barr 1968). Adaptations to the high relative humidity and low nutrient availability typical of caves are common among troglobites (Howarth 1983; Mitchell 1967; Barr 1968) and the nine invertebrates exhibit many of these adaptations (Barr 1960; Barr 1974; Gertsch 1974). Nearly all food energy in caves must be imported from the exterior (Holsinger 1988).

Energy enters areas near the cave entrance via species that move between the surface and the cave, including bats, and by means of organic matter that washes into the caves. In deeper reaches

of the cave, primary input of energy is through water containing dissolved organic matter percolating through the karst vertically through fissures and solution features (Howarth 1983; Holsinger 1988; Elliott and Reddell 1989). Rapid urbanization in northern Bexar County would likely result in a dramatic increase in impermeable cover in areas surrounding many of the caves. An increase in impermeable cover could result in decreased percolation of water into the caves via the karst and have a detrimental effect on the moisture regime and nutrient input critical to karst-dwelling species.

Several of the caves containing the nine invertebrates have been subject to vandalism, trash dumping, and other threats that may be associated with visitation by humans. Excessive visitation by humans can result in habitat disturbance or loss of habitat due to soil compaction or changes in atmospheric conditions as well as direct mortality of invertebrates. Vandalism may result in the destruction or deterioration of the karst ecosystem. Dumping of trash (such as alkaline batteries) can lead to contamination of the karst ecosystems while disposal of household and other wastes may attract fire ants or other surface-dwelling species harmful to the karst ecosystem.

Comments we received suggest that trash and debris left in caves can benefit the nine invertebrates by providing supplemental nutrients to the cave ecosystem. While the nine invertebrates need some input of nutrients into the underground environment, the impacts associated with trash dumping in caves are more likely to be negative. Caves and karst features are low-nutrient environments, and many obligate karst-dwelling organisms have evolved adaptations to this unique environment (Mitchell 1967; Barr 1968; Howarth 1983). Over the long term, excess artificial input of nutrients into the karst ecosystem would more likely benefit predators and competitors of the nine invertebrates (see factor C of this section) and upset the natural balance in the karst ecosystem.

Commenters have also stated that, since the nine invertebrates continue to exist in caves where there is a history of dumping, vandalism, or invasion by fire ants (see factor C of this section), these activities must not pose a threat to the species. Karst invertebrates occur in low numbers and are difficult to study. Consequently, detecting small, gradual changes in the populations of karst invertebrates is difficult. While little quantitative data are available on the direct effects of trash dumping, vandalism, fire ants, sealing, and other

disturbances on the nine invertebrates, there is substantial evidence indicating that the threats discussed herein are real, significant, and ongoing. Reddell (invertebrate biologist, *in litt.* 1993) and Elliott (cave and karst ecologist, *in litt.* 1993) both cite examples in which trash dumping, vandalism, and over-visitation have resulted in decreased observations of karst invertebrates in affected areas in caves in Travis and Williamson counties. Furthermore, we believe that using extirpation (extinction of a population) as the only measure of threats would significantly compromise the ability to provide for long-term conservation of these species. The earlier that threats are identified, the greater the likelihood that species can be conserved.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* One commenter stated that the only "documented cause of death" for karst invertebrates is scientific collecting, and that collecting invertebrates involves major disruption of their habitat. While it is true that positive identification of karst invertebrates usually requires collection and permanent preservation of individual specimens, the number of individuals taken for this purpose is small and such collections are made infrequently. We do not believe that collection of a few individuals has significantly reduced their numbers. Habitat disturbance resulting from searching for species is relatively minor when done by experienced collectors, and usually involves turning over rocks on the cave floor, which are then returned to their previous positions. Thus, we do not consider scientific collecting to be a threat at this time. Further, if the species are listed, a scientific collecting permit will be required and excess collection will not be permitted.

Commenters have also suggested that enlarging cave openings to allow biologists access to sample for karst invertebrates could change the internal cave environment and harm the species. The Service agrees that, in some instances, creation or significant enlargement of cave openings could alter the environment of caves. Where changes in the cave environment are expected to result, the Service recommends returning the opening to its previous natural condition with natural dirt and rock fill or installing an appropriate cave gate designed to provide suitable conditions in the cave and protect the internal environment.

These species are of little interest in the insect trade or to amateur collectors. They are collected only occasionally by

scientists conducting studies of cave fauna. Consequently, any threat from overutilization of these species for commercial, recreational, scientific, or educational purposes is insignificant at this time.

C. *Disease or predation.* Human activities facilitate movement of predators such as fire ants into an area. Construction areas, lawns, roadways, and landscaped areas provide habitat from which these species can disperse. The relative accessibility of the shallow caves in Bexar County leaves them especially vulnerable to invasion by non-native species.

Non-native fire ants are a major threat to the nine invertebrates. Fire ants are voracious predators and there is evidence that overall arthropod diversity drops in their presence (Vinson and Sorensen 1986, Porter and Savignano 1990). Reddell (*in litt.* 1993) lists at least nine cave-inhabiting species he has observed being preyed upon by fire ants. Although none of the petitioned species covered in this proposed rule are the species he observed being preyed upon, several of those observed are closely related to the nine invertebrates or to endangered karst invertebrates in Travis and Williamson counties, Texas.

Elliott (1992) cites other examples of predation and notes that fire ant activity has increased dramatically in central Texas since 1989. Even in the unlikely event that fire ants do not affect the proposed species directly, their presence in and around caves could have a drastic detrimental effect on the cave ecosystem through loss of species, inside the cave and out, that provide nutrient input and critical links in the food chain.

Of 36 caves Veni and Reddell visited while conducting a status survey for the nine invertebrates, fire ants were found in 26 caves (Reddell 1993). The 1993 status survey revealed that of 24 caves confirmed to contain one or more of the nine invertebrates, at least 15 had fire ant infestations at the time the study was conducted (Reddell 1993). Most of the collections for the status survey were done between April and June of 1993 at a time during that year when fire ants had likely not reached peak densities (Reddell, pers. comm. 1995). Consequently, fire ant infestations could be worse than reflected by the status survey, and the rate of infestation is expected to be similar for the rest of the 56 caves known to contain one or more of the nine invertebrates.

Controlling fire ants once they have invaded a cave and its vicinity is difficult. Chemical control methods have some effectiveness, but the effect

of these agents on non-target species is unclear. Consequently, use of chemicals to control fire ants in and close to caves is not currently advisable. At present, we recommend only boiling water treatment for control of fire ant colonies near caves inhabited by endangered karst invertebrates in Travis and Williamson counties. This method is labor intensive and only moderately effective. Carefully controlled chemical treatment may be appropriate in certain circumstances. Although control methods are available, the burden of carrying out such practices in areas occupied by these proposed species is not a designated or mandated duty of any agency, organization, or individual. This type of control will likely be needed indefinitely or until a long term method of fire ant control is developed.

**D. The inadequacy of existing regulatory mechanisms.** Invertebrates are not included on the TPWD list of threatened and endangered species and are provided no protection by the State; nor do TPWD's regulations contain provisions for protecting habitat of any listed species. The TNRCC regulations may give some degree of protection to significant aquifer recharge features, but would apply to only a few of the caves in question since the majority do not contribute significantly to recharge. In addition, setbacks from recharge features required by the TNRCC may not always be adequate to protect entire hydrogeological areas and surface communities that provide nutrient input into the cave. The TNRCC also approves capping (concrete sealing) of certain sinkholes and other karst features in an effort to prevent contaminated water from entering the aquifer. Such alteration or blocking of natural drainage patterns could result in drying of the habitat and a reduction in nutrient input into the karst feature.

The City of San Antonio regulates development and impervious (resistant to seepage of water) cover within the recharge area of the Edwards Aquifer. The plan provides limits on types of development that can occur within the recharge zone and limits on impervious cover. This ordinance requires, in part, identification of critical environmental features and may provide some protection for caves and karst features that provide recharge to the Edwards Aquifer. However, most of the caves known to contain the nine invertebrates are relatively small and do not provide significant recharge, so it is uncertain how these caves would be considered under the ordinance. In addition, many of the caves known to have the nine invertebrates lie outside the recharge zone. Finally, development plans filed

prior to passage of the ordinance are grandfathered and are not required to comply with the new restrictions.

We are not aware of other regulations that will specifically address the protection of the karst features that serve as habitat for these invertebrate species. At present, adequate, long term conservation of the karst fauna is not assured in any of the caves containing one or more of the nine invertebrates. Five caves located in Government Canyon State Natural Area contain a total of five of the nine invertebrates. The TPWD will likely protect habitat at these sites; however, fire ants are present in some of the caves and throughout the property. Thus, the invertebrate species within those caves are at risk because effective methods of controlling fire ants are not known.

A total of 21 caves containing the proposed species are located on Federal property at the Camp Bullis Training Site. Eighteen caves contain only *Rhadine exilis*, two caves contain only *Rhadine infernalis* and one cave contains both *Rhadine* species. Efforts are underway through the Department of Defense's Legacy program to inventory karst features within the recharge zone on Camp Bullis, and these efforts may result in protection of biologically or hydrologically significant karst features. However, complete protection of the species in these features may require control of fire ants.

**E. Other natural or manmade factors affecting its continued existence.** Just as human activities may facilitate movement of fire ants into an area (see factor C of this section), competitors such as cockroaches and sow bugs can also be introduced into cave ecosystems in association with human activity. Native and non-native species may increase and compete with the nine invertebrates directly by consuming the same foods and using the same habitats; or they may compete indirectly by using resources needed by species, such as cave crickets (*Ceuthophilus* spp.), that provide nutrient input to karst ecosystems. Fire ants can be considered both predators and competitors (see factor C of this section).

Possible impacts from human entry into caves for recreational purposes include habitat disturbance or loss due to soil compaction or changes in atmospheric conditions; abandonment of the cave by animals, including bats, that inhabit caves but must return to the surface for food or other necessities, and in so-doing provide nutrient input to the cave ecosystem; and direct mortality of karst fauna. These impacts may be reduced or avoided depending on the

caving skills and caution of the person(s) entering the cave.

Vandalism is also a threat to karst ecosystems and can contribute to an alteration of the cave ecosystem through soil compaction, temperature changes, and contamination from household chemicals such as insecticides (Reddell 1993). Additionally, disturbance of habitat and introduction of excess nutrients, such as garbage, may facilitate the establishment of or increase the numbers of competitors and/or predators (including non-native species) as discussed above. Certain caves have frequently been used for parties and other unauthorized activities. Trash dumping has occurred in numerous Bexar County caves. Reddell (1993) noted in several caves that contain one or more of the nine invertebrates that vandalism has contributed to the degradation of the cave.

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Rhadine exilis*, *Rhadine infernalis*, *Batrises venyivi*, *Texella cokendolpheri*, *Cicurina baronia*, *Cicurina madla*, *Cicurina venii*, *Cicurina vespera*, and *Neoleptoneta microps* as endangered.

The Act defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range. We believe that endangered is the appropriate status for these species because of the high degree and immediacy of threats faced by and limited range of these species.

If the provisions of this rule become final, the karst fauna regions delineated by Veni (1994a) will likely constitute recovery units for the species. The recovery criteria for these species will likely call for, among other things, the preservation of at least three karst fauna areas per karst fauna region, as outlined for endangered karst invertebrates in Travis and Williamson counties, Texas. These criteria are discussed in the Recovery Plan for Endangered Karst Invertebrates in Travis and Williamson Counties, Texas (USFWS 1994). These recovery criteria were designed to protect populations of the species far enough apart to guard against catastrophic loss of all populations within a region and to preserve genetic diversity across each species' range.

### Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

Section 4(a)(3) of the Act and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist—(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species. We find that designation of critical habitat is not prudent for the nine invertebrates due to increased threat of taking and lack of benefit.

The publication of precise species locations and maps and descriptions of critical habitat in the **Federal Register**, as required in a proposal to designate critical habitat, would make the nine invertebrates more vulnerable to incidents of vandalism. Vandalism of caves and unauthorized entry have been documented, and are a known threat to the species (see factor A of the Summary of Factors Affecting the Species section). Also, these species cave habitats are located at the edge of a growing urban area. The expanding human population increases the risk that publicizing cave and species locations would increase the likelihood of vandalism of the nine invertebrates' cave habitats.

Critical habitat receives consideration under section 7 of the Act with regard to actions carried out, authorized, or funded by a Federal agency (see "Available Conservation Measures" section). As such, designation of critical habitat may affect activities on Federal lands and may affect activities on non-Federal lands where such a Federal

nexus exists. Under section 7 of the Act, Federal agencies are required to ensure that their actions do not jeopardize the continued existence of a species or result in destruction or adverse modification of critical habitat. However, both jeopardizing the continued existence of a species and adverse modification of critical habitat have similar standards and thus similar thresholds for violation of section 7 of the Act. In fact, biological opinions that conclude that a Federal agency action is likely to adversely modify critical habitat but not jeopardize the species for which the critical habitat has been designated are extremely rare. Because the nine invertebrates have extremely limited distributions, and because new potentially suitable habitats cannot be constructed (and are not created by nature except in geological time frames), any activity which would cause adverse modification of critical habitat would also likely cause jeopardy to the species.

In addition, a primary threat to the nine invertebrates on Federal lands is predation by and competition with fire ants. Because the threat posed by fire ants would not necessarily be subject to section 7 consultation, designation of critical habitat would not result in reduction of this threat.

Most (35 of 56) of the caves supporting the nine invertebrates are on non-Federal lands, and many of the activities likely to cause adverse modification of these caves (modification of surrounding vegetation and/or drainage patterns, contamination from septic effluent and run-off, predation by and competition with fire ants, and vandalism) do not involve a Federal nexus. The designation of critical habitat on non-Federal lands would not provide any benefit in reducing the threats from these activities. Activities that cause take of the species, however, would be prohibited under section 9 of the Act.

The designation of critical habitat for the purpose of informing Federal agencies and landowners of the known locations of the nine invertebrates is not necessary because we can inform Federal agencies and landowners through other means. We will notify all appropriate Federal agencies and landowners of the importance of protecting the caves these species occupy through our standard notification procedures. Thus, recognition of important areas for conservation of the species can be accomplished without designating critical habitat.

For these reasons, we believe that the increased threat of vandalism through disclosure of cave locations as required

in a proposal to designate critical habitat outweighs the benefits provided by such designation, and that, therefore, the designation of critical habitat for the nine invertebrates is not prudent.

### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the 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 local agencies, private organizations, and individuals. The 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 and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a species proposed for listing 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 the 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 us.

In addition, section 7(a)(1) of the Act requires all Federal agencies to review the programs they administer and use these programs in furtherance of the purposes of the Act. All Federal agencies, in consultation with us, are to carry out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of the Act.

Examples of Federal agency actions that may require conference and/or consultation as described in the preceding paragraphs include operations at military facilities in the San Antonio area (specifically Camp Bullis Military Reservation), Environmental Protection Agency authorization of discharges and



registration and regulation of pesticides; Federal Highway Administration and Army Corps of Engineers (Corps) involvement in such projects as road and bridge construction and maintenance; other Corps projects subject to section 404 of the Clean Water Act (33 U.S.C. 1344 *et seq.*); and U.S. Department of Housing and Urban Development activities, funding, and authorizations.

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

We may issue permits to carry out otherwise prohibited activities involving endangered or threatened wildlife under certain circumstances. Regulations governing permits for endangered wildlife are codified at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance propagation or survival of the species, and/or for incidental take in the course of otherwise lawful activities. Because these species are not in trade, we do not expect requests for such permits.

Send requests for copies of regulations regarding listed wildlife and inquiries about prohibitions and permits to the U.S. Fish and Wildlife Service, Region 2, Endangered Species Listing Coordinator, 500 Gold Avenue SW Room 4012, Albuquerque, NM 87103-1306 (telephone 505/248-6655; facsimile 505/248-6922).

We recognize that some landowners have expressed willingness to work with us to protect the nine invertebrates and that land management strategies that benefit the species and provide clear guidelines for land use in the vicinity of occupied caves can be developed. We intend to work with landowners in developing management plans and conservation agreements for these species.

The karst features inhabited by these species and the ecosystems on which they depend have developed slowly over millions of years and cannot be

recreated once they have been destroyed. Protection of the ecosystems that support the nine invertebrates will require maintaining moist, humid conditions and stable temperatures in the air-filled voids; maintaining an adequate nutrient supply; preventing contamination of the water entering the ecosystem; preventing or controlling invasion of non-native species such as fire ants; and other actions as deemed necessary.

Protecting the karst features inhabited by the nine invertebrates will entail protecting sufficient surface and subsurface area surrounding the karst features to maintain the integrity of the karst ecosystem. Due to the paucity of light and limited capability for photosynthesis, karst ecosystems are almost entirely dependent upon surface plant and animal communities for nutrient and energy input. Karst ecosystems receive nutrients from the surface in the form of leaf litter and other organic debris that have washed or fallen into the caves, from tree and other vascular plant roots, or through the feces, eggs, or dead bodies of other species, for example, cave crickets, bats, and raccoons.

A healthy ecosystem surrounding the karst features is important to conservation of the nine invertebrates. Certain animal species, such as cave crickets, daddy-longlegs, raccoons, skunks, and other small mammals, appear to use many caves and karst features, provided there is sufficient area on the surface with habitat to support these species and the cave entrances are not blocked. Recent research indicates cave crickets may forage more than 50 meters from cave entrances (W.R. Elliott, Texas Memorial Museum, pers. comm. 1993).

Cave crickets are an especially important component of the cave ecosystem, because many invertebrates are known to feed on their eggs, nymphs, feces, and dead bodies. Cave crickets typically roost and lay eggs in caves during the day, then emerge at night to feed. They are general predators and scavengers, but the exact food preferences of *Ceuthophilus* species in Texas are still unclear. The daddy-longlegs harvestman (*Leibunum townsendii*), which is abundant in many caves, may similarly introduce nutrients into the cave ecosystem. Raccoons, bats, and other small mammals are also ecologically important in many cave communities because their feces provide a rich medium for the growth of fungi and, subsequently, localized population blooms of several species of tiny, hopping insects that reproduce rapidly on rich food sources and may

become prey for some predatory troglobites.

Water quality is also an important factor in conservation of karst invertebrates. Caves and karst features are susceptible to pollution from contaminated water entering the ground because karst has little capacity for purification. Transmission of groundwater flows in karst is comparatively rapid and provides little opportunity for natural filtering or other purifying effects (IUCN 1997). The area that has the greatest potential to contribute water-borne contaminants into the karst ecosystem is the surface and subsurface drainage basin that supplies water to the ecosystem. Certain activities within this hydrologically sensitive area, such as application of pesticides and fertilizers, leakage from sewer lines, and urban runoff, could contaminate the karst ecosystem. The potential for contaminants to travel through karst systems may be increased in some areas relative to others due to local geologic features. Areas surrounding the karst features providing habitat for the nine invertebrates should be maintained so as to minimize the possibility of introducing contaminants into the karst ecosystem.

In addition to providing nutrients to the karst ecosystem, the surface plant community also serves to buffer the karst ecosystem against changes in temperature and moisture regimes, pollutants entering from the surface (Biological Advisory Team 1990, Veni & Associates 1988), and other factors such as sedimentation resulting from soil erosion. Protecting native vegetation may also help control certain non-native species (such as fire ants) that may compete with and/or prey upon the listed species and other karst fauna. Soil disturbance, introduction of nursery plants and sod containing fire ants, garbage (potential food source), and electrical equipment are some of the factors contributing to fire ant infestations.

It is our policy (July 1, 1994; 59 FR 34272) to identify to the maximum extent practicable at the time a species is listed those activities that would or would not likely constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of the listing on proposed and ongoing activities within a species' range. We emphasize that this action is a proposed listing and that the guidelines presented herein are for use in the event that the listing becomes final. Should the species be listed, the discussion and outline presented here should assist landowners and managers



in avoiding a violation of section 9 of the Act.

The guidelines below for determining whether or not an activity is likely to result in take of listed invertebrates are based on karst zone maps prepared by Veni (1994a; see Map 1). These maps show general zones of karst occurrence and do not show specific locations of cave invertebrates. Thus, we believe they provide useful general information without risk of increasing the threat of vandalism to karst features.

Veni (1994a) defines five karst zones in the San Antonio area based on geology, distribution of known caves, distribution of cave fauna, and primary factors that determine the presence, size, shape and extent of caves with respect to cave development. The five zones reflect the likelihood of finding a karst feature that will provide habitat for endemic invertebrates are as follows:

Zone 1—Areas known to contain the proposed endemic cave fauna;

Zone 2—Areas having a high probability of suitable habitat for proposed or other endemic cave fauna;

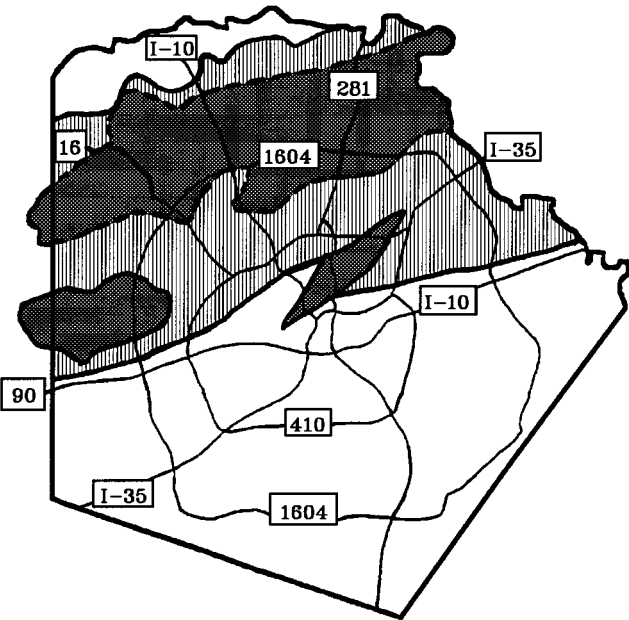
Zone 3—Areas that probably do not contain proposed or endemic cave fauna;





Zone 4—Areas that require further research but are generally equivalent to zone 3, although they may include sections that could be classified as zone 2 or zone 5; and

Zone 5—Areas that do not contain proposed or endemic cave fauna.

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Map 1  
Bexar County, Texas  
Karst Zones



-  Zones 1 & 2
-  Zones 3 & 4
-  Zone 5
-  Approximate boundaries: Consult more detailed maps

Veni (1994a) includes detailed discussion of the geologic makeup of these karst zones. Map 1 simplifies Veni's karst zone maps to show where actions may or may not be likely to take karst invertebrates. Zones 1 and 2 are combined in the shaded areas, zones 3 and 4 are combined in the hatched areas, and the remaining area falls in zone 5. Zone 5 does not have karst-forming strata and the nine invertebrates are not expected to occur in these areas.

The likelihood that an activity in zones 1-4 will result in take of listed invertebrates is directly related to the likelihood of species occurrence and may require specialized knowledge and familiarity with caves, geology of karst areas, and local geology. Persons qualified to identify and evaluate the significance of karst features may include professional geologists or hydrogeologists, biological consultants familiar with cave and karst ecosystems, and other similarly knowledgeable persons. Property owners should take care in conducting karst surveys or selecting a person to conduct a karst survey so as to obtain the most accurate information possible and to avoid doing any damage to a karst feature or the karst ecosystem during the survey.

Collection and identification of karst invertebrates requires specialized knowledge and familiarity with cave biology and ecology and life history of karst invertebrates. Identification of some specimens will require microscopic examination and expert taxonomic assistance. Persons qualified to search for karst invertebrates and make preliminary identifications of specimens should also be able to evaluate various karst features' suitability as habitat for the species. Extreme care must be taken when surveying for invertebrates in karst ecosystems, and these invertebrate surveys should not be undertaken by an amateur. If this proposed rule is finalized, individuals wishing to collect the nine invertebrates will be required to obtain a scientific permit from us and submit all specimens collected to a museum for evaluation and preservation.

We believe that, based on the best available information, activities in zones 1-4 that could potentially result in take include, but are not limited to:

- (1) Collecting or handling of the species;
- (2) Surface or subsurface activities that may directly result in destruction or alteration of species' habitat (such as trenching for installation of utility or sewer lines, excavation, etc.);
- (3) Alteration of the topography within the surface or subsurface

drainage area or other alterations to any cave or karst feature providing habitat for the species that results in changes to the cave environment (such as filling cave entrances or otherwise reducing airflow which limits oxygen availability; increasing airflow that results in drying; altering natural drainage patterns with the result of changing the amount of water entering the cave or karst feature; increasing impervious cover within the surface or subsurface drainage areas of the cave or karst feature; altering the entrance or opening of the cave or karst feature in a way that would disrupt movements of raccoons, opossums, cave crickets, or other animals that provide nutrient input; etc.);

(4) Discharge or dumping of chemicals, silt, pollutants, household or industrial waste, or other harmful material into karst features or areas that drain into karst features;

(5) Pesticide or fertilizer application in or near karst features containing the nine invertebrates or areas that drain into these karst features. Careful use of pesticides in the vicinity of karst features may be necessary in some instances to control non-native fire ants. Guidelines for controlling fire ants in the vicinity of karst features are available from us (see **ADDRESSES** section);

(6) Activities within caves that lead to soil compaction, changes in atmospheric conditions, abandonment of the cave by bats or other fauna, or direct mortality of the species.

(7) Activities that attract fire ants or cockroaches to caves or karst features (e.g., dumping of garbage into caves or karst features).

Activities that we believe will not result in a violation of section 9, provided such activities do not result in any of the situations described above, include:

(1) Activities authorized under sections 7 or 10 of the Act.

(2) Construction activities in non-karstic areas;

(3) Maintenance of existing roads;

(4) Recreational activities on the surface, including camping, hiking, and hunting;

(5) Maintenance of established lawns and other landscaping features, including mowing, pruning, seeding, removing dead trees, and planting trees and shrubs, particularly using native plant species;

(6) Legal use of pesticides in areas that do not drain into karst features.

We welcome the involvement of landowners in conservation efforts for the nine invertebrates. Conservation measures for these species may include careful fire ant control in the vicinity of

occupied karst features; construction/disturbance setbacks from caves; and avoidance of the use of chemical pesticides or fertilizers, surface topography alteration, and trenching within specific areas.

#### Public Comments Solicited

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, we request comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments concerning:

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

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

(3) Additional information concerning the range, distribution, and population size of these species;

(4) Current or planned activities in the San Antonio area and their possible impacts on these species;

(5) Existing local, State, or Federal regulations that provide protection for these species and/or the caves and karst features that provide habitat for the species; and

(6) Appropriateness of using the karst regions outlined in Veni (1994a, Figure 1) as recovery units in the event the species are listed.

We will submit the available scientific data and information to appropriate, independent specialists for review. We will summarize the opinions of these reviewers in the final decision document. In making a final decision, we will take into consideration the comments and any additional information we receive, and such communications may lead to a final determination that differs from this proposal.

The 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 in the **Federal Register**. Such requests must be made in writing and addressed to the Field Supervisor, U.S. Fish and Wildlife Service (see **ADDRESSES** section).

#### Executive Order 12866

Executive Order 12866 requires each agency to write regulations that are easy to understand. We invite your comments on how to make this rule easier to understand including answers

to the following: (1) Are the requirements of the rule clear? (2) Is the discussion of the rule in the Supplementary Information section of the preamble helpful in understanding the rule? (3) What else could we do to make the rule easier to understand?

Send a copy of any comments on making this rule easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C Street, NW, Washington, DC 20240. You may also e-mail the comments to this address: Exsec@ios.doi.gov.

### National Environmental Policy Act

We have determined that Environmental Assessments and Environmental Impact Statements, 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. We published a notice outlining our reasons for this

determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

### Paperwork Reduction Act

This rule does not contain any new collections of information other than those already approved under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and assigned Office of Management and Budget clearance number 1018-0094. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid control number. For additional information concerning permit and associated requirements for endangered species, see 50 CFR 17.22.

### References Cited

A complete list of references cited herein, as well as others, is available upon request from the Field Supervisor, U.S. Fish and Wildlife Service (see **ADDRESSES** section).

### List of Subjects in 50 CFR Part 17

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

### Proposed Regulation Promulgation

For the reasons given in the preamble, we propose to amend 50 CFR part 17 as set forth below:

### PART 17—[AMENDED]

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. In § 17.11(h) add the following to the List of Endangered and Threatened Wildlife in alphabetical order under “ARACHNIDS” and “INSECTS:”

### § 17.11 Endangered and threatened wildlife.

\* \* \* \* \*

(h) \* \* \*

| Species                         |                              |       | Historic range    | Status | When listed | Critical habitat | Special rules |
|---------------------------------|------------------------------|-------|-------------------|--------|-------------|------------------|---------------|
| Common name                     | Scientific name              |       |                   |        |             |                  |               |
| ARACHNIDS                       |                              |       |                   |        |             |                  |               |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Harvestman, Robber Baron Cave   | <i>Texella cokendolpheri</i> | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Spider, Government Canyon cave  | <i>Neoleptoneta microps</i>  | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Spider, [no common name] .....  | <i>Cicurina venii</i>        | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Spider, Madla's cave .....      | <i>Cicurina madla</i>        | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Spider, Robber Baron cave ..... | <i>Circurina baronia</i>     | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Spider, vesper cave .....       | <i>Cicurina vespera</i>      | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| INSECTS                         |                              |       |                   |        |             |                  |               |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Beetle, [no common name] .....  | <i>Rhadine exilis</i>        | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |
| *                               | *                            | *     | *                 | *      | *           |                  | *             |
| Beetle, [no common name] .....  | <i>Rhadine infernalis</i>    | ..... | U.S.A. (TX) ..... | E      | .....       | NA               | NA            |

| Species                    |                                   | Historic range    | Status    | When listed | Critical habitat | Special rules |
|----------------------------|-----------------------------------|-------------------|-----------|-------------|------------------|---------------|
| Common name                | Scientific name                   |                   |           |             |                  |               |
| * * * * *                  | * * * * *                         | * * * * *         | * * * * * | * * * * *   | * * * * *        | * * * * *     |
| Beetle, Helotes mold ..... | <i>Batrissodes ventyivi</i> ..... | U.S.A. (TX) ..... | E         | .....       | NA               | NA            |
| * * * * *                  | * * * * *                         | * * * * *         | * * * * * | * * * * *   | * * * * *        | * * * * *     |

Dated: December 18, 1998.

**Jamie Rappaport Clark,**

*Director, Fish and Wildlife Service.*

[FR Doc. 98-34410 Filed 12-29-98; 8:45 am]

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 679

[Docket No. 981222313-8313-01; I.D. 121098D]

#### Fisheries of the Exclusive Economic Zone Off Alaska; Bering Sea and Aleutian Islands; Proposed 1999 Harvest Specifications for Groundfish

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Proposed 1999 specifications for groundfish and associated management measures; apportionment of reserves; request for comments.

**SUMMARY:** NMFS proposes 1999 harvest specifications and prohibited species bycatch allowances for the groundfish fishery of the Bering Sea and Aleutian Islands management area (BSAI). This action is necessary to establish harvest limits and associated management measures for groundfish during the 1999 fishing year and to accomplish the goals and objectives of the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP). The intended effect of this action is to conserve and manage the groundfish resources in the BSAI and to provide an opportunity for public participation in the annual groundfish specification process.

**DATES:** Comments must be received by January 25, 1999.

**ADDRESSES:** Comments must be sent to Sue Salvesson, Assistant Regional Administrator, Sustainable Fisheries Division, Alaska Region, NMFS, P.O. Box 21668, Juneau, AK 99802-1668, Attn: Lori Gravel.

The preliminary 1999 Stock Assessment and Fishery Evaluation (SAFE) report, dated September 1998, is

available from the North Pacific Fishery Management Council, West 4th Avenue, Suite 306, Anchorage, AK 99510-2252 (907-271-2809).

#### FOR FURTHER INFORMATION CONTACT:

Shane Capron, 907-586-7228 or shane.capron@noaa.gov.

#### SUPPLEMENTARY INFORMATION:

Background for the 1999 Proposed Harvest Specifications.

Groundfish fisheries in the BSAI are governed by Federal regulations at 50 CFR part 679 that implement the FMP. The Council prepared the FMP and NMFS approved it under the Magnuson-Stevens Fishery Conservation and Management Act. General regulations governing U.S. fisheries also appear at 50 CFR part 600.

The FMP and its implementing regulations require NMFS, after consultation with the Council, to specify annually the total allowable catch (TAC) for each target species and the "other species" category, the sum of which must be within the optimum yield range of 1.4 million to 2.0 million metric tons (mt) (§ 679.20(a)(1)(i)). Regulations under § 679.20(c)(1) further require NMFS to publish annually and solicit public comment on proposed annual TACs, prohibited species catch (PSC) allowances, and seasonal allowances of the pollock TAC. The proposed specifications set forth in Tables 1 through 7 of this proposed action satisfy these requirements. For 1999, the proposed sum of TACs is 1.925 million mt. Tables 8 through 10 specify limitations for catcher/processor vessels listed in section 208(e)(1) through (20) of the American Fisheries Act (AFA) contained within the Omnibus Appropriations Bill for FY 99; Pub. L. 105-277. Under § 679.20(c)(3), NMFS will publish the final annual specifications for 1999 after considering: (1) comments received within the comment period (see **DATES**) and (2) consultations with the Council at its December 9, 1998 meeting.

Regulations at § 679.20(c)(2)(ii) require that one-fourth of each proposed initial TAC (ITAC) amount and apportionment thereof, one-fourth of each Community Development Quota (CDQ) reserve established under § 679.20(b)(1)(iii), one-fourth of each proposed PSC allowance established

under § 679.21, and the first seasonal allowance of pollock become available at 0001 hours Alaska local time (A.l.t.), January 1, and remains available until superseded by the final specifications. If approved by NMFS, proposed management measures for the Atka mackerel fishery (63 FR 60288, November 9, 1998) will also require that the first seasonal allowance of Atka mackerel TAC be specified on an interim basis. Regulations at § 679.20(c)(2)(ii) do not provide for an interim specification for either the hook-and-line and pot gear sablefish CDQ reserve or for sablefish managed under the Individual Fishing Quota management plan.

Prior to January 1, 1999, NMFS will publish in the **Federal Register**, the interim TAC specifications and apportionments thereof for the 1999 fishing year. These interim specifications are scheduled to become effective 0001 hours, A.l.t. January 1, 1999, and remain in effect until superseded by the final 1999 harvest specifications.

#### Proposed Acceptable Biological Catch (ABC) and TAC Specifications

The proposed ABC levels are based on the best available scientific information, including projected biomass trends, information on assumed distribution of stock biomass, and revised technical methods used to calculate stock biomass. In general, the development of ABCs and overfishing levels involves sophisticated statistical analyses of fish populations and is based on a successive series of six levels, or tiers, of reliable information available to fishery scientists.

The Bering Sea Groundfish Plan Team (Plan Team) acknowledged that for purposes of the proposed 1999 Overfishing Levels and ABC amounts, the best information currently available is set forth in the final SAFE report for the 1998 BSAI groundfish fisheries dated November 1997. The Plan Team further acknowledged that information on the status of stocks will be updated with the 1998 survey results and reconsidered by the Plan Team at its November 1998 meeting. The Plan Team's preliminary recommendation was to rollover 1998 ABC, overfishing,