

5. Section 578.3 is revised to read as follows:

§ 578.3 Applicability.

This part applies to civil penalties for violations of Chapters 301, 305, 323, 325, 327, 329, and 331 of Title 49 of the United States Code. This part also applies to the criminal penalty safe harbor provision of section 30170 of Title 49 of the United States Code.

6. Section 578.4 is amended by revising the definition of "civil penalty" to read as follows:

§ 578.4 Definitions.

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Civil penalty means any non-criminal penalty, fine, or other sanction that:

(1) Is for a specific monetary amount as provided by Federal law, or has a maximum amount provided for by Federal law; and

(2) Is assessed, compromised, collected, or enforced by NHTSA pursuant to Federal law.

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7. A new section 578.7 is added to read as follows:

§ 578.7 Criminal Safe Harbor Provision.

(a) *Scope.* This section sets forth the requirements regarding the reasonable time and the manner of correction for a person seeking safe harbor protection from criminal liability under 49 U.S.C. 30170(a)(2), which provides that a person described in 49 U.S.C. 30170(a)(1) is not subject to criminal penalties thereunder if:

(1) At the time of the violation, such person does not know that the violation would result in an accident causing death or serious bodily injury; and

(2) The person corrects any improper reports or failure to report, with respect to reporting requirements of 49 U.S.C. 30166, within a reasonable time.

(b) *Reasonable time.* A correction is considered to have been performed within a reasonable time if the person seeking protection from criminal liability makes the correction to any improper (i.e., incorrect, incomplete, or misleading) report not more than twenty-one (21) calendar days after the date of the report to the agency and corrects any failure to report not more than twenty-one (21) calendar days after the report was due to be sent to or received by the agency, as the case may be, pursuant to 49 U.S.C. 30166, including a regulation, requirement, request or order issued thereunder. In order to meet these reasonable time requirements, all submissions required by this section must be received by NHTSA within the time period specified in this paragraph, and not

merely mailed or otherwise sent within that time period.

(c) *Sufficient manner of correction.* Each person seeking safe harbor protection from criminal penalties under 49 U.S.C. 30170(a)(2) must comply with the following with respect to each improper report and failure to report for which safe harbor protection is sought:

(1) Sign and submit to NHTSA a dated document identifying:

(i) Each previous improper report (e.g., informational statement and document submission), and each failure to report as required under 49 U.S.C. 30166, including a regulation, requirement, request or order issued thereunder, for which protection is sought, and

(ii) The specific predicate under which the improper or omitted report should have been provided (e.g., the report was required by a specified regulation, NHTSA Information Request, or NHTSA Special Order).

(2) Submit the complete and correct information that was required to be submitted but was improperly submitted or was not previously submitted, including relevant documents that were not previously submitted, or, if the person cannot do so, provide a detailed description of that information and/or the content of those documents and the reason why the individual cannot provide them to NHTSA (e.g., the information or documents are not in the individual's possession or control).

(3) For a corporation, the submission must be signed by an authorized person (ordinarily, the individual officer or employee who submitted the improper report or who should have provided the report that the corporation failed to submit on behalf of the company, or someone in the company with authority to make such a submission).

(4) Submissions must be made by a means which permits the sender to verify promptly that the report was in fact received by NHTSA and the day it was received by NHTSA.

(5) Submit the report to Chief Counsel (NCC-10), National Highway Traffic Safety Administration, Room 5219, 400 Seventh Street, SW., Washington, DC 20590.

Issued on: December 15, 2000.

Sue Bailey,
Administrator.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AF33

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

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine nine cave-dwelling invertebrates from Bexar County, Texas, to be endangered species under the authority of 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. *Batrisodes venyivi* (Helotes mold beetle) is a small, eyeless 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 final rule as the nine invertebrates) are known from karst topography (limestone formations containing caves, sinks, fractures 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 septic effluent, sewer leaks, run-off, pesticides, and other sources; predation by and competition with nonnative fire ants; and vandalism. This action will implement Federal protection provided by the Act for these species. We based our decision on the best available information, including that received during public comment on the proposal to list these species.

EFFECTIVE DATE: The effective date of this rule is December 26, 2000 (see **EFFECTIVE DATE** section under below).

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Austin Ecological Services Field Office, 10711 Burnet Road, Suite 200, Austin, Texas 78758.

FOR FURTHER INFORMATION CONTACT:

Alisa Shull, Supervisory Fish and Wildlife Biologist, Austin Ecological Services Field Office (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*. *Batrisodes venyivi* 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. In 1992, Gertsch described these species. *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 (capable of surviving in only one environment) karst or cave-dwelling species (trogllobites) of local distribution in karst terrain in Bexar County, Texas. "Karst" is a type of terrain in which the rock is dissolved by water so that much of the drainage occurs into the subsurface rather than as runoff. The subsurface drainage leads to passages or other openings within the underground rock formations. Some of the features that develop in karst areas include cave openings, holes in rocks, cracks, fissures, and sinkholes.

Habitat required by the nine karst invertebrate species consists of underground, honeycomb limestone that maintains high humidity and stable temperatures. The surface environment of karst areas is also an integral part of the habitat needed by the animals inhabiting the underground areas. Openings to the surface allow energy and nutrients, in the form of leaf litter, surface insects, other animals, and animal droppings to enter the underground ecosystem. Mammal feces provide a medium for the growth of fungi and, subsequently, localized population blooms of several species of tiny, hopping insects. These insects reproduce rapidly on rich food sources and may become prey for some predatory cave invertebrates (Service 1994). While the life habits of the nine invertebrates are not well known, the species probably prey on the eggs,

larvae, or adults of other cave invertebrates.

We funded a status survey (Veni 1994a; Reddell 1993) of all nine species through a grant to the Texas Parks and Wildlife Department (TPWD) under section 6 of the Act. 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 biologists believed likely to contain species of concern. Researchers described all 77 caves, to some extent, before the status survey was conducted and some 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 (on an evolutionary time scale) 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 regions) within Bexar County. The karst 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 regions are geological or geographical features that may represent obstructions to trogllobite movement (on a geologic time scale) which has 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 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, the species of which could not be positively identified, is highly likely to be *T. cokendolpheri* (James Reddell, Texas Memorial Museum, and Dr. Darrell Ubick, California Academy of Sciences, pers. comm. 1995).

Batrisodes venyivi, 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 region on private property. We do not have reliable information on the collection from the third cave. The collector of the specimen declined to give us a specific site collection record, but we believe it is located on private property.

Rhadine exilis is known from 35 caves in north and northwest Bexar County. Twenty-one are located on Department of Defense (DOD) land in the Stone Oak karst region. The remainder are distributed among the Helotes, UTSA, and Stone Oak karst regions, while one location lies in the Government Canyon region. One of the non-DOD sites 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 35 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 regions— Helotes, UTSA, Stone Oak, Culebra Anticline, and Government Canyon. Scientists have delineated three subspecies (*Rhadine infernalis ewersi*, *Rhadine infernalis infernalis*, *Rhadine infernalis* ssp.), and described and named two of these in scientific literature (Barr 1960, Barr and Lawrence 1960). In a recent report, scientists characterized the third subspecies as distinct, but not named (Reddell 1998). Only three caves, all on DOD land, contain the subspecies *Rhadine infernalis ewersi*. 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 unnamed subspecies.

Cicurina venii is known from only one cave, which is located on private property in the Culebra Anticline karst 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, 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 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, Madla's cave spider, is known from six caves. One cave is within the Government Canyon karst region in Government Canyon State Natural Area, one is on DOD land, three are located in the Helotes karst region on private property, and one is located on private property in the UTSA karst region.

Biologists have found *Cicurina vespera*, the vesper cave spider, in two caves. One cave 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 this latter cave have not been revealed to us, but we believe it is located on private property.

Neoleptoneta microps is known only from the Government Canyon karst region, from two caves within Government Canyon State Natural Area.

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 are expected to face the same threats as the known occurrences of these species. The 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 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. This 90-day finding resulted in the requirement under the Act that we review the status of the species and, within 12 months of receipt of the petition, issue a finding as to whether the petitioned action is warranted (12-month finding).

We added eight of the nine invertebrates to the Animal Notice of Review as category 2 candidate species in the **Federal Register** on November 15, 1994 (59 FR 58982). We intended to include *Rhadine exilis* in the notice of review, but an oversight occurred and it did not appear in the published notice. Category 2 candidates, a classification since discontinued, 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.

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. This precluded completion of the 12-month finding for these species in that Fiscal Year.

The 12-month petition finding and publication of the proposed rule were again precluded by higher priority activities under the listing priority guidance for fiscal year 1997, finalized December 5, 1996 (61 CFR 64475). 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 the 12-month finding. This 12-month finding resulted in a proposal to list the 9 invertebrates as endangered, which we published in

the **Federal Register** on December 30, 1998 (63 FR 71855).

The processing of this final rule conforms with our current Listing Priority Guidance, published in the **Federal Register** on October 22, 1999 (64 FR 57114). Priority 1 (highest priority) is processing emergency listing rules for any species determined to face a significant and imminent risk to its well-being. Priority 2 is processing final determinations on proposed additions to the lists of endangered and threatened wildlife and plants. Priority 3 is processing new proposals to add species to the lists. The processing of administrative petition findings (petitions filed under section 4 of the Act) is the fourth priority. This final rule is a Priority 2 action. We updated this rule to reflect any changes in information concerning distribution, status, and threats since the publication of the proposed rule.

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 continued working with interested parties to develop a conservation strategy and agreement. The issues that needed to be addressed in a conservation agreement related primarily to determining the needs for the species' conservation, responsibility and commitment for implementation and funding, and the amount of time required to implement the conservation measures. In January 1999, we provided a handout titled "Criteria and Measures for Long-term Conservation of Karst Invertebrates in Bexar Co., TX," to the coalition as a guide for conservation of species-inhabited caves. However, actions required to address the above issues and to reach this goal have not yet occurred.

Summary of Comments and Recommendations

In the December 30, 1998, proposed rule and associated notifications, we requested that all interested parties submit factual reports or information that might contribute to the development of a final rule. We originally scheduled the comment period to close on April 29, 1999, but we extended it to May 31, 1999 (64 FR 16890). We contacted appropriate Federal and State agencies, county governments, scientific organizations, and other interested parties and requested that they comment. We requested comments on the proposed rule and literature cited from nine scientific experts. We received no comments from those nine. We

published a newspaper notice in the *San Antonio Express News* on December 30, 1998, in which we invited general public comment. We received 38 comment letters through the mail.

Alan Glen, of Drenner and Stuart, and San Antonio Water System requested a public hearing. We published a notice of the public hearing in the **Federal Register** (64 FR 16890) and gave written notice to those on our mailing list for this topic. We held the public hearing in San Antonio at Lee High School on April 29, 1999; a court reporter made a verbatim transcript of the hearing testimony. Approximately 75 people attended. Of the 22 oral commenters, 8 also submitted written comment letters at the public hearing.

We updated the final rule to reflect comments and information we received during the comment period. We address both the written and oral comments in the following summary. These comments addressed a range of issues regarding the proposal. Because multiple respondents offered similar comments in some cases, we combined those comments in the following summary. Of the 60 comments (some commenters commented more than once) we received from the public hearing and through the mail, 5 directly opposed the listing, 27 supported continued efforts on the conservation agreement to preclude the need to list, 6 both directly opposed the listing and supported continued efforts on the conservation agreement, 19 supported the listing, and 3 were neutral. In this summary, we do not address comments that are not related to the listing decision, such as comments on habitat conservation plans (HCPs) or recovery planning.

Issue 1: So little is known about the species that the Service has not even defined habitat for the invertebrates beyond cave openings.

Our Response: We took this comment into consideration in this final rule and included more detailed habitat descriptions (see the Background section under Supplementary Information). The Available Conservation Measures portion of this final rule discusses criteria for habitat preservation and preserve design. Under section 4(b)(1) of the Act, we must make our listing decision on the best scientific and commercial information available. We believe that substantial evidence exists to support a listing determination for these species, but also recognize that additional research is important to assist in making sound management recommendations.

Issue 2: These nine invertebrates are insignificant to mankind.

Our Response: We are responsible for protecting species in danger of extinction and ecosystems on which they depend. The Act recognizes the importance of all species to properly functioning ecosystems and requires us to base listing decisions on the best scientific information available. Based on best available scientific information, we determined that the Bexar County invertebrates are in danger of extinction and warrant protection as endangered species.

Issue 3: It is inaccurate to describe these species as troglobitic without surveys conducted outside of the caves in the surrounding leaf litter. Evidence in support of additional habitats for these species includes the lack of collected specimens of pupae or larvae from within the caves, few records of some species from caves, and closely related species (including some with troglobitic features) known to exist in non-cave environments.

Our Response: The scientific literature, published by species experts and cited in this final rule, describe the nine Bexar County karst invertebrates as troglobitic. There has been no information submitted to us to indicate otherwise. As for lack of collections of pupae and larvae in caves, we have no evidence discounting the occurrence of reproduction and initial life phases in the humanly inaccessible recesses of caves. Barr (1974) states that there are significantly more caves than entrances, and that approximately ninety percent of them are closed off from human access.

Issue 4: Six of the nine species have common names that are not registered with the Entomological Society of America or the American Arachnological Society, and may not be accurate descriptors for those species.

Our Response: The official name for these species is the scientific name; we list them by their scientific name. The common names we used in this rule are for ease of reference for the general public. We understand that they are not officially registered common names. If the process to register common names is completed in the future, we will refer to those common names, but the listing of these species will not be affected. Until such time we will continue to use the names listed in this document.

Issue 5: It is believed *Batrises venvivi* is restricted to the Helotes karst region, based on past collections. "In Texas, each obligate cave species of [this beetle family] has been restricted to small geographic areas, and each is found in only a small number of closely situated caves."

Our Response: In the "Background" section, we refer to three locations for this species; two are located in the Helotes karst region on private property. We do not have reliable information on the location of the third cave. The collector of the specimen declined to give us a specific site collection record, but we believe it is located on private property.

Issue 6: How can the threats be so imminent when so many caves are owned by governmental entities?

Our Response: We understand that for some of these species a significant number of locations are owned by governmental entities. Many of the government-owned sites have some limited protection, but fire ants are still a threat. Human activities facilitate movement of certain predators, such as fire ants, into an area. Both Camp Bullis and Government Canyon State Natural Area are increasingly being surrounded by development which provides habitat (construction areas, lawns, roadways, and landscaped areas) from which fire ants can disperse. The relative accessibility of the shallow caves in Bexar County leaves them especially vulnerable to invasion by nonnative species. Without continuously implemented management plans in place, this threat is still imminent.

Issue 7: Continued efforts toward developing a conservation agreement to preclude the need to list the species was desired. Many were disappointed that efforts to develop a conservation agreement were terminated in 1998 and the Service continued with publishing the proposed rule.

Our Response: Please see our discussion under the Previous Federal Action portion of this final rule. We agree that cooperative, voluntary efforts to conserve these species that remove or reduce threats would be an alternative to Federal listing if sufficient conservation measures were implemented so that the species were no longer in danger of extinction. Since 1994, we have been working with a coalition of interested parties to develop a conservation strategy and agreement. While, we acknowledge that some progress toward conservation of these species has been made by this coalition, actions required to address the above issues and to reach this goal have not yet occurred.

Issue 8: With regard to evidence of threats, some believe that in the time it has taken the proposed rule to be published there has been habitat loss and no protection for the species. Others believe that all of the known locations of the nine invertebrate species have been left undisturbed throughout the

entire process, indicating a lack of evidence for perceived habitat-destruction threats. Additionally, the Service has not provided any evidence of contamination, predation on these species, and adverse effects from impervious (resistant to seepage of water) cover, closing of caves, and vandalism.

Our Response: During the comment period, we received San Antonio Water System (SAWS) documentation that recharge features were sealed since the petition was filed to preserve water quality and avoid contamination of the aquifer. The Texas Natural Resources Conservation Commission (TNRCC), the State agency responsible for water quality and filling karst features, does not require that any invertebrate surveys be done in assessing karst features and, therefore, may approve the filling of the feature even when the species may be present. We believe that habitat-destruction is a viable threat when sealing of features occurs without investigations for invertebrates.

In the "Summary of Factors Affecting the Species" section of this rule, we cite examples of other threats and their negative effects. We believe that these threats still exist. We included additional examples of contamination on caves under Factor A. Throughout the world there are many documented cases describing the effects of contamination on caves (IUCN 1997). Under Factor C, we also included additional information and citations regarding fire ants and their effects on the species and their habitat. In addition, as indicated in the "Background" section of this final rule, some of the known invertebrate locations suffered degradation prior to the petition to list them.

In addition, even where existing caves have not been filled or polluted, development that encroaches on the area around the cave entrance can significantly degrade the surface habitat, decreasing the potential for long-term persistence of the population of karst invertebrates in that cave. According to data provided by SWCA, Inc., ten of the known locations for these species have less than 10.1 hectares (ha) (25 acres (ac)) of undeveloped area remaining surrounding the caves and several of these have as little as 0.4 to 2 ha (1 to 5 ac). In February 2000, Service personnel observed construction within 30 meters (m) (100 feet (ft)) of 2 known locations of *Rhadine exilis*, which is currently reducing the potential for preservation around these sites. We believe that such small areas of native, surface habitat are not sufficient for

sustainable support of karst invertebrate populations.

Issue 9: How can fire ants be a predator on the nine invertebrates when Veni *et al.* (1995) found fire ants in different zones, or physical divisions within the cave, than the invertebrates during a survey at Camp Bullis, and Porter and Savignano (1990) found that crickets and roaches increased in the presence of fire ants?

Our Response: Veni (pers. comm. 1999) has since done additional work at Camp Bullis and believes the reduced observations of fire ants are due to low population numbers on the property as a result of minimal ground disturbance. Elliott (*in litt* 1993–1997) found several instances, in two caves in the Austin area, when fire ants and troglobites were located within the same zones. Reddell (1993, *in litt*) documented observations of fire ant predation on three species of troglobites and on cave crickets. Even if fire ants did not prey on the nine invertebrates, heavy predation on cave crickets would reduce available food for the nine invertebrates. As for Porter's and Savignano's (1990) findings, the crickets that increased in abundance with fire ants were ground crickets (Gryllidae: Nemobiinae), not cave crickets (*Ceuthophilus* sp.), which are the species critical for nutrient input for the nine karst invertebrate species. Only very few species, including the ground cricket, the roach, and a beetle that is symbiotic with the imported fire ants, increased in abundance in infested areas. However, even when including the increase in these few species, the total abundance of arthropods (excluding fire ants) in infested areas was 75 percent less than uninfested areas. In addition, fire ant infestation reduced biodiversity; there were 40 percent fewer species in infested areas.

Issue 10: Some commenters believe the existing regulations of the TNRCC, City of San Antonio (City), and SAWS, the primary water and wastewater purveyor in Bexar County, are adequate to protect the species and their habitat, while other commenters believed they are inadequate.

Our Response: Our analysis of the adequacy of existing regulatory mechanisms found that additional measures are needed to protect these species from extinction. Although certain rules and regulations provide some protection, they do not alleviate all of the identified threats. We reviewed current programs and regulations of the TNRCC, the City, and SAWS. The purpose of the existing regulations is to protect water quality and the regulations are not adequate to fully protect the species from all threats.

For further information please see Factor D in the "Summary of Factors Affecting the Species" section of this final rule.

Issue 11: SAWS initiated a Land Acquisition Program that is currently purchasing land in the karst regions. Certainly, this ongoing program serves to provide substantial protection to these species and their habitat.

Our Response: The focus of this program is preservation of lands for water quality in the Edward's Aquifer and not for caves containing the species. This program may have potential to contribute to species conservation. However, we have no information that indicates SAWS has located and/or preserved caves supporting the nine invertebrates.

Issue 12: Even if the perceived threats did have an impact on the species, the decision to list as endangered will not prevent future negative effects from occurring.

Our Response: Please see our discussion under the Available Conservation Measures section of this final rule. The Act provides numerous conservation mechanisms for listed species.

Issue 13: Some believe the listing is primarily for stopping development over the Edwards Aquifer and not for the species themselves. Others believe that protection of the species and their habitat will provide ancillary benefits by protecting their sole-source water supply.

Our Response: We are obligated under the Act to address the status of species in relation to the five factors discussed under the Summary of Factors Affecting the Species section of this final rule. Other benefits or effects of listing cannot be considered in our determination whether to list a species.

Issue 14: The proposed rule does not indicate the nine karst invertebrates are bred or hunted for commercial purposes, or that they move in interstate commerce. The nine karst invertebrates are intrastate species having no effect in commerce and, therefore, are beyond Congress' authority to regulate. Thus, the Service lacks authority under the Act pursuant to the Commerce Clause of Article 1, Section 8 of the United States Constitution to regulate the nine proposed karst invertebrates.

Our Response: A decision in the United States Court of Appeals for the District of Columbia circuit (*National Association of Homebuilders v. Babbitt*, 130 F. 3d 1041, D.C. Cir. 1997) makes it clear in its application of the test used in the United States Supreme Court case, *United States v. Lopez*, 514 U.S. 549 (1995), that regulation of species

limited to one State under the Act is within Congress' commerce clause power. On June 22, 1998, the Supreme Court declined to review this case (118 S. Ct. 2340 1998). Therefore, our application of the Act to the nine karst invertebrates, currently known to be endemic to only one county in the State of Texas, is constitutional.

Issue 15: Listing the nine karst invertebrates as endangered will add additional costs and delays to urban development projects.

Our Response: While economic effects and related concerns cannot be considered in listing decisions, such factors are considered in recovering listed species. In a **Federal Register** notice published July 1, 1994 (59 FR 34272), the Secretaries of Interior and Commerce established an interagency policy to minimize social and economic impacts consistent with timely recovery of listed species. Thus, it is our desire that any recovery actions associated with these nine invertebrates minimize adverse social and economic impacts to the extent practicable.

In addition, we have been encouraging voluntary consideration of these invertebrates in development planning for several years. We believe early coordination can avoid unnecessary increases in costs or delays for construction-related activities in areas containing the listed species. We encourage Federal or State agencies, private developers, and others to contact us during early phases of project design so that the necessary measures to minimize or avoid impacts to listed species can be incorporated into development projects as early as possible. We are committed to working with landowners and others to develop cooperative solutions to species conservation that avoid or minimize the need for regulatory burdens on landowners.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, we determined that nine Bexar County karst invertebrates should be classified as endangered species. We followed procedures found at section 4(a)(1) of the Act and regulations implementing the listing provisions of the Act (50 CFR part 424). 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 their habitat or range.

The ranges of the nine invertebrates are limited to limestone karst strata in the northern portion of Bexar County, which includes a portion of northern San Antonio, Texas. Their historical ranges are unknown, but were likely similar to their present ranges with the exception of caves that have been destroyed or suffered adverse impacts due to the factors discussed in the proposed rule and this final rule.

The proximity of the caves and karst features inhabited by these species to the City of San Antonio makes them vulnerable to negative impacts 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) estimated 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 that considerable development has occurred and is expected to continue in the San Antonio area in general and in the karst 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, 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. A City of San Antonio Department of Planning (2000) map shows that growth of San Antonio from 1971 to 1999 has been primarily to the northwest. 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 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 population 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) showed 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. That report also indicated that the majority of the growth (about 81 percent, as measured by new electrical connections) occurred 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 continued to be the fastest growing areas in the county. 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.

Population growth in Texas and Bexar County is expected to continue at a rapid rate. The Texas Water Development Board (1997) estimated that the current Texas human population size is 19 million; it is expected it to nearly double in the next 50 years, reaching over 36 million residents in the year 2050. Bexar County alone experienced an estimated 1.3% population increase between 1998 and 1999, with a 1999 population estimate of 1.37 million (US Census Bureau 2000). Estimates from the Texas State Data Center and the Center for Demographic and Socioeconomic Research and Education (2000) indicate that the total population size in Bexar County from the year 2000 to the year 2030 would increase anywhere from 17.2% (assuming no net migration) to 56.9% (assuming migration rates are consistent with those observed between 1990 and 1998), with population sizes of 1.54 million to 2.25 million people by the year 2030.

Plotting cave locations on 1993 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 either has no agricultural

exemption or includes areas 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.

TABLE 1.—NUMBERS OF KARST FEATURES CONTAINING THE NINE INVERTEBRATES BY LAND USE

[1993 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	Ranchland	Tax exempt ²	Unknown	Ttl
Rhadine exilis	2	1	3	1 ²	21 DOD 1 GCSNA 1 Co. ROW	4	35
Rhadine infernalis							25
R. i. ewersi					3 DOD		
R. i. infernalis	2		6	2	4 GCSNA 1 Church	1	
R. i. new species	2		1	3			
Batrisodes ventyivi	1			1		³ 1	3
Texella cokendolpheri	1						1
Cicurina baronia	1						1
Cicurina madla	1		2	1	1 DOD 1 GCSNA		6
Cicurina venii	1						1
Cicurina vespera					1 GCSNA		1
Neoleptoneta microps					2 GCSNA		2

¹ 1 in county road right-of-way and 1 across the street from residential neighborhood

² DOD = Department of Defense; GCSNA = Government Canyon State Natural Area; Co.ROW = county road right-of-way

³ Exact location unknown

Ranchland is land with an existing agricultural exemption. These areas may be vulnerable to fire ant infestations, siltation due to overgrazing, or to chemicals such as pesticides.

Tax 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. Five caves in TPWD's Government Canyon State Natural Area contain a total of five of the nine invertebrates (Reddell 1993). The TPWD will likely protect habitat at these sites; however, fire ants are present in some of the caves and throughout the property (see discussion under Factor C, below). Thus, the invertebrate species within those caves are at risk because methods of controlling fire ants are only partially effective. To date, there is no management or maintenance plan in place that adequately reduces these threats to the species.

A total of 23 caves containing the species are located on Federal property at the Camp Bullis Training Site. Twenty caves contain only *Rhadine*

exilis, two caves contain only *Rhadine infernalis*, and one cave contains both *Rhadine* species and *Cicurina madla*. Efforts are underway through the Department of Defense's Legacy program to inventory karst features within the recharge zone on Camp Bullis and to determine adequate areas for protection of biologically and/or hydrologically significant karst features. While the habitat on DOD lands is fairly secure, complete protection of the species in these features may require additional steps, such as control of fire ants, cave gates, and long-term management. Currently DOD is drafting a management plan, but until the plan is completed and implemented these threats may not be adequately reduced.

A number of the caves containing the nine invertebrates occur within the recharge zone for the Edwards Aquifer. The Edwards Underground Water District (1993) presented 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. Since

karst systems are affected by both surface and subsurface drainage, it is necessary to protect these areas to avoid infiltration of contaminants. In a study of small invertebrates that live in underground spaces too small to allow human access (interstitial spaces), Danielopol (1981) found with increased infiltration of pollution into the interstitial spaces, the invertebrates were replaced by surface species. He concluded that the ratio between surface and interstitial species is proportional to pollution.

The Texas Water Commission (TWC), now part of the 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. The TNRCC (1994) summarizes information on groundwater contamination and lists contaminant spills on a county-by-county basis as reported by the 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 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 animals 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 cave crickets, bats, racoons, and other small mammals) and by means of organic matter that washes or falls 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).

Culver (1986) discusses several documented threats to caves, and indicates that the covering or closing of caves greatly affects nutrient input because major food sources for troglobites come in through cave entrances. Many caves extend beyond humanly accessible points, thereby restricting our knowledge of other access points not readily noticeable from the surface. 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. Disposal of household and other wastes may attract fire ants or other surface-dwelling species harmful to the karst ecosystem.

B. Overutilization for commercial, recreational, scientific, or educational purposes. 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. 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. 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 certain 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 the nine invertebrates especially vulnerable to invasion by nonnative species.

Nonnative 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 ten cave-inhabiting species he has observed being preyed upon by fire ants. Although none of the species covered in this final 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. It is reasonable to expect that the nine Bexar County invertebrates are similarly affected in areas where fire ants are present.

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 listed 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. Elliott (1994) found fire ants competing intensively with cave crickets during foraging; since cave crickets transport nutrients from outside to inside the caves, this will probably lead to the eventual decline of cave communities. Porter and Savignano (1990) found arthropod species richness and abundance was lower in fire ant-infested areas compared to uninfested areas.

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. The rate of infestation is expected to be similar for the rest of the 57 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. 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 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. Furthermore, TPWD's regulations do not contain provisions for protecting habitat of any listed species.

The TNRCC regulations may give some degree of protection to significant aquifer recharge features, but may apply to only a few of the caves in which the nine invertebrates are found since the majority do not meet TNRCC's definition of "sensitive feature". TNRCC defines a sensitive feature as a "permeable geologic or manmade feature located on the recharge zone or transition zone where: (A) A potential for hydrologic interconnectedness between the surface and the Edwards Aquifer exists, and (B) rapid infiltration to the subsurface may occur."

The TNRCC regulations are designed to protect the water quality of the Edwards Aquifer. This is typically accomplished by prohibiting certain activities (for example, locating waste disposal wells or concentrated animal feed lots on the recharge zone), filing a Water Pollution Abatement Plan, and through the use of Best Management Practices. Complying with TNRCC regulations may also entail the capping (concrete sealing) of some features to prevent contaminated water from entering the aquifer. Such alteration or blocking of natural drainage patterns could result in drying of the

subterranean habitat and a reduction in nutrient input into the karst feature. Karst features supporting the nine invertebrates may also be exempted from TNRCC regulations because a number are not found in either the recharge or transition zone.

The City of San Antonio regulates development and impervious cover within the recharge area of the Edwards Aquifer through Ordinance #81491, made effective January 23, 1995. This Ordinance limits types of development and impervious cover within the city limits, the extraterritorial jurisdiction, and the recharge zone. 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. Development setbacks provided for in the Ordinance range from 18.3 to 30.5 m (60 to 100 ft). These setback distances translate into buffer areas of 0.13 to 0.37 ha (0.33 to 0.92 ac). Setbacks from recharge features required by the Ordinance may not always be adequate to protect entire hydrogeological areas that provide surface and subsurface moisture to the karst habitat and surface communities that provide nutrient input into the cave. We believe that the amount of surface habitat needed for perpetual sustainability of the karst ecosystem is on the order of 40 ha (100 ac) based upon such factors as foraging distances of cave crickets; minimum viable population sizes of the dominant, native plant species; and the distance of edge effects on both the floral and faunal communities. In addition, 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. Many of the caves known to have the nine invertebrates lie outside the recharge zone.

The Ordinance classifies property into three categories. Category 1 is any property having already filed official documents; such as development plats, water or sewer contracts, water pollution abatement plans, or zoning changes, or having a valid permit with the City prior to the effective date of the Ordinance. The Ordinance does not apply to these properties, allowing up to 100 percent impervious cover. Category 2 properties are those not already designated as Category 1 and that lie within the corporate limits of the City of San Antonio. This category allows 30 percent, 50 percent, and 65 percent impervious cover, respectively, for single-family residential, multi-family, and commercial development. Category

3 property is not within Category 1 or 2, but is within the extra-territorial jurisdiction (ETJ) of the City of San Antonio and within the Edwards Aquifer Recharge Zone. Impervious cover is limited to 15 percent on Category 3 property. In an update by SAWS on January 14, 1998, they noted that from January 23, 1995 to the end of 1997, 29.25 percent (9,695 ha (23,958 ac)) of development within the recharge zone was redesignated from Category 2 or 3 to Category 1. As San Antonio grows and extends the corporate limits, impervious cover limits for non-developed land will increase with those extensions.

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.

E. *Other natural or manmade factors affecting their continued existence.* Just as human activities may facilitate movement of fire ants into an area (see discussion under Factor C, above), competitors such as cockroaches and sow bugs can also be introduced into cave ecosystems in association with human activity. Native and nonnative 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 that provide nutrient input to karst ecosystems. Fire ants can be considered both predators and competitors (see discussion under Factor C, above).

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 or increase the numbers of competitors and/or

predators (including nonnative 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 that vandalism contributed to the degradation of several caves that contain one or more of the nine invertebrates.

We carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Rhadine exilis*, *Rhadine infernalis*, *Batrisesodes 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 these species are endangered because of the high degree and immediacy of threats and their limited ranges.

Effective Date

In accordance with 5 U.S.C. 553(d)(3), we find good cause to make this rule effective immediately. Because of the extremely isolated nature of the populations of these species, the corresponding negligible possibility for recolonization of destroyed habitat, and our knowledge that permanent destruction of habitat quality for at least two caves, in which some of these invertebrates live, is imminent, the protection provided by the Act is granted to the nine invertebrates in Bexar County immediately upon publication of this final rule. We believe that habitat destruction would temporarily intensify if the final rule does not become effective until 30 days after rule publication. Through consultations for other threatened and endangered species, we are currently aware of numerous developments in the range of the nine invertebrates.

Several in-progress developments have known karst features on the property, but it is unknown whether these features support any of the nine invertebrates. By making this rule effective immediately, developers may experience temporary delays in order to conduct any needed surveys for karst features and for the nine invertebrates, and to determine how their projects may proceed in compliance with the Act. However, the majority of these

developments would experience these delays regardless of the effective date. Making the rule effective immediately upon publication may prevent the destruction of a number of significant but as yet unknown locations for these species and speed the recovery of the species.

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 determination that such areas are essential for the conservation of the species. "Conservation" as defined in the Act 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 listed. The 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.

In the proposed rule, we indicated that designation of critical habitat was not prudent for the nine invertebrates because the publication of precise species locations and maps and descriptions of critical habitat in the **Federal Register** would make the nine invertebrates more vulnerable to incidents of vandalism through increased recreational visits to their cave habitat and through purposeful destruction of the caves. We also indicated that designation of critical habitat was not prudent because it would not provide any additional benefit beyond that provided through listing as endangered.

In the last few years, a series of court decisions have overturned a number of our determinations that designation of critical habitat for other species would not be prudent (for example, *Natural Resources Defense Council v. U.S.*

Department of the Interior 113 F. 3d 1121 (9th Cir. 1997); *Conservation Council for Hawaii v. Babbitt*, 2 F. Supp. 2d 1280 (D. Hawaii 1998)). Based on the standards applied in those judicial opinions, we have reexamined the question of whether critical habitat for the nine invertebrates would be prudent.

We examined the available evidence for the nine invertebrates and did not find specific evidence of collection or trade of these or any similarly situated species. There have been instances of vandalism to caves due to recreational cave use. By designating critical habitat in a manner that does not identify specific cave locations, the threat of vandalism by recreational visits to the cave or purposeful destruction by unknown parties should not be increased.

In the absence of a finding that critical habitat would demonstrably increase threats to a species, if there are any benefits to critical habitat designation, then a prudent finding is warranted. In the case of these species, there may be some benefits to designation of critical habitat. Critical habitat also identifies areas that may require special management considerations or protection, and may provide protection to areas where significant threats to the species have been identified. Critical habitat receives protection from destruction or adverse modification through required consultation under section 7 of the Act with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 also requires conferences on Federal actions that are likely to result in the adverse modification or destruction of proposed critical habitat. Aside from the protection that may be provided under section 7, the Act does not provide other forms of protection to lands designated as critical habitat.

Section 7(a)(2) of the Act requires Federal agencies to consult with the Service to ensure that any action they carry out, authorize, or fund does not jeopardize the continued existence of a federally listed species or destroy or adversely modify designated critical habitat. Our implementing regulations (50 CFR part 402) define "jeopardize the continuing existence of" (a species) and "destruction or adverse modification of" (critical habitat) in very similar terms. To jeopardize the continuing existence of a species means to engage in an action "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species by reducing the reproduction, numbers, or distribution

of that species." Destruction or adverse modification of critical habitat means a "direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species in the wild." Both definitions describe an action that would result in an appreciable detrimental effect to both the survival and recovery of a listed species.

A critical habitat designation for habitat currently occupied by these species would usually result in the same outcome under section 7 consultation as if the critical habitat had not been designated because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy for these species. However, there may be a few instances where section 7 consultation would be triggered only if critical habitat is designated, such as areas where the primary constituent elements of critical habitat are present but adequate surveys have not yet been conducted to find any of the nine invertebrates. Because the nine species are small, inconspicuous, and reclusive, and their population levels are low, surveys may have been inadequate to detect them based on insufficient number of surveys, insufficient effort in surveying, inappropriate climatic conditions for surveying, or other factors. It is common that no individuals are seen in surveys of caves where they are known to be present.

Designation of critical habitat can help focus conservation activities for a listed species by identifying areas that contain the physical and biological features essential for the conservation of that species. Designation of critical habitat alerts the public as well as land-managing agencies to the importance of these areas.

We find that critical habitat designation is prudent for the nine invertebrates due to the increased benefits to the species described above. We find that these benefits are not outweighed by potential increased threats of designating critical habitat.

The Final Listing Priority Guidance for FY 2000 (64 FR 57114) states that we will undertake critical habitat determinations and designations during FY 2000 as allowed by our funding allocation for that year. As explained in detail in the Listing Priority Guidance, our listing budget is currently insufficient to allow us to immediately complete all of the listing actions required by the Act. Listing these nine invertebrate species without designation of critical habitat will allow us to concentrate our limited resources on higher-priority listing actions, while

allowing us to invoke protections needed for the conservation of the nine invertebrates without further delay. We will propose designation of critical habitat in the future at such time when our available resources and priorities allow.

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 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 consultation as described in the preceding paragraphs include operations at Camp Bullis Military Reservation; Environmental Protection Agency authorization, registration, and regulation of pesticides

and of discharges under the Clean Water Act (33 U.S.C. 1344 *et seq.*) such as Construction General Permits and any applicable National Pollution Discharge and Elimination System permits; 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; 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 the 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 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 hardship exemption permits.

To obtain a copy of regulations regarding listed wildlife or to ask about prohibitions and permits, contact the Legal Instruments Examiner, U.S. Fish and Wildlife Service, Division of Endangered Species, P. O. Box 1306, Albuquerque, NM 87103-1306 (telephone 505/248-6920; facsimile 505/248-6788).

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 are destroyed. Protection of the ecosystems that support the nine invertebrates requires 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 nonnative species such as fire ants; maintaining of a healthy ecosystem surrounding the karst features; and other actions as deemed necessary.

Protecting the karst features inhabited by the nine invertebrates entails protecting sufficient natural 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.

Water quality is also an important factor in the 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 nonnative species (such as fire ants) that may compete with and/or prey upon the listed species and other karst fauna (Service 1994). Soil disturbance, introduction of nursery plants and sod containing fire ants, dumping of garbage (a potential food source), and installation of electrical equipment (fire ants appear to be attracted to electrical fields) 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.

Veni 1994(a) 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 (see map 1). The five zones reflect the likelihood of finding a karst feature that will provide habitat for endemic invertebrates as follows:

Zone 1: Areas known to contain one or more of the nine invertebrates;

Zone 2: Areas having a high probability of suitable habitat for the invertebrates;

Zone 3: Areas that probably do not contain the invertebrates;

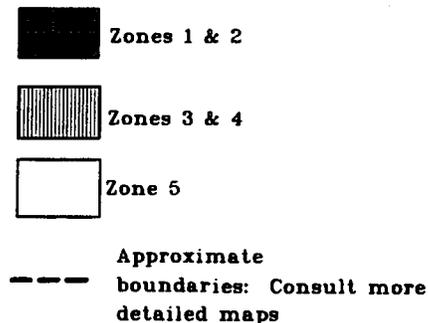
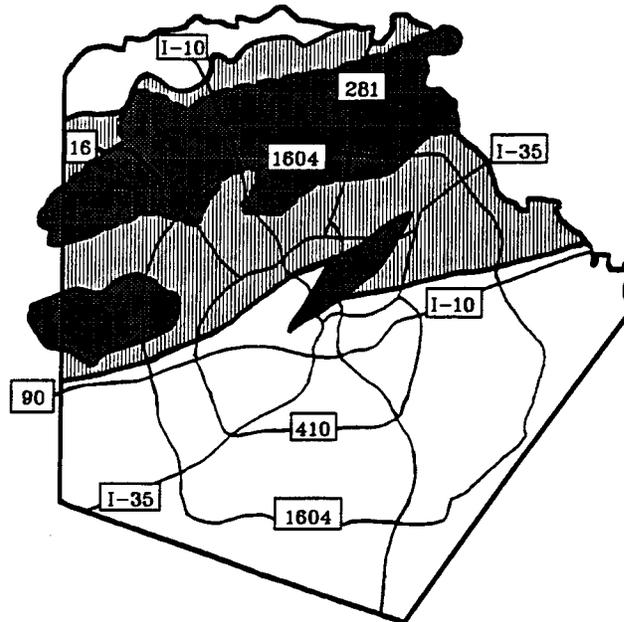
Zone 4: Areas that require further research but are generally equivalent to zone 3, although they may include sections that could be classified as zone 2 or zone 5; and

Zone 5: Areas that do not contain the invertebrates.

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.

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Map 1
Bexar County, Texas
Karst Zones



The likelihood that activities in zones 1–4 will result in take of listed invertebrates is related to the likelihood of species occurrence, which in turn is related to the likelihood of karst features being present and may require specialized knowledge and familiarity with caves, geology of karst areas, and local geology to determine. The following paragraphs outline steps suggested to avoid the possibility of taking karst invertebrates for properties that lie entirely or partially within zones 1, 2, 3, or 4. If a property is in zone 5,

then no precautions to avoid taking these species should be necessary.

In zone 1 or 2, a survey by a qualified geologist or geohydrologist to search for karst features is recommended. In zones 3 and 4, where the presence of karst features is possible, but less likely, we recommend that landowners visually inspect their property for obvious karst features, noticeable sinks, or caves. If the inspection reveals no karst features, and no subterranean voids are encountered during subsequent activities, then no further precautions

should be necessary. However, if an inspection reveals caves, noticeable sinks, or karst features on the property, and/or caves, karst features, or subterranean voids are discovered during the course of any activity carried out on the property, the features should be examined by a qualified biologist, who has a U.S. Fish and Wildlife Service section 10(a)(1)(A) scientific permit, for the presence of the listed karst invertebrates. If karst invertebrates are found, contact us for additional advice and information on how to avoid

taking the species or, if taking cannot be avoided, the process for obtaining incidental take authorization (see **ADDRESSES**).

If property is adjacent to a known occupied cave and within geohydrologically sensitive zones of influence on that cave, then activities discussed below could lead to take of species on that adjacent property. If you are in or adjacent to zone 1 karst, consultation with us is advisable to determine if you are adjacent to a known occupied cave or within geohydrologically sensitive zones of influence on that cave.

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 the life histories 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 must only be done by qualified individuals who are permitted by the Fish and Wildlife Service to conduct such surveys.

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. This may include, but is not limited to, such activities 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; removal or disturbance of native surface vegetation; increasing impervious cover within the surface or subsurface drainage areas of the cave or karst feature; and 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, or otherwise negatively altering the movement of nutrients into the cave or karst feature;

(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 or that affect surface plant and animal communities that support karst ecosystems;

(5) Pesticide or fertilizer application in or near karst features containing the nine invertebrates or areas that drain into these karst features or that affect surface plant and animal communities that support karst ecosystems. Careful use of pesticides in the vicinity of karst features may be necessary in some instances to control nonnative 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; and

(7) Activities that attract or increase access for fire ants, cockroaches, or other invasive predators or competitors to caves or karst features (for example, dumping of garbage in or around caves or karst features).

We believe that, based on the best available information, the following actions will not result in take, provided such activities do not result in any of the situations described above:

- (1) Construction activities in non-karstic areas;
- (2) Maintenance of existing roads (this does not include widening);
- (3) Recreational activities on the surface, including camping, hiking, and hunting; and,
- (4) Chemical-free maintenance of established lawns and other landscaping features, including mowing, pruning, seeding, removing dead trees, and planting trees and shrubs that are free of fire ants, particularly using native plant species.

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 (following Service-recommended methods); construction/disturbance setbacks from caves; and avoidance of the use of chemical pesticides or fertilizers, surface topography alteration, and trenching within specific areas.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*)

This rule does not contain new or revised information collection for which Office of Management and Budget approval is required under the Paperwork Reduction Act. Information collections associated with Habitat Conservation Plans (HCP) is covered by an existing OMB approval, and is assigned OMB Control Number 1018–0094. The Service may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We determined that we do not need to prepare Environmental Assessments and Environmental Impact Statements, as defined under the authority of the National Environmental Policy Act of 1969, 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).

References Cited

A complete list of references we cited in this rule is available upon request from the Field Supervisor, U.S. Fish and Wildlife Service (see **ADDRESSES** section).

Author

The primary author of this final rule is Christina Longacre, 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.

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended 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. Section 17.11(h) is amended by adding the following to the List of Endangered and Threatened Wildlife in alphabetical order under “ARACHNIDS” and “INSECTS” to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *
(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Common name	Scientific name					
* * *	* * *	* * *	* * *	* * *	* * *	* * *
INSECTS						
Beetle, [no common name]	<i>Rhadine exilis</i>	U.S.A. (TX)	E	706	NA	NA
Beetle, [no common name]	<i>Rhadine infernalis</i>	U.S.A. (TX)	E	706	NA	NA
Beetle, Helotes mold	<i>Batrisodes venyivi</i>	U.S.A. (TX)	E	706	NA	NA
ARACHNIDS.						
Harvestman, Robber Baron Cave.	<i>Texella cokendolpheri</i>	U.S.A. (TX)	E	706	NA	NA
Spider, Government Canyon cave.	<i>Neoleptoneta microps</i>	U.S.A. (TX)	E	706	NA	NA
Spider, [no common name]	<i>Cicurina venii</i>	U.S.A. (TX)	E	706	NA	NA
Spider, Madla's cave	<i>Cicurina madla</i>	U.S.A. (TX)	E	706	NA	NA
Spider, Robber Baron cave	<i>Cicurina baronia</i>	U.S.A. (TX)	E	706	NA	NA
Spider, vesper cave	<i>Cicurina vespera</i>	U.S.A. (TX)	E	706	NA	NA
* * *	* * *	* * *	* * *	* * *	* * *	* * *

Dated: December 19, 2000.
Jamie Rappaport Clark,
 Director, Fish and Wildlife Service.
 [FR Doc. 00–32809 Filed 12–22–00; 8:45 am]
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