first-round 2015 NUSA allowance allocations that will be made to new units in that state, assuming there are no corrections to the data, and (3) the quantity of allowances that would remain in the 2015 NUSA for use in second-round allocations to new units (or ultimately for allocation to existing units), again assuming there are no corrections to the data.

Objections should be strictly limited to the data and calculations upon which the NUSA allowance allocations are based and should be emailed to the address identified in **ADDRESSES**. Objections must include: (1) Precise identification of the specific data and/or calculations the commenter believes are inaccurate, (2) new proposed data and/or calculations upon which the commenter believes EPA should rely instead to determine allowance allocations, and (3) the reasons why EPA should rely on the commenter's proposed data and/or calculations and not the data referenced in this notice.

**Authority:** 40 CFR 97.411(b), 97.511(b), 97.611(b), and 97.711(b).

Dated: May 22, 2015.

**Reid P. Harvey,**

*Director, Clean Air Markets Division.*

[FR Doc. 2015–13031 Filed 5–29–15; 8:45 am]

**BILLING CODE 6560–50–P**

## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

### 50 CFR Part 17

**[Docket No. FWS–R2–ES–2015–0030; FF09E42000 156 FXES11130900000]**

## Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To Remove the Bone Cave Harvestman (Texella reyesi) From the List of Endangered and Threatened Wildlife

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

**ACTION:** Notice of 90-day petition finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to remove the Bone Cave harvestman (*Texella reyesi*) from the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition does not present substantial scientific or commercial information indicating that the petitioned action may be warranted. Therefore, we are not initiating a status review in response to this petition. However, we ask the public to submit to us any new information that becomes available concerning the status of, or threats to, the Bone Cave harvestman or its habitat at any time.

**DATES:** The finding announced in this document was made on June 1, 2015.

**ADDRESSES:** Copies of the petition are available in the docket associated with this notice at *http://www.regulations.gov* and at *http://fws.gov/southwest/es/austintexas/* or upon request from the Field Supervisor of the Austin Ecological Services Field Office, 10711 Burnet Road, Suite 200, Austin, TX 78758.

**FOR FURTHER INFORMATION CONTACT:** Adam Zerrenner, Field Supervisor, Austin Ecological Services Field Office, 10711 Burnet Road, Suite 200, Austin, TX 78758; by telephone at 512–490–0057; or by facsimile at 512–490–0974. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800–877–8339.

**SUPPLEMENTARY INFORMATION:**

### Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is ''that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted'' (50 CFR 424.14(b)(1)). If we find that substantial scientific or commercial information was presented, we are required to promptly conduct a species status review, which we subsequently summarize in a 12-month finding.

*Petition History*

On June 2, 2014, we received a petition from John Yearwood, Kathryn Heidemann, Charles and Cheryl Shell, the Walter Sidney Shell Management Trust, the American Stewards of Liberty, and Steven W. Carothers requesting that we remove the endangered Bone Cave harvestman from the Federal lists of endangered and threatened species. The petition clearly identified itself as a petition and included the requisite identification information for the petitioners, as required in 50 CFR 424.14(a). This finding addresses the petition.

*Previous Federal Actions*

The Bone Cave harvestman was originally listed as endangered on September 16, 1988 (53 FR 36029). In an August 18, 1993, **Federal Register** document (58 FR 43818), the Service gave the Bone Cave harvestman protection under the Act as a separate species. It had previously been listed as endangered as a part of the Bee Creek Cave harvestman (*Texella reddelli*), which was subsequently re-classified into two species, and this final rule set forth technical corrections to ensure that the species continued to receive protection under the Act. On March 14, 1994, we published a 90-day finding (59 FR 11755) on a petition to delist the Bone Cave harvestman in which we found that the petition did not present substantial scientific or commercial information indicating that the petitioned action may have been warranted. A draft recovery plan was available for public review and comment on June 7, 1993, and a final recovery plan was published on August 25, 1994 (Service 1994). On December 4, 2009, we completed a 5-year review of the Bone Cave harvestman, which recommended that the species remain listed as endangered (Service 2009).

*Species Information*

For information on the biology and life history of the Bone Cave harvestman, see the final rule listing this species (53 FR 36029), the Endangered Karst Invertebrates Recovery Plan for Travis and Williamson Counties (Service 1994), and the 5-year Status Review for the Bone Cave Harvestman (Service 2009), all posted at *http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=J009*. For information on preserve design and management for karst invertebrate species conservation, see the Karst Preserve Design Recommendations (Service 2012) and the Karst Preserve Management and Monitoring Recommendations (Service 2014) posted at *http://www.fws.gov/southwest/es/AustinTexas/ESA_Sp_KarstInverts.html.*

**Evaluation of Information for This Finding**

Under section 3(16) of the Act, we may consider for listing any species, including subspecies, of fish, or wildlife, or plants, and any distinct population segment (DPS) of any species of vertebrate fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Such entities are listed under the Act if we determine that they meet the definition of an endangered or threatened species.

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the lists of endangered and threatened species. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

We must consider these same five factors in delisting a species. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened for the following reasons:

(1) The species is extinct;

(2) the species is recovered; or

(3) the original data for classification were in error. According to 50 CFR 424.11(d)(3), a species may be delisted when subsequent investigations ''show that the best scientific and commercial data available when the species was listed, or the interpretation of such data, were in error.''

In making this 90-day finding, we evaluated whether the petition presented substantial information indicating that the petitioned action (delisting) may be warranted.

The petition did not assert that the Bone Cave harvestman is extinct, nor do we have information in our files indicating that the species is extinct.

The petition asserted that new information indicates that the original data, or our interpretation of the data, used in the listing of this species were in error. The petition also states that significant conservation has been put in place since the species was listed, such that the species is recovered.

In 2009, we conducted a 5-year status review of the Bone Cave harvestman (Service 2009). The purpose of a 5-year status review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review). Based on a 5-year review, we recommend whether the species should be removed from the lists of endangered and threatened species, be changed in status from endangered to threatened, or be changed in status from threatened to endangered. As part of the 2009 Bone Cave harvestman review, we evaluated whether the species had met the recovery criteria laid out in the species' recovery plan (Service 1994, pp. 86–89).

Our recovery handbook (Service 2010) points out that recovery criteria should address the biodiversity principles of resiliency, redundancy, and representation (Schaffer and Stein 2000).

Resiliency is defined as the ability of a species to persist through severe hardships or stochastic events (Tear *et al.* 2005, p. 841). A variety of factors contribute to a species' resiliency. These can include how sensitive the species is to disturbances or stressors in its environment, how often they reproduce and how many young they have, and their specific habitat needs. A species' resiliency can also be affected by the resiliency of individual populations and the number of populations and their distribution across the landscape. Protecting multiple populations and variation of a species across its range may contribute to its resiliency, especially if some populations or habitats are more susceptible or better adapted to certain threats than others (Service and NOAA 2011, p. 76994). The ability of individuals from populations to disperse and recolonize an area that has been extirpated may also influence the species' resiliency. As population size and habitat quality increase, the population's ability to persist through periodic hardships also increases. Healthy populations are more resilient and better able to withstand disturbances such as random fluctuations in birth rates (demographic stochasticity), and variation in rainfall and/or temperatures (environmental stochasticity).

Redundancy is defined as ensuring a sufficient number of populations to provide a margin of safety to reduce the risk of losing a species or certain representation (variation) within a species due to catastrophic events or other threats. Redundancy is essential for long-term viability (Shaffer and Stein 2000, pp. 307, 309–310; Groves *et al.* 2002, p. 506). This provides a margin of safety for a species to withstand catastrophic events (Service and NOAA 2011, p. 76994) by decreasing the chance of any one event affecting the entire species. Redundancy is about spreading risk and can be measured through the duplication and distribution of resilient populations across the range of the species.

Representation is defined as conserving ''some of everything'' with regard to genetic and ecological diversity to allow for future adaptation and maintenance of evolutionary potential. Representation and the adaptive capabilities (Service and NOAA 2011, p. 76994) of the Bone Cave harvestman are also important for long-term viability. Because a species' genetic makeup is shaped through natural selection by the environments it has experienced (Shaffer and Stein 2000, p. 308), populations should be protected in the array of different environments in which the invertebrate species occur as a strategy to ensure genetic representation, adaptive capability, and conservation of the species. Generally, the more representation, or diversity, the species has, the more it is capable of adapting to changes (natural or human caused) in its environment.

The recovery plan for the Bone Cave harvestman (Service 1994, pp. 86–88) identifies criteria for reclassification (from endangered to threatened), but does not include delisting criteria because we were uncertain about prospects for recovery and delisting of the species. These recovery criteria are a way of measuring our progress toward recovery. The recovery plan identifies two criteria for reclassifying the species from endangered to threatened:

(1) Three karst fauna areas (if at least three exist) within each karst fauna region in its range are protected in perpetuity. If fewer than three karst fauna areas exist within a given karst fauna region, then all karst fauna areas within that region should be protected.

(2) Criterion (1) has been maintained for at least 5 consecutive years with assurances that these areas will remain protected in perpetuity.

There are six karst fauna regions in Travis and Williamson Counties that are known to contain the Bone Cave harvestman (Service 1994, p. 33): North Williamson, Georgetown, McNeil/Round Rock, Cedar Park, Jollyville Plateau, and Central Austin. These regions are used as a way to facilitate conservation of representation and redundancy (as defined above) throughout the species' range.

For the purposes of the recovery plan, a karst fauna area ''is an area known to

support one or more locations of a listed species and is distinct in that it acts as a system that is separated from other karst fauna areas by geologic and hydrologic features and/or processes that create barriers to the movement of water, contaminants, and troglobitic fauna'' that live their entire lives underground (Service 1994, p. 76). Karst fauna areas should be far enough apart so that if a catastrophic event (for example, contamination of the water supply, flooding, disease) were to destroy one of the areas, that event would not likely destroy any other area occupied by that species (Service 1994, p. 76).

To be considered ''protected,'' a karst fauna area must be sufficiently large to maintain the integrity of the karst ecosystem on which the species depends (Service 1994, p. 87). In addition, these areas must also provide protection from threats such as red imported fire ants, habitat destruction, and contaminants.

The overall recovery strategy for the Bone Cave harvestman includes the perpetual protection and management of an adequate quantity and quality of habitat (three karst fauna areas in each karst fauna regions) that spans the species' geographic range and provides a high probability of the species' recovery and survival over the long term. Adequate quality (as discussed below) and quantity of habitat refers to both size and number of preserved karst fauna areas that are sufficient for supporting the karst invertebrates and the ecosystems upon which they depend (Service 2011, p. 16). The recovery plan criteria call for three karst fauna areas (preserves) in each karst fauna region. The size of karst fauna area preserves should be large enough to ensure resiliency as discussed above and to protect the environmental integrity of the karst ecosystems upon which the species depends. The number of karst fauna area preserves called for in the recovery criteria provides redundancy for the species. A minimal level of redundancy is essential to provide a margin of safety for the species to reduce the risk of losing the species or representation (variation) within the species from catastrophic events or other threats (Shaffer and Stein 2000 pp. 307, 309–310, Groves *et al.* 2002, p. 506). The Bone Cave harvestman has significant geographic variability across its range, and loss of a significant number of locations in part of its range could result in loss of genetic and ecological diversity. The conservation of multiple karst fauna area preserves across the Bone Cave harvestman's range should provide representation of the breadth of its genetic and ecological diversity to conserve its adaptive capabilities (Schaffer and Stein 2000, p. 308).

Adequate quality of habitat refers to (1) the condition and configuration of preserved lands with respect to the known localities for the species and (2) the ability of the species' needs to be met to sustain viable populations. Due to the uncertainty in determining population viability of the Bone Cave harvestman, the design of preserves for its protection should be based on estimates and assumptions that favor a high probability for recovery of this species and the ecosystems upon which it depends as discussed below.

The Endangered Karst Invertebrates Recovery Plan for Travis and Williamson Counties (Service 1994) calls for protecting karst fauna areas sufficiently large to maintain the integrity of the karst ecosystem on which the species depends. This focus on the ecosystem is consistent with the purpose of the Act, which includes ''to provide a means whereby the ecosystem upon which endangered species and threatened species depend may be conserved.'' Therefore, we recommend designing karst fauna area preserves to protect occupied karst feature(s) and associated mesocaverns (humanly impassable voids). For further guidance on how to provide for adequate quantity and quality of habitat at specific invertebrate locations, we have developed and refer to our Karst Preserve Design Recommendations (Service 2012).

According to our preserve design guidelines (Service 2012, p. 3–5), karst fauna area preserves should include the following: (1) Surface and subsurface drainage basins of at least one occupied cave or karst feature; (2) a minimum of 16 to 40 hectares (ha) (40 to 100 acres (ac)) of contiguous, unfragmented, undisturbed land to maintain native plant and animal communities around the feature and protect the subsurface karst community; (3) 105-meter (m) (345-feet (ft)) radius undisturbed area from each cave footprint for cave cricket foraging (cave crickets are an important source of nutrient input to the karst ecosystem) and to minimize deleterious edge effects; and (4) preserves should be free of pipelines, storage tanks, or other facilities (for example, water retention ponds) that could cause contamination.

In addition, due to the uncertainty in determining population viability and habitat requirements of the Bone Cave harvestman, the design of preserves for its protection should be based on estimates and assumptions that favor a high probability for recovery of the species and the ecosystems upon which it depends. This method follows a precautionary approach, which provides guidance to avert irreversible risk when facing uncertainty (Service 2012, p. A–1). The best available scientific information indicates that this species cannot be reintroduced into existing habitat. Life-history characteristics of this species indicate that it requires stable temperature and humidity (Barr 1968, p. 47, Mitchell 1971, p. 250) and suggest that this species cannot be reintroduced because it cannot withstand surface climatic conditions.

According to anecdotal reports provided to our field office, limited efforts to maintain karst invertebrates in a lab setting have been unsuccessful. Additionally, captive propagation techniques have not been developed for karst invertebrates and may be challenging to develop because of their specific adaptations to subterranean environment. Further, the sample size that would likely be needed to reintroduce a population into a new location cannot be obtained from existing populations due to the cryptic nature of this species and the fact that often only a few individuals are observed per cave survey. Therefore, an attempt to re-establish a population after it has been extirpated is not feasible at this time. In addition, if a preserve is later found to be insufficient to support the species due to surrounding developments being either too close or too dense, the potential for adequately conserving the site is lost.

Because the Bone Cave harvestman has a relatively long life span and low requirements for food, a decline in population size or even the complete extirpation of the population due to the influence of development or other threats may take years or even decades. Observations of this species over several years on a preserve that is too small for perpetual species preservation may not allow detection of declines that are actually occurring. If these observations are used as evidence that a preserve size was adequate, then the potential for long-term preservation of the species may be lost due to irreversible development surrounding the preserve. Therefore, preserve sizes should be established with caution and be large enough to account for the uncertainty in area requirements for a population.

According to the petition there are now more known occupied locations identified; there were 6 confirmed caves at listing, 60 confirmed caves at the time the recovery plan was drafted, and 168 confirmed caves in 2009 when the 5-year status review was completed (53 FR 36029, Service 1994, 2009). The

petition also states that more locations are likely to be found. We acknowledge there are more known locations since the time those documents were completed and the increase is likely an increase in our knowledge, not a true increase in the number of populations or range; however, species are listed under the Act based on threats and not just the number of sites or size of the range.

In addition, the petition states that 94 karst preserve areas are currently providing significant conservation. However, many of the existing protected areas referenced in the petition are too small to meet our preserve design recommendations. As part of the 2009 5-year status review of the Bone Cave harvestman, we reviewed the status of all of the known locations of the harvestman (including 83 of the 94 mentioned in the petition) to assess whether the criteria from the recovery plan to reclassify the species from endangered to threatened had been met for the Bone Cave harvestman. We considered the habitat size and condition to evaluate whether the locations could meet the preserve design recommendations (a reflection of the potential to support a resilient population) and then also looked at whether legally binding mechanisms were in place to provide protection of these sites over the long term (in perpetuity).

Of the locations known at the time of the 5-year review, 21 areas appeared to have the ability to meet the preserve design criteria. Our status review refers to 21 areas, while the petition indicates that the status review considered 28 sites. This discrepancy is because the petition considers each individual cave location, while our status review considered closely located caves to be part of the same karst fauna area. Of these 21 areas, 1 is no longer confirmed to have the species (Barker Ranch Cave No. 1), and 5 are now protected karst fauna areas (Priscilla's Well, Twin Springs, Cobbs Cavern, Karankawa, and Tooth Cave).

In addition, at most of the remaining locations (of the 21 areas) we are lacking information to confirm that they meet the preserve design criteria (such as surface and subsurface drainage basins, tract acreage, exact locations of the cave, and management activities to protect against threats, such as red imported fire ants). Also, many of these areas do not have a legally binding mechanism that ensures perpetual protection and management. Hence, we are unsure whether those areas have adequate undeveloped acreage, management, or protection mechanisms to ensure the long-term protection and survival of the Bone Cave harvestman.

Of the five protected karst fauna areas that meet preserve design criteria, four occur in the North Williamson County Karst Fauna Region and one occurs in the Jollyville Plateau Karst Fauna Region. However, this species occurs in six karst fauna regions, and four of these have no protected karst fauna areas that are confirmed to meet preserve design recommendations. Therefore, the best available information indicates that the criteria for reclassification from endangered to threatened for this species have not been met, nor has adequate representation and redundancy (three karst fauna areas in each karst fauna region) been protected throughout the species' range, leaving the species vulnerable to existing threats including habitat destruction.

The petition asserts that four additional locations are known since the time of the 5-year review. However, the petition does not provide adequate information that would support whether these four additional locations are in a condition to meet preserve design recommendations. Based on information in our files, we are aware of one additional cave since the 5-year review that may meet preserve design recommendations in the North Williamson Karst Fauna Region; however, it is privately owned, and we are unsure about the property acreage and if the site receives any type of protection or management. Regardless, the amount of protected karst fauna area still falls short of the criteria for reclassification from endangered to threatened.

Further, we reviewed 83 of the 94 caves identified in the petition as receiving some level of protection in the 5-year review. Two of the caves that we did not review (Cobbs Cavern and Whitney West Cave) are now in confirmed karst fauna areas mentioned above (Cobbs Cavern and Twin Springs), one (Pond Party Pit) is in the Beard Ranch Cave area discussed in the 5-year review, and we have no locality information or taxonomic verifications for the remaining caves and this information was not provided in the petition.

The petition also asserts that threats to the species are not as severe as originally thought. We evaluate that information, below, in respect to the five listing factors.

*Factor A: The present or threatened destruction, modification, or curtailment of the species' habitat or range.* In the 1988 listing rule (53 FR 36029), we stated that the primary threat to the Bone Cave harvestman was the potential loss of habitat due to development activities, which could result in filling in or collapsing of caves; alteration of drainage patterns; increase in flow of sediment, pesticides, fertilizers, and urban run-off into caves; and increase in human visitation and vandalism.

We also considered additional information on threats to the species when we developed the recovery plan for the species (Service 1994, pp. 59–65) and when we conducted the 5-year status review of the species (Service 2009, p. 2), in which we concluded that no change in the species' status (that is, reclassification to threatened or delisting) was warranted. We also reviewed available threat information in our files and in a 1993 petition when we made our negative 90-day finding on that petition to de-list (59 FR 11755).

The current petition asserts that ''Development activities on the surface may not result in the significant loss or degradation of habitat for *T. reyesi* as originally thought'' and suggests that evidence of this is the species persistence in caves surrounded by developed areas. Examples given in the petition are Inner Space Caverns, Sun City caves, Weldon Cave, Three-Mile Cave, and Four-Mile Cave. However, the observation of the species in these locations does not mean their populations at these locations are thriving or can withstand the long-term impacts from development activities that are expected to occur to karst invertebrate populations in developed areas as discussed in the listing rule, recovery plan, and 5-year status review for the Bone Cave harvestman.

Bone Cave harvestman populations may be declining or threatened even though they are still observed at a specific site. Information adequate to detect population trends for this species is not readily available and was not provided in the petition. This species has life-history strategies that include characteristics such as low metabolic and reproductive rates, long life spans, and inherently low sample sizes, which make it difficult to detect population response to possible impacts (Poulson and White 1969, p. 977, Howarth 1983, p. 374). We indicated in the 1994 90-day petition finding (59 FR 11755) that more time was needed to detect if the species was declining; however, while more time has passed, we are still lacking adequate data to conduct a trend analysis at most locations, given that it can take decades to detect population trends due to small sample sizes, the difficulty surveying for the species, and their long life spans.

In addition, some of the threats from development are due to the increased probability of chance events occurring in the future, such as a contaminant event like a pipeline leak, which exists because more contamination sources are in the vicinity of species' locations due to development.

The petition states that several Sun City caves are examples of areas where the species can persist in developed areas. However, the petition failed to provide data adequate to assess trends in the karst invertebrate populations since the development occurred. In addition, we worked with the Sun City developers when they designed the project to develop strategies that we believed at the time would avoid or minimize the possibility of ''take'' to listed karst species. While we now believe that most of the Sun City cave preserves are too small to meet our preserve design recommendations for recovery and long-term survival (Service 2012), we expect that the strategies and measures put in place likely have reduced the rate of impacts to the species.

The commercial cave known as Inner Space Caverns is another example the petition provided where the Bone Cave harvestman continues to persist in a developed area. Although the Bone Cave harvestman may be present at Inner Space Caverns, this does not ensure their populations are robust and secure; they may still be declining, and are at risk due to competition with surface-dwelling invertebrates and other threats associated with development such as the potential for contamination. This cave has an overgrowth of blue-green algae growing near cave lights where the petition states that this species has been observed. This type of algae is known as ''lampenflora'' and favors surface-dwelling invertebrate species that can out-compete karst invertebrate species (Mulec and Kosi 2009, p. 109, Culver 1986, p. 438), such as the Bone Cave harvestman. The petition failed to provide any data adequate to assess trends in the karst invertebrate population in relation to the time (duration and frequency) that they have been exposed to the artificial lighting. Additionally, part of the cave footprint occurs under a major interstate highway and train tracks, which both present a threat of a contaminant spill that could impact the species in the future.

Weldon Cave was another example in the petition of a cave occupied by the Bone Cave harvestman within a developed area. Based on the best available information in our files this cave is surrounded by undeveloped open space. Other than a small portion of the subsurface drainage basin potentially being impacted by a school campus, this cave appears to meet our preserve design recommendations but is not within a developed area, as asserted in the petition. Three-Mile Cave and Four-Mile Cave were also provided in the petition as examples of developed caves wherein the Bone Cave harvestman is known to occur. According to the petition, surveys conducted by SWCA in 2008 and 2009 documented the Bone Cave harvestman at these locations. However, detailed survey data were not provided by the petitioners and were not in the SWCA 2009 ''Annual Report of Activities Involving Endangered Karst Invertebrates under Threatened and Endangered Species Permit TE800611–2.''

The petition also states that, since the Bone Cave harvestman uses mesocaverns, it is protected from surface development activities because mesocaverns are ''geologically protected.'' We are unclear why the petition contends that mesocaverns are protected because mesocaverns are subject to rapid permeation of surface water (Cowan *et al.* 2007, p. 160), and karst landscapes (including mesocaverns) are particularly susceptible to groundwater contamination because water penetrates rapidly through bedrock conduits providing little or no filtration (White 1988, p. 149).

One of the major threats to the Bone Cave harvestman is habitat loss due to increasing urbanization. The Bone Cave harvestman is a troglobite, meaning it lives its entire life underground. Karst ecosystems are heavily reliant on surface plant and animal communities for nutrient input.

Caves in central Texas that are occupied by federally listed karst invertebrates, such as the Bone Cave harvestman, receive energy (or nutrients) primarily from (1) detritus (decomposing organic matter) that falls or is washed into the caves and (2) energy brought into the caves by cave crickets (*Ceuthophilus* spp.) (Barr 1968, p. 48; Reddell 1993, p. 2; Lavoie *et al.* 2007, p. 114; Taylor 2003, p. 3, 2004, p. 2, 2005, p. 97), which are found in most Texas caves (Reddell 1966, p. 33). Cave crickets forage widely in the surface habitat surrounding the cave. Karst invertebrates feed on the cave cricket eggs (Mitchell 1971, p. 251), feces (Barr 1968, pp. 51–53, Poulson *et al.* 1995, p. 226), and directly on the crickets themselves (Elliott 1994, p. 15).

Development within urbanized areas can destroy or alter the surface plant and animal communities on which karst invertebrates depend. As development increases within the cave crickets' foraging area, there may be dramatic shifts in the available food supply within the cave (Taylor *et al.* 2007, p. 7). The leaf litter and other decomposing material that make up most of the detritus from the surface plant and animal community may also be reduced or altered, resulting in a reduction of nutrient and energy flow into the cave. A study by Taylor *et al.* (2007) compared caves in urbanized areas that were impacted by development to those in natural areas and found that, even though a small area within a largely urbanized ecosystem may support a cave community where karst invertebrates are occasionally seen, these populations are significantly lower than those found in caves in more natural, less developed ecosystems, most likely as a result of reduced nutrient input. Another study at Lakeline Cave in Travis County, Texas, was conducted in association with the issuance of a habitat conservation plan and accompanying section 10(a)(1)(B) permit issued for Lakeline Mall. That study is based on data collected from 1992 through 2011, and it documented a significant decline during that 20-year timeframe in another endangered karst invertebrate, *Rhadine persephone,* and cave crickets as development increased (ZARA 2012, pp. 8, 10, 12). Further, at Lakeline Mall Cave, no more than three Bone Cave harvestmen have been observed during any single survey (ZARA 2012, p. 11). Also, no Bone Cave harvestmen were seen during 6 years (1993, 1999, 2001, 2006, 2009, and 2010) and 12 surveys in Lakeline Mall Cave (ZARA 2012, p. 11).

Available information in our files supports our projection in the 1988 listing rule that development and human population would continue to increase within the range of the species. The population of the City of Austin grew from 251,808 people in 1970 to 735,088 people in 2007 (City of Austin 2007). This represents a 192-percent increase over the 37-year period. Population projections from the Texas State Data Center (2012, pp. 496–497), estimate that Travis County will increase 94 percent in population from 1,024,266 in 2010, to 1,990,820 in 2050. The Texas State Data Center also estimates an increase in human population in Williamson County from 422,679 in 2010, to 2,015,294 in 2050 representing a 377-percent increase over a 40-year timeframe. All human population projections from the Texas State Data Center presented here are under a high-growth scenario, which

assumes that migration rates from 2000 to 2010 will continue through 2050 (Texas State Data Center and the Office of the State Demographer 2012, p. 9). Urbanization and human population growth and development were identified as a threat in the original 1988 listing rule and continue to represent a threat to the species.

*Factor B: Overutilization for commercial, recreational, scientific, or educational purposes.* In the 1988 listing rule for the Bone Cave harvestman, we did not identify any threats under this factor. Likewise, the petition and our review of the information in our files did not identify any threats under this factor.

*Factor C: Disease or predation.* In the 1988 listing rule, we stated that increased human population increases the threat of predation by and competition with exotic (non-native) and native surface-dwelling species, such as sow bugs, cockroaches, and red imported fire ants. The petition states that ''Recent studies suggest that fire ants may not present as significant or as lasting of a threat to the species as originally believed.'' The information cited regarding red imported fire ants is identified in the petition as an article by Porter and Savignano (1990), which we previously considered in our finding on the 1993 petition, and another study by Morrison (2002). The petition states that ''a subsequent study by Morrison in 2002 revisited the Porter and Savignano (1990) study area 12 years later and replicated their study.

Morrison (2002, pp. 2341, 2343–2344) found that arthropod communities had rebounded to pre-RIFA [red imported fire ant]-invasion levels and that all measures of native ant and other arthropod species' diversity had returned to pre-invasion levels. Red imported fire ants were still the most abundant ant species, but not nearly as abundant as during the initial red imported fire ants infestation. He concluded that the impacts to arthropod communities by red imported fire ants might be greatest during and shortly after the initial invasion, but long-term impacts are likely not as significant as once believed. However, we note that Morrison (2002, p. 2342) also states that ''it is quite likely that red imported fire ants did contribute directly or indirectly to the disappearance or reduction in numbers of species'' and that their study ''should not be interpreted as an indication that detrimental effects of invasive ants will simply disappear with time.'' In addition, this is not ''new information'' as we have already reviewed these articles and considered the information they provided in the Bexar County Karst Invertebrates Recovery Plan (Service 2011, p. 12) and in our Karst Preserve Management and Monitoring Recommendations (Service 2014, p. 3), which is applicable here as all central Texas endangered karst invertebrates have similar life-history characteristics, and one of the Bexar County invertebrates is in the same genus (*Texella*) as the Bone Cave harvestman. In addition, red imported fire ants have been found within and near many caves in central Texas and have been observed feeding on dead troglobites, cave crickets, and other species within caves (Elliott 1992, p. 13, 1994, p. 15, 2000, pp. 668, 768; Reddell 1993, p. 10; Taylor *et al.* 2003, p. 3).

*Factor D: The inadequacy of existing regulatory mechanisms.* The 1988 listing rule states that ''there are currently no laws that protect any of these species or that indirectly address protection of their habitat.''

While the petition did discuss some new ordinances that appear to have been put in place since the time of listing, we do not have enough information to indicate whether or not these State and local ordinances provide enough protection from all threats to the Bone Cave harvestman.

The petition states that ''the regulatory landscape includes a number of measures contributing to the conservation of the species outside of the protections afforded by the Endangered Species Act of 1973, as amended.'' For example, they say that protections offered though the City of Austin are adequate to protect the species in Austin, Texas. In the course of our work, we have reviewed these regulations and understand that most caves that are defined by the City of Austin's Environmental Criteria Manual as a cave are provided a 46- to 91-m (150- to 300-ft) set-back area (City of Austin 2014, p. 13–3). However, a 46-m (150-ft) or 91-m (300-ft) set-back is not adequate to meet our preserve design criteria, does not protect the cave cricket foraging area, and potentially does not include the surface and subsurface drainage basins. Further, it is not applicable across the range of the Bone Cave harvestman because the species occurs in Travis and Williamson Counties and the City of Austin does not cover all of those counties.

The petition states that the City of Georgetown Water Quality Management Plan for the Georgetown salamander will offer protection to the Bone Cave harvestman. They state that this plan encourages the use of best management practices to protect water quality at Georgetown salamander locations. However, there are few Bone Cave harvestman locations that occur near Georgetown salamander locations, so any protection offered to the harvestman would be limited. Further, it is not clear from the petition whether this mechanism is voluntary or if it is regulatory or if it is currently in effect. In addition, the petition did not provide enough detail for us to evaluate all benefits this plan would provide to the Bone Cave harvestman, and it appears that participation in this plan is at least in part voluntary.

The petition states that the Texas Commission on Environmental Quality (TCEQ) Edwards Rules provide protection to recharge features on the Edwards Plateau and that this provides protection from pollution to the Bone Cave harvestman. In a discussion of Factor D in the Bexar County Karst Invertebrates Recovery Plan (Service 2011, p. 13), we state that ''the TCEQ water quality regulations do not provide much protection to the species' habitat (see 65 FR 81419–81433 for more information). For example, while some TCEQ practices provide protection from water quality impacts, others, such as sealing cave entrances for water quality reasons, can harm karst invertebrates.'' Sealing cave entrances can be harmful by blocking off water (leading to drying) and nutrient input to the karst invertebrate habitat. In addition, not all of the caves and mesocaverns that the Bone Cave harvestman occurs in are considered recharge features and, therefore, would not receive some of the water quality protection measures. Also, not all locations of the Bone Cave harvestman are under the jurisdiction of the Edwards Rules.

*Factor E: Other natural or manmade factors affecting the continued existence of the species.* In the 1988 listing rule, we stated that this species is extremely vulnerable to losses because of its severely limited range and because of its naturally limited ability to colonize new habitats. We also stated that the very small size of the species habitat units and the fragile nature of cave ecosystems make them vulnerable to even isolated acts of vandalism. The petition states, ''Inner Space Cavern demonstrates that the species can persist in caves with frequent human visitation and may be more tolerant of related habitat modification than originally believed.'' They also provide Three-Mile Cave and Four-Mile Cave as examples of caves that have experienced human use yet the species persists. The petition contends that, since the Bone Cave harvestman exists in Inner Space Caverns, human visitation is not a threat. The petition also states that Three-mile and Four-mile Cave had

graffiti from the 1890s, 1920s, and 1950s. Yet, no detailed information was provided to demonstrate if these caves experienced continued human use. The petition also indicates that Four-Mile Cave was inaccessible to humans prior to 2009 due to boulders blocking the entrance. In addition, the petition provided no trend analysis for these caves. As stated earlier, the observation of the species in these locations does not mean the populations at these locations have not been impacted (in a way that is short of extirpation) or can withstand the long-term impacts that are expected to occur to karst invertebrate populations in developed areas or from human visitation.

In the species 5-year status review (Service 2009, p. 18) we said, ''Although climate change was not identified as a threat to *T. reyesi* in the original listing document or in the recovery plan, the species' dependence on stable temperatures and humidity levels opens the possibility of climatic change impacting this species. Therefore, while it appears reasonable to assume that *T. reyesi* may be affected, we lack sufficient certainty to know how climate change will affect this species.''

The petitioners state that ''the use of small voids or 'mesocaverns' within the geologic formations known to support occupied caves mitigates the potential threat of climate change.'' We acknowledge that mesocaverns may provide some protection from fluctuations in temperature and humidity that may be induced by climate change. However, the presence of mesocaverns alone will likely not be sufficient to ameliorate all of the effects that climate change may pose to this species. Karst invertebrates depend on stable temperatures and high humidity (Barr 1968, p. 47, Mitchell 1971, p. 250). The temperatures in caves are typically the average annual temperature of the surface habitat and vary much less than the surface environment (Howarth 1983, p. 372, Dunlap 1995, p. 76). If average surface temperatures increase, this could result in increased in-cave temperatures, which could affect the Bone Cave harvestman.

Increased and/or more severe storms as well as prolonged periods of high temperatures and drought between rainfall events associated with predicted climate change effects may also impact the cave environment. Changes in rainfall regimes may affect the harvestman in several ways, including directly either through flooding or indirectly by modifying their habitat or nutrient availability. Changes in rainfall regimes could (1) alter the moisture levels within the caves leaving them drier between floods, which could lead to desiccation of the Bone Cave harvestman and (2) affect the amount and timing of nutrients washed into a cave, potentially resulting in longer periods between nutrient input. These changes to drier and less suitable conditions in the caves will likely cause the Bone Cave harvestman to retreat farther into mesocaverns and away from nutrients that are thought to be located in larger cave passages (Howarth 1987, pp. 5–7), causing individuals to spend more energy trying to acquire nutrients in an already stressed environment. In addition, caves in arid regions have been shown to have smaller invertebrate populations and diversity due to less moisture and nutrient availability (George Veni, National Cave and Karst Research Institute, pers. comm. 2010). Since the Bone Cave harvestman is also sensitive to these habitat parameters, it is reasonable to predict that climate change could affect its populations in a similar manner despite the presence of mesocaverns.

Further, stochastic (random) events from either environmental factors (for example, severe weather) or demographic factors (which come from the chance events of birth and death of individuals) exacerbate threats to the species because of its small population size (Melbourne and Hastings 2008, p. 100). The risk of extinction for any species is known to be highly inversely correlated with population size (Pimm *et al.* 1988, pp. 774–775, O'Grady *et al.* 2004, pp. 516, 518). In other words, the smaller the population the greater the overall risk of extinction. Therefore, threats to the Bone Cave harvestman are exacerbated by its small population size, which makes it more vulnerable to existing threats.

## Finding

We have reviewed the petition and also evaluated readily available, related information in our files. The petitioners have based their assessment that the species can thrive in developed areas on information that we have already reviewed (except in 4 caves discovered since the 5-year status review and 7 for which we lack locality information or taxonomic verifications) while working on previous documents (Service 2009, 2012) or on observations that lack a large enough sample size to produce population trend information for the Bone Cave harvestman. The petition provided no trend analysis to indicate that this species can withstand the threats associated with development or climate change over the long term. Based on our review and evaluation, we find that the petition does not present substantial scientific or commercial information indicating that delisting of the Bone Cave harvestman may be warranted due to recovery, extinction, or error in the original scientific data at the time the species was classified or in our interpretation of the data. However, much progress has been made toward recovery in the North Williamson and Jollyville Plateau Karst Fauna Regions. We encourage interested parties to continue to gather data and implement conservation actions across the range of the Bone Cave harvestman that will further assist with the conservation of this species. If you wish to provide information regarding the Bone Cave harvestman, you may submit your information or materials to the Field Supervisor, Austin Ecological Services Field Office (see **ADDRESSES**) at any time.

## References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Austin Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

## Authors

The primary authors of this notice are staff members of the Austin Ecological Services Office.

## Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: May 21, 2015.

**Gary Frazer,**

*Acting Director, U.S. Fish and Wildlife Service.*

[FR Doc. 2015–13136 Filed 5–29–15; 8:45 am]

**BILLING CODE 4310–55–P**