

³Partially funded with FY 2010 funds and FY 2011 funds.

⁴Funded with FY 2010 funds.

⁵Funded with FY 2011 funds.

We have endeavored to make our listing actions as efficient and timely as possible, given the requirements of the relevant law and regulations, and constraints relating to workload and personnel. We are continually considering ways to streamline processes or achieve economies of scale, such as by batching related actions together. Given our limited budget for implementing section 4 of the Act, these actions described above collectively constitute expeditious progress.

The Mt. Charleston blue butterfly will be added to the list of candidate species upon publication of this 12-month finding. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

We intend that any proposed listing action for the Mt. Charleston blue butterfly will be as accurate as possible. Therefore, we will continue to accept additional information and comments from all concerned governmental agencies, the scientific community, industry, or any other interested party concerning this finding.

References Cited

A complete list of all references cited is available on request from the Nevada Fish and Wildlife Office (*see ADDRESSES*).

Authors

The primary authors of this document are the staff members of the U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office (*see ADDRESSES*).

Authority

The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: February 11, 2011.

Rowan W. Gould,

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

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R2-ES-2011-0011; MO 92210-0-0008]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Texas Kangaroo Rat as Endangered or Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the Texas kangaroo rat, *Dipodomys elator*, as endangered or threatened and to designate critical habitat under the Endangered Species Act of 1973, as amended. Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing the Texas kangaroo rat may be warranted. Therefore, with the publication of this notice, we are initiating a status review to determine if listing the Texas kangaroo rat is warranted. To ensure the status review is comprehensive, we are requesting scientific and commercial data and other information regarding this species. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before May 9, 2011. Please note that if you are using the Federal eRulemaking Portal (*see ADDRESSES* section, below), the deadline for submitting an electronic comment is 11:59 p.m. Eastern Time on this date. After May 9, 2011, you must submit information directly to the Arlington Ecological Services Field Office (*see FOR FURTHER INFORMATION CONTACT* section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. In the box that reads "Enter Keyword or ID," enter the

Docket number for this finding, which is FWS-R2-ES-2011-0011. Check the box that reads "Open for Comment/ Submission," and then click the Search button. You should then see an icon that reads "Submit a Comment." Please ensure that you have found the correct rulemaking before submitting your comment.

- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: FWS-R2-ES-2011-0011; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will post all information received on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (*see the Request for Information* section below for more details).

FOR FURTHER INFORMATION CONTACT: Thomas J. Cloud, Jr., Field Supervisor, Arlington Ecological Services Field Office, 711 Stadium Drive, Suite 252, Arlington, TX 76011; by telephone (817) 277-1100; or by facsimile (817) 277-1129. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the Texas kangaroo rat from governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties. We seek information on:

- (1) The species' biology, range, and population trends, including:
 - (a) Habitat requirements for feeding, breeding, and sheltering;
 - (b) Genetics and taxonomy;
 - (c) Historical and current range, including distribution patterns;
 - (d) Historical and current population levels, and current and projected trends; and
 - (e) Past and ongoing conservation measures for the species, its habitat, or both.
- (2) The factors that are the basis for making a listing determination for a

species under section 4(a) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), which are:

- (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.

(3) Current land use or recent trends in north-central Texas as they pertain to both cultivated crop and cattle ranching.

If, after the status review, we determine that listing the Texas kangaroo rat is warranted, we will propose critical habitat (*see* definition in section 3(5)(A) of the Act) under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, within the geographical range currently occupied by the Texas kangaroo rat, we request data and information on:

- (1) What may constitute “physical or biological features essential to the conservation of the species;”
- (2) Where such physical or biological features are currently found; and
- (3) Whether any of these features may require special management considerations or protection.

In addition, we request data and information on “specific areas outside the geographical area occupied by the species” that are “essential to the conservation of the species.” Please provide specific comments and information as to what, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and explain why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your information concerning this status review by one of the methods listed in the **ADDRESSES**

section. If you submit information via <http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the Web site. If you submit a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

Information and supporting documentation that we received and used in preparing this finding will be available for you to review at <http://www.regulations.gov>, or you may make an appointment during normal business hours at the U.S. Fish and Wildlife Service, Arlington Ecological Services Field Office (*see* **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(A) of the Act (16 U.S.C. 1533(b)(3)(A)) 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 submitted with the petition, supporting information submitted with the petition, and information otherwise available in our files at the time we make the finding. The following five documents represent information contained within our files and are cited in this document: Jones and Bogan (1986), Martin (2002), Shaw (1990), Stangl and Schafer (1990), and Wahl (1987). All other cited references were supplied as part of the petition. 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 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)). If we find that substantial scientific or commercial information was presented, we are required to promptly conduct a species status review, which is subsequently summarized in our 12-month finding.

Petition History

On January 15, 2010, we received a petition dated January 11, 2010, from

WildEarth Guardians of Denver, Colorado, requesting the Texas kangaroo rat be listed as endangered or threatened and that critical habitat be designated under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioner, as required by 50 CFR 424.14(a). In a July 19, 2010, letter to the petitioner, we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. We also stated that due to court orders and judicially approved settlement agreements for other listing and critical habitat determinations under the Act that required nearly all of our listing and critical habitat funding for fiscal year 2010, we would not be able to further address the petition at that time but would complete the action when workload and funding allowed. This finding addresses the petition.

Previous Federal Actions

The Texas kangaroo rat was previously listed as a category 2 candidate species under the Act on December 30, 1982 (47 FR 58454). Category 2 candidates were taxa for which information in our possession indicated that proposing to list was possibly appropriate, but for which substantial data on biological vulnerability and threats were not available to support a proposed listing rule. On December 5, 1996, we published a notice of decision that discontinued the practice of maintaining a category 2 candidate list (61 FR 64481).

Species Information

The Texas kangaroo rat (*Dipodomys elator*), also referred to as Loring’s kangaroo rat (Davis 1942, pp. 328–329), was first described by Merriam in 1894 (pp. 109–110). Merriam (1894, pp. 109–110) originally stated *D. elator* was similar to the banner-tailed kangaroo rat (*D. spectabilis*) based on general external morphology (body structure) and Phillip’s kangaroo rat (*D. phillipsii*) based on its cranial arch (curve of the skull). Dalquest and Collier (1964, p. 148) suggested *D. elator* most resembles *D. ornatus* (no common name) with regard to its habits, appearance, and skull. Best and Schnell (1974, p. 266) also indicated the Texas kangaroo rat most resembled *D. ornatus* based on bacular (penis bone) measurements. Measurements taken from the baculum, a bone found in the penis of some mammals, varies in shape and size by species and its characteristics are

sometimes used to differentiate between similar species. More recent studies have suggested the Texas kangaroo rat is closely associated with Phillip's kangaroo rat, although these studies did not include *D. ornatus* in their methodology (Hamilton *et al.* 1987, p. 777; Mantooth *et al.* 2000, p. 888). Even though the phylogenetic relationship (genetic relationship of a group of organisms) between *Dipodomys* species is not currently resolved, we accept the characterization of the Texas kangaroo rat as a species because this status is generally accepted in the scientific community (Mantooth *et al.* 2000, p. 885).

The Texas kangaroo rat has an average total length of approximately 290 millimeters (mm) (11.4 inches (in)) (Merriam 1894, p. 109), and has large hind feet as is typical of members of this genus. It has a brownish-yellow dorsum (upper surface) and is whitish along its ventral (belly) surface. The Texas kangaroo rat also has a white-tipped tail and four toes on its hind feet, distinguishing it from Ord's kangaroo rat (*D. ordii*), which has five toes on its hind feet and whose range overlaps that of the Texas kangaroo rat (Caire *et al.* 1989, p. 204).

Generally, Texas kangaroo rats inhabit arid areas that are not prone to flooding (Martin 2002, p. 34); are characterized by short, sparse grasses (Dalquest and Collier 1964, p. 147; Goetze *et al.* 2007, p. 18; Nelson *et al.* 2009, p. 126); and contain little woody canopy cover (Goetze *et al.* 2007, p. 18). Texas kangaroo rats prefer areas where the soil contains a sufficient clay component to support their burrows (Bailey 1905, p. 149; Dalquest and Collier 1964, p. 148; Roberts and Packard 1973, p. 958; Martin and Matocha 1991, p. 355; Goetze *et al.* 2007, p. 17), although it is not exclusively restricted to such soils (Martin and Matocha 1991, p. 355). Their burrows are often associated with *Prosopis* spp. (mesquite trees) (Dalquest and Collier 1964, p. 147; Martin and Matocha 1972, p. 875), although subsequent research has suggested this association may be circumstantial (Stangl *et al.* 1992b, p. 31; Goetze *et al.* 2007, p. 20; Nelson *et al.* 2009, p. 128). For dust bathing, Texas kangaroo rats require areas of bare ground that may not be available in patches of dense vegetation (Goetze *et al.* 2008, pp. 312–313; Nelson *et al.* 2009, p. 127). As such, the Texas kangaroo rat appears to opportunistically burrow in minimally disturbed areas (Stangl *et al.* 1992b, pp. 25–35; Goetze *et al.* 2007, p. 19; Nelson *et al.* 2009, pp. 128–129).

Texas kangaroo rats primarily feed on grass seeds (Chapman 1972, pp. 878–

879). However, the seeds, leaves, fruits, and flowers of annual forbs may also be a significant portion of their diet (Chapman 1972, pp. 878–879). Although they do not tend to construct their burrows in croplands (Martin and Matocha 1972, p. 874), Texas kangaroo rats may occasionally enter agricultural fields to gather seeds (Chapman 1972, p. 879). Similar to other kangaroo rats, the Texas kangaroo rat stores food items in burrow caches (Chapman 1972, p. 879).

Little is known about this species' reproductive behavior or physiology (a branch of biology that deals with the functions and activities of life or of living matter, *i.e.*, organs, tissues, or cells), although it is known that the species does not hibernate and evidence suggests it may be capable of breeding throughout the year (Carter *et al.* 1985, p. 1).

The first recorded instance of the Texas kangaroo rat was a specimen collected in 1894 from Clay County, Texas (Merriam 1894, p. 109). In 1905, this species was reported from the Chattanooga vicinity, Comanche County, Oklahoma (Bailey 1905, pp. 148–149). Since these early records, additional Texas kangaroo rat sightings have been recorded from the following counties: Archer, Baylor, Childress, Clay, Cottle, Foard, Hardeman, Montague, Motley, Wichita, and Wilbarger Counties, Texas; and Comanche and Cotton Counties, Oklahoma (Dalquest and Collier 1964, pp. 146–147; Packard and Judd 1968, p. 536; Martin and Matocha 1972, pp. 873–876; Cokendolpher *et al.* 1979, p. 376; Baumgardner 1987, pp. 285–286; Martin and Matocha 1991, p. 354; Martin 2002, p. 10). A single, disjunct record was reported from an unverified sighting in Coryell County, Texas; however, subsequent attempts to confirm its presence in this region have failed, suggesting the original sighting was probably false (Martin and Matocha 1972, pp. 874–875; Martin 2002, p. 10).

The present extent of the Texas kangaroo rat's distribution is largely unknown, but evidence indicates that the species may inhabit only half of its former range. Of the 11 Texas counties that once contained Texas kangaroo rats, it has been suggested that only 5 were known to support them in 2002: Archer, Childress, Hardeman, Motley, and Wichita (Martin 2002, p. 10). The petition cites surveys published in peer-reviewed scientific journals that we deem as reliable information, and indicates that the species may be extirpated from Oklahoma, having last been sighted there in 1969 (Baumgardner 1987, pp. 285–286; Moss and Mehlhop-Cifelli 1990, p. 357; Stangl

et al. 1992a, p. 19). However, more surveys are needed to determine the species' current distribution.

Evaluation of Information for This Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR part 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. 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.

In considering what factors might constitute threats, we must look beyond the exposure of the species to a particular factor to evaluate whether the species may respond to that factor in a way that causes actual impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat and we attempt to determine how significant a threat it is. The threat may be significant if it drives, or contributes to, the risk of extinction of the species such that the species may warrant listing as endangered or threatened as those terms are defined by the Act. The identification of factors that could impact a species negatively may not be sufficient to compel a finding that substantial information has been presented suggesting that listing may be warranted. The information should contain evidence or the reasonable extrapolation that any factor(s) may be an operative threat that acts on the species to the point that the species may meet the definition of endangered or threatened under the Act.

In making this 90-day finding, we evaluated whether information regarding threats to the Texas kangaroo rat, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

A. Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Information Provided in the Petition

The petition asserts that present or threatened destruction, modification, or curtailment of the habitat or range of the Texas kangaroo rat threatens this species such that listing may be warranted. It identifies five key components affecting the destruction, modification, or curtailment of this species' habitat and range:

- (1) Conversion of native habitat to cropland;
- (2) Loss of historical ecological processes;
- (3) Domestic livestock grazing;
- (4) Brush control; and
- (5) Development and roads.

The petition suggests that crop fields and cultivated land are uninhabitable by Texas kangaroo rats (WildEarth Guardians 2010, p. 11). It estimates that greater than 15 percent of the range of the Texas kangaroo rat is encroached upon by agriculture, with areas in southwestern Oklahoma being the most impacted (WildEarth Guardians 2010, pp. 11–12); however, the petition did not provide information regarding current land use trends within this species' range. The petition also states that human activities have altered the natural ecological processes within the range of the Texas kangaroo rat and specifically identifies the extirpation of bison and prairie dogs and suppression of naturally occurring fires (WildEarth Guardians 2010, pp. 13–16). It claims that these natural factors were historically responsible for creating and maintaining Texas kangaroo rat habitat, and that their alteration has negatively impacted the species (WildEarth Guardians 2010, p. 13). The petition suggests that domestic livestock grazing has historically been a threat to the Texas kangaroo rat by promoting the encroachment of weeds and woody shrubs, although it also suggests alterations in rangeland management techniques may benefit the species by promoting shortened vegetation and areas of bare ground (WildEarth Guardians 2010, p. 16). In addition, the petition suggests that development and roads have encroached on Texas kangaroo rat habitat (WildEarth Guardians 2010, pp. 16–19), thereby increasing the risks of predation and direct mortality from vehicle collisions (WildEarth Guardians 2010, p. 25). However, it did not explicitly indicate how the encroachment of other urban developments may affect this species. Lastly, the petition suggests that brush control, particularly through the use of

chemicals, may be responsible for the degradation of Texas kangaroo rat habitat (WildEarth Guardians 2010, p. 20).

Evaluation of Information Provided in the Petition and Available in Service Files

The sources cited within the petition provide reliable and accurate information regarding the potential impacts that the conversion of native habitat to cropland, the loss of historical ecological processes, domestic livestock grazing, development and roads, and brush control may have on the Texas kangaroo rat. However, upon further examination of the cited materials, we note that the portrayal of this information within the petition may be misleading, and the information requires further examination, as it does not adequately address the potential positive impacts that some of these factors may have on the Texas kangaroo rat or its habitat. An examination of the materials cited in the petition and of those contained within our files is presented below.

One of the primary factors that may be negatively impacting the Texas kangaroo rat is conversion of native habitat to cropland. The conversion of native habitat to cropland results in a loss of habitat because the Texas kangaroo rat does not construct burrows in agricultural crops (Martin and Matocha 1972, p. 874; Martin 2002, pp. 33–34; Goetze *et al.* 2007, p. 18; Goetze *et al.* 2008, p. 313; Nelson *et al.* 2009, pp. 119–120). Additionally, in regions with substantial agricultural development, Texas kangaroo rats can often be found burrowing along the disturbed shoulder of roads, suggesting the practice of cultivating crop land to the margins of roads may further preclude this species from utilizing these areas (Wahl 1987, p. 2; Martin 2002, pp. 35–36). Further, given their relatively small home ranges and movement patterns (Roberts and Packard 1973, pp. 958–961; Stangl and Schafer 1990, p. 6), the fragmentation of suitable habitat by agricultural cultivation of land may isolate Texas kangaroo rats from other nearby populations, thereby reducing genetic exchange (Wahl 1987, p. 2). Over time, reduced genetic exchange may cause isolated populations to die out from the deleterious effects of inbreeding (Keller and Waller 2002, pp. 230–241). Thus, there appears to be substantial information indicating that loss of habitat due to conversion of native rangeland into cropland may be negatively impacting the species. Based on the above evaluation, we find that

the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the loss of burrowing habitat due to the conversion of rangeland to cropland may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

The petition also asserts that, in addition to loss of burrowing habitat, the conversion of native rangeland to cropland results in a loss of foraging habitat, which has been presumed to be a key factor in the disappearance of the Texas kangaroo rat from Oklahoma (Moss and Melhop-Cifelli 1990, p. 357). However, the use of cropland for foraging is not completely understood. Goetze *et al.* (2008, p. 313) did not record any Texas kangaroo rats foraging in, or otherwise utilizing, adjacent wheat fields, either before or after harvesting. In contrast, through an analysis of cheek pouch contents, Chapman (1972, pp. 878–879) indicated Texas kangaroo rats foraged in adjacent oat fields following harvest. Bailey (1905, p. 149) found a single specimen whose pouches contained grain from a nearby corn field. Therefore, based on information in our files, there is evidence that Texas kangaroo rats will forage in croplands. Thus, the conversion of rangeland to cropland does not seem to result in a loss of foraging habitat. Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, does not present substantial scientific or commercial information indicating that the loss of foraging habitat due to the conversion of rangeland to cropland may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

Free-ranging bison, prairie dog colonies, and naturally occurring fires contributed to creation and maintenance of prairies containing short vegetation and areas of bare ground, the preferred habitat of the Texas kangaroo rat (Stangl *et al.* 1992b, pp. 33–34; Nelson *et al.* 2009, p. 128). The propensity of the Texas kangaroo rat to inhabit disturbed areas may be indicative of the species having evolved in the presence of these three factors. The petition asserts that removal of bison, prairie dogs, and naturally occurring fires from the historical range of the Texas kangaroo had a negative impact on this species. However, information in our files indicates that Texas kangaroo rats occur in habitats without bison, prairie dogs colonies, or natural fires (Dalquest and Collier 1964, pp. 146–147; Packard and

Judd 1968, p. 536; Martin and Matocha 1972, pp. 873–876; Cokendolpher *et al.* 1979, p. 376; Baumgardner 1987, pp. 285–286; Martin and Matocha 1991, p. 354; Martin 2002, p. 10). In addition, given the persistence of Texas kangaroo rats in areas without bison, prairie dog colonies, or natural fires, it appears that, while each may help create and maintain suitable habitat, they are not essential for its survival. In the absence of these historical processes, heavy cattle grazing and anthropomorphic disturbances may create suitable Texas kangaroo rat habitat (Stangl *et al.* 1992b, p. 34; Martin 2002, p. 35; Goetze *et al.* 2007, p. 19; Nelson *et al.* 2009, pp. 120–129). Therefore, information provided by the petitioner and in our files does not indicate that the lack of free-ranging bison, prairie dog colonies, and naturally occurring fires has contributed to loss of habitat for the Texas kangaroo rat. Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that the lack of free-ranging bison, prairie dog colonies, and naturally occurring fires may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

Domestic livestock grazing was noted by the petition as a factor negatively impacting the Texas kangaroo rat by promoting the encroachment of weeds and woody shrubs. The petitioner cites Hafner (1998, p. 16) in suggesting that the Texas kangaroo rat is vulnerable to grazing pressures because grazing presumably degrades grasslands. We believe this claim lacks substantiation because grazing that produces areas of short vegetation interspersed with bare ground is conducive to Texas kangaroo rat inhabitation (Stangl *et al.* 1992b, p. 32; Martin 2002, p. 34; Nelson *et al.* 2009, p. 120). On the other hand, ranch management practices that are designed to maintain dense grass stands lacking areas of bare ground are not suitable for maintaining Texas kangaroo rat habitat (Goetze 2001, pp. 1–3; Martin 2002, p. 34; Nelson *et al.* 2009, p. 120). Under light to moderate grazing pressure, localized areas of heavy grazing and soil disturbance can be achieved through the strategic placement of supplemental feeders and stock tanks (Stangl *et al.* 1992b, pp. 32–34).

The petition also claims that cattle grazing can lead to rangeland encroachment by weeds, woody shrubs, and invasive plants that can be detrimental to the Texas kangaroo rat (WildEarth Guardians 2010, p. 16).

According to information we reviewed, the mere presence of woody shrubs, weedy species, and nonnative plants does not preclude the presence of Texas kangaroo rats. In fact, a study of cheek pouch contents indicated that a wide variety of plants, including several nonnative species, serve as possible food sources for the Texas kangaroo rat (Dalquest and Collier 1964, pp. 147–148; Chapman 1972, pp. 878–879; Carter *et al.* 1985, p. 1), and that woody forbs may collect wind-blown soil in which this species constructs its burrows (Nelson *et al.* 2009, p. 120).

We believe that, besides heavy grazing regimes, burrowing and forage habitat for Texas kangaroo rats is not negatively impacted by livestock grazing. Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that domestic livestock grazing may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

The petition suggests that brush control, particularly through the use of chemicals, is responsible for the degradation of Texas kangaroo rat habitat (WildEarth Guardians 2010, p. 20). Although not scientifically assessed, Chapman (1972, p. 879) found that chemically treated brush control sites showed little evidence of Texas kangaroo rat inhabitation, and indicated additional studies should be conducted to quantify the effects of range and agricultural practices on this species. In contrast, Stangl *et al.* (1992b, p. 31) found that chemical brush control actually enhanced Texas kangaroo rat habitat by providing more bare ground and grassy areas that the species prefers (Goetze *et al.* 2007, p. 18). Further, Texas kangaroo rats have also been shown to preferentially construct burrows on elevated soil mounds, including those that formed around old brush piles (Nelson *et al.* 2009, pp. 124, 128). Thus, we find no evidence that brush control, even through the use of chemicals, is having a detrimental effect on Texas kangaroo rat habitat. Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that brush control may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

The petition suggests that development and roads have encroached on Texas kangaroo rat

habitat (WildEarth Guardians 2010, pp. 16–19), thereby increasing the risks of predation and direct mortality from vehicle collisions (WildEarth Guardians 2010, p. 25). While development and road construction have increased throughout the historic range of the Texas kangaroo rat since its description by Merriam in 1894, the impact of urban expansion on the species' status is unclear. Brock and Kelt (2004, pp. 638–639) suggest that roads increase the likelihood of predation of Texas kangaroo rats and facilitate invasion by exotic plants. Martin (2002, p. 35) found that Texas kangaroo rats extensively utilize suitable, previously disturbed areas along the edges of roadsides, including roadside habitats within agricultural areas, where they may otherwise be precluded. Others have noted that Texas kangaroo rats (Roberts and Packard 1973, p. 960; Stangl and Schafer 1990, p. 11; Stangl *et al.* 1992b, p. 34), and other similar species (Brock and Kelt 2004, pp. 633–639), may preferentially use dirt roads as migration corridors. Also, it is well established that nighttime road surveys are an easy and effective way to determine the presence of the Texas kangaroo rat, suggesting they do not entirely avoid these areas. Although there are reports of specimens killed by vehicular traffic (Dalquest and Collier 1964, p. 146; Jones *et al.* 1988, p. 249), information we reviewed suggests that this is not having a negative impact on the overall species' status.

Additionally, Texas kangaroo rats are nocturnal and remarkably tolerant of human presence (Stangl *et al.* 2005, p. 140; Goetze *et al.* 2008, p. 310), suggesting that urban development around otherwise suitable habitat may not preclude their inhabitation. There is some indication that Texas kangaroo rats are less active on brightly moonlit nights and more active during the darkest times of the night (Jones *et al.* 1988, p. 253; Stangl and Schafer 1990, p. 4; Martin 2002, p. 31), suggesting light may negatively affect this species. In contrast, others have noted this species is tolerant of higher light levels (Bailey 1905, p. 149; Goetze *et al.* 2008, p. 314). Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that development and roads may pose a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

In conclusion, the fragmentation of the native landscape by conversion of

land to cropland has likely impacted the Texas kangaroo rat by reducing burrowing habitat. This threat, in conjunction with the species' limited long-distance mobility, may be impairing the species' ability to maintain viable populations by genetically isolating them from one another (Wahl 1987, p. 1). However, the effects of cattle grazing, encroachment of roads and development, and brush control methods on Texas kangaroo rat habitat are less certain, and may be beneficial under certain circumstances. Similarly, it appears that loss of historical disturbance by bison, prairie dogs, and fire may be offset by heavy grazing of domestic cattle. We will further analyze potential threats under Factor A during our status review for this species.

Therefore, we find that the information presented in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information to indicate that the Texas kangaroo rat may warrant listing due to present or threatened destruction, modification, or curtailment of the species' habitat or range, primarily due to conversion of native rangeland to agricultural cropland.

B. Overutilization for Commercial, Recreational, Scientific or Educational Purposes

Information Provided in the Petition

The petition claims that early scientific overutilization involving the collection and preservation of Texas kangaroo rat specimens may have had an impact on its range contraction (WildEarth Guardians 2010, p. 20). As indicated in the petition, many early scientific studies of Texas kangaroo rats resulted in preservation of specimens as museum vouchers (Dalquest and Collier 1964, p. 146; Packard and Judd 1968, pp. 535–536; Martin and Matocha 1972, p. 876; Cokendolpher *et al.* 1979, p. 376; Hamilton *et al.* 1987, p. 776).

Evaluation of Information Provided in the Petition and Available in Service Files

We acknowledge that the historical collection and preservation of Texas kangaroo rat specimens were lethal means of collection; however, we have no evidence that collections occurred at a level that impacted the status of the species. Further, current collection methods have resulted in fewer deaths. More recent studies have used live-trapping techniques, although Texas kangaroo rats left overnight in traps are susceptible to cold nightly temperatures

and may die following release (Stangl and Schafer 1990, p. 9). In conclusion, we acknowledge that scientific studies have resulted in the death of Texas kangaroo rats, but neither the petition nor information within our files presents substantial scientific or commercial information indicating that collection was, or is, occurring at a level that impacts the overall status of the species. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that overutilization for commercial, recreational, scientific, or educational purposes may present a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

C. Disease or Predation

Information Provided in the Petition

The petition did not identify disease or predation as factors impacting Texas kangaroo rats. In fact, the petition suggests that there are no records of natural predation acting as a threat to Texas kangaroo rats. However, the petition identifies several Texas kangaroo rat parasites, but indicates that disease is not currently known to be a major mortality factor. The petition also recommends further investigation of the potential for sylvatic plague to affect the Texas kangaroo rat (WildEarth Guardians 2010, pp. 20–21).

Evaluation of Information Provided in the Petition and Available in Service Files

After reviewing the original source material cited with the petition, we find that the information within the petition is reliable and accurate regarding Texas kangaroo rat disease and predation. Information in our files suggests that the potential for infection from sylvatic plague does exist, but the disease rarely causes mortality in Texas kangaroo rats (Martin 2002, p. 30). A number of external parasites (Thomas *et al.* 1990, pp. 111–114) and an internal parasite (Pffaffenberger and Best 1989, pp. 76–80) are known to use the Texas kangaroo rat as a host, but their effects on the survival and proliferation of this species are not known. Even though the Texas kangaroo rat is exposed to disease, there is no evidence to indicate that the species is responding to the factor in a way that causes actual impacts to the species.

Similarly, there is no evidence indicating predation is having an impact on the species. Stangl *et al.* (2005, p. 139) found that the Texas kangaroo rat was underrepresented in the diet of barn owls, and attributed this partly to the auditory and locomotion abilities of the

rat, which allowed it to escape predation. Remnants of a similar species, the Ord's kangaroo rat (*Dipodomys ordii*), were found in only 4.3 percent of coyote scats in south Texas, suggesting coyotes may not depend heavily on kangaroo rats as a part of their diet (Martin 2002, p. 29). In addition, domesticated cats have been found to prey on the Texas kangaroo rats, but only to a limited extent (Martin 2002, p. 29). Although available information in the petition and our files suggests that Texas kangaroo rats are susceptible to predation, the information we reviewed does not suggest that predation occurs at levels that act as a significant limiting factor to the species throughout its range.

We reviewed information in our files and the information provided by the petitioners, and did not find substantial information to indicate that disease or predation may be outside the natural range of variation such that either could be considered a threat to the Texas kangaroo rat. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that disease or predation may present a threat to the Texas kangaroo rat such that the petitioned action may be warranted.

D. Inadequacy of Existing Regulatory Mechanisms

Information Provided in the Petition

The petition claims there are insufficient existing regulatory mechanisms protecting the Texas kangaroo rat. While this species is listed as threatened under Texas Parks and Wildlife Code, Chapter 68, this status does not prevent the destruction or degradation of Texas kangaroo rat habitat (WildEarth Guardians 2010, p. 21).

Evaluation of Information Provided in the Petition and Available in Service Files

We find that the information within the petition, although limited, is reliable and accurate regarding the inadequacies of existing regulatory mechanisms in protecting the Texas kangaroo rat. As discussed above under Factor A, Texas kangaroo rats do not inhabit cultivated cropland; thus, the expansion of cultivated cropland may fragment existing populations until they are no longer viable (Wahl 1987, p. 1). The "threatened" status of the Texas kangaroo rat under Texas Parks and Wildlife Code does not preclude further land conversion in areas occupied by the species. Therefore, we find that the information provided in petition, as

well as other information readily available in our files, presents substantial scientific or commercial information indicating the petitioned action may be warranted due to the inadequacy of existing regulatory mechanisms.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Information Provided in the Petition

The petition claims that road construction, extermination programs, and climate change are, or may become, threats to the continued existence of the Texas kangaroo rat (WildEarth Guardians 2010, pp. 21–26). The effects of road construction on this species are evaluated above under Factor A. The petition suggests that kangaroo rat extermination programs in the 1920s and 1930s were initiated because these species were implicated in the ongoing desertification of rangeland. The petition also provides evidence of climate change trends (WildEarth Guardians 2010, pp. 21–24) and suggests that the ensuing ecological changes would make this species' current range more unsuitable for its inhabitation.

Evaluation of Information Provided in the Petition and Available in Service Files

After reviewing the original source material cited in the petition, we find that these sources are reliable and accurate. However, we believe that the portrayal of this information within the petition requires further examination as described below.

The petitioner claims that extermination programs may be threatening the continued existence of the Texas kangaroo rat. Sjöberg *et al.* (1984, p. 13) suggested that kangaroo rats, particularly the banner-tailed kangaroo rat (*Dipodomys spectabilis*), whose mound system is extensive, were treated by various methods to remove them from rangelands. However, the Texas kangaroo rat does not make extensive mounds, and its exceptionally small burrow entrances occupy very little of the landscape (Bailey 1905, p. 149; Carter *et al.* 1985, p. 1; Martin 2002, p. 3). This species also has minimal economic impact on agriculture (Martin 2002, p. 3). Therefore, it is unlikely the Texas kangaroo rat was historically subjected to extensive eradication efforts, and there is no evidence presented by the petitioner or readily available in our files indicating that the Texas kangaroo rat was impacted by eradication efforts

aimed at other species. In addition, the Texas kangaroo rat is currently protected as a nongame species under Texas Parks and Wildlife Code, Chapter 68, making such eradication efforts illegal. Therefore, we found no evidence that extermination programs are negatively impacting the Texas kangaroo rat.

Also, the petition asserts that climate change trends will make the current range more unsuitable for the Texas kangaroo rat to inhabit (WildEarth Guardians 2010, pp. 21–24). The petitioner presents information that plant and animal communities are expected to shift toward the poles or increase in altitude with increasing global temperatures and drought conditions (Parmesan *et al.* 2000, p. 443; Cameron and Scheel 2001, p. 676; Root and Schneider 2002, pp. 22–23; Karl *et al.* 2009, pp. 72, 132). However, the petition does not provide substantial information indicating how pole-ward shifts in plant and animal communities would negatively impact the Texas kangaroo rat. We believe that increasing global temperatures and drought conditions will likely have little impact on kangaroo rats because they are physiologically and behaviorally well adapted to warm, arid landscapes (Sjöberg *et al.* 1984, p. 12). In addition, Texas kangaroo rats do not appear to be particularly dependent on any single type of vegetation for survival, and are capable of adapting to changing vegetation as is evident from their behavior of gathering nonnative plant seeds (Dalquest and Collier 1964, pp. 147–148; Chapman 1972, pp. 878–879). As such, the information we reviewed does not indicate that climate change-induced, pole-ward shifts in plant and animal communities would result in the Texas kangaroo rat's current range becoming unsuitable for the species to inhabit.

The petition further claims that climate change models show a loss of Texas kangaroo rat habitat. Cameron and Scheel (2001, p. 664) predicted that between 48 and 80 percent of suitable Texas kangaroo rat habitat would be lost under two different climate change models. These losses were estimated from a 2001 baseline of approximately 103,400 square kilometers (km²) (39,923 square miles (mi²)) of suitable Texas kangaroo rat habitat, and following correction for vegetation preferences (Cameron and Scheel 2001, p. 664). However, the combined acreage of the 11 Texas counties from which the Texas kangaroo rat has been recorded is approximately 24,500 km² (9,460 mi²), a value much closer to their pre-corrected habitat estimate of 21,200 km²

(Cameron and Scheel 2001, p. 655). This suggests that the model may have overestimated current suitable habitat. In addition, the study found vegetation preference significantly affected habitat suitability for this species while soil preferences were not significant (Cameron and Scheel 2001, p. 655). In contrast, Shaw (1990, p. 16) found Texas kangaroo rat distributions to vary significantly with soil type. Furthermore, Cameron and Scheel (2001, p. 659) did not assess habitat outside of Texas. If animals are generally predicted to move pole-ward as a result of climate change, the Texas kangaroo rat may partially relocate to Oklahoma, which was not included as part of the Cameron and Scheel (2001) study. Even though Cameron and Scheel (2001, p. 664) predicted theoretically severe implications for climate change on the Texas kangaroo rat based on their models, we could find no evidence to substantiate their claims. Additional analysis is needed to determine the effect of these impacts on the Texas kangaroo rat. We will further analyze the potential impacts of climate change on the species during our status review.

Therefore, we find the petition does not present substantial scientific or commercial information indicating that other natural or manmade factors may affect the continued existence of the Texas kangaroo rat such that the petitioned action may be warranted.

Finding

On the basis of our determination under section 4(b)(3)(A) of the Act, we find that the petition presents substantial scientific or commercial information indicating that listing the Texas kangaroo rat throughout its entire range may be warranted. This finding is based on potential threats posed under Factor A, The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range, and Factor D, The Inadequacy of Existing Regulatory Mechanisms. Specifically, we find that the loss of burrowing habitat and genetic isolation of populations due to the conversion of native rangeland to agricultural cropland, and the inadequacy of existing regulatory mechanisms to protect against such land conversion, may pose a threat to the Texas kangaroo rat throughout all or a significant portion of its range, such that the petitioned action may be warranted. The information provided under Factors B, C, and E was not substantial.

Because we have found that the petition presents substantial information indicating that listing the Texas kangaroo rat may be warranted,

we are initiating a status review to determine whether listing the Texas kangaroo rat under the Act is warranted.

The “substantial information” standard for a 90-day finding differs from the Act’s “best scientific and commercial data” standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act’s standards

for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

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

Author

The primary author of this notice is a staff member of the Arlington Ecological

Services Field Office (*see* **FOR FURTHER INFORMATION CONTACT**).

Authority

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

Dated: February 16, 2011.

Rowan W. Gould,

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

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