

SUPPLEMENTARY INFORMATION: This proposal addresses the following local rules: SJVUAPCD Rule 1020, Definitions and SBCAPCD Rule 102, Definitions. In the Rules and Regulations section of this **Federal Register**, we are approving these local rules in a direct final action without prior proposal because we believe these SIP revisions are not controversial. If we receive adverse comments, however, we will publish a timely withdrawal of the direct final rule and address the comments in subsequent action based on this proposed rule. Please note that if we receive adverse comment on an amendment, paragraph, or section of this rule and if that provision may be severed from the remainder of the rule, we may adopt as final those provisions of the rule that are not the subject of an adverse comment.

We do not plan to open a second comment period, so anyone interested in commenting should do so at this time. If we do not receive adverse comments, no further activity is planned. For further information, please see the direct final action.

Dated: August 11, 2009.

Jane Diamond,

Acting Regional Administrator, Region IX.
[FR Doc. E9-20805 Filed 8-27-09; 8:45 am]

BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2009-0079; FRL-8944-9]

Revisions to the California State Implementation Plan, Antelope Valley Air Quality Management District

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: EPA is proposing to approve revisions to the Antelope Valley Air Quality Management District (AVAQMD) portion of the California State Implementation Plan (SIP). These revisions concern volatile organic compound (VOC) emissions from leaking components at industrial facilities such as petroleum refineries and chemical manufacturing plants. We are proposing to approve a local rule to regulate these emission sources under the Clean Air Act as amended in 1990 (CAA or the Act). At the same time, we are also approving a Negative Declaration and removing rules from the SIP.

DATES: Any comments on this proposal must arrive by September 28, 2009.

ADDRESSES: Submit comments, identified by docket number EPA-R09-OAR-2009-0079a, by one of the following methods:

1. *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the on-line instructions.

2. *E-mail:* steckel.andrew@epa.gov.

3. *Mail or deliver:* Andrew Steckel (Air-4), U.S. Environmental Protection Agency Region IX, 75 Hawthorne Street, San Francisco, CA 94105-3901.

Instructions: All comments will be included in the public docket without change and may be made available online at <http://www.regulations.gov>, including any personal information provided, unless the comment includes Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Information that you consider CBI or otherwise protected should be clearly identified as such and should not be submitted through <http://www.regulations.gov> or e-mail. <http://www.regulations.gov> is an "anonymous access" system, and EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send e-mail directly to EPA, your e-mail address will be automatically captured and included as part of the public comment. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: The index to the docket for this action is available electronically at <http://www.regulations.gov> and in hard copy at EPA Region IX, 75 Hawthorne Street, San Francisco, California. While all documents in the docket are listed in the index, some information may be publicly available only at the hard copy location (e.g., copyrighted material), and some may not be publicly available in either location (e.g., CBI). To inspect the hard copy materials, please schedule an appointment during normal business hours with the contact listed in the **FOR FURTHER INFORMATION CONTACT** section.

FOR FURTHER INFORMATION CONTACT: Jerry Wamsley, EPA Region IX, (415) 947-4111, wamsley.jerry@epa.gov.

SUPPLEMENTARY INFORMATION: This proposal addresses the following local rules: Rule 1173—Fugitive Emissions of Volatile Organic Compounds, Rule 465—Vacuum Producing Devices or Systems, Rule 466—Pumps and Compressors, 466.1—Valves and

Flanges, and Rule 467—Pressure Relief Devices. In the Rules and Regulations section of this **Federal Register**, we are approving amendments to Rule 1173 and removing Rules 465, 466, 466.1, and 467 from the SIP in a direct final action without prior proposal because we believe these SIP revisions are not controversial. If we receive adverse comments, however, we will publish a timely withdrawal of the direct final rule and address the comments in subsequent action based on this proposed rule. Please note that if we receive adverse comment on an amendment, paragraph, or section of this rule and if that provision may be severed from the remainder of the rule, we may adopt as final those provisions of the rule that are not the subject of an adverse comment.

We do not plan to open a second comment period, so anyone interested in commenting should do so at this time. If we do not receive adverse comments, no further activity is planned. For further information, please see the direct final action.

Dated: May 13, 2009.

Laura Yoshii,

Acting Regional Administrator, Region IX.
[FR Doc. E9-20828 Filed 8-27-09; 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-2009-0032]
[92210-1117-0000-B4]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Sonoran Population of Desert Tortoise (*Gopherus agassizii*) as a Distinct Population Segment (DPS) With Critical Habitat

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, announce a 90-day finding on a petition to list the Sonoran desert tortoise (*Gopherus agassizii*) as a distinct population segment (DPS) under the Endangered Species Act of 1973, as amended, and designate critical habitat. On the basis of our review of the petition and information readily available in our files, we have determined that there is substantial information indicating that the Sonoran

desert tortoise may meet the criteria of discreteness and significance as defined by our policy on distinct vertebrate population segments. Further, we find that the petition presents substantial scientific or commercial information indicating that listing the Sonoran population of the desert tortoise may be warranted. Therefore, with the publication of this notice, we are initiating a status review of the Sonoran population of the desert tortoise to determine if listing the population is warranted. To ensure that the status review of the Sonoran population of the desert tortoise is comprehensive, we are soliciting scientific and commercial data and other information regarding this population. At the conclusion of this review, we will issue a 12-month finding to determine if the petitioned action is warranted. We will make a determination on critical habitat for the Sonoran population of the desert tortoise if we initiate a listing action.

DATES: We made the finding announced in this document on August 28, 2009. To allow us adequate time to conduct this review, we request that we receive information on or before October 27, 2009.

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

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.

- U.S. mail or hand-delivery: Public Comments Processing, Attn: [FWS-R2-ES-2009-0032]; 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 **Information Solicited** section below for more details).

FOR FURTHER INFORMATION CONTACT: Steve Spangle, Field Supervisor, Arizona Ecological Services Office, 2321 West Royal Palm Drive, Suite 103, Phoenix, AZ 85021; by telephone 602-242-0210; or by facsimile 602-242-2513. Persons who use a telecommunications device for the deaf (TDD), may call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Information Solicited

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly commence a review of the status of the species. To

ensure that the status review is complete and based on the best available scientific and commercial information, we are soliciting information on the status of the Sonoran population of the desert tortoise (Sonoran desert tortoise). We request information from the public, other concerned governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning the status of the Sonoran desert tortoise. We are seeking information regarding:

- (1) The historical and current status and distribution of the Sonoran desert tortoise (particularly with respect to Mexico), its biology and ecology, and ongoing conservation measures for the species and its habitat;

- (2) Information relating the importance of the Sonoran desert tortoise population to the species as a whole;

- (3) Information relevant to 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 the species' 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 and threats to the species or its habitat; and

- (4) Information about any ongoing conservation measures for, or threats to, the Sonoran desert tortoise and its habitat.

If we determine that listing the Sonoran desert tortoise is warranted, it is our intent to propose critical habitat to the maximum extent prudent and determinable at the time we would propose to list the Sonoran desert tortoise. Therefore, with regard to areas within the geographical range currently occupied by the Sonoran desert tortoise, we also request data and information on what may constitute physical or biological features essential to the conservation of the Sonoran desert tortoise, where these features are currently found, and whether any of these features may require special management considerations or protection. In addition, we request data and information regarding whether there are areas outside the geographical area occupied by the Sonoran desert tortoise that are essential to its

conservation. Please provide specific comments and information as to what, if any, critical habitat should be proposed for designation if the Sonoran desert tortoise is proposed for listing, and why such habitat meets the requirements of the Act.

Please note that comments 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, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is a threatened or endangered species must be made "solely on the basis of the best scientific and commercial data available." Based on the status review, we will issue a 12-month finding on the petition, as provided in section 4(b)(3)(B) of the Act.

You may submit your information concerning this finding 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 website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this 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 materials we receive, as well as supporting documentation we used in preparing this finding, will be available for public inspection on <http://www.regulations.gov>, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Arizona Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

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 to indicate that the petitioned action may be warranted. We are to base this finding on information contained 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 receipt of the petition and publish our notice of this 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)). If we find that substantial scientific or commercial information was presented, we are required to promptly commence a status review of the species.

On October 15, 2008, we received a petition dated October 9, 2008, from WildEarth Guardians and Western Watersheds Project (petitioners) requesting that the Sonoran population of the desert tortoise be listed under the Act as a distinct population segment (DPS), as threatened or endangered rangewide (in the United States and Mexico), and critical habitat be designated. The petition clearly identified itself as such and included the requisite identification information for the petitioners, as required in 50 CFR 424.14(a). The petition contained detailed information on the natural history, biology, current status, and distribution of the Sonoran population of the desert tortoise. It also contained information on what the petitioners reported as potential threats to the Sonoran population of the desert tortoise, such as livestock grazing, urbanization and development, mining, international border patrol activities, illegal collection, inadequacy of existing regulations, altered fire regimes, off-highway vehicle use, drought, and climate change. In a November 26, 2008, letter to the petitioners, we responded that we had reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species as per section 4(b)(7) of the Act was not warranted. We also stated that we intended to make our finding on whether the petition presented substantial information that the requested action may be warranted, to the maximum extent practicable within 90 days of receipt of the petition, according to the provisions of section 4(b)(3) of the Act.

Previous Federal Actions

Throughout this finding, we use “Mojave” to describe desert tortoise populations north and west of the Colorado River, which is consistent with the previous and current spelling of the common name in Federal actions that have addressed this population. We use “Mohave” in the geographic context to remain consistent with its reference by the U.S. Board of Geographic Names (e.g., Mohave Desert, Mohave County). In addition, while we do not currently recognize the Sonoran population of the

desert tortoise as a unique taxonomic entity, for ease of reference, we refer to the Sonoran population of the desert tortoise as the “Sonoran desert tortoise” in this document.

On December 30, 1982, we published a notice of review which determined the desert tortoise throughout its range in the United States and Mexico to be a Category 2 Federal Candidate species (47 FR 58454); this was reaffirmed on September 18, 1985 (50 FR 37958). Category 2 status was granted to species for which information in our possession indicated that a proposed listing as threatened or endangered was possibly appropriate, but for which sufficient data were not available to make a determination of listing status under the Act. On April 2, 1990, we issued a final rule designating the Mojave population of the desert tortoise (occurring north and west of the Colorado River) as a threatened species under the Act (55 FR 12178; see final rule for a summary of previous actions regarding the Mojave population of the desert tortoise). Currently, the Mojave population of the desert tortoise is recognized as a DPS under the Act. As part of that rulemaking, we designated any desert tortoise from the Sonoran population as threatened when observed outside of its known range, due to similarity of appearance under section 4(a) of the Act.

On December 5, 1996, we published a rule that discontinued the practice of keeping a list of category 2 candidate species (61 FR 64481). Since that time, the Sonoran desert tortoise has had no Federal Endangered Species Act status.

Species Information

The desert tortoise is a member of the Testudinidae family (terrestrial tortoises) of turtles in the genus *Gopherus* (Rafinesque 1832), or gopher tortoises. Scientific nomenclature assigned to the desert tortoise has undergone a series of changes since its initial description by Cooper (1863) as *Xerobates agassizii*. The desert tortoise was also once known as *Scaptochelys agassizii* (Crother *et al.* 2008, p. 70). Further information is available on classification of the desert tortoise in Van Devender (2002b), Lamb and McLuckie (2002), and McCord (2002).

The desert tortoise is recognized by its gray to orange-brown, high, domed upper shell. The shell measures 8 to 15 inches (20 to 38 centimeters) in length (Service 2008, p. 4). Adult desert tortoises may weigh 8 to 15 pounds (3.6 to 6.8 kilograms) (Service 2008, p. 4). Hind limbs of the desert tortoise are stocky and elephantine in appearance while the forelimbs are paddle-shaped

and used for digging (Brennan and Holycross 2006, p. 54). In the wild, desert tortoises have an average lifespan of 35 years (Germano 1994).

The Sonoran desert tortoise is closely associated with rocky bajadas (lower slopes of mountains) and hillsides, and, to a lesser extent, flat areas (including incised washes between or adjacent to flat terrain) (Riedle *et al.* 2008). Sonoran desert tortoises generally occur at elevations ranging from 510 to 5,300 feet (155 to 1,615 meters) (Arizona Game and Fish Department 2001, p. 4).

In the United States, the Sonoran desert tortoise occurs within Mohave desertscrub, Sonoran desertscrub, and semi-desert grassland habitat (Germano *et al.* 1994; Van Devender 2002a; Brennan and Holycross 2006, p. 54). In Mexico, the Sonoran desert tortoise occurs in Sonoran desertscrub and semi-desert grassland (Germano *et al.* 1994; Fritts and Jennings 1994; Bury *et al.* 2002; Van Devender 2002a; Edwards *et al.* 2009, p. 8). The Sonoran desert tortoise may also occasionally occur in the lower elevations of Madrean oak woodland (Germano *et al.* 1994; Fritts and Jennings 1994; Bury *et al.* 2002; Van Devender 2002a).

Primarily herbivores, Sonoran desert tortoises consume a variety of plant material in their diet (Van Devender *et al.* 2002).

Sonoran desert tortoises are largely inactive from mid-October to late February or early March when they overwinter in constructed burrows or rocky cavities or crevices (Averill-Murray 2000b). Sonoran desert tortoises tend to use or construct burrows differently, depending on habitat. Riedle *et al.* (2008) found that the availability of adequate shelter sites strongly influenced Sonoran desert tortoise densities.

Tortoise activity spikes in the spring, especially following average or above-average winter precipitation that enhances annual plant production (Averill-Murray 2000b). However, the peak activity for the Sonoran desert tortoises occurs at the onset of the monsoon (summer rainy season) in mid-to late-summer when annual and perennial plants reach peak abundance and availability, and water sources become more widely dispersed across the landscape (Averill-Murray 2000b). During the hot and dry late-spring/early-summer season, Sonoran desert tortoises are less active or may become entirely dormant until the onset of the monsoon (Averill-Murray 2000b).

The monsoon also marks the height of social interaction and reproductive behaviors for the Sonoran desert tortoise. During this time, female

Sonoran desert tortoises lay their eggs, with an average clutch size of 5 (Averill-Murray and Klug 2000). Hatchling Sonoran desert tortoises will emerge from the nest site (burrow) in late summer or they may overwinter, emerging the following spring (Wilson *et al.* 1999; Averill-Murray 2000b). Sonoran desert tortoises reach sexual maturity at approximately 10 to 12 years of age (Averill-Murray 2000b).

Desert tortoises are distributed from California, Nevada, Utah, and Arizona in the United States, south through the Mexican states of Sonora and Sinaloa. The specific distribution of desert tortoise is likely determined by habitat and climatic characteristics (e.g., vegetation community (food), soil and substrate characteristics (shelter), precipitation pattern (water availability)) within the appropriate elevation range. The distribution of the Sonoran desert tortoise in the United States is considered to be east and south of the Colorado River, extending south and east from northwestern Mohave County in Arizona (Germano *et al.* 1994; Van Devender 2002a, Brennan and Holycross 2006, p. 54), covering roughly the western portion of the state. The distribution in the United States is likely bounded to the northeast and east by habitat changes imposed by the Mogollon Rim. In Mexico, the distribution of the Sonoran desert tortoise extends from the International Border of Sonora and Arizona, south to the vicinity of Guaymas, north of the Yaqui River, in southern Sonora (Germano *et al.* 1994; Fritts and Jennings 1994; Bury *et al.* 2002; Van Devender 2002a; Edwards *et al.* 2009, pp. 7-8), covering approximately the western half of the state of Sonora from the Gulf of California coast east roughly to the transition to unsuitable woodland and conifer forest areas in the higher elevations of the Sierra Madre Occidental. The Mojave and Sinaloa populations of desert tortoises represent two additional populations of this species recognized in the literature (Lamb and McLuckie 2002). The Mojave population, listed as threatened in 1990, includes those populations that occur north and west of the Colorado River in southern California, southern Nevada, southwestern Utah, and extreme northwestern Arizona; and the Sinaloa population is considered to be generally distributed along and within the western face of the Sierra Madre Occidental of central Sonora south into the border region between Sonora and Sinaloa at the extreme southern end of the species' range (Lamb and McLuckie 2002). Genotypes (genetic makeup of an

organism) differ significantly between populations (Lamb and McLuckie 2002).

Distinct Population Segment

Under section 3(15) of the Act, we may consider for listing any species, subspecies, or, for vertebrates, any DPS of these taxa. In determining whether an entity constitutes a DPS, and is therefore listable under the Act, we follow the Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act (DPS Policy) (61 FR 4722; February 7, 1996). Under our DPS Policy, three elements are considered in a decision regarding the status of a possible DPS: (1) the discreteness of the population segment in relation to the remainder of the taxon; (2) the significance of the population segment to the taxon to which it belongs; and (3) the population segment's conservation status in relation to the Act's standards for listing (i.e., whether the population segment, when treated as if it were a species, is endangered or threatened) (61 FR 4722, February 7, 1996). The first two elements are used to determine if the population segments constitutes a valid DPS. If it does, then the third element is used to consider whether such DPS warrants listing. In this section, we will consider the first two criteria (discreteness and significance) to determine if the Sonoran desert tortoise may be a valid DPS (i.e., a valid listable entity). Our policy further recognizes it may be appropriate to assign different classifications (i.e. threatened or endangered) to different DPSs of the same vertebrate taxon (61 FR 4721).

The petitioners requested we examine the Sonoran desert tortoise as a DPS. The information discussed below was presented by the petitioners, unless otherwise noted.

The petitioned DPS includes those populations that occur east and south of the Colorado River, south to the biogeographical boundary of the Yaqui River in southern Sonora, Mexico. In making this delineation for the petitioned DPS, the petitioners considered biogeographic isolation, ecological divergence, morphological and physiological characteristics, and genetic polymorphisms (genetic material occurring in multiple forms or configurations).

The petitioners discuss a population of desert tortoise with the "Mojave" genotype (i.e., having similar genetic characteristics to the those of the Mojave DPS of desert tortoise) which occurs in the Black Mountains of Mohave County, Arizona (isolated from the threatened Mojave DPS that occurs north and west of the Colorado River),

and are seeking the inclusion of that population within the petitioned DPS because it does not currently have protection under the Act. We will evaluate this anomalous situation further in our 12-month finding.

Discreteness

Under the DPS Policy, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following two conditions: (1) it is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation; or (2) it is delimited by international governmental boundaries within which significant differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist (61 FR 4722, February 7, 1996).

Information Provided in the Petition on Discreteness

The petitioners claim that the Sonoran population is discrete from the Mojave and Sinaloa populations due to differences in habitat use, reproduction strategies, physical characteristics, and genotype. The petitioners claim that the Colorado (United States) and Yaqui (Sonora, Mexico) Rivers act as biogeographical barriers to movement of tortoises between the Mojave and Sonoran populations, and between the Sonoran and Sinaloa populations, respectively. In view of this biogeographical isolation, the petitioners claim that significant ecological divergence has occurred between the Mojave and Sonoran populations of desert tortoise, largely due to significant differences in geology, vegetation types, and precipitation cycles where the populations are distributed. Desert tortoises in the Mojave population are most dense in the intermountain valleys that have soil types favorable to the construction of large, deep burrows (Bury *et al.* 1994). However, Sonoran desert tortoises reach maximum densities in the rocky bajadas and hillsides of higher slope, with reduced densities in the intermountain valleys (Averill-Murray *et al.* 2002b). The petitioners state that differences in precipitation cycle have led to notable differences in seasonal activity patterns between desert tortoises that occur in the Sonoran and Mojave deserts. Information in our files confirms these assertions. Specifically, analyzing the genetic population structure among desert tortoise populations in Mexico,

Edwards *et al.* (2009, pp. 7-8) suggest the Sinaloan population of desert tortoise uses Sinaloan thornscrub and tropical deciduous forest habitats (which are created by higher precipitation levels). However, some level of gradation of the Sonoran and Sinaloan genotypes may occur in the vegetative transition zone between Plains of Sonora subdivision of Sonoran desertscrub and Sinaloan thornscrub habitats of central Sonora (Edwards *et al.* 2009, p. 8).

Differences in reproduction strategies between the Sonoran and Mojave populations of desert tortoises were also discussed in the petition. In the Mojave population of desert tortoises, females lay up to three clutches of eggs per year with larger clutch sizes, earlier in the year (April to mid-July) while those in the Sonoran population lay one clutch per year of smaller size, later in the year (June through August) (Wallis *et al.* 1999; Averill-Murray *et al.* 2002a). These differences led Averill-Murray (2002b) and Henen (1997) to hypothesize that Sonoran desert tortoises invest all reproductive effort into a single clutch which hatches at the peak of forage and water availability and abundance, whereas desert tortoises in the Mojave population (maturing at younger ages and at smaller body sizes), have higher clutch numbers to account for higher mortality. Comparative reproduction strategies of the Sinaloan population of the desert tortoise were not discussed in the petition.

The petitioners claim morphological and physiological characteristics, in particular, shell characteristics, differ between the Sonoran and Mojave populations of desert tortoises. Germano (1993) found that desert tortoise shells in the Sonoran population are narrower than those in the Mojave population, were less domed, and possessed shorter gular shields (plates projecting forward from the lower shell). Desert tortoises in the Sonoran population also have a smaller plastron (lower shell) and a broader carapace (upper shell) (McLuckie *et al.* 1999). The petitioners did not provide information on the potential differences in morphological and physiological characters between the Sonoran and Sinaloan populations of desert tortoises.

Lastly, the petitioners rely on genetic polymorphisms (that is, genetic material occurring in multiple forms) as a primary basis to consider the Mojave, Sonoran, and Sinaloan populations of desert tortoises as evolutionarily significant units. The Mojave population of desert tortoise exhibits three related genotypes but the Sonoran desert tortoise possesses a single

genotype that is closely associated with Arizona upland and lower Colorado River subdivisions of Sonoran desertscrub habitat where the species is generally found (Lamb *et al.* 1989; Lamb and McLuckie 2002). Lamb and McLuckie (2002) suggest that regional inundation of the inland area from Yuma, Arizona, north to the Nevada border during the Miocene Epoch correlates with a single maternal ancestor of the Mojave population of desert tortoises, which would have presented significant isolation long enough to allow such genetic divergence between these two populations.

Evaluation of Discreteness

The population of desert tortoises in the Black Mountains of Mohave County, Arizona, which possess a uniquely Mojavean genotype, present an anomaly in the argument for genetic divergence as a result of regional inundation and subsequent isolation. McLuckie *et al.* (1999) suggest three possible hypotheses that may have led to the occurrence of the Mojave genotype east of the Colorado River: (1) active dispersal from north of the Miocene Epoch inundation; (2) river meander and subsequent geomorphological features assisted in allowing tortoises to cross the river over time; and (3) aboriginal human transport across the river for food stock, ritualistic or ceremonial use, or for medicinal uses which may have resulted in released animals or escapes.

The genetic differentiation between the entire Mojave and Sonoran populations of the desert tortoise has led some researchers to hypothesize that the two populations may represent different species entirely (Berry *et al.* 2002; Murphy *et al.* 2007). The Sinaloan population of desert tortoise, has been documented to have a 4.2 percent divergence in genotype from the Sonoran desert tortoise, and a 5.1 percent divergence in genotype from the Mojave population of desert tortoise (Lamb and McLuckie 2002). Lamb and McLuckie (2002) stated, "Given their geographic distribution, genealogical depth, and concordant suite of characters, the Mohave, Sonoran, and Sinaloan tortoise assemblages clearly qualify as [evolutionarily significant units]."

We have reviewed the information presented in the petition, and have evaluated the information in accordance with 50 CFR 424.14(b). On the basis of our review, we find that the petition provided substantial information indicating that the Sonoran population of the desert tortoise as it occurs east and south of the Colorado River, south to the Yaqui River, in Sonora, Mexico,

may be discrete from the Mojave and Sinaloan desert tortoise populations. We base this conclusion on ecological (habitat use), physiological (reproductive capacity), morphological (shell dimensions), and behavioral (seasonal activity patterns) differences that are further supported by analysis of genetic polymorphisms that concluded significant divergence has occurred among the Mojave, Sonoran, and Sinaloan populations of the desert tortoise over time.

Significance

Under our DPS Policy, in addition to our consideration that a population segment is discrete, we consider its biological and ecological significance to the taxon to which it belongs. This consideration may include, but is not limited to: (1) evidence of the persistence of the discrete population segment in an ecological setting that is unique or unusual for the taxon; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; (3) evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historical range; and (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics (61 FR 4721; February 7, 1996).

Information Provided in the Petition on Significance

The current range of the Sonoran desert tortoise, as described in the discussion above pertaining to discreteness, represents several hundred miles or kilometers of occupied habitat spanning across an International Border. The petition contends that this population segment is confined by two large perennial rivers; the Colorado River in its northern periphery, which separates the Mojave and Sonoran populations of desert tortoises, and the Yaqui River at its southern periphery, which separates the Sonoran and Sinaloan populations of the desert tortoise. These two rivers represent significant biogeographical barriers to genetic exchange between adjacent population segments and, therefore, preclude recolonization of this expanse of habitat from adjacent populations should the Sonoran desert tortoise become extirpated. As a result, the loss of the Sonoran desert tortoise would constitute a significant gap of several hundred miles or kilometers in the range between the Mojave and Sinaloan populations of desert tortoises.

Evaluation of Significance

We have reviewed the information presented in the petition, and have evaluated the information in accordance with 50 CFR 424.14(b). On the basis of our review, we find that the petition provided substantial information indicating that the Sonoran desert tortoise may be significant to the continued existence of the taxon. We base this conclusion on the large geographic range of the species, which may be significant to the taxon as a whole, a gap of several hundred miles or kilometers that would result from the loss of the Sonoran population, which would effectively bisect the species' range, and the genetic divergence between the three populations. These factors indicate that the loss of the Sonoran population may result in a significant gap in the range of the taxon that could not be filled over time due to presence of biogeographical barriers to movement.

DPS Conclusion

We have reviewed the information presented in the petition, and have evaluated the information in accordance with 50 CFR 424.14(b). In a 90-day finding, the question is whether a petition presents substantial information that the petitioned action may be warranted. Based on our review, we find that the petition, supported by information in our files, presents substantial scientific or commercial information to demonstrate that the Sonoran population of desert tortoise may be discrete from the Mojave and Sinaloan populations and that the Sonoran population may be significant to the taxon as a whole. As a result, we have determined that the Sonoran population of desert tortoise may be a DPS. Thus, the Sonoran population of desert tortoise may be a listable entity under the Act.

Five-Factor Evaluation

We next evaluated the level of threat to the potential DPS based on the five listing factors established by the Act. We thus proceeded with an evaluation of information presented in the petition, as well as information in our files, to determine whether there is substantial scientific or commercial information indicating that listing this population may be warranted.

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR 424, set forth the procedures for adding species to the Federal List of Endangered and Threatened Wildlife and Plants. A species, subspecies, or distinct population segment of

vertebrate taxa may be determined to be endangered or threatened 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 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 making this 90-day finding, we evaluated whether information regarding the Sonoran desert tortoise, 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. The information discussed below was presented by the petitioners, unless otherwise noted.

A. Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

Information Provided in the Petition

The petition states that habitat occupied by the Sonoran desert tortoise is threatened by livestock grazing, urbanization and development, mining, and international border patrol activities.

The petitioners claim that livestock grazing in occupied habitat adversely affects the Sonoran desert tortoise in a number of ways including competition for forage, vegetative trampling, alteration of plant community structure, introducing or enhancing the establishment of nonnative plant species, altering fire ecology, damaging burrows and cover sites, and altering tortoise behavior (Bostick 1990; Fleischner 1994; Oldemyer 1994; Averill-Murray 2000b; Kazmaier *et al.* 2001; Boarman 2002; Esque *et al.* 2002). Over 60 percent of habitat occupied by the Sonoran desert tortoise occurs on federally managed land, the majority of that on lands managed by the U.S. Bureau of Land Management (BLM). The petitioners claim that on BLM land livestock grazing occurs on 78 percent (on 273 allotments) of potentially occupied habitats for the Sonoran desert tortoise. The petitioners also state that on U.S. Forest Service lands, livestock grazing occurs on 86 percent of potentially occupied habitat for the Sonoran desert tortoise. The percentage of Sonoran desert tortoise habitat used for livestock grazing on State, private, or tribal lands is not identified in the petition.

The petitioners claim that the Sonoran desert tortoise and its habitat are harmed by urbanization and development in approximately 29 percent of its occupied range in the United States. The petitioners state that urbanization and development threaten the Sonoran desert tortoise and its habitat. Tortoise habitat within developing areas may be permanently lost or degraded, while patterns of development may fragment habitat, restrict gene flow, and hamper recolonization of formerly occupied habitat.

The human population in Arizona increased by 394 percent from 1960 to 2000; Arizona is the second-fastest growing State in terms of human population (Social Science Data Analysis Network 2000, p. 1). In particular, certain counties with habitat occupied by the Sonoran desert tortoise have experienced explosive human population growth over this timeframe: Maricopa (463 percent); Yavapai (579 percent); and Mohave (2,004 percent) (Social Science Data Analysis Network 2000). The petition did not specifically discuss the threat of urbanization and development in occupied habitat for the Sonoran desert tortoise in Mexico; however, information in our files suggests urbanization and development might affect the Sonoran desert tortoise there as well. Information in our files indicates that Mexico's human population grew 700 percent from 1910 to 2000 (Miller *et al.* 2005, p. 60). Demand from a growing human population has spurred the need for more agricultural development, according to information from our files (Contreras Balderas and Lozano 1994, p. 384; va Linda *et al.* 1997, p. 316).

The petitioners provided evidence that mining activities may also be a threat to the Sonoran desert tortoise and its habitat. Mining activities occur on Federal and private lands but are stated to be the most pervasive on BLM lands, with 4,670 mining claims occurring in habitat occupied by the Sonoran desert tortoise. As of 2003, 1,096 of these claims remained active and 3,574 had been closed, according to the petitioners. The petitioners state that mining activities (both small- and large-scale) adversely affect the Sonoran desert tortoise through habitat fragmentation, loss, and degradation; introduction of contaminants and fugitive dust (dust that cannot be attributed to a single point of origin, such as a smokestack); off-road travel associated with mining activities or roads created for said activities; and entrapment of tortoises in mine spoil

heaps (Averill-Murray 2000b; Woodman *et al.* 2001, 2004; Boarman 2002).

Occupied habitat for the Sonoran desert tortoise occurs along the International Border in Yuma, Pima, and Santa Cruz counties in Arizona. The petitioners state that patrol activities on the international border present threats to the Sonoran desert tortoise and its habitat. Specifically, the petitioners state that border patrol activities threaten the Sonoran desert tortoise and its habitat through road mortality, and loss or degradation of occupied habitat. In particular, the petitioners claim that the recently constructed border fence fragments the habitat of Sonoran desert tortoise populations in Mexico and the United States, and also directly and indirectly threatens the Sonoran desert tortoise habitat from construction and maintenance activities associated with the border fence.

Evaluation of Information

In consideration of the threats summarized above and discussed in the petition, we find that the petition provides substantial information that listing the Sonoran desert tortoise due to the present or threatened destruction, modification, or curtailment of its habitat or range may be warranted.

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

Information Provided in the Petition

The petition claims that the Sonoran desert tortoise is threatened by poaching, illegal collection for use as pets, shooting, and vandalism (physical harassment or disturbance of the animals) throughout its range in the United States and Mexico. Illegal collection of desert tortoises for food, for commercial trade, and as pets has been documented (Fritts and Jennings 1994, Averill-Murray 2000b; Bury *et al.* 2002). Information in our files suggests that the simple act of handling a Sonoran desert tortoise may cause an individual tortoise to void the contents of its bladder in defense. This loss of water may jeopardize its life (Averill-Murray 2002, p. 434; Boarman 2002). Shooting and vandalism of Sonoran desert tortoises has been reported in Howland and Rorabaugh (2002) and Woodman *et al.* (2002).

Evaluation of Information

In our evaluation of the petition, we find that the petitioners provided substantial information that listing the Sonoran desert tortoise due to overutilization for commercial,

recreational, scientific, or educational purposes may be warranted.

C. Disease or Predation

Information Provided in the Petition

The petitioners cite upper respiratory tract disease (URTD) as a threat to the Sonoran desert tortoise and reference the significant threat URTD is, and has been, for the Mojave population; a primary reason that population was listed as threatened in 1990. This disease is irreversible and fatal once acquired. Two species of *Mycoplasma* (a genus of small parasitic bacteria that lack cell walls and can survive without oxygen), *Mycoplasma agassizii* and *M. testudineum*, are known to cause URTD in desert tortoises and are easily transmitted between individual tortoises from casual contact (Brown *et al.* 1999; Wendland *et al.* 2007). Appendix 2 of the petition summarizes disease incidence reports within Sonoran desert tortoise populations. The petitioners state that Sonoran desert tortoises have tested positive for one or both of these antibodies at Saguaro National Park, and in the Ragged Top, Hualapai, Harcuvar, Little Shipp, and Sand Tank mountains among other locations. Dickinson *et al.* (2002) suspected that URTD may not be as serious a threat to the Sonoran population of desert tortoises as it has been for the Mojave population because tortoises in the Sonoran population do not occur in as high of densities as those in the Mojave and because Sonoran populations are more isolated from one another. In addition, the Sonoran population can take advantage of a bimodal precipitation cycle (two distinct rainy seasons). This offers additional opportunities for rehydration, lessening physiological stress, and, therefore, lessening susceptibility to the disease.

In addition to URTD, cutaneous dyskeratosis (shell disease) has been observed in numerous Sonoran desert populations (Appendix 2 of the petition). The petitioners claim that, while no serious deleterious effects of the disease have been observed in affected tortoises, Homer *et al.* (2001) indicated higher mortality rates in some populations where the disease has been documented. Lastly, the petitioners state that additional pathogens have been noted in free-ranging Sonoran desert tortoises including *Pasteurella* sp., *Streptococcus* sp., *Staphylococcus* sp., herpesvirus, *Pseudomonas* sp., and *Salmonella* sp. and that these diseases may be correlated with physiological stress induced by habitat destruction and modification discussed above in

Factor A (Pettan-Brewer *et al.* 1996; Dickinson *et al.* 2001).

There are numerous natural predators of the Sonoran desert tortoise, including the jaguar (*Panthera onca*) and mountain lion (*Felis concolor*) (the only predators known to be able to break an adult tortoise's shell), coyote (*Canis latrans*), common raven (*Corvus corax*), kit fox (*Vulpes macrotis*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), Gila monster (*Heloderma suspectum*), golden eagle (*Aquila chrysaetos*) and other raptors, greater roadrunner (*Geococcyx californianus*), coachwhip (*Coluber flagellum*), gophersnake (*Pituophis melanoleucus*), and kingsnake (*Lampropeltis getula*) (Averill-Murray *et al.* 2002b). The petitioners state that urban encroachment within the distribution of the Sonoran desert tortoise has created, or threatens to create, elevated levels of unnatural predation, mainly by ravens, coyotes, and feral domestic dogs. As explained below, petitioners claim these predators have benefitted, or been "subsidized," by human activities within the wild-urban interface areas.

Ravens can effectively prey on juvenile tortoises because their shells have not yet hardened (particularly the plastron) and the ravens are able to pierce the shells (Boarman 2002). Ravens, noted as a significant threat to desert tortoises in the Mojave population, have increased their numbers 14-fold within Arizona (Appendix 3 of the petition; Boarman and Kristen 2008). The petitioners suggest that increases in the number of ravens within the Sonoran desert may be linked to increased availability of food and water resources at landfills, rural and urban developments, along heavily traveled roads, and at agricultural areas in particular dairies. These land uses were also suspected by the petitioners to result in increased predation of Sonoran desert tortoises from coyotes and feral dogs; the latter being documented at 4 of 17 Sonoran desert tortoise study plots (Appendix 1 of the petition).

Evaluation of Information

In our evaluation of the petition, we find that the petitioners provide substantial information that listing the Sonoran desert tortoise due to the incidence of disease and high predation levels may be warranted.

D. The Inadequacy of Existing Regulatory Mechanisms

Information Provided in the Petition

In 1988, the Sonoran and Mojave populations of the desert tortoise were closed to collection in Arizona by the Arizona Game and Fish Department, except as authorized under their scientific collecting permit program. This status means that it is illegal to kill or capture desert tortoises from the wild (unless under a special permit). Possession for trade, sale, or other commercial purposes is prohibited (Howland and Rorabaugh 2002). Prior to 1988, the Arizona Game and Fish Department allowed the possession of one lawfully obtained tortoise per person, which likely contributed to their popularity as pets (Averill-Murray 2000b). The Arizona Game and Fish Department has developed a draft Comprehensive Wildlife Conservation Strategy: 2005-2015, in which the Sonoran desert tortoise has been identified as a Species of Greatest Conservation Need for which immediate conservation is necessary (Tier 1b under the Vulnerable category) (Arizona Game and Fish Department 2006a, pp. 485-487; 2006b, p. 4). The Arizona Game and Fish Department has been a significant contributor in the conservation and management of the Sonoran desert tortoise, producing many documents for public education, administering an adoption program for individual Sonoran desert tortoises that cannot be returned to the wild, and conducting or funding monitoring and research on wild Sonoran desert tortoise populations (Arizona Game and Fish Department 1990, 1996, 2000, and 2004; Arizona Interagency Desert Tortoise Team 1996, 1997, and 2000; Averill-Murray 2000).

The Sonoran desert tortoise does not currently have special status under the Endangered Species Act. The desert tortoise is included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora and a permit is required for the export of tortoises (Howland and Rorabaugh 2002).

Several Federal agencies have management authority for Sonoran desert tortoise habitat, including the BLM, the National Park Service, the U.S. Forest Service, the U.S. Bureau of Reclamation, the U.S. Department of Defense, and the Service. Significant land use protections are afforded the Sonoran desert tortoise on National Park Service lands and U.S. Fish and Wildlife Service refuges, in particular where they occur adjacent to U.S. Department of Defense lands such as the

Barry M. Goldwater Range and the Yuma Proving Grounds, because of the relatively large amounts of primarily undisturbed habitat within the boundary zone between these managed lands.

The Sonoran desert tortoise is considered a "sensitive species" by the BLM. In 1988, the BLM adopted a rangewide management strategy for desert tortoise habitat (BLM 1988; Howland and Rorabaugh 2002). Subsequently, habitat for the Mojave and Sonoran populations of desert tortoise was categorized into one of three categories: Category one being the highest quality; Category three, the lowest. In 1991, the BLM, the Service, and state wildlife agencies (Arizona, Nevada, Utah, and California) developed a policy whereby persons who disturbed occupied habitat were required to pay monetary compensation (usually in the form of land acquisition). The monetary compensation was weighted using the BLM's habitat categorization criteria. Mitigation ratios ranged from 1:1 (acres protected: acres disturbed) for category three habitat, to 6:1 for category one habitat (Howland and Rorabaugh 2002). The petitioners also cite numerous reports, management strategies, and formal actions taken by the BLM with regard to management of the Sonoran desert tortoise, but conclude that, based on their review, these measures may be insufficient to adequately protect the Sonoran desert tortoise on BLM lands.

The Sonoran desert tortoise occurs on both the Tonto and Coronado National Forests. The Sonoran desert tortoise is on the Regional Forester's Sensitive Species List, which means it is considered in land-management decisions. The petitioners claim that, despite this recognition, threats to the Sonoran desert tortoise continue to occur within these National Forests and that potential protections, such as those afforded under the National Environmental Policy Act (42 U.S.C. 4321-4327), have failed to come to fruition, particularly with respect to livestock grazing (see Table 6, p. 55 of the petition).

There are currently 10 Native American reservations within Arizona that contain known or potential Sonoran desert tortoise habitat: Fort Mojave Indian Tribe, Colorado River Indian Tribe, Hualapai Tribe, Fort McDowell Yavapai Nation, Salt River Pima-Maricopa Indian Community, Gila River Indian Community, Ak Chin, Tohono O'odham Nation, Pasqua Yaqui Tribe, and San Carlos Apache Tribe, although the status of populations on these reservations has not been established

(Averill-Murray 2000b). The petitioners state that historically no reservations conducted surveys or performed active management for the Sonoran desert tortoise or its habitat. However, the petitioners note that recently the Tohono O'odham Nation developed the Wildlife and Vegetation Management Program and now has oversight over the desert tortoise on their land. This program authorizes surveys for Sonoran desert tortoise and the establishment of monitoring plots, but does not provide funding to implement these activities (Averill-Murray 2000b). The petitioners also suggest that many Native American tribes have a historical relationship with desert tortoises that is of important cultural and spiritual significance, which may provide added protection of the species on their lands (Nabhan 2002).

On State lands, the Arizona State Land Department manages occupied Sonoran desert tortoise habitat, according to the petition, with the goal of "maximizing revenue to benefit education, health and penal institutions," and works cooperatively with the Arizona Game and Fish Department in management of Sonoran desert tortoises (Averill-Murray 2000b). Specifically, the petitioners state that the Arizona Game and Fish Department "recommends mitigation measures for tortoise impacts for which it is consulted ... (and) comments on State land projects related to urban planning, land sales and exchanges, rights of way, and commercial leases," but these recommendations are not binding (Averill-Murray 2000b).

The petition also notes that Pima County has considered the Sonoran desert tortoise in its habitat conservation planning by acknowledging that populations are decreasing in Pima County. However, Pima County offers few specific protections for the species.

In Mexico, the Secretaria de Deserrollo Social lists both the Sonoran and Sinaloan populations of the desert tortoise as threatened (Secretaria de Deserrollo 2008, p. 99). Populations of the Sonoran desert tortoise in Mexico are reportedly in decline. Factors believed to contribute to this decline are related to lack of resources for enforcement and include habitat destruction or modification, capture of tortoises for food or pets, and predation by feral dogs (particularly in areas adjacent to settlements or urban areas) (Fritts and Jennings 1994; Bury *et al.* 2002).

In the United States, as part of a multi-agency collaborative project, the Arizona Interagency Desert Tortoise

Team was formed in 1985 to coordinate research and management of Sonoran desert tortoise populations in Arizona. Participating agencies in the Arizona Interagency Desert Tortoise Team include the Arizona Game and Fish Department, Arizona State Lands Department, the U.S. Forest Service, the BLM, the U.S. Bureau of Reclamation, the U.S. Bureau of Indian Affairs, the Service, the National Park Service, the U.S. Geological Survey, and several U.S. Department of Defense military reservations (Arizona Interagency Desert Tortoise Team 1996). Since its inception, the Arizona Interagency Desert Tortoise Team has collaborated in the development of numerous publically available documents addressing conservation of the Sonoran desert tortoise (Averill-Murray 2000a, 2000b; Arizona Game and Fish Department 2007a, 2007b; Arizona Interagency Desert Tortoise Team 2008).

The Arizona Interagency Desert Tortoise Team's Memorandum of Understanding, signed in 1995, established specific objectives for the team including: (1) ensuring the survival of the species; (2) preventing loss of the species; and (3) improving the quality of Sonoran desert tortoise habitat in Arizona, with the team to function as an advocate for the Sonoran desert tortoise (Arizona Interagency Desert Tortoise Team 1996). A management plan for the Sonoran desert tortoise completed in 1996 called for improved monitoring protocols, the implementation of threat-minimization activities, and the creation of Sonoran Desert Management Areas for conservation of the Sonoran desert tortoise (Arizona Interagency Desert Tortoise Team 1996). However, the petitioners claim that the 1996 plan: (1) lacked meaningful goals and objectives; (2) lacked political willpower without legal protection for the Sonoran desert tortoise; (3) failed to designate Sonoran Desert Management Areas; and (4) was poorly funded, which hampered implementation of threat minimization activities outlined in the plan. These shortcomings in the 1996 plan were collectively recognized by the Arizona Interagency Desert Tortoise Team members who in 2002 reconvened to initiate the development of a revised plan in the form of a State Conservation Agreement for the Sonoran desert tortoise. The State Conservation Agreement, when finalized, is expected to: (1) mandate more practical conservation recommendations; (2) garner a higher level of commitment and responsibility from its signatories; (3) set measurable goals and objectives; and

(4) establish Key Habitat Areas on public lands where management strategies for the Sonoran desert tortoise will focus.

Evaluation of Information

There are significant protections in place with respect to management for the Sonoran desert tortoise on lands managed by the Service, National Park Service, and to a lesser degree, lands managed by the U.S. Department of Defense. The Arizona Interagency Desert Tortoise Team has also provided technical expertise and guided habitat-management decisions of participating agencies with marginal success. Despite these protections, we conclude that the petition and information in our files present substantial information that existing regulatory mechanisms may be inadequate to prevent declines of the Sonoran desert tortoise, particularly on lands managed as "multiple-use" such as U.S. Forest Service, BLM, and the Arizona State Land Department, where threats continue to occur. An additional concern is the limited implementation of recommendations of the Arizona Interagency Desert Tortoise Team's 1996 management plan.

In our evaluation of the petition, we find that the petitioners provided substantial information that listing the Sonoran desert tortoise due to the inadequacy of existing regulatory mechanisms may be warranted.

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

Information Provided in the Petition

The petitioners state that off-highway vehicle (OHV) use, alteration of fire frequency in the Sonoran Desert resulting from nonnative plant invasion, mortality on roads, drought, and climate change are among additional threats to the Sonoran desert tortoise. The petitioners claim that OHV use has increased significantly on public lands within the distribution of the Sonoran desert tortoise, especially on U.S. Forest Service and BLM lands, and particularly in incised washes, which are important habitat for the Sonoran desert tortoise (Averill-Murray 2000b; Averill-Murray and Averill-Murray 2002; Riedle *et al.* 2008). We have information in our files that indicates the use of OHVs has grown considerably in Arizona. For example, as of 2007, 385,000 OHVs were registered in Arizona (a 350-percent increase since 1998) and 1.7 million people (29 percent of Arizona's population) engaged in off-road activity from 2005-2007 (Sacco 2007). Over half of OHV users reported that merely

driving off-road was their primary activity, versus using the OHV for the purpose of seeking a destination to hunt, fish, or hike (Sacco 2007). Specific threats cited by the petitioners to the Sonoran desert tortoise or its habitat from OHV use include crushing tortoises, collapsing occupied and unoccupied burrows, changes in plant abundance and species composition, reduced habitat connectivity, soil compaction, soil erosion, reduced water infiltration, higher soil temperatures, and increased fire-starts (Boarman 2002; Ouren *et al.* 2007, pp. 6-7, 11, 16). The petitioners further claims that OHV use causes destruction of cryptogamic soils, which are soils with crusts formed by an association of algae, mosses, and fungi, which stabilize desert soil, retain moisture, and protect germinating seeds (Boarman 2002, pp. 46-47; Ouren *et al.* 2007, pp. 7-8).

Nonnative plant species such as Mediterranean splitgrass (*Schismus barbatus*), red brome (*Bromus rubens*), and African buffelgrass (*Pennisetum cilare*) have significantly degraded Sonoran desert tortoise habitat by out-competing more nutritional, native plant species and altering the frequency and magnitude of wildfires in many areas within its distribution (Howland and Rorabaugh 2002). The petitioners state that in addition to injury and mortality of Sonoran desert tortoises, wildfire within occupied habitat is expected to result in the complete conversion of deserts scrub to grasslands at higher elevations and to barren landscapes at lower elevations (Esque *et al.* 2002). *Pennisetum cilare* poses unique problems for the Sonoran desert tortoise in Sonora, Mexico, because Sonoran deserts scrub is actively cleared in favor of planting *P. cilare* as forage for livestock; *P. cilare* disperses naturally from these sites into adjacent habitat where it self-perpetuates, and is "likely to dominate the entire area" (Bury *et al.* 2002).

The petitioners cite several adverse effects to the Sonoran desert tortoise from roads. Among these threats were direct mortality, injury, facilitation of increased raven populations, increased roadside foraging by tortoises (as a result of increased plant growth from precipitation runoff), population fragmentation, and contamination of roadside habitat (Homer *et al.* 2001; Boarman 2002). Boarman and Kristin (2008, Appendix 3 of the petition) states that roads are one of the most prevalent threats in the study plots they reviewed.

Lastly, the petitioners claim that drought and climate change pose additional threats to the Sonoran desert tortoise. Drought increases the

physiological stress of desert tortoises and reduces reproductive rates within populations because of reduced forage quality and abundance (Averill-Murray and Klug 2000). The petitioners also state that the effects of drought can act synergistically with other threats to the Sonoran desert tortoise such as disease and habitat destruction or modification. Increased magnitude and frequency of drought is expected to occur as a result of climate change. Weiss and Overpeck (2005) predict that the Sonoran Desert may be displaced in the south by hotter, drier habitats and may expand to the north and to higher elevations, displacing cooler, drier habitats. In our review of available files, we find that Seagar *et al.* (2007, pp. 1181-1184) analyzed 19 different computer models of differing variables to estimate the future climatology of the southwestern United States and northern Mexico in response to predictions of changing climatic patterns. All but one of the 19 models predicted a drying trend within the Southwest; one predicted a trend toward a wetter climate (Seagar *et al.* 2007, p. 1181). A total of 49 projections were created using the 19 models and all but three predicted a shift to increasing aridity (dryness) in the Southwest as early as 2021-2040 (Seagar *et al.* 2007, p. 1181).

Evaluation of Information

In consideration of the above, we find that the petition and information in our files provide substantial information to indicate that OHV use, altered fire regimes, roads, and effects from prolonged drought, exacerbated by climate change, may be threats to the Sonoran desert tortoise.

Finding

On the basis of our determination under section 4 of the Act and our

evaluation of the five factors, we have determined that the petition presents substantial information indicating that listing the Sonoran population of desert tortoise may be warranted.

The petitioners presented substantial information indicating that the Sonoran population of desert tortoise may be discrete and significant and, therefore, may be a listable entity (DPS) under the Act. Further, the petitioners presented substantial information that the Sonoran population of desert tortoise may be threatened by Factors A through E throughout the entire range, with the exception of Factor C where the petitioners did not provide information on disease or predation in Mexico, nor did we have information in our files on disease or predation of the Sonoran desert tortoise in Mexico. Based on this review and evaluation, we find that the petition has presented substantial scientific or commercial information that listing the Sonoran population of desert tortoise throughout its range in the United States and Mexico as a DPS may be warranted due to current and future threats presented in our discussion of the five listing factors. As such, we are initiating a status review to determine whether listing the Sonoran desert tortoise under the Act is warranted. We will issue a 12-month finding as to whether any of the petitioned actions are warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information regarding the Sonoran desert tortoise, particularly with respect to its status and threats in Mexico.

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.

The petitioners requested that critical habitat be designated for this DPS. If we determine in our 12-month finding that listing the Sonoran population of desert tortoise is warranted, we will address the designation of critical habitat to the maximum extent prudent and determinable at the time of the proposed rulemaking.

References Cited

A complete list of all references cited is available, upon request, from the Arizona Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary authors of this notice are the staff members of the Arizona Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

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: August 19, 2009.

Daniel M. Ashe,

Director, U.S. Fish and Wildlife Service.

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