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Defenders of Wildlife Exhibit List for the ISEGS hearing

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January 23, 2009

Via Facsimile & E-mail

California Energy Commission
Che McFarlin
1516 Ninth St., MS-15
Sacramento, CA. 95814

ATTENTION: Preliminary Staff Assessment Ivanpah Solar Electric Generating System Application For Certification (07-AFC-5)

Dear Mr. McFarlin:

On behalf of Defenders of Wildlife ("Defenders") and our more than half a million members and supporters in the U.S., 200,000 of which are in California, I am writing to provide comments on the California Energy Commission's (CEC) preliminary staff assessment of the BrightSource Energy, Inc., Application for Certification (AFC) (07-AFC-5) for the proposed Ivanpah Solar Electric Generating System (ISEGS).

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, Defenders employs science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in AB 32, including the development of renewable energy in California. However, we urge that in the quest for renewable power that project proponents design their projects in the most sustainable manner possible. This is essential to ensure that project approval moves forward expeditiously and in a manner that does not sacrifice our fragile desert landscape and wildlife in the rush to meet our renewable energy goals.

The Ivanpah SEGS is a massive project which has increased from a 3,400-acre footprint to a 4,065 acre footprint that includes three solar concentrating thermal power plants, associated buildings, roads, a gas and water pipeline, new groundwater pumping, and a reconductored transmission line.

Based on a review of the Preliminary Staff Assessment of the Ivanpah SEGS Application for Certification ("project application") and associated documents, Defenders has several serious concerns about the potential impacts of this project on a number of rare, declining and listed species and on their associated desert habitat and waters. These concerns were first outlined in our comments to the Bureau of Land Management dated January 31, 2008 comments on the Notice of Intent to prepare an Environmental Impact Statement. At that time we also offered a number of recommendations regarding issues that need to be adequately examined in the Environmental Impact Statement and Final Staff Assessment (EIS/FSA).

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Defenders is very concerned that "the applicant has not yet provided specific information on how to compensate for loss of habitat for desert tortoise, for loss of rare plants and other sensitive species, or for impacts to state waters."(page 5.2-1 staff report). The staff report further states that the ISEGS project "would have major impacts to the biological resources of the Ivanpah Valley, significantly affecting many sensitive plant and wildlife species and eliminating a broad expanse of relatively undisturbed Mojave Desert Habitat."

I. The EIS/FSA Must Adequately Analyze and Address Impacts to Species and Habitats.

A. Desert Tortoise:

The desert tortoise is a threatened species due largely to habitat destruction, predation, and disease. Despite efforts to recover this species, the tortoise continues to decline in the California Desert. While the project site is currently classified as Category III desert tortoise habitat under the Northeast Mojave Plan ("NEMO"), the California Department of Fish and Game ("DFG") continues to maintain that there was no scientific justification for the Bureau of Land Management ("BLM") to downgrade this habitat from Category II to Category III. Further, the surveys by the project proponent's consultants found a high presence of desert tortoise on this property. Finally, given the precarious nature of the tortoise population and the foreseeable impacts to desert tortoise from climate change, this habitat is even more important to the future survival and recovery of this species.

The proponent continues to imply that this is poor quality and highly disturbed land. Defenders realizes that this project area has been in the Clark Mountain grazing allotment (CA-690-EA06-26).However, the area has been viewed by Defenders staff and as stated in the staff assessment (pg 5.2-30) "The ISEGS project area provides high quality habitat for this species, with low levels of disturbance and high plant species diversity (CDFG 2008a). The desert tortoise population in this part of the Ivanpah Valley is also unique because it is the highest elevation at which this species is known to reside in the State (CDFG2008a).

Given the importance of this habitat, the high number of tortoise on this land, and the severe impacts to tortoise from the project, we strongly recommend that the project proponent do all it can to avoid impacts to tortoises first, then minimize those impacts that cannot be avoided, and finally, if all else fails, adequately mitigate for those impacts. To that end, we strongly urge that the project follow the recommendations found the current Desert Tortoise Recovery Plan for avoidance and minimization measures.

In addition, the project proposes a mitigation ratio of 1:1 for desert tortoise habitat. We strongly oppose such a mitigation ratio. The recommended ratio for good quality tortoise habitat is 5:1. DFG determines mitigation ratios for desert tortoise based on: (1) presence of the species; (2) habitat quality; (3) disturbance level of habitat; (4) adjacent land uses; (5) connectivity; and (6) projected growth. Defenders of Wildlife would like to see an analysis of mitigation ratios addressing the above 6 parameters.

The staff report states that (5.2-42) the "staff has concluded that the applicant's proposed mitigation would be insufficient to avoid significant direct, indirect and cumulative impacts to Desert Tortoise,

and fails to meet the state's full mitigation standard." Rather, the staff report recommends "appropriate levels of suitable habitat acquisition and enhancement" to ensure long-term viability of desert tortoise populations. CEC and DFG staff recommended a 3:1 habitat compensation ratio for the nearby Victorville Project (See Victorville 2 Hybrid Power Project (07-AFC-1) Status Report 2, page 2). Staff considered the 3:1 ratio necessary to protect mojave ground Squirrel, desert tortoise and burrowing owls. However, the proposed Ivanpah facility meets at least four of the DFG parameters listed above and should therefore follow a 5:1 mitigation standard. The desert tortoise is known to be present on the site, the habitat is of high quality, and the habitat would be significantly disturbed by the project due to grading. Additionally, the project affects habitat connectivity because it bifurcates an area located at the juncture of the Mojave Preserve, the Tortoise DWMAs and Federal wilderness areas.

Staff should also consider the risks posed by the translocation program in structuring the compensatory mitigation program. The U.S. Army suspended its Desert Tortoise translocation program when at least 15% of the translocated tortoises died, mostly due to predation (see http://www.pe.com/localnews/inland/stories/PE_News_Local_S_tortoises10.450e731.html). The tremendous risks involved with translocation militate towards a higher compensatory mitigation ratio.

Other impacts to tortoise must be fully analyzed and addressed, such as new water sources that attract predators, impacts to tortoise water sources from proposed groundwater pumping, impacts from roads, and impacts from vegetation management. For example, if additional water sources will be placed on site, it could increase raven populations within the surrounding area. A raven monitoring plan would need to be included, as ravens can have a very detrimental impact on tortoises. In addition, while the project will obviously involve roads and a great deal of traffic (particularly during construction), the project application fails to consider the use of fencing to avoid impacts to the tortoise.

Roads lead to direct and indirect impacts on desert tortoise including roadkill mortality, destruction of burrows, dispersion of invasive plants, predators, development, recreation, and possibly disease (Boarman 2002). Roads and highways tend to fragment wildlife habitat and reduce the movement of animals through the landscape (Tsunokawa and Hoban 1997, Evink 2002). Road kill is the greatest human-caused source of direct mortality to vertebrate wildlife in the United States with an estimated one million vertebrates killed per day on roads in America (Forman and Alexander 1998, Kline and Swan 1998). The cumulative impact of habitat fragmentation on desert tortoise is exacerbated by roads and the amount of habitat that they degrade (Boarman 2002).

The project mentions the use of translocation of desert tortoises as a part of the mitigation strategy. At this time Defenders is reviewing the new USFWS Guidelines for Clearance and Translocation of Desert Tortoises from the ISEGS project. We do not believe that translocation, in and of itself, provides adequate mitigation. Instead, any translocation must be in conjunction with the preservation of habitat. Further, the Translocation Plan will need to comply with the recommendations of the FWS 1994 Desert Tortoise Recovery Plan, including

a) No experimental translocations into Desert Wildlife Management Areas ("DWMAs").
b) Translocations should be made to appropriate habitat; the EIS/FSA will need to define the habitat to be used and justify this selection.

c) Areas into which desert tortoises are to be relocated should be surrounded by a desert tortoise-proof fence or similar barrier. The fence will contain the desert tortoises while they are establishing home ranges and a social structure.
d) The best translocations into empty habitat involves desert tortoises in all age classes, in the proportions in which they occur in a stable population. What is the population structure in this area?
e) The number of desert tortoises introduced should not exceed the pre-decline density.
f) All potential translocatees should be medically evaluated in terms of general health and indications of disease, using the latest available technology, before they are moved.
g) If desert tortoises are to be moved into an area that already supports a population—even one that is well below carrying capacity—the recipient population should be monitored for at least 2 years prior to the introduction. Necessary data include the density and age structure of the recipient population, home ranges of resident desert tortoises, and general ecological conditions of the habitat. Any translocation sites should be isolated by a desert tortoise barrier fence or similar barrier next to the highway or road. The purpose of fencing the highway is obvious—to keep translocated animals from being crushed by vehicles on the road. The project application is unclear about the level and extent of fencing.

B. Banded Gila Monster:

Defenders urges that the Banded Gila Monster be included on the list of species to be analyzed and addressed. Recent scientific research has found that Gila monsters appear to use two overwintering sites (rocky hills and surrounding bajadas). D.F. DeNardo, et al., 2007 Desert Tortoise Council Symposium Abstract). Thus, this project could be important habitat for the Gila monster.

C. Bighorn Sheep:

Defenders also urges that the EIS/FSA assess the impacts to bighorn sheep. While the California Natural Diversity Database ("CNDDB") reports the last occurrence of bighorn sheep in this area to be in 1986, we understand that the Society for Bighorn Sheep possesses updated information showing that this project area is a wildlife corridor for bighorn sheep. Therefore, we strongly urge that this project analyze and address impact to bighorn sheep and their ability to move across the Ivanpah Valley. Furthermore, given the proposed pumping of groundwater, we strongly urge that the impacts of this pumping be analyzed and addressed with respect to potential impacts on the desert seeps and springs used by bighorn sheep.

D. Burrowing Owl:

The project fails to acknowledge and address any impacts to the burrowing owl. In addition to being a Species of Special Concern, the burrowing owl is also protected under Fish and Game Code Section 3503.5 and the Migratory Bird Treaty Act. Impacts to burrowing owls must be assessed in the EIS/FSA. If impacts are found to exist, then the following measures should be adhered to in the document, as found in the DFG's Burrowing Owl Survey Protocol and Mitigation Guidelines:

a) Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the Department of Fish and Game determines that the adult birds have not begun egg-laying and the juveniles from the occupied burrows are foraging independently and capable of independent survival
b) As compensation for the direct loss of burrowing owl nesting and foraging habitat, the project proponent should mitigate by permanently protecting known burrowing owl nesting and foraging habitat.
c) A Burrowing Owl Mitigation and Monitoring Plan should be submitted to the Department of Fish and Game for review and approval prior to relocation of owls describing the proposed relocation and monitoring plans. The plan shall include the number and location of occupied burrow sites and details on adjacent or nearby suitable habitat available to owls for relocation. If no suitable habitat is available nearby for relocation, details regarding the creation of artificial burrows (numbers, location, and type of burrows) will also need to be included in the plan.

E. Native Desert Vegetation and Special Status Plant Species

The project application details impacts to some plant species, particularly the barrel cactus and Mojave yucca. However, since the original plant surveys were admittedly conducted during a dry year, we strongly urge that additional surveying be conducted this spring in order to better assess impacts to a number of special status plants and to prescribe adequate mitigation. We do not support deferring this analysis to pre-construction surveys. Indeed, given the biodiversity found on the project site during a dry year survey, we believe that this site contains a large number and extent of rare plants.

With respect to mitigation as currently proposed in the application, we also strongly urge that the environmental documents do a much more thorough job of describing adequate mitigation should a rare plant show up on the project. Right now, the project application sets forth a list of potential mitigation strategies, but commits to none and analyzes none.

Finally, we are very concerned about the extent of the impact of the proposed project on the Creosote Bush-White Bursage Barrel Cactus Community Type. With 10,000 acres of this plant community existing in 20 to 30 locations, the project appears to impact more than 1/3 of the community type. Such an impact appears to be very significant and must be fully analyzed and addressed in the EIS/FSA.

F. Other Species:

The proposed project will reroute and fill in a number of existing ephemeral washes that flow into the Ivanpah Dry Lake. The EIS/FSA must analyze and address impacts to the Dry Lake and fairy shrimp. In addition, the EIS/FSA must analyze and address the impacts of the groundwater pumping on desert species and habitat. Finally, the EIS/FSA must analyze and address impacts to migratory birds from this project, including any potential impacts from the evaporation ponds.

II. <u>The EIS/FSA Must Adequately Analyze Cumulative Impacts</u>.

The need to prepare a comprehensive EIS based on cumulative and regional effects on wildlife has been specifically embraced by the D.C. Circuit. For example, in *Natural Resources Defense Council v. Hodel*, 865 F.2d 288 (D.C. Cir. 1988), conservation organizations alleged that the Department of the Interior failed to adequately consider the cumulative effects of simultaneous offshore oil and gas leasing and development in the Pacific and Atlantic Oceans on migratory species including endangered cetaceans, marine mammals, salmon, and marine and coastal birds. The D.C. Circuit agreed with plaintiffs, finding that the EIS "for the most part considers only the impact within each area" of leasing. *Id.* at 298 (emphasis in original). The Court thus held that the analysis did "not address the issue ... which NEPA requires the Secretary to consider: the cumulative impacts of [oil and gas leasing] development in different areas," and that "allowing the Secretary's 'analysis' to pass muster here would eviscerate NEPA." *Id.* at 298-99 (quotations and emphasis in original).

Further, NEPA requires analysis of significant cumulative impacts of the proposed project when combined with other past, present and reasonably foreseeable future projects. CEQ Regulations for NEPA (Section 1508.27) require that the significance of actions be analyzed in several contexts such as society as a whole, the affected region, the affected interest, and the locality. This section also requires that the severity of impact be considered and evaluated in determining "significantly" using 10 stated criteria (43 FR 56003, Nov. 29, 1978; 44 FR 874, Jan. 3, 1979). The seventh criterion addresses "[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts."

Therefore, the EIS/FSA must analyze the other proposed renewable energy projects in this region, any foreseeable growth in this area, including in Primm, the foreseeable impacts of climate change, and any other reasonably foreseeable future projects. The impacts should include a discussion of the growth due to the workers associated with this project.

III. The EIS/FSA Must Include An Adequate Range of Alternatives and Provide Meaningful Analysis of These Alternatives.

NEPA requires that an EIS contain a discussion of the "alternatives to the proposed action." 42 U.S.C. §§ 4332(C)(iii),(E); *see also Council on Environmental Quality ("CEQ") NEPA Regulations*, 40 C.F.R. 1508.9(b). This alternatives analysis is "the heart" of the NEPA process, and is intended to provide a "clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. 1502.14; *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985) (EIS must consider "every" reasonable alternative). An agency's failure to consider a reasonable alternative is thus fatal to its NEPA analysis of a proposed action. *See Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519-20 (9th Cir. 1992) ("The existence of a viable, but unexamined alternative renders an environmental impact statement inadequate."); Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 48 Fed. Reg. 18,026 (March 16, 1981)("In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out the particular alternative. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.").

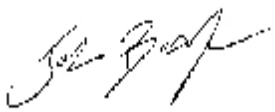
In order to conduct a meaningful alternatives analysis, however, an agency must first "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives

including the proposed action." 40 C.F.R. § 1502.13. "The stated goal of a project necessarily dictates the range of 'reasonable' alternatives and an agency cannot define its objectives in unreasonably narrow terms." *City of Carmel-by-the-Sea v. DOT*, 95 F.3d 892 (9th Cir. 1996). Consequently, "[l]ogic and law dictate that every time an agency prepares an environmental impact statement, it must answer three questions in order. First, what is the purpose of the proposed project (major federal action)? Second, given that purpose, what are the reasonable alternatives to the project? And third, to what extent should the agency explore each particular reasonable alternative?" *Id.* at 903.

To that end, we strongly advise that the project proponents take care not to unreasonably constrain their range of alternatives in the EIS/FSA by formulating a limited purpose and scope of the project. For example, we would oppose a purpose and need statement that simply describes the project as the goal instead of reflecting the larger goal of generating renewable solar energy. With an adequately designed purpose and need statement, the project's range of alternatives should involve, at a minimum, an environmentally preferred alternative, a no action alternative, and an alternative that provides for power generation closer to the power consumption.

We thank you for the opportunity to provide comments on this project. Please add us to the distribution list for the EIS/FSA and all notices associated with this project. If you have any questions or comments, please do not hesitate to contact us at (916) 313-5800.

Sincerely,



Kim Delfino
California Program Director

Joshua Basofin
California Representative

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May 21, 2009

Mr. John Kessler
Project Manager
California Energy Commission
1516 9th Street, MS 15
Sacramento, CA 95814-5504

SUBJECT: Comments on the Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Kessler:

On behalf of Defenders of Wildlife ("Defenders") and our more than half a million members and supporters in the U.S., 200,000 of which are in California, we are writing to provide comments on the Draft Desert Tortoise Translocation/Relocation Plan for the proposed Ivanpah Solar Electric Generating System (ISEGS) (07-AFC-7).

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, Defenders employs science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in AB 32, including the development of renewable energy in California. However, we urge that in the quest for renewable power that project proponents design their projects in the most sustainable manner possible. This is essential to ensure that project approval moves forward expeditiously and in a manner that does not sacrifice our fragile desert landscape and wildlife in the effort to meet our renewable energy goals.

We reviewed the comment letters from the California Energy Commission (CEC), Department of Fish and Game (CDFG), and U.S. Fish and Wildlife Service (USFWS) on the Draft Desert Tortoise Translocation/Relocation Plan for the proposed ISEGS project. A translocation/relocation plan is required in order for ISEGS to obtain incidental take authorizations for the Desert Tortoise from USFWS under 16 U.S.C. § 1536(b)(4) CDDFG under California Fish and Game Code § 2081. The translocation/relocation plan specifies how ISEGS plans to minimize the take of Desert Tortoises to the lowest possible level while conforming to standard capture, handling, release and monitoring guidelines issued by the regulatory agencies. We are confident that the technical aspects of the relocation plan when finalized and implemented will conform to the requirements and guidelines imposed on the project proponent through oversight and enforcement by the wildlife and regulatory agencies.

Relocation plan goals (Draft Plan, page 2): Goals of the Draft Plan should not simply be to conform to the procedural guidelines of the wildlife and regulatory agencies and minimize impacts to tortoises outside the fenced project areas. We believe the goal of this effort should be to achieve 100 percent success in the translocation/relocation effort and full integration of relocated animals into the host population. Success should entail no mortality due to the relocation project over the three year monitoring period. Naturally, since Desert Tortoise relocation projects continue to be categorized as experimental, we have no way of assuring that the project will be 100 percent successful, but striving to achieve that goal is entirely reasonable in light of the goals and requirements of both the California Endangered Species Act and the (federal) Endangered Species Act. Considering the widespread and severe declines in tortoise populations throughout the various designated critical habitat units in California, maximizing protection of remaining populations and individuals comprising those populations becomes

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even more important. There is now thought being given to the importance of lower density tortoise populations on the fringes of the species range because the incidence of upper respiratory tract disease is less or even non-existent compared to those in core areas of the major recovery units.

Project clearance surveys (Draft Plan, page 3): We recommend that authorized biologists accompanied by tortoise monitors carefully survey the fenced project areas during and after the vegetation removal and grading phases to detect and document any Desert Tortoises remaining after site clearance surveys. Documentation should also account for any animals that were killed during the vegetation removal and grading. We believe this is important in judging the adequacy of clearance surveys and tortoise removals from the fenced project areas.

Transportation and release (Draft Plan, page 5): The Draft Plan needs to conform to all project guidelines dated 12/12/08 submitted by the USFWS to the project proponent. For example, the Draft Plan does not indicate how captured tortoises would obtain drinking water prior to being released into relocation areas.

Scheduling (Draft Plan, page 5): Defenders recommends that tortoise translocation/relocation be done in the fall season when daily high temperatures are gradually diminishing. In the Mojave Desert region, including the Ivanpah Valley, fall season relocations should generally not be scheduled in August due to the likelihood of high daily temperatures. We believe a relocation window in the fall from early October to early November is reasonable. Spring season relocations should be scheduled no later than the middle of April in order to avoid the possibility of high daily temperatures. We do not support any summer season relocations.

Monitoring and Reporting (Draft Plan, page 6): Monitoring the status of the relocated animals is required to test the validity of translocation/relocation as a means of reducing take to the extent necessary so that it becomes "incidental" to the project. The California Endangered Species Act § 2081(B)(2) requires that the impacts of authorizing incidental take are minimized and fully mitigated. Monitoring will help in determining if those standards are being met and if project goals are being achieved, including preventing mortality attributed to the relocation project. We recommend that any relocated and monitored tortoises be subjected to the absolute minimum amount of human handling or manipulation and that observation of marked animals be done at the farthest possible distance in the shortest period of time needed to obtain essential monitoring information. Defenders is of the opinion that tortoise predators such as Common Ravens and Coyotes may be attracted to areas within their home range frequented by humans, which may result in abnormally high rates of tortoise encounters and predation losses in relocation areas.

Defenders strongly recommends that further investigation into the existing Desert Tortoise population in Ivanpah Valley be performed, combined with a habitat suitability determination that will provide additional insight into the potential for either success or failure of the relocation. The existing golf course in Ivanpah Valley located approximately 1.5 miles to the east of the proposed ISEGS project contains open water ponds, trees and grass that may support unnaturally high numbers of Ravens, Coyotes and Desert Kit Foxes, all predators of the Desert Tortoise. The habitat suitability determination needs to address effects of these predators on the existing tortoise population and potential for abnormally high mortality to both the host and relocated tortoises.

The relocation plan should include a section on alternative courses of action that will be mandatory and take effect immediately if mortality of relocated animals exceeds the 10 percent threshold as per the USFWS relocation guidelines for the project. We believe prior agreement on alternative actions should be part of the plan because reinitiating consultation may be triggered by unforeseen higher rates of mortality.

During a field tour of the proposed ISEGS on May 18th, 2009, representatives from Defenders, BLM, CDFG and the project proponent observed that livestock watering and holding facilities are located within or near the proposed translocation/relocation areas. Livestock operations associated with these facilities may seriously impact the Desert Tortoise translocation/relocation and we strongly recommend that this issue be resolved. Furthermore, it was observed that the watering troughs contained water which potentially attracts and supports predators of the Desert Tortoise as mentioned above.

Defenders requests that the suitability of the proposed translocation areas adjacent to Interstate 15 be given further study. We recognize that the project would include installation of Desert Tortoise barrier fencing along Interstate 15 prior to any necessary animal translocation. However, we are concerned about the condition of the habitat, increased noise and pollutants associated with the heavy traffic using the highway, the possible increased frequency of predators/scavengers attracted by road-killed animals, and the potential for higher than normal predation on Desert Tortoises translocated to these areas.

General concerns about Desert tortoise relocation projects: Although tortoises have been subject to several relocation efforts as a means of minimizing take in portions of its range in California, Nevada, Utah and Arizona, the practice continues to be experimental due to limited data, lack of analyses and uncertainties with regard to the efficacy of relocation, and in some cases significant, unforeseen losses of relocated tortoises even though relocation plans were carefully developed and implemented.

Adverse effects of relocation can include increased mortality due to predation, human interactions such as vehicle kill or collection, and exposure to extreme heat or cold. These mortality-related factors are often directly attributed to the effects of the relocation effort, especially during the first year following relocation.

Relocated animals may attempt to return to their home range, make long-distance movements, experience aggressive interactions with the host tortoise population possibly resulting in displacement of less dominant members of the population, etc. The common factor in the increased mortality appears to be the amount of time spent by individual tortoises above ground in the absence of known sheltering, feeding and resting areas. This increased time above ground exposes individuals to predation, environmental stress, collection, and vehicle kill.

Recent tortoise relocation projects have been associated with significant losses of individuals in both the host and relocated populations due to Coyote predation. The most prominent case is the large relocation effort at the National Training Center at Fort Irwin, which was suspended in October 2008 by the Army due to excessively high tortoise mortality from Coyote predation (Los Angeles Times, October 11, 2008). Although the FWS and others involved in investigating the mortality issue have reported that the relocation project had no relationship to the high mortality, Defenders is skeptical of the veracity of that conclusion, as well as conclusions or statements suggesting that the high mortality was due to drought conditions that had reduced populations of Jackrabbits and other prey species of Coyotes, thereby causing them to seek Desert Tortoises as an alternative prey. Drought is a relative term, and we consider drought to be the norm in the Mojave Desert, with non-drought periods occurring infrequently. Initial assessments by the U.S. Geological Survey, FWS and others indicated significantly higher levels of Coyote predation on tortoises in the study area frequented by the researchers on both the host and relocated animals.

Abnormally high mortality may be the result of several of the effects of relocation causing Desert Tortoises to spend increased time above ground, thereby increasing vulnerability to predators and exposure to intolerably high or low temperature. Defenders is also of the opinion that natural predators of the Desert Tortoise, such as the Coyote, Desert Kit Fox, and Common Raven may be attracted to areas within their home ranges that are frequented by humans, such as during Desert Tortoise relocation efforts.

General conditions and site preparation recommendations for Ivanpah Valley: Defenders believes the habitat conditions in the relocation and surrounding areas must be as conducive to tortoise survival and population viability as possible. If these conditions are not provided, then the goal of the relocation is compromised from the beginning, and questions arise whether or not mortality due to the relocation can be deemed "incidental."

The proposed relocation and translocation zones need to be free of as many human related threats as possible in order to increase the likelihood that the relocation will succeed (i.e., relocated tortoises are integrated into the host population with the mortality rate of the entire population at a normal level). We believe it is essential that off-road vehicle use and livestock grazing in the portion of Ivanpah Valley required to support both host and resident tortoise populations be eliminated. This is an action that would be required by the Bureau of Land Management (BLM) that could be recommended by the CEC and CDFG. The Colosseum dirt road should be closed and not reconstructed through the proposed relocation zone between project units one and two. All other unnamed dirt roads within the proposed relocation and translocation zones should be permanently closed to vehicle use unless

permitted by the BLM for land management or maintenance of utilities. Casual and permitted off-road vehicle use should be prohibited. Livestock grazing in Ivanpah Valley north of Interstate 15 on the Clark Mountain Allotment administered by BLM should be terminated. During the field tour of the proposed project area on May 14 one member of the group observed several free-roaming wild burros in the area. As with livestock, their presence in the translocation/relocation areas could compromise the success of the effort, and Defenders recommends that these animals be captured and removed by BLM.

Defenders recommends that the agencies consider installation of a segment of Desert Tortoise barrier fence in an appropriate location between the proposed SEGS Unit 1 and the golf course or adjacent area as a means of preventing tortoises from moving closer to sources of human encounter and potentially higher predation.

Concern over cumulative impacts: The California Environmental Quality Act (CEQA) requires analysis of a project's cumulative impacts when its incremental effect is cumulatively considerable. Calif. Pub. Res. Code § 15130. Cumulative impacts to the Desert Tortoise population and its habitat in Ivanpah Valley north of Interstate 15 are of concern considering the potential for a large commercial airport on or near Ivanpah Dry Lake, the existing casinos and hotels at Primm and Jean, the nearby golf course, Interstate 15 and electrical transmission lines.

Defenders is aware that another solar energy developer, OptiSolar, has applied to the BLM for a 4160 acre right of way for a 380 MW photovoltaic facility immediately adjacent to the NW facing side of the ISEGS. If a second facility were to be permitted and constructed, additional tortoise relocations may become necessary. This possibility raises questions about the ability of the tortoise population to remain viable, including its ability to tolerate additional effects of a potential second relocation. Based on the need to consider translocation/relocation of an estimated 25 Desert Tortoises from the proposed ISEGS site alone, the additional existing and future projects referenced above will likely result in the need to consider additional translocations/relocations. As mandated by CEQA, a complete analysis of cumulative impacts must be conducted to determine and disclose the impacts to the Desert Tortoise in the affected area from past, present and reasonably foreseeable projects or human activities.

Defenders appreciates the opportunity to provide comments on the draft relocation plan and we hope they are useful to the CEC and CDFG finalizing the plan.

Sincerely,

Jeff Aardahl
California Representative

Cc: Ray Bransfield, FWS, Ventura
Scott Flint, CDFG, Sacramento
Bruce Kinney, CDFG, Bishop
Greg Miller, BLM, Moreno Valley

California Office
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www.defenders.org

August 31, 2009

Chris Otahal
Bureau of Land Management (BLM)
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311

Sent by electronic mail to: caftirwin@blm.gov

Re: Additional Comments on Draft Environmental Assessment for Desert Tortoise Translocation

Dear Mr. Otahal:

This letter contains supplemental comments on the subject environmental assessment from Defenders of Wildlife (Defenders). These comments are in addition to those contained in our letter to you dated August 21, 2009.

After reading the environmental assessment and BLM Manual 1745 (Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife and Plants), we conclude that the proposed action of releasing Desert Tortoises captured on portions of the National Training Center at Fort Irwin to adjacent public lands does not conform to BLM policy.

Although Defenders fully supports all actions necessary to conserve (recover) the threatened Desert Tortoise, we believe additional planning and analysis is needed before BLM is in a position to make an informed decision regarding the release of captured Desert Tortoises from Fort Irwin onto BLM administered lands in the adjacent designated critical habitat units (i.e., Superior-Cronese and Fremont-Kramer).

BLM policy contained in Manual 1745 includes the following requirements with regard to wildlife introductions, transplants or reestablishments:

- Decisions should be made as part of the land use planning process and releases must conform to resource management plans. Land use plans must be amended if management direction is not provided. Note: It is our understanding that the California Desert Conservation Plan as amended for the West Mojave area did not establish Desert Tortoise translocation areas on BLM administered lands.

- Public participation is required, including the State wildlife agencies.

- A site-specific activity plan is required prior to commencing with the operation unless waived by the State Director.

- A site-specific activity plan must include measurable habitat population objectives based on existing ecological site potential and condition, habitat capability, and other important factors.

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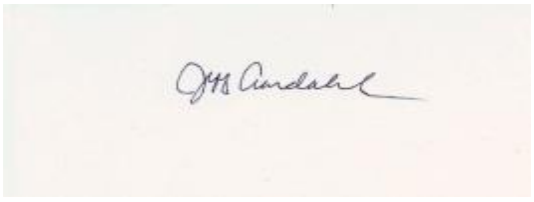
The West Mojave amendments to the California Desert Conservation Area (CDCA) establish Survey and Disposition Protocols in Section 2.2.4.2.2 of the Final Plan and EIS found on pages 2-61 through 2-66. These protocols include guidelines for projects requiring the capture and release of Desert Tortoises as a means of minimizing take to incidental levels. It is clear from reading the guidelines that the Fort Irwin translocation project would require establishing translocation sites because of the greater release distances involved and the assumption that habitat within the Western Expansion Area would ultimately be removed by military training exercises. In establishing translocation sites, we again call attention to the 1745 Manual, which indicates such areas are to be established through a land use planning process.

We are concerned that the proposed release of up to approximately 1200 Desert Tortoises onto public lands may result in significant mortality and injury to these animals from increased predation, exposure and stress associated with the capture, release and long-term monitoring. We do not believe the translocation proposal under consideration is substantially different from the previous translocation project that was halted due to high Desert Tortoise mortality attributed to predation by Coyotes.

We also believe the success of the proposed translocation will depend on establishing and maintaining habitat conditions that promote ecosystem recovery and maintenance. Based on our knowledge of on-the-ground conditions in the areas contemplated for Desert Tortoise release, we strongly believe significant reductions in designated open vehicle routes, increased law enforcement, elimination of all shooting and plinking, and prohibiting the use of unlicensed off-road vehicles need to occur before any relocation can be considered. These conservation measures should be built into a translocation plan developed and implemented through the land use planning process. With regard to designated vehicle routes, we believe that a 50 to 70 percent reduction in the density or frequency of currently designated open routes needs to occur to substantially reduce the adverse impacts associated with motorized vehicle use and access.

We recommend that an interagency team comprised of biologists and managers from BLM, U.S. Fish and Wildlife Service, U.S. Army and the California Department of Fish and Game develop a sound management strategy for completing the translocation of Desert Tortoises from Fort Irwin. Such a strategy should involve the public and make use of the best available scientific data on Desert Tortoise translocation. Once a strategy is accepted, it can be used as the basis for a proposed amendment to the CDCA Plan that addresses the release of Desert Tortoises onto public lands.

Sincerely,



Jeff Aardahl
California Representative

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July 29, 2009

Commissioner Jeffrey Byron, Presiding Member
Commissioner James D. Boyd, Associate Member
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2493 Portola Road, Suite B
Ventura, CA 93003

Scott Flint
Environmental Program Manager
Ecosystem Conservation Division
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

SUBJECT: Proposed Ivanpah Solar Electric Generating System (07-AFC-5): Cumulative Impact Analysis

Dear interested agencies:

On behalf of Defenders of Wildlife ("Defenders") and our more than half a million members and supporters in the U.S., 70,000 of which are in California, I am writing to express Defenders' continued and heightened concern for the Desert Tortoise in the greater Ivanpah Valley with respect to the proposed Ivanpah Solar Energy Generating System ("SEGS") and several additional existing and planned projects in both California and Nevada.

Completion of the analysis of the proposed Ivanpah SEGS will result in the publication of a Draft Final Staff Assessment and Draft Environmental Impact Statement ("FSA/DEIS") for the proposed project in late August of 2009, at which time a 90 day public comment period will commence pursuant to the National Environmental Policy Act ("NEPA"). Although we expect that the analysis will address cumulative impacts, we are writing to urge all the regulatory and permitting agencies involved in this effort to pay particular attention to existing and planned projects in Ivanpah Valley in both California and Nevada, and their past, present and potential future adverse effects on the threatened Desert Tortoise.

The Ivanpah Valley occurs in California and Nevada and Desert Tortoises range widely throughout the region. For purposes of a cumulative effects analysis, the tortoises occur within the Northeastern Mojave Recovery Unit, but likely have biological continuity (gene flow) with adjacent populations in the Eastern Mojave and Northern Colorado Recovery Units. (Fish and Wildlife Service 1994[1]). It appears the current land use planning decisions for public land in California and Nevada, as well as the critical habitat for the Desert Tortoise designated by the U.S. Fish and Wildlife Service, essentially place Ivanpah Valley outside of any recovery management area, which Defenders finds very unfortunate. In the absence of Desert Tortoise recovery commitments in the Ivanpah Valley, the continued downward trend in overall populations and loss of suitable, occupied habitat is a certainty and will occur more rapidly.

[1] Fish and Wildlife Service 1994. Desert tortoise (Mojave population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 73 pp. plus appendices.

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Based on our review of existing public documents, we have identified the following current and planned projects in the Ivanpah Valley that have and will continue to adversely impact the Desert Tortoise. Pursuant to 40 C.F.R. 1508.7 and Cal. Pub. Res. Code § 15130, each of these projects should be considered in any cumulative impact analysis of any project proposed for the Ivanpah Valley in California or Nevada.

California Projects

Interstate Highway 15 – existing
Electrical transmission corridor – existing
Commercial developments at Primm and Jean, NV – existing
California Agricultural Inspection Station – planned
Ivanpah-El Dorado transmission line upgrade – proposed
Ivanpah SEGS (400 MW solar thermal) - proposed
OptiSolar (FirstSolar)(380 MW photo voltaic) – planned
High speed passenger train - planned

Nevada Projects

Ivanpah Airport – planned
Cogentrix Solar Energy (1000 MW solar thermal) – planned
NextLight Renewable Power (500 MW solar thermal) – proposed
NextLight Renewable Power (200 MW photo voltaic) – proposed
High speed passenger train - planned

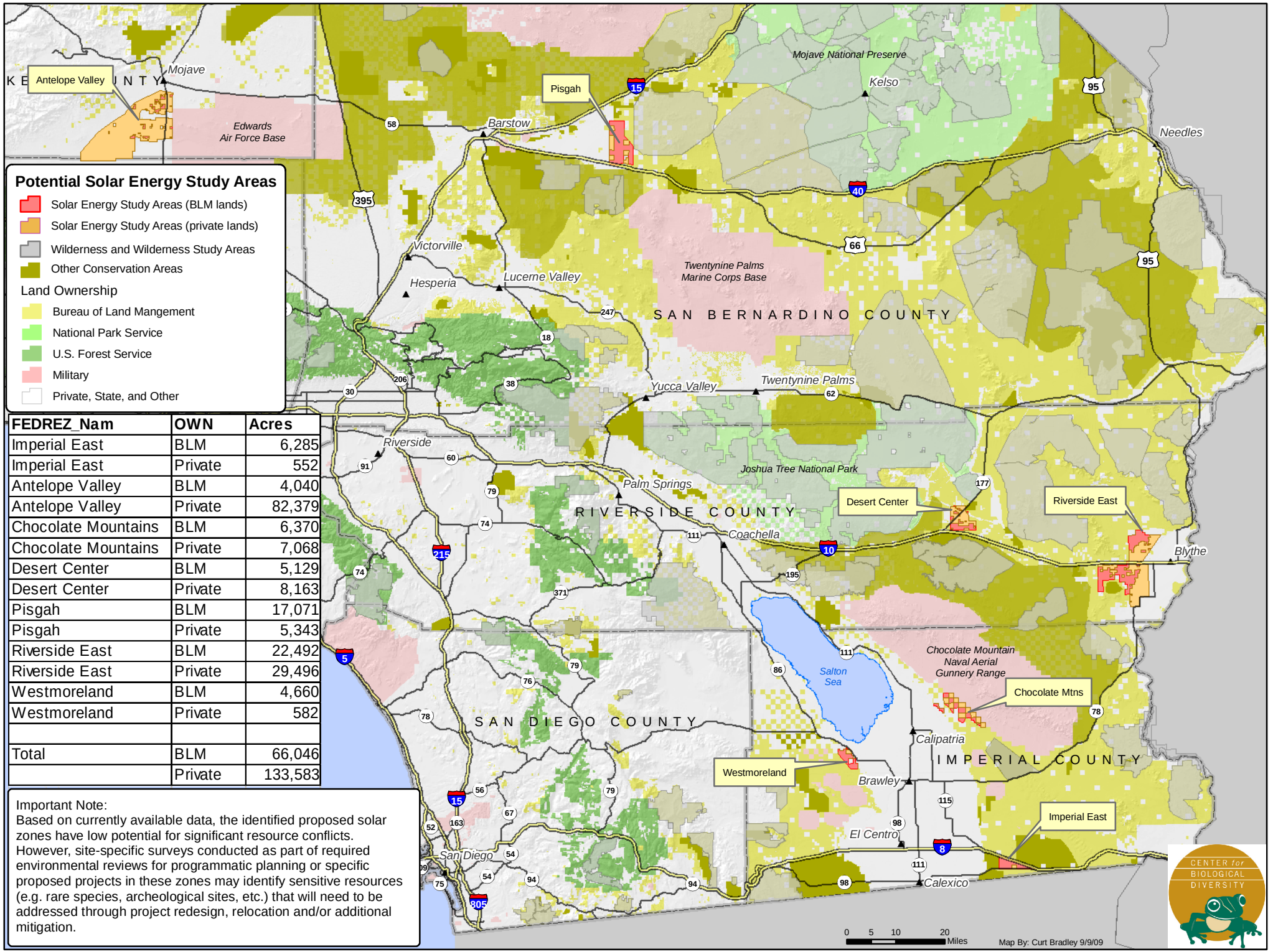
Please contact me if you would like to discuss our concerns or have any questions about the projects identified above.

Sincerely,

Jeff Aardahl
California Representative

Cc: Paul Kramer
Hearing officer
California Energy Commission

John Kessler
Project manager
California Energy Commission



FEDREZ_Nam	OWN	Acres
Imperial East	BLM	6,285
Imperial East	Private	552
Antelope Valley	BLM	4,040
Antelope Valley	Private	82,379
Chocolate Mountains	BLM	6,370
Chocolate Mountains	Private	7,068
Desert Center	BLM	5,129
Desert Center	Private	8,163
Pisgah	BLM	17,071
Pisgah	Private	5,343
Riverside East	BLM	22,492
Riverside East	Private	29,496
Westmoreland	BLM	4,660
Westmoreland	Private	582
Total	BLM	66,046
	Private	133,583

Important Note:
Based on currently available data, the identified proposed solar zones have low potential for significant resource conflicts. However, site-specific surveys conducted as part of required environmental reviews for programmatic planning or specific proposed projects in these zones may identify sensitive resources (e.g. rare species, archeological sites, etc.) that will need to be addressed through project redesign, relocation and/or additional mitigation.

USGS
science for a changing world

Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona

Open-File Report 2009-1102

U.S. Department of the Interior
U.S. Geological Survey

COVER PHOTOGRAPH
(2005) Mojave Desert Tortoise found in Piute Valley in Clark County, Nevada (Kenneth E. Nussear)

Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona

By Kenneth E. Nussear, Todd C. Esque, Richard D. Inman, Leila Gass, Kathryn A. Thomas, Cynthia S. A. Wallace, Joan B. Blainey, David M. Miller, and Robert H. Webb

Prepared as a part of the
Department of the Interior on the Landscape – Mojave Project
for the Western Region, of the U.S. Geological Survey

Open-File Report 2009-1102

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Suzette M. Kimball, Acting Director

U.S. Geological Survey, Reston, Virginia: 2009

Suggested citation:
Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H., 2009, Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

Contents

Figures

Tables

Conversion Factors, Datums, and Abbreviations and Acronyms

Conversion Factors

Multiply	By	To obtain
	Length	
kilometer (km)	0.6214	mile (mi)
millimeter (mm)	0.03935	inch (in.)
	Area	
square kilometer (km^2)	0.3861	square mile (mi^2)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F+(1.8\times°C)+32.$$

Datums

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).
Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Abbreviations and Acronyms

AGP – Annual Growth Potential
AUC – Area Under the ROC Curve
CV – Coefficients of Variation
DEM – Digital Elevation Map
EVI - Enhanced Vegetation Index
MODIS –Moderate Resolution Imaging Spectroradiometer
NAD –North American Datum
NED – National Elevation Database
RBG – Random Background
ROC – Receiver Operating Characteristic
STATSGO - State Soil Geographic (STATSGO) Database
USGS – U.S. Geological Survey

Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona

By Kenneth E. Nussear, Todd C. Esque, Richard D. Inman, Leila Gass, Kathryn A. Thomas, Cynthia S. A. Wallace, Joan B. Blainey, David M. Miller, and Robert H. Webb

Abstract

Habitat modeling is an important tool used to simulate the potential distribution of a species for a variety of basic and applied questions. The desert tortoise (*Gopherus agassizii*) is a federally listed threatened species in the Mojave Desert and parts of the Sonoran Desert of California, Nevada, Utah, and Arizona. Land managers in this region require reliable information about the potential distribution of desert tortoise habitat to plan conservation efforts, guide monitoring activities, monitor changes in the amount and quality of habitat available, minimize and mitigate disturbances, and ultimately to assess the status of the tortoise and its habitat toward recovery of the species. By applying information from the literature and our knowledge or assumptions of environmental variables that could potentially explain variability in the quality of desert tortoise habitat, we developed a quantitative habitat model for the desert tortoise using an extensive set of field-collected presence data. Sixteen environmental data layers were converted into a grid covering the study area and merged with the desert tortoise presence data that we gathered for input into the Maxent habitat-modeling algorithm. This model provides output of the statistical probability of habitat potential that can be used to map potential areas of desert tortoise habitat. This type of analysis, while robust in its predictions of habitat, does not account for anthropogenic changes that may have altered habitat with relatively high potential into areas with lower potential.

Introduction

Spatial models that predict areas of potential habitat for plants and animals are extremely useful for evaluating management actions, particularly recovery plans for threatened or endangered species (Graham and others, 2004). Using spatially defined environmental variables, which may be either continuous numbers, integers, or categorical data, these habitat models can be very robust at detailed scales and are useful when designing of conservation programs and evaluating changes in species distributions owing to anthropogenic effects or global change. Data on species occurrence, combined with spatially explicit environmental data, can be used with recently developed statistical techniques and analytical tools without specific absence data (Elith and others, 2006; Phillips and others, 2006; Phillips and Dudik, 2008).

The desert tortoise (*Gopherus agassizii*, cover photograph) occupies a variety of habitat types in the Mojave Desert including creosotebush – white-bursage (*Larrea tridentata – Ambrosia dumosa*) communities (Fig. 1). The species is widely distributed in southwestern North America, ranging from the Sierra Nevada in California to southwestern Utah and southwards into Sonora and Sinaloa, Mexico (Fig. 2). North and west of the Colorado River, the desert tortoise is a federally listed threatened species owing to reductions in habitat quality and extent caused by human activities, land-use practices, increasing populations of subsidized predators, disease, and other factors (Luckenbach, 1982; Department of the Interior, 1990; Berry and others, 2002). Urbanized areas within Clark County, Nevada, typify several fast-growing urban areas within former tortoise habitat (*http://www.censusscope.org/us/m4120/chart_popl.html*) that have caused significant displacements of these animals. Land-use practices leading to habitat degradation or destruction include development (urban and rural), military training activities, habitat fragmentation from roads and utility corridors, recreational activities, livestock grazing, and previously uncommon fires fueled mostly by non-native species (Tracy and others, 2004). Extensive habitat changes and reduction in populations prompted wildlife managers to create a recovery plan (U.S. Fish and Wildlife Service, 1994) and a subsequent revision of the recovery plan (Tracy and others, 2004; U.S. Fish and Wildlife Service, 2008). The results of this modeling project will be a useful element of the Revised Recovery Plan.

Figure 1. Creosote scrub habitat (one type of preferred desert tortoise habitat) in the Mojave Desert.

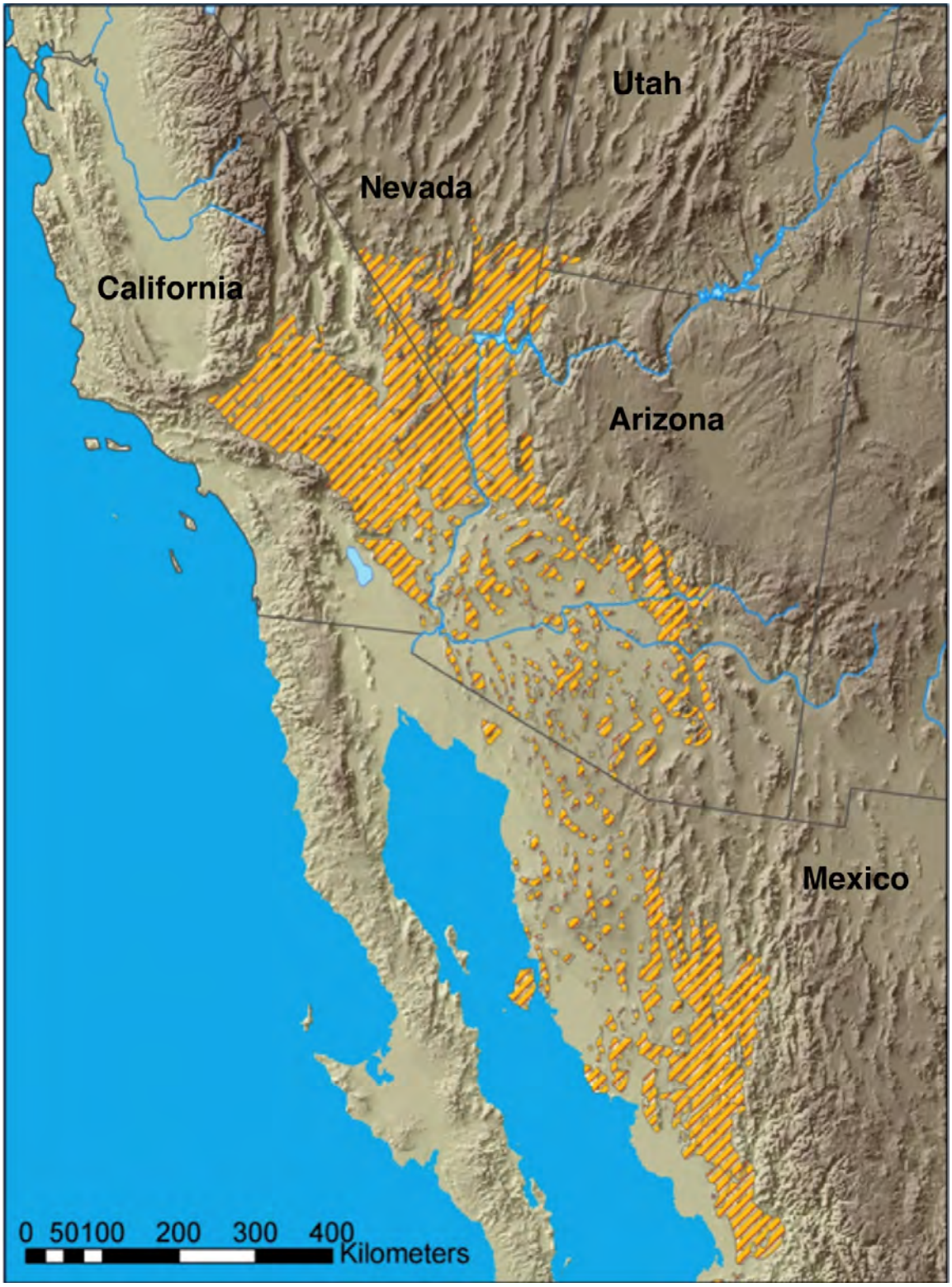


Figure 2. Map showing distribution of desert tortoise (*Gopherus agassizii*) in western North America (adapted from Germano and others, 1994).

We assembled an interdisciplinary team to create a model of potential habitat for the listed Mojave Desert populations of the desert tortoise. After assembling a unique set of presence data (Fig. 3) gleaned from the scientific literature, state and federal land-management agencies, scientists, and biologists, we used a series of innovative techniques (for example; remote sensing and spatial interpolation; Blainey and others, 2007; Wallace and Gass, 2008; Wallace and Thomas, 2008; Wallace and others, 2008) to develop environmental data layers at a common spatial scale of 1 km^2 to help define potential habitat. We used the Maxent algorithm (Phillips and others, 2006) to predict potential desert tortoise habitat in the Mojave Desert and parts of the Sonoran Desert.

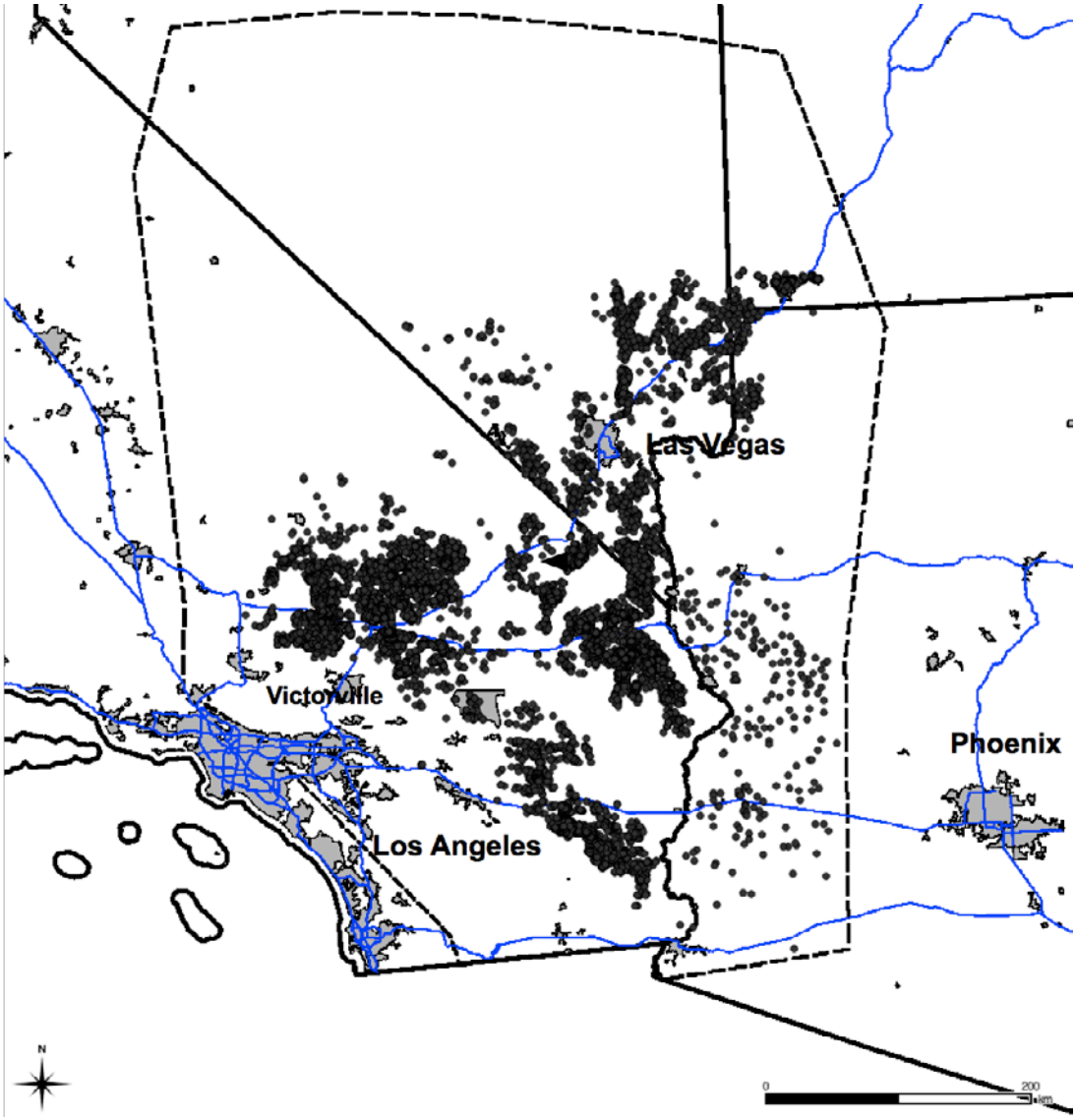


Figure 3. Distribution of desert tortoise (*Gopherus agassizii*) presence observations at sites in the Mojave Desert and parts of the Sonoran Desert of California, Nevada, Utah, and Arizona. *Solid circles* indicate records of one or more observations of live or dead tortoises. The dashed line indicates the study area boundary for the habitat model. Major highways are indicated by blue lines, and urban areas are indicated by gray shaded areas.

Purpose and Scope

The purpose of this report is to document the methods and data sources used to model the potential habitat of the desert tortoise in the Mojave and parts of the Sonoran Desert and to present a map showing this potential habitat. We discuss some of the limitations of our data and caution that our results do not account for other factors that affect habitat quality, notably significant changes brought about by land-use practices.

Background

Geography and Topography

Our study encompasses the range for the Mojave population of desert tortoises north and west of the Colorado River, as well as a small portion of the northwest Sonoran Desert, and comprises 336,594 km^2 of basin-and-range topography (Fig. 3). The study area was used to create spatially coincident environmental-data layers for environmental variables known from the literature and our experience for defining potential habitat. Within this area, we created a spatial grid of 1-km^2 cells for which we assessed habitat potential. Although the habitat for the desert tortoise is thought to occur primarily at elevations between 600 and 1,200 m above sea level (Germano and others, 1994, Fig. 2), we used the entire elevation range within the distributional limits of this species, which ranges from the rugged mountain ranges to the flat-lying playa systems that characterize the study area.

Climate

Owing to relatively sparse climatological data for the study area, the range in temperatures and precipitation within the current desert-tortoise habitat is only generally known. In the Mojave Desert, annual precipitation within known habitat ranges from 100 to 210 mm (Germano and others, 1994), mostly occurring during the winter months (> 50-75%) and infrequently as snow below 1,200 m. The temperature range of known habitat is extreme, with average daily low temperatures in January typically at or slightly below 0 ºC and average daily high temperatures in July ranging from 37 to 43 ºC (Germano and others, 1994). Both precipitation and temperature are strongly and complexly related to elevation, aspect, and position within this desert; the closed-basin playa systems that characterize the Mojave Desert tend to control air movement, leading to low-level temperature inversions in winter and thermal trapping of heat in some valleys during summer. Winter precipitation is usually dependent on frontal storms or the residual effects of gulf storms penetrating northward with increasing amounts of rain or snow at higher elevations. Summer precipitation is associated with the North American monsoon, which is more reliable in the easterly parts of the desert tortoise range. Precipitation events, especially the monsoon, may be highly local depending strongly on orographic effects.

The complex interactions between topography and climate are perhaps best illustrated by the differing results of studies of preferred aspect by the desert tortoise. Weinstein (1989) found a significantly greater abundance of desert tortoises on northwest to north-northwest facing slopes, a result that he attributed to ground heating and possibly illumination. However, Andersen and others (2000), working in a different part of the Mojave Desert, found a preference for southwestern facing slopes, again for possible effects of soil heating during winter. This apparent shift in habitat preference on the basis of aspect underscores the complexity of topography and climate interactions as they affect habitat preference for this species and illustrates the need for robust environmental data over the entire range of this species.

Other Environmental Constraints on Habitat

The characteristics of high-quality habitat for the desert tortoise have been proposed by numerous researchers, possibly beginning with Woodbury and Hardy (1948) and Miller (1932, 1955) and more recently including Luckenbach (1982), Weinstein (1989), Germano and others (1994), U.S. Fish and Wildlife Service (1994), and Andersen and others (2000). A conceptualized array of these environmental characteristics are related to the core variables of soils, landscape, climate, and biological characteristics (Fig. 4). As summarized most recently in U.S. Fish and Wildlife Service (2008), desert tortoise habitat typically consists of alluvial fans and plains and colluvial/bedrock slopes with vegetation alliances of creosote bush (*Larrea tridentata*) or, less commonly, blackbrush (*Coleogyne ramosissima*), Joshua tree (*Yucca brevifolia*), and even juniper (*Juniperus* sp.) at higher elevations and saltbush (*Atriplex* sp.) at lower elevations. In general, tortoises prefer *Larrea* habitat with high diversity and cover of perennial species and high production of ephemeral plants, which comprise their primary diet (Esque, 1994; Jennings, 1997; Avery, 1998).

Soils tend to be of sufficient strength to accommodate burrows without collapse but allow excavation by the animals (Andersen and others, 2000); in some cases, tortoises take advantage of natural shelters in rock formations or exposed calcic soil horizons. Both from constraints on mobility and their inability to easily construct shelters, tortoises tend not to use rocky or shallow bedrock habitat, particularly on very steep slopes, in the Mojave Desert. Home ranges of desert tortoises can cover 3.9 km^2 (Berry, 1986) or more over their long lifespans, suggesting that a spatial modeling unit of 1 km^2 is appropriate.

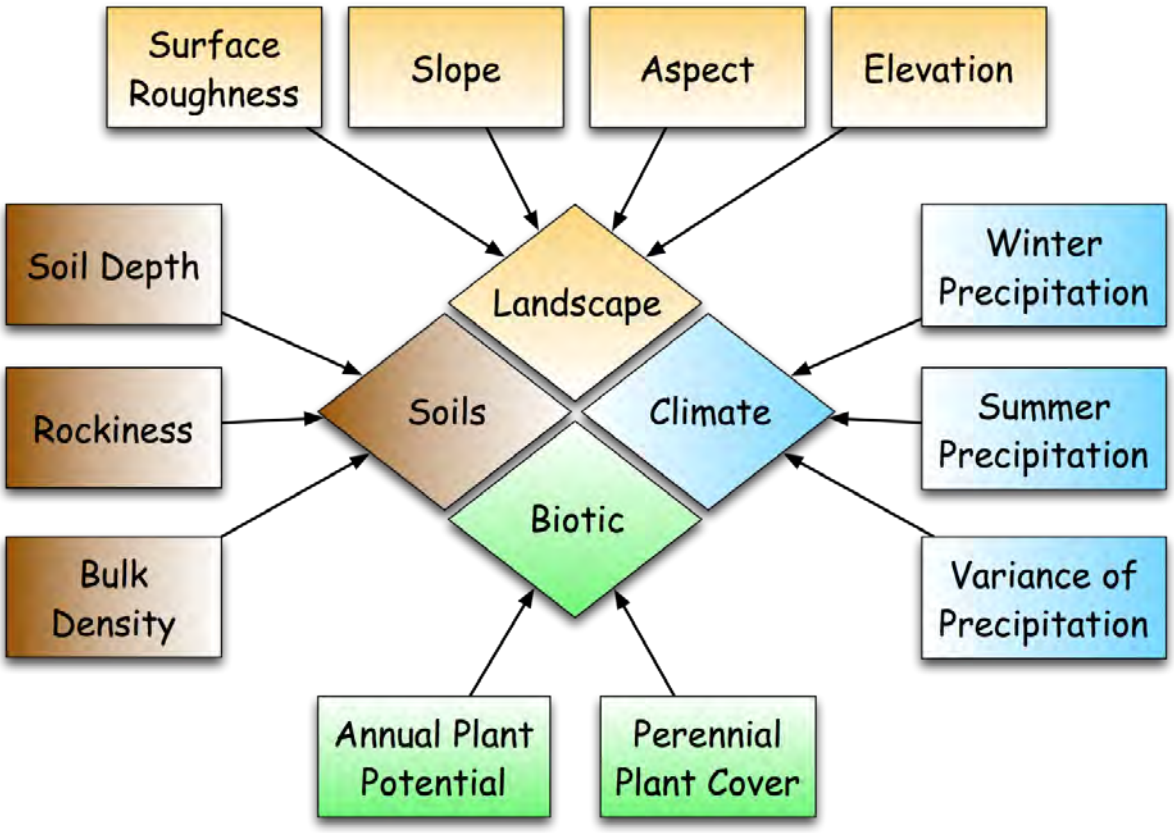


Figure 4. Array of variables used to predict desert tortoise habitat. Environmental variables were generally related to four categories of influence on the landscape and were hypothesized to influence tortoise ecology/habitat potential through a variety of mechanisms.

Methods

Tortoise Presence Data

We combined several datasets of desert tortoise occurrence collated from a variety of sources to assemble presence points in the Mojave and parts of the Sonoran Deserts (see Acknowledgments). Presence records included data from 1970 through 2008, although most of the data were collected after 1990. These data resulted from at least 23 different data-collection initiatives. Although methods of data collection varied among the primary sources, we were able to use the observations of tortoises (live or dead) as point sources of presence. We used only data involving evidence of live tortoises or carcasses, discarding locations reported on the basis of burrows, scat, or other sign, as these can be easily misidentified. The locations represent "potential" presence because carcasses may have been moved into unsuitable habitat by predators or humans. Our geospatial database includes 15,311 points representing presence (Fig. 3).

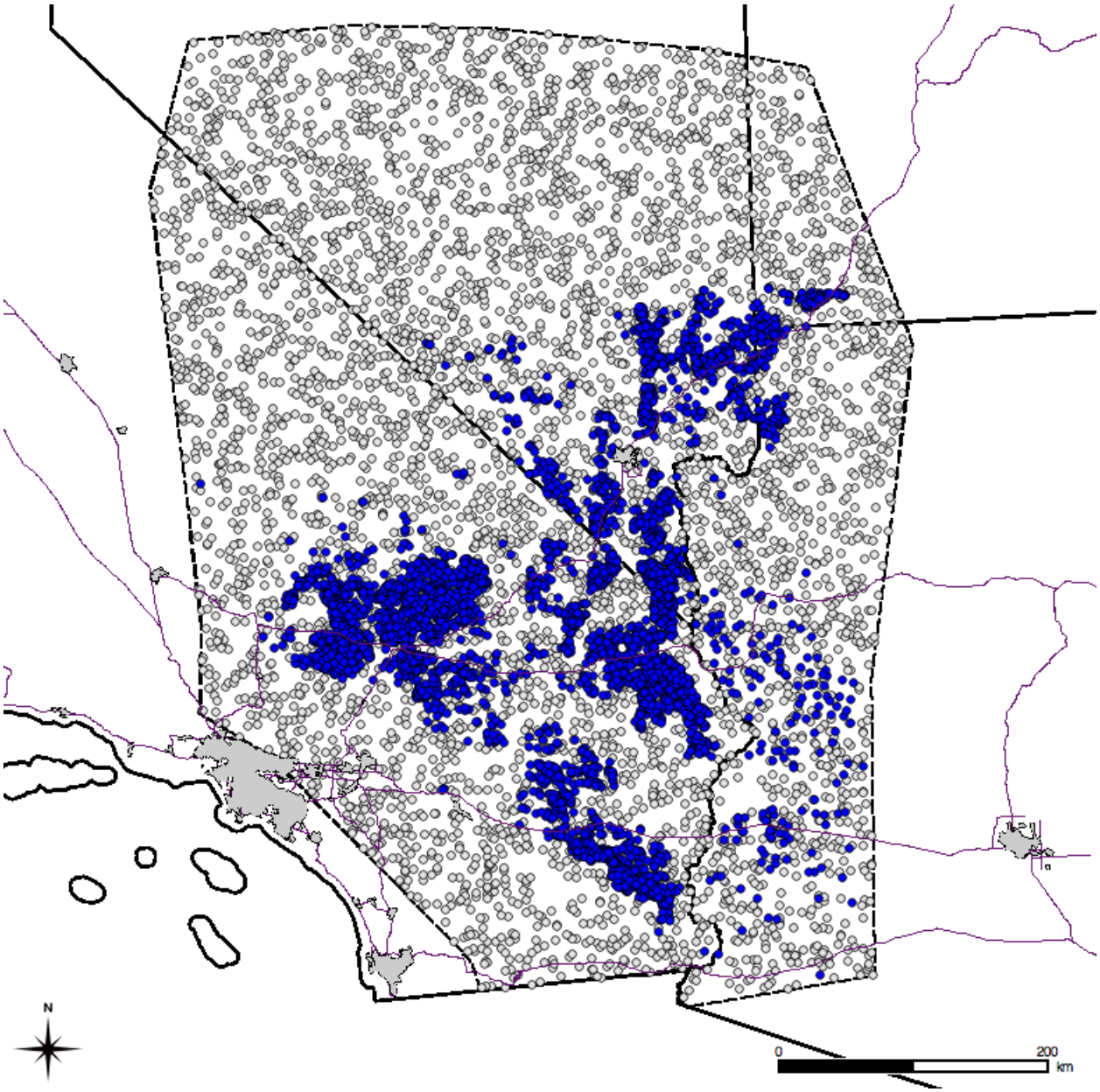


Figure 5. Distribution of presence data (blue circles) and random background data (gray circles) used in habitat modeling. Urban areas are defined by the gray shaded polygons.

We aggregated the presence observations to the 1-km^2 grid by merging all points within each grid cell to a single point at the grid-cell center. This reduced the 15,311 occurrences to 6,350 grid-cell points (Fig. 5). We randomly selected 20% of the presence points (1,270 points) for model testing; the remaining 80% (5,080 points) were used for model training.

Environmental Data Layers

Using the literature (e.g., Luckenbach 1982) and the experience of the authors of this report, we developed 16 environmental data layers that define or influence desert tortoise habitat. These data, assembled by an interdisciplinary team, include soil characteristics, perennial and annual vegetation, elevation and extracted topographic variables, and seasonality and variability of precipitation (Table 1). All environmental datasets were resampled to match our standard spatial grid using tools available in GRASS 6.4 (GRASS Development Team, 2008)

Table 1. Environmental data used in modeling potential habitat of the desert tortoise in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona.

[Dry season, May through October; wet season, November through April with statistics for 1961 to 1990 used as the climatic normal and coefficient of variation]

Description of Environmental Data Layer	Source of Environmental Data
CLIMATE	
Mean dry season precipitation for 30-year normal period	Blainey and others (2007)
Dry season precipitation, spatially distributed coefficient of variation *	Blainey and others (2007)
Mean wet season precipitation for 30-year normal period	Blainey and others (2007)
Wet season precipitation, spatially distributed coefficient of variation *	Blainey and others (2007)
TOPOGRAPHY	
Elevation	30 m NED DEM (USGS)
Slope *	derived from 30 m NED DEM (USGS)
Northness (aspect) *	derived from 30 m NED DEM (USGS)
Eastness (aspect) *	derived from 30 m NED DEM (USGS)
Average surface roughness	derived from 30 m NED DEM (USGS)
Percent smooth	derived from 30 m NED DEM (USGS)
Percent rough *	derived from 30 m NED DEM (USGS)
SOILS	
Average soil bulk density	STATSGO database
Depth to bedrock	STATSGO database
Average percentage of rocks > 254 mm B-axis diameter	STATSGO database
BIOLOGICAL CHARACTERISTICS	
Perennial plant cover	Wallace and others (2008)

* Environmental layers that were dropped from the final model after evaluation of the jackknife analyses.

Climate data consisted of two seasonal data layers representing average summer (May–October) and average winter (November–April) precipitation. Based on climatic normals calculated from conditions between 1961 and 1990, we used spatially distributed coefficients of variation (CV) for both seasons (Blainey and others, 2007). We did not use temperature as a variable, although some studies show a relation between temperature and tortoise physiological response (Naegle, 1976; Spotila and others, 1994; Rostal and others, 2002). In our experience, no data published to date definitively show direct temperature limitations on the extent of desert tortoise habitat. Temperature is likely to influence tortoises ecologically at several time periods and life history stages, which would require several complex hypothetical temperature interactions to be created as GIS layers of temperature, and was beyond the scope of this project. Despite this, temperatures indirectly were used in our model owing to their strong correlation with elevation and position, particularly in the northern parts of the study area.

We derived six topographic data layers from a 30-m DEM that, along with elevation, provided the suite of topographic variables that influence desert tortoise habitat at a 1-km^2 scale using methods similar to Wallace and Gass (2008). Surface roughness was calculated at a 30-m cell size using the method specified by Hobson (1972). Average surface roughness was calculated as the average value of surface roughness in each 1-km^2 grid cell. Separately, the percentage of each 1-km^2 cell that was "smooth" and "rough" was assessed by measuring the proportion of 30-m average roughness grid cells that were < 1.01 (threshold for smooth) or > 1.11 (threshold for rough), where the 25% and 75%quartiles of the 30-m surface roughness grid were used to define the thresholds, respectively.

The aspect of each 1-km^2 grid cell was represented by eastness and northness (Zar, 1999), which are variables that represent aspect by converting the 1 to 360º range of possible azimuths into a range of -1 to 1, where -1 = south or west and 1 = north or east for northness and eastness, respectively. This transformation avoids identical aspects (e.g., 0 and 360 degrees) and creates two data layers with unique numerical representation of aspect, and was calculated using

$$E = \sin\left(\frac{A \times \pi}{180}\right) \text{ and} \qquad \text{eqn. (1)}$$

$$N = \cos\left(\frac{A \times \pi}{180}\right), \qquad \text{eqn. (2)}$$

where E = eastness, N = northness, and A = aspect.

Spatial data for average soil bulk density, depth to bedrock, percent area with depth to bedrock greater than 1 m, and percent of soil mass with rocks greater than 254 mm B-axis (intermediate) diameter were previously created from the STATSGO database by the Natural Resource Conservation Service and modified by USGS (Bliss, 1998).

The total perennial plant cover data were modeled using Moderate Resolution Imaging Spectroradiometer (MODIS) Enhanced Vegetation Index (EVI) collected by the MODIS satellite and composited over 16-day intervals (Wallace and others, 2008), combined with field measurements of total perennial cover, estimated from line intercept transects at locations across the Mojave Desert (Webb and others, 2003, 2009; Thomas and others, *unpublished data*; Wallace and others, 2008). Total perennial cover was related to elevation and 2001 through 2004

MODIS-EVI data at the transect locations (R^2 = 0.82), and the resulting model was used to extrapolate cover estimates for the remaining study area. The resulting data used in our study represented the absolute cover of all perennials irrespective of species composition (Wallace and others, 2008).

Annual growth potential is an environmental data layer that is a proxy for annual plant biomass, which reflects potential forage for tortoises. This data layer was derived by calculating the difference in greenness (a measure of plant growth) between two highly contrasting years of annual plant production (Wallace and Thomas, 2008). The difference between MODIS-EVI images for 2002 (a very dry year) and 2005 (a very wet year) had high correlation with field measurements of annual plant cover collected on 36 plots in the Mojave National Preserve in 2005 (R^2 = 0.63, p=0.01). The proxy measure of annual growth potential, AGP, was calculated as

$$\mathrm{AGP} = \left(\frac{EVI(2005) - EVI(2002)}{EVI(2005) + EVI(2002) + 1} \right) * 100, \qquad \text{eqn. (3)}$$

where EVI (2005) and EVI (2002) are the average MODIS-EVI values for the years 2005 and 2002. This formula is analogous to the Normalized Difference Vegetation Index of Huete and others (2002). The resulting values represent the potential for site specific food availability for desert tortoise.

Background Data

If both presence and absence data are available, many statistical techniques exist to predict potential habitat (Guisan and Zimmermann, 2000). However, absence data are rarely available or reliable for animals that hibernate in shelters for part of the year, in part, because their absence from specific areas is difficult to confirm (Guisan and Thuiller, 2005; MacKenzie and others, 2005; Thompson, 2004). Moreover, current ranges for species that have been extirpated from a larger area are misleading when it comes to development of recovery plans. Models built with presence-only data do not incorporate information on the frequency of occurrence of a species in a region, and therefore, they cannot accurately predict probability of presence; these models only estimate a relative index of habitat potential (Elith and others, 2006). We used a random background set of data to serve as "absences." Although these data do not reflect true absences, they do create comparable models for testing a variety of algorithms and models with different environmental data without embedding assumptions of pseudo-absence point generation models into the habitat model, and they perform similarly to models using pseudo-absence (Phillips and Dudik, 2008).

We created random background points, which we refer to as RBG, by selecting random cells throughout our study area in locations constrained only to cells where desert tortoises were not observed. A total of 6,350 RBG points were selected; 20% of the RBG points (1,270) were used for model testing, and 80% (5,080) points were used for model training.

The Maxent Model

We modeled potential habitat using the Maxent algorithm (version 3.2.19, Phillips and others, 2006). Maxent uses a maximum entropy probability distribution to compare samples of occurrence data with background environmental data. Each of the included predictor variables were assessed using a jackknife test of variable importance and percent contribution (Phillips and others 2006). We used the logistic model output to represent an index of the potential of the habitat in a cell given the training data (Phillips and Dudik, 2008).

To assess the performance of this model, we used area under the curve (AUC) of the receiver operating characteristic (ROC) as a threshold-independent measure of model performance (Elith and others, 2006). ROC is plotted for all possible thresholds, with sensitivity (true positive rate) on the y-axis and 1-specificity (false positive rate) on the x-axis (Fawcett, 2003). The AUC characterizes the performance of the model at all possible thresholds and is summarized by a single number ranging from 0 to 1, where 1 indicates perfect model performance, 0.5 indicates the equivalent of a random guess, and less than 0.5 indicates performance worse than random. Here AUC tests the model discrimination between presence and the random background points rather than presence and true absence; therefore, the maximum possible AUC < 1 and random chance is AUC = 0.5 (Phillips and others, 2006). We also calculated the correlation between the test presence and RBG points (1 or 0) and the predicted values as Pearson's correlation coefficient (Zheng and Agresti, 2000; Elith and others, 2006). This performance metric is similar to AUC, but provides a more direct measure of how the model predictions vary from observations (Elith and others, 2006). The predicted habitat values from Maxent were continuous numbers between 0 (no habitat) to 1 (habitat), which we then binned into 12 intervals to represent various levels of potential habitat. These results were mapped to graphically represent potential habitat.

Results

The Maxent model produced a map of potential desert tortoise habitat for parts of the Mojave and Sonoran Deserts (Fig. 6). This model had a high AUC test score (0.93) and had a significant Pearson's correlation coefficient of 0.74 ($p < 0.01$), indicating a substantial agreement between the predicted habitat and the observed localities of desert tortoises. The final selected model excluded 6 of 16 habitat variables including eastness, northness, winter precipitation CV, summer precipitation CV, percent roughness, and slope (Table 1). These variables were dropped due to their low overall contributions to the model performance in jackknife tests. The model produced output with habitat-potential scores ranging from 0 to 1 (Fig. 7), plus an area that was not estimable because environmental data were not available for one or more layers (Fig. 6). These scores were placed in 12 different bins to provide an index of habitat potential (Table 2). Tortoises were present in 1-km^2 cells that spanned the entire range of model outputs. The mean model score for all tortoise presence cells was 0.84, and 95% of the cells with known presence had a model score greater than 0.7 (Fig. 7). The total area occupied by each of the 12 bins used as an index for habitat potential is presented in Table 2.

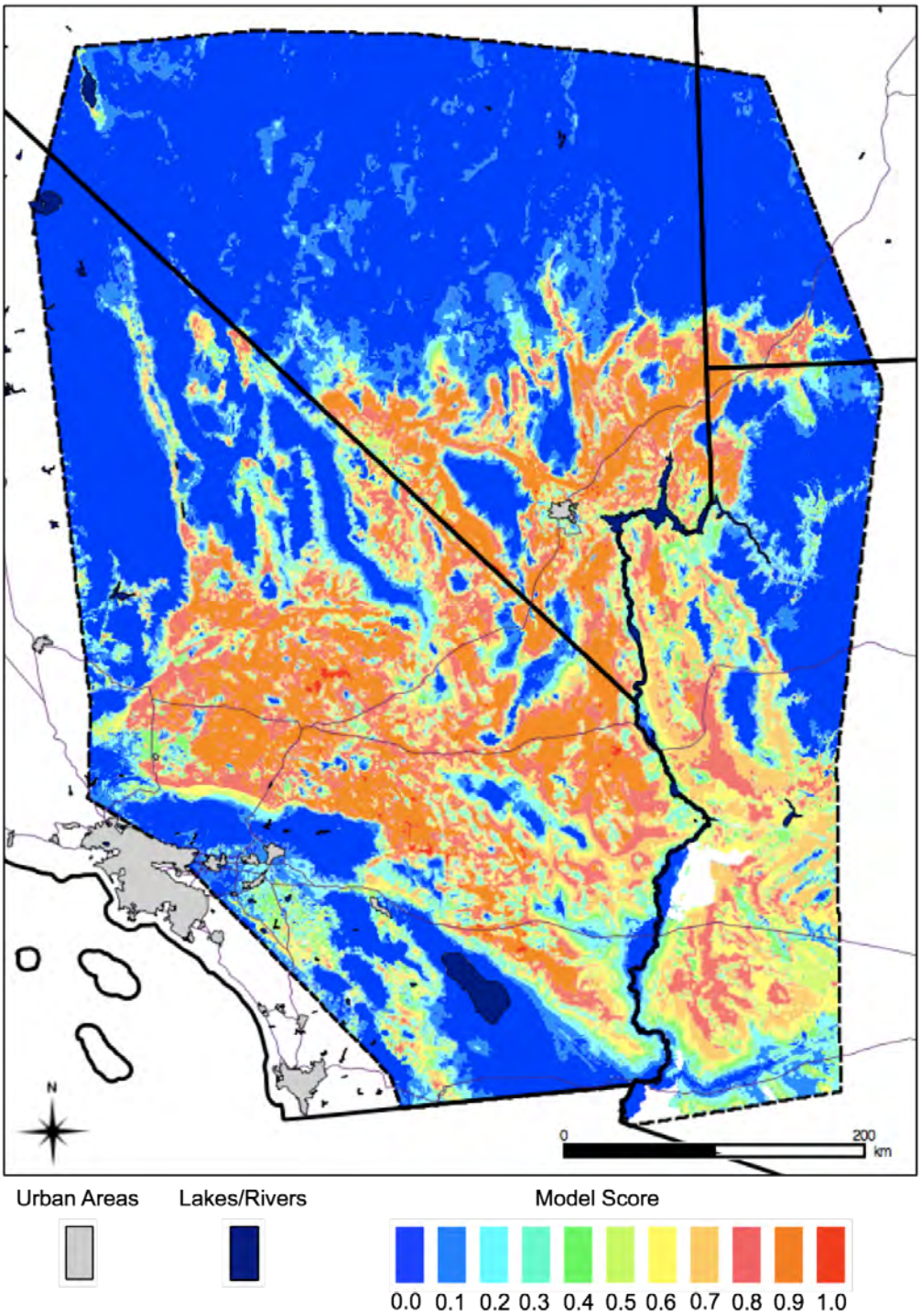


Figure 6. Spatial representation of the predicted habitat potential index values for desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of Arizona, Nevada, Utah, and Arizona. White patches within the study area indicate areas where no environmental data were available for one or more layers. The Maxent model output used to develop this figure available as an ESRI ASCII GRID file at http://pubs.usgs.gov/of/2009/1102/.

Table 2. Total predicted area of desert tortoise habitat for each of 12 bins representing habitat potential values in the habitat potential model of the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona.

[The item labeled as Not Estimable represents a relatively small area where supporting data layers were not available]

Habitat Potential Index Value	Area km^2
1	677
0.9	27,303
0.8	31,216
0.7	23,835
0.6	15,191
0.5	12,880
0.4	13,119
0.3	14,612
0.2	15,100
0.1	30,493
0	147,249
Not Estimable	4,919
Study Area Total	336,594

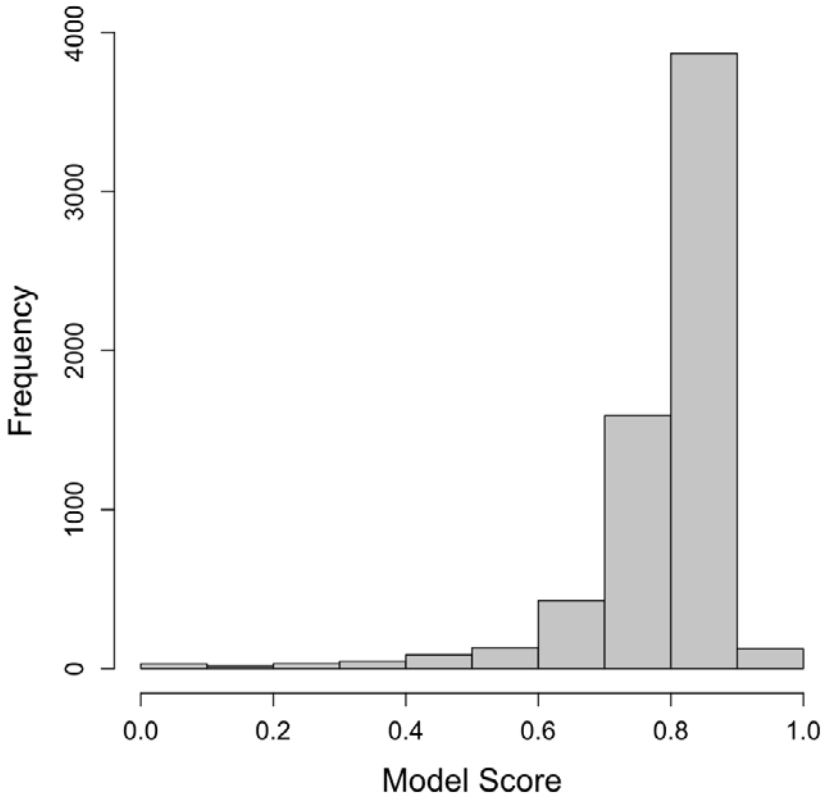


Figure 7. Frequency of the habitat potential index values for the 6,350 1-km^2 grid cells with known tortoise presence in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona.

Study Limitations

The quality of the spatial data used in this report is strongly dependent on the accuracy of previously reported presence points for desert tortoises and on the data used to calculate the environmental layers. Though all possible efforts were made to create a seamless and robust dataset, discrepancies are unavoidable since data were collected by different groups using different measurement techniques and sampling frequencies. Model scores reflect a hypothesized habitat potential given the range of environmental conditions where tortoise occurrence was documented. As such, there are likely areas of potential habitat for which habitat potential was not predicted to be high, and likewise, areas of low potential for which the model predicted higher potential. Finally, the map of desert tortoise potential habitat that we present does not account either for anthropogenic effects, such as urban development, habitat destruction, or fragmentation, or for natural disturbances, such as fire, which might have rendered potential habitat into habitat with much lower potential in recent years. Those topics are important foci for future analyses.

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R. Averill-Murray provided guidance as well as tortoise-occurrence data. Other data were obtained from D. Bedford, S. Dudash, L. Amoroso, J. Stock, K. Schmidt, B. Hagerty, S. Schwartz, C. Everly, A. Mcluckie, P. Medica, N. Pratini, C. Jones, A. Owens, the Bureau of Land Management, the National Park Service, Arizona Game and Fish, and the Arizona and Utah Natural Heritage Programs. Support from the Desert Managers Group in southern California was influential in securing adequate funding for this project. This report benefitted greatly from the reviews and comments provided by R. Averill-Murray, B. Hagerty, J. Heaton, K. Phillips, R. Scofield, J. Yee, R. Kirby, M. DeBortoli, and two anonymous reviewers. This project was funded by the U.S. Geological Survey, Western Regional Office.

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2. *Ivanpah DWMA*

Current densities:

5 to 250 desert tortoises per square mile.

Location and Description:

The proposed Ivanpah DWMA in San Bernardino County, California, is horseshoe in shape and is composed of the Ivanpah, Kelso, and Shadow valleys and interconnecting corridors (Figure 9). Although most of this proposed DWMA lies in the eastern Mojave recovery unit, Ivanpah Valley is in the northeastern Mojave recovery unit. Elevations range from 2,500 to 4,764 feet and topography includes bajadas, rolling hills, lava flows, one playa lake, and a few major drainages. Vegetation is diverse and includes seven distinct communities (Appendix E). This proposed DWMA includes portions of the East Mojave National Scenic Area. This area is managed almost entirely by BLM.

Desert Tortoise Densities and Trends:

The highest known densities of desert tortoise occurred in southern Ivanpah Valley, where about 20 square miles support densities of 200 to 250 per square mile. Throughout much of the northern Ivanpah, Kelso, and Shadow valleys, densities were generally less than 50 per square mile. About half of these were adult or subadult animals (Berry 1990, as amended, Berry 1991). On the Ivanpah Valley plot, densities declined from 368 tortoises per square mile in 1970 to 249 in 1990, but this trend was not statistically significant (Berry 1990, as amended). Nine of 18 desert tortoises monitored in Ivanpah Valley from 1989 to 1991 succumbed to drought-related stress (Nagy et al. 1990, Berry 1992, Jacobson and Gaskin 1990). In addition, the proportion of juvenile desert tortoises declined from the 1970's to the 1990's at the Ivanpah Valley plot, apparently as a result of high predation rates by ravens (Berry et al. 1986b, Berry 1990, as amended, 1991, BLM et al. 1989).

Threats:

A variety of human uses have contributed to habitat loss and degradation in this DWMA. Military maneuvers during the mid 1960's impacted areas in the southern Ivanpah Valley, while motorcycle races, including the Barstow to Vegas race, affected habitat in the Shadow Valley and northern Ivanpah Valley. Cattle grazing occurs on portions of five allotments in this DWMA, and perennial grasses are heavily grazed in some areas. Other major human uses include recreation that contributes to habitat degradation, mining, powerline corridors. Urban development at

Stateline, Nevada; OHV use in northern Ivanpah Valley and around Roach Lake; and landfills, garbage dumps, and sewage ponds which attract ravens all contribute to desert tortoise mortality and habitat destruction.

A few desert tortoises in a health profile research program tested positive for URTD (*Mycoplasma*) during 1991 (Brown et al. 1993). Some animals also have shell disease (Berry pers. comm. 1993). An adult desert tortoise was found paralyzed in Shadow Valley in 1991. Possible causes of the paralysis included poisoning resulting from ingestion of locoweed (*Astragalus sp.*) or some other toxin (Klaasan 1991, Blood et al. 1989, Casteel et al. 1985, Fuller and McClintock 1986).

Specific Management Actions:

In addition to the management actions recommended for all DWMAs (Section II.E.2.), the following specific actions should be implemented in the Ivanpah DWMA:

(1) Remove livestock grazing from the Crescent Peak, Clark Mountain, Kessler Springs, Valley Wells, and Valley View allotments.

(2) Construct and maintain desert tortoise-proof barriers and underpasses to protect tortoises and habitat from Interstate 15 and well-used roads, such as Nipton and Ivanpah Roads. Also, construct fencing to protect desert tortoises from recreational vehicle use on the Ivanpah Dry Lake and near Whiskey Pete's casino.

(3) Conduct intensive new surveys (using strip transects) in northern Ivanpah, Shadow, and Kelso valleys and Cima Dome to gather information on distribution and densities of desert tortoises.

(4) Implement a raven-control program to reduce predation on juvenile tortoises. Monitor desert tortoise populations to ensure that juveniles are recruited into subadult and adult cohorts in sufficient numbers to promote population recovery.

(5) Sign DWMA boundaries in the vicinity of Nipton, Kelso, and other similar settlements and areas with conflicting land uses.

(6) Promote return of perennial grasses and increases in cover values of native grasses and decreaser species.

(7) Construct desert tortoise barriers and underpasses along the Union Pacific Railroad.

Recommended Research:

The following research topics are especially suited to the management needs and opportunities presented in this DWMA:

(1) Disease, health, nutritional requirements and physiology, as well as effects of grazing on vegetation, soils, and desert tortoise behavior (continue ongoing intrusive research).

(2) The extent and potential causes of toxicosis (possibly selenium poisoning, locoweed poisoning, or some other form of toxicosis) in desert tortoises in the Shadow Valley and elsewhere in this DWMA. Identify sources of poison and distribution of potentially poisonous plants.

(3) Genotypes of desert tortoises in areas of potential linkages between this DWMA, and the Fenner and Piute-El Dorado DWMAs.

(4) The effects of utility towers on the desert tortoise and its habitat. Towers and similar structures may encourage an increase in avian predators.

Form 1221-2
(June 1969)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release
1-1603
Date
3/26/92

Subject

1745 - INTRODUCTION, TRANSPLANT, AUGMENTATION, AND REESTABLISHMENT OF FISH, WILDLIFE, AND PLANTS

1. Explanation of Material Transmitted: This release replaces the Bureau of Land Management's (BLM) Manual Section 6820 - Wildlife Introduction and Transplants and transmits a revised BLM Manual Section. It expands coverage to plants; provides for implementation of Executive Order 11987; and identifies key policies and guidelines for the planning, coordination, and execution of fish, wildlife, and plant introductions, transplants, augmentations, and reestablishment. It provides the basis to ensure that decisions made are ecologically sound and will not adversely impact ecosystems.

2. Reports Required: None.

3. Material Superseded: The BLM Manual Section superseded by this release is listed under "REMOVE" below. Instruction Memorandums 88-28, 88-368, and 90-264 are also superseded. No other directives are superseded.

4. Filing instructions: File as directed below.

REMOVE:	INSERT:
All of 6820 (Rels. 6-57 and 6-62)	1745
(Total: 8 sheets)	(Total: 8 Sheets)

Michael J. Penfold
Assistant Director, Land and Renewable Resources

1745 - INTRODUCTION, TRANSPLANT, AUGMENTATION, AND REESTABLISHMENT OF FISH, WILDLIFE, AND PLANTS

Table of Contents

1745 - INTRODUCTION, TRANSPLANT, AUGMENTATION, AND REESTABLISHMENT OF FISH, WILDLIFE, AND PLANTS

.01 Purpose. This Manual Section establishes the Bureau of Land Management's (BLM) policy and guidance on the introduction of exotic species and the transplant, augmentation, and reestablishment of native species and naturalized exotic species. Specific guidance and requirements for the introduction of exotic organisms for use as Biological Control Agents must meet the requirements outlined in BLM Manual Section 9014.

.02 Objectives. The objectives are to: (1) Ensure that management of native, naturalized and exotic species enhances, restores, and does not reduce the biological and genetic diversity of natural ecosystems and provides for the protection of soil resources; (2) Ensure that the introduction of exotic species is ecologically sound and will not adversely impact natural ecosystems and their biological diversity; (3) Ensure that appropriate planning, coordinating, monitoring, and evaluating for introductions and transplants are performed; and (4) Ensure full compliance with applicable State and Federal laws, Executive Orders, and regulations.

.03 Authority.

A. Endangered Species Act (ESA) of 1973, as amended, provides for the conservation of ecosystems upon which Threatened and Endangered (T/E) species depend.

B. Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701-1782) and P.L. 98-540 (98 Stat. 2718).

C. National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-47; 83 Stat. 852; P.L. 91-190).

D. Executive Order (EO) 11987, Exotic Organisms (dated May 24, 1977), restricts the introduction of exotic species into natural ecosystems of the United States (U.S.).

E. BLM Manual Section 6500.

.04 Responsibility.

A. Assistant Director, Lands and Renewable Resources is responsible for the development, implementation, coordination and integration of policies and procedures for the introduction, transplant, augmentations, and reestablishment of fish, wildlife and plants.

B. Chief, Division of Wildlife and Fisheries is responsible for:

1. Developing policy, procedures, and technical guidance for the introduction, transplant, augmentation, and reestablishment of fish, wildlife and special status plants.

2. Ensuring that fish, wildlife and special status plant protection procedures are incorporated into all introduction, transplant, augmentation and reestablishment of fish, wildlife and plants.

3. Evaluating the effectiveness of fish and wildlife special status plant introduction, transplant, augmentation and reestablishment programs.

4. Developing guidance for the preparation of habitat management or other appropriate plans to facilitate the reestablishment of native fish and wildlife and the recovery of special status plants.

C. Chief Division of Rangeland Resources is responsible for:

1. Developing policy, procedures, and technical guidance for the introduction, transplant, augmentation, and reestablishment of plants.

2. Ensuring that rangeland ecosystem management and protection procedures are incorporated into the introduction, transplant, augmentation and reestablishment of all plants.

3. Evaluating the effectiveness of plant introduction, transplant, augmentation and reestablishment programs.

4. Developing guidance for the preparation of Allotment Management Plans or other appropriate activity or action plans to facilitate the reestablishment of native plants.

D. Service Center Director is responsible for providing technical expertise, assistance, and/or support within purview of Service Center operations and responsibilities for fish, wildlife and plant introductions, transplants, augmentations and reestablishments.

E. State Directors are responsible for implementing systematic procedures for planning, conducting and evaluating fish, wildlife and plant introductions, transplants, augmentations and reestablishments.

.05 References.

A. BLM Manual Sections:

1. 1203 - Delegation of Authority.

2. 1601 - Bureau Planning System.

3. 1611 - Resource Management Planning Guidance.

4. 1613 - Areas of Critical Environmental Concern.

5. 1614 - Public Participation in Planning.

6. 1617 - Resource Management Plan Approval, Use, and Modification.

7. 1619 - Activity Plan Coordination.

8. 1621 - Supplemental Program Guidance for Environmental Resources.

9. 1622 - Supplemental Program Guidance for Renewable Resources.

10. 1737 - Riparian/Wetland Area Management.

11. 1740 - Renewable Resource Improvements and Treatments.

12. 1790 - National Environmental Policy Act.

13. 4120 - Grazing Management.

14. 6500 - Wildlife and Fisheries Management.

15. 6521 - State Agencies.

16. 6720 - Aquatic Resource Management.

17. 6780 - Habitat Management Plans.

18. 6830 - Animal Damage Control.

19. 6840 - Special Status Species Management.

20. 8560 - Management of Designated Wilderness Areas.

21. 9014 - Use of Biological Control Agents of Pests on Public Lands.

B. BLM Handbooks:

1. H-8550-1 - Interim Management Policy and Guidelines for Lands Under Wilderness Review.

2. H-1790-1 - National Environmental Policy Act.

3. H-8560-1 - Management of Designated Wilderness Areas, Policies and Guidelines for Fish and Wildlife Management in Wilderness Areas.

C. "Guidelines for Fish and Wildlife Management in Wilderness Areas," 1976, 1986 from International Association of Fish and Wildlife Agencies, adopted by the BLM and the Forest Service.

D. Williams, Jack E., et al. "American Fisheries Society Guidelines for Introductions of Threatened and Endangered Fishes," Fisheries, Vol. 13, No. 5.

E. International Union for Conservation of Nature and Natural Resources position statement on translocation of living organisms, September 1987.

F. State Heritage Plans.

.06 Policy. The policies for fish, wildlife, and plant introductions; transplants, augmentation/restocking, and reestablishments are as follows:

A. Native species shall be used, unless through the NEPA process it is determined that: (1) Suitable native species are not available; (2) The natural biological diversity of the proposed management area will not be diminished; (3) Exotic and naturalized species can be confined within the proposed management area; (4) Analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; (5) Resource management objectives cannot be met with native species.

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B. The restoration and maintenance of native, naturalized, and exotic species and their habitats shall be conducted in accordance with approved land use plans. All proposed introductions, transplants, reestablishments, or augmentation/restocking shall be in conformance with management direction and decisions in an applicable Resource Management Plan (RMP) (see BLM Manual Sections 1601 and 1622). A site-specific activity plan must be prepared, using an interdisciplinary planning process, for all proposed introductions, transplants, and reestablishments, unless waived by the State Director.

C. Appropriate State and/or Federal agency(ies) must coordinate with and when applicable approve or sponsor introductions, transplants, augmentation/restocking, or reestablishments of species. State level Memorandums of Understanding (MOU's) or Cooperative Agreements with cooperating agencies provide the basis for identifying roles and responsibilities for releases. Field level agreements or operational plans outline the specifics for each release effort.

D. The NEPA compliance is required before introductions, transplants and reestablishments can be approved.

E. Quarantine procedures must comply with all Federal and State regulations, restrictions, and requirements governing the release of disease free organisms and the importation of exotic plants and animals into the U.S.

F. Exotic or domesticated species that have reverted to a feral state and (feral species) that are adversely impacting native species and/or habitats should be controlled and/or removed, unless permitted by State or Federal law, in a manner consistent with State and Federal policies, procedures, and regulations.

G. In wilderness study areas, reestablishment and augmentation of native and naturalized species existing in the area prior to the passage of the FLPMA of 1976 is permitted. Introductions and transplants are not permitted, except Biological Control Agents used to enhance native species proliferation.

H. In designated wilderness areas, native and naturalized species may be augmented or reestablished to: (1) Perpetuate and enhance recovery of a T/E species, and thus prevent extinction; and (2) To restore a population of an indigenous species reduced or eliminated by human influence. Exotics shall not be introduced, except as Biological control agents as allowed in BLM Handbook H-8550-1.

I. Exceptions to and modifications of existing policies for a specific wilderness area may be provided in the legislation designating the area as wilderness, and must be accommodated as Statements of Congressional policy and objectives. Additionally, designation legislation may provide for adoption of specific fish and wildlife guidelines and should be reviewed carefully to determine policy requirements for the specific wilderness areas involved.

J. The BLM shall cooperate with the Fish and Wildlife Service (FWS) and appropriate State agencies in planning and providing for the recovery of T/E species. This includes reestablishment or release of T/E species or experimental populations of T/E species within the historical range of the species.

K. Interested and affected State and Federal agencies, private landowners, and other individuals and organizations must be notified through identified processes of possible introductions, transplants, and reestablishments during the planning and NEPA review processes.

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.07 File and Records Maintenance. Files are maintained in accordance with BLM Manual Section 1272 and disposed of according to the BLM Records Schedule. Guidance on the organization and contents of resource project files is contained in BLM Handbook H-1740-1.

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.1 Planning Process.

.11 Resource Management Plan (RMP).

A. Decisionmaking. Decisions for making introductions, transplants, or reestablishments should be made as part of the land use planning process (see BLM Manual Section 1622). Releases must be in conformance with approved RMPs. A Land Use Plan Amendment must be prepared for proposed releases if management direction is not provided in the existing Land Use Plan (see BLM Manual Section 1617). During the development of the RMP, the BLM should coordinate with State wildlife agencies and other appropriate State and Federal agencies in establishing habitat, population, and desired plant community objectives for proposed release activities. Adequate inventory information should be available to analyze proposed releases. The RMP decision should clearly identify desired population targets or objectives and anticipated distribution of species proposed for introductions, transplants, or reestablishments. The BLM Manual Sections 1622.1 and 1621.3 outline the required Land Use Plan information and determinations regarding introductions, transplants, and reestablishments for fish, wildlife, and vegetation. Follow procedures in BLM Manual Sections 1617 and 1622 if a plan amendment is required.

B. Participation. Public participation is required. Parties potentially affected by introductions, transplants, or reestablishments, must be given the opportunity to be involved in the public participation process outlined in BLM Manual Section 1614. Potentially affected parties include adjacent State, Federal, and private landowners, other interested groups, and individuals.

.12 Activity Plan. A site-specific activity plan is required prior to the introduction, transplant, and reestablishment of plants or animals on public lands, unless waived by the State Director. Nearby landowners and other interested and affected parties, State and Federal agencies shall be encouraged to participate in the development and implementation of activity plans (HMP), Allotment Management Plan (AMP), Coordinated Activity Plan (CAP), Herd Management Area Plan (HMAP), Normal Fire Rehabilitation Plan (NFRP) etc. The activity plan must include:

A. Site-specific and measurable vegetation/habitat population objectives which are based on existing ecological site potential/condition, habitat capability, and other important factors. (See BLM Manual Sections 1619, 6780, and 4120).

B. Planned actions to accomplish the stated objectives.

C. Appropriate monitoring and evaluation.

D. Coordination with other management plans and programs.

.13 NEPA Requirements. All proposed introductions, transplants, augmentations and reestablishments must be reviewed to identify and disclose their environmental consequences and the alternatives considered in accordance with the requirements of the NEPA. Depending upon the specific facts and circumstances involved, this analysis may be documented through: (1) An administrative determination that the action has been fully analyzed in a previous EA or EIS document; (2) An environmental assessment; and (3) An environmental impact statement. Consult the BLM's Handbook (H-1790-1) for requirements and standards for environmental documentation. The level of analysis, documentation, and public participation associated with the NEPA process should be commensurate with the potential biological, social, and economical impacts of the proposed action. (See BLM Manual Section 1790 and Handbook H-1790-1.)

.14 Required Documentation for Exotic and Naturalized Species, and Native Species Cultivars. The proposed introduction of exotic and naturalized species and native species cultivars requires specific documentation to ensure compliance with EO 11987 (Exotic Organisms), and to provide an appropriate level of analysis to satisfy the NEPA requirements. The proposed action must include the following documentation and provide an adequate level of analysis:

A. A detailed description of the proposed introduction, applicable statutes, regulations, existing management designations, activities and issues, and agency responsibilities.

B. A description of the habitat and biological requirements of both the exotic and naturalized species and the potentially impacted native species.

C. Analysis of potential impacts to biological and genetic diversity of both the exotic/naturalized species and potentially affected native species.

D. Potential for hybridization, disease, and parasite transmission with/to native species, feral or domestic animals and plants within the management area.

E. Potential for displacement of native species in terms of forage, cover, water, competition, allopathy, social intolerance, reproductive interference, and other incompatibilities.

F. A description of any measures taken or mitigating circumstances that would help ensure that the proposed introduction will not adversely affect any ecosystem. Identify agency responsibilities, procedures, techniques, and associated costs in the event the species becomes a problem and has to be removed or controlled.

G. Solicitation/documentation of comments from local, State, or national authorities responsible for the management of natural ecosystems and adjacent landowners that may be affected by the proposed activity.

H. Supporting documents including, but not limited to, scientific papers, NEPA documents, project plans, and permit applications.

.15 Decision Record. The decision record must clearly outline the reasons for approval or denial of the proposed introduction, transplant, or reestablishment; approved mitigating measures; and other special conditions.

.16 Approval. State Directors are responsible for approving animal and plant introductions, transplants, and reestablishments. Approval cannot be redelegated to BLM District or Area Managers. Supplementing or augmenting existing populations can be redelegated to BLM District or Area Managers (See BLM Manual Section 1203).

.2 Coordination. Introductions, transplants, reestablishments, and augmentations require appropriate coordination between the BLM and cooperating agencies to assure success and alleviate potential conflicts. The intensity of coordination shall be commensurate with the level of interest and involvement of all concerned parties. Effective coordination is essential during land use activity, prerelease planning, and the NEPA process. Coordination is required with affected landowners, land users, appropriate State and Federal agencies, health authorities, conservation and sportsman groups, and others where necessary or appropriate.

.21 Notification Process. Release proposals that are not in conformance with existing land use planning documents are to be submitted to the BLM in writing at least one-year in advance of the proposed release date or as previously agreed to in State level MOUs. Release proposals that are in conformance with current land use planning documents must be submitted in writing to the BLM District Manager 90 days before the anticipated action is to occur (or as previously agreed to in State MOU's). State agencies in cooperation with BLM and other Federal agencies should develop a 2-5 year release schedule so that sufficient lead time is provided to complete all planning and NEPA requirements. As for augmentating/restocking, affected BLM Field Offices must be notified by the State agency, as soon as possible, of upcoming augmentation activities. Exceptions to the notification time requirements may be granted by the BLM State Director on a case-by-case basis when emergency action is needed to protect resource values.

.23 Prerelease Agreement/Operations Plan. Development of a new agreement/operations plan or the amendment of an existing plan with cooperators is encouraged for introduction, transplant, reestablishment, or augmentating/restocking of plants or animals. A prerelease plan may cover one or more actions. The plan identifies roles and responsibilities of the cooperators. As a minimum, it shall include responsibility for: (1) Number and location of individuals/populations to be released; (2) Logistics and manpower needs; (3) Quarantine and health provisions; (4) Funding; (5) Monitoring and evaluation; (6) Proposed control/mitigation of resource damage or depredation, and (7) Public affairs/notification responsibilities.

.24 Public Information. A public information plan shall be prepared at the appropriate organizational level, commensurate with the level of public interest or controversy. The plan shall identify potential agencies and publics to be informed, information methods, schedules, and responsibilities. Development of the plan shall be initiated in concert with the NEPA compliance process.

.3 Release of Federally-Listed T/E Species. In accordance with the ESA of 1973 as amended, the BLM will cooperate in all efforts to recover federally-listed species and provide opportunities to further the conservation of those species. The BLM, in cooperation with the FWS and other appropriate State agencies, will utilize the planning process to identify historical habitat suitable for release of T/E species onto public lands. Special exemptions to allow transplanting outside of a species' historical range may be provided for those T/E species for which remaining historical habitat has been destroyed or otherwise rendered unsuitable. The Secretary, through the FWS, will determine whether a federally-listed species will be released under full protection of the ESA or as an experimental population. Title 50 CFR, Part 17, of the ESA establishes procedures for (1) The establishment and/or designation of certain populations of T/E species as experimental populations; (2) The determination of such populations as "essential" or "nonessential"; and (3) The promulgation of appropriate protective measures for such populations. (See also BLM Manual Section 6840.3.)

.31 Releases of Experimental Populations. The release of federally-listed species designated as experimental populations shall be restricted to habitat documented as "historic range" and outside the current geographic range for the identified species. An "essential experimental population" is an experimental population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild. All other experimental populations are classified as "nonessential."

.32 Authorizing Experimental Populations. Before the BLM authorizes the release of an experimental population of any T/E species, and before authorizing any transportation to conduct the release, the FWS must find by, regulation that such a release will further the conservation of the species. The BLM shall assist the FWS in providing the following data: (1) A means to identify an experimental population, including but not limited to its actual or proposed location, actual or proposed migration, number of specimens released, and other criteria appropriate to identify the experimental population; (2) Any supporting data which would help in determining whether the experimental population is, or is not essential to the continued existence of the species in the wild; (3) Identification of management measures or other special protective actions which shall be implemented to ensure the success of the experimental population; and (4) Preparation of a monitoring plan which shall provide for periodic review and evaluation of the success or failure of the release and the affect the release may have on the conservation and recovery of the species.

.33 Management of Experimental Populations. For purposes of compliance with the ESA, each member of an experimental population shall be treated as a threatened species, except the nonessential experimental populations for purposes of ESA, Section 7 (other than Section 7(a)(1)) shall be treated as species proposed for listing.

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Glossary of Terms

- A -

adverse impact: the act of displacing, hybridization with, disease/parasite transmission to, or competition (social, biological) with or otherwise having negative impacts on the survival of native species.

augmentation/restocking: the act of releasing animals or plants to maintain or enlarge an existing population of the same species within a specified area, sometimes called supplemental transplants. Augmentation includes, but is not limited to, routine game fish stocking or reseedings.

-E-

ecosystem: an interacting natural system including all the component organisms together with the abiotic environment that comprises one functioning whole.

endemic: a species that historically has been restricted to a specific geographic area.

essential experimental population: an experimental population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild. All other experimental populations are to be classified as "nonessential."

exotic species: all species of plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States (EO 11987).

experimental population: a transplanted or reestablished T/E species population that has been so designated by the Secretary of the Interior and is separated geographically from nonexperimental populations of the same species.

-F-

feral species: an animal species that was once domesticated or is descended from domesticated animals but is now living in a wild state.

-I-

introductions: the release, escape, or establishment of an exotic species into a natural ecosystem (EO 11987).

-N-

native species: all species of plants and animals naturally occurring, either presently or historically, in any ecosystem of the United States (EO 11987).

native species cultivars: native species of plants and animals (variety, strain or race) that have originated and persisted under cultivation.

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naturalized species: those exotic species which are already occurring within defined areas in a self-sustaining wild state, e.g., English sparrow, ring-necked pheasant, chukar, brown trout, crested wheat grass, red brome, cheatgrass, russian olive, and dandelion.

nonessential experimental populations: those experimental populations whose loss would not appreciably affect the continued existence of the species.

-R-

reestablishment (reintroduction): the act of releasing or planting native species into habitat formerly occupied by that species for the purpose or intent of creating self-sustaining populations in the wild state.

release: the act of liberating or planting any species (plant or animal) for the purpose or intent of creating self-sustaining or harvestable populations.

restocking: releasing or planting of a native or naturalized species in an area currently occupied by said species (see augmentation).

-T-

transplant: the act of releasing or planting native species into habitat not previously occupied by that species for the purpose or intent of creating self-sustaining populations in the wild state.

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Executive Order

presidential documents

Title 3—The President

Executive Order 11987 May 24, 1977

EXOTIC ORGANISMS

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the purposes and policies of the Lacey Act (18 U.S.C. 42) and the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), it is hereby ordered as follows:

Section 1. As used in this Order:

(a) "United States" means all of the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, and the Trust Territory of the Pacific Islands.

(b) "Introduction" means the release, escape, or establishment of an exotic species into a natural ecosystem.

(c) "Exotic species" means all species of plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States.

(d) "Native species" means all species of plants and animals naturally occurring, either presently or historically, in any ecosystem of the United States.

Sec. 2. (a) Executive agencies shall, to the extent permitted by law, restrict the introduction of exotic species into the natural ecosystems on lands and waters which they own, lease, or hold for purposes of administration; and, shall encourage the States, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the United States.

(b) Executive agencies, to the extent they have been authorized by statute to restrict the importation of exotic species, shall restrict the introduction of exotic species into any natural ecosystem of the United States.

FEDERAL REGISTER, VOL. 42, NO. 101—WEDNESDAY, MAY 25, 1977

1745 - INTRODUCTION, TRANSPLANT, AUGMENTATION, AND REESTABLISHMENT OF FISH, WILDLIFE, AND PLANTS

Executive Order

THE PRESIDENT

(c) Executive agencies shall, to the extent permitted by law, restrict the use of Federal funds, programs, or authorities used to export native species for the purpose of introducing such species into ecosystems outside the United States where they do not naturally occur.

(d) This Order does not apply to the introduction of any exotic species, or the export of any native species, if the Secretary of Agriculture or the Secretary of the Interior finds that such introduction or exportation will not have an adverse effect on natural ecosystems.

Sec. 3. The Secretary of the Interior, in consultation with the Secretary of Agriculture and the heads of other appropriate agencies, shall develop and implement, by rule or regulation, a system to standardize and simplify the requirements, procedures and other activities appropriate for implementing the provisions of this Order. The Secretary of the Interior shall ensure that such rules or regulations are in accord with the performance by other agencies of those functions vested by law, including this Order, in such agencies.

Jimmy Carter

THE WHITE HOUSE,
May 24, 1977

[FR Doc.77-15120 Filed 5-24-77;1:41 pm]

FEDERAL REGISTER, VOL. 42, NO. 101—WEDNESDAY, MAY 25, 1977

FOR IMMEDIATE RELEASE:
Thursday, December 17, 2009

Senators Feinstein and Merkley Introduce Measure to Spur Renewable Energy Development

-Measure would extend and expand Treasury Department grant program-

Washington, DC – U.S. Senators Dianne Feinstein (D-Calif.) and Jeff Merkley (D-Ore.) today introduced a measure to spur the development of renewable energy employment and construction, such as wind and solar farms and solar panel factories. The bill would primarily extend and expand a popular Treasury Department grant program that was established in Section 1603 of the American Recovery and Reinvestment Act of 2009 in order to help diminish the impact of the economic crisis on the renewable energy sector.

The Treasury grant program helps renewable energy developers secure affordable financing to move forward with capital-intensive projects. It is currently slated to expire in 2010. The legislation introduced today by Senators Feinstein and Merkley would extend the program for two additional years, until 2012. It would also expand this program to allow public power utilities to participate, since they are currently ineligible. Finally, it would create a new tax credit for solar manufacturing facilities and the construction of large solar projects on disturbed private lands.

"One of the consequences of the economic crisis was the shelving of major solar and wind projects, as readily-available financing evaporated," Senator Feinstein said. "The stimulus bill established a new grant program to help restart these projects by allowing renewable energy developers to qualify for grants, or payments, from the Treasury Department instead of claiming tax credits. But the grant program is set to expire at the end of next year, before most construction is expected to occur and well before experts expect the tax equity markets to thaw. If the grant program is not extended, bank profits will again become the limiting factor on renewable energy development in the United States, and that makes no sense. This legislation would extend the grant program for two additional years, until 2012. It would also allow public power utilities to qualify for the grants program, since they provide energy for as many as 45 million Americans."

Senator Merkley said, "This bill makes sure incentives for renewable energy keep functioning during this recession and keep acting as job-creation engines. It also extends this important job-generating program to utilities that serve many smaller Oregon towns and rural areas."

Background

Before this year, wind and solar developers were required to partner with large, profitable banks in complex financial agreements, where banks would provide their equity (or profits) to development projects in exchange for a 30 percent tax credit, and charge the developers a fee.

When the economic crisis struck, the tax equity market that financed renewable energy development was frozen and major projects were shelved and delayed.

Section 1603 of the American Recovery and Reinvestment Act (the Stimulus bill) established "payments in lieu of tax credits for specified energy property." The program allows renewable energy developers to qualify directly for a 30 percent federal grant for capital-intensive projects, equivalent to the amount they would have expected from tax credits.

Experts credit the grant program with helping to resume development of new major solar and wind projects.

Bill Summary

The Feinstein-Merkley bill, the Renewable Energy Incentive Act (S.2899), specifically would:

Extend the Treasury Grants Program until 2012: The program allows renewable energy developers to take grants, or payments, from the Treasury department instead of claiming tax credits in order to help build projects that require a great deal of capital upfront. The program is set to expire in 2010, but experts believe this deadline is well before most large-scale renewable energy projects would be ready to begin construction or tax equity markets would be primed to rebound. The Feinstein measure would extend the program until 2012.

Permits Public Power Utilities to receive Treasury Grants for Renewable Energy: The bill would level the playing field between public power and for-profit companies by allowing public power utilities to receive Treasury Grants for renewable energy projects. Public power serves 45 million American consumers, but these utilities are currently the only major segment of the power industry prohibited from receiving Treasury Grants for their renewable energy projects. Public power utilities have to establish complex financial arrangements with private developers, in order to build renewable energy projects that qualify for grants under current law. This is in conflict with public power's vertically integrated, non-profit model.

Expands the solar investment tax credit to include manufacturing equipment and solar water heaters for commercial and community pools. The bill would allow equipment that makes solar panels to qualify for the 30 percent solar investment tax credit. Promoting solar manufacturing in this country could lead to thousands of new jobs, such as those being created at Solyndra's new factory in Fremont, CA.

Commercial pools are common at hotels/motels, health clubs, and schools. Approximately 189,000 commercial pools nationwide use fossil fuel or electricity to heat an estimated 27.25 billion gallons of water. If the heating systems were replaced with solar water heating systems, there would be 1.23 million tons of carbon dioxide emissions avoided annually, which is equivalent to taking 237,000 cars off the road. California has 26 percent of all commercial pools in the U.S. and could significantly reduce pollution by widely adopting solar hot water heating.

Establishes a new solar tax credit for consolidation of disturbed private land with high solar value. The bill would create a 30 percent investment tax credit for the purchase, consolidation, and use of multiple, 100 acre or less blocks of high solarity, disturbed private lands for solar development. Solar developers have focused development proposals on pristine public land because it is very difficult, costly, and time intensive to consolidate large blocks of disturbed private land from many different owners.

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State of California

Memorandum

DOCKET	
07-AFC-5	
DATE	OCT 27 2009
RECD	OCT 28 2009

To : Mr. John Kessler, Project Manager
Siting, Transmission & Environmental Protection Division
California Energy Commission

Date: October 27, 2009

From : **Department of Fish and Game**
Kevin Hunting, Deputy Director, Ecosystem Conservation Division

Subject: Comments on the Preliminary Staff Assessment and Recommendations for the Final Staff Assessment for the Ivanpah Solar Electric Generating System (CEC Docket # 07-AFC-5)

Dear John:

This memo and attachments convey the recommendations of the Department of Fish and Game (Department) on the Final Staff Assessment/Final Environmental Impact Statement (FSA/FEIS) and California Endangered Species Act (CESA) recommendations to the California Energy Commission (Commission) for the Ivanpah Solar Electric Generating System. Our recommendations are consistent with guidance emerging through the joint effort to implement the Governor's Executive Order S-14-08 and are consistent with the commitment among the members of the Renewable Energy Action Team (REAT) to collaborate and cooperate on project and policy guidance to facilitate achieving renewable energy targets. The Department reserves the right to adjust these recommendations, comments and mitigation conditions as appropriate to the preservation, protection, and management measures to be developed for the Desert Renewable Energy Conservation Plan (DRECP) being created in furtherance of Executive Order S-14-08.

The Department typically serves as the permitting agency with regard to projects subject to CESA. However, for energy projects that fall within the scope of the Warren-Alquist Act ("the Act"), Public Resources Code section 25000 et seq., the Commission serves as the permitting agency under California law and is responsible for ensuring compliance with the California Environmental Quality Act (CEQA), CESA and other state environmental laws. As the designated trustee agency charged with protecting, preserving, and managing California's biological resources, the Department has significant expertise in assessing project impacts to such resources and in formulating appropriate measures to mitigate those impacts. For these reasons, and to better facilitate project coordination, Commission staff has requested the Department review energy projects within the Commission's jurisdiction and make recommendations to the Commission regarding impacts and mitigation under CEQA/CESA.

The Ivanpah Solar Electric Generating System (Project) will be located in the Mojave Desert approximately fifty miles northwest of the City of Needles. When constructed, the Project will be approximately 4,060 acres and will generate approximately 400 megawatts, enough to power roughly 140,000 homes. The Project will be built in three phases, consisting of two 100 megawatt facilities and one 200 megawatt facility. With regard to CESA, the impacts of this Project relate exclusively to desert tortoise (*Gopherus agassizii*) and its habitat.

Mitigation Under CESA and ESA

The Department is providing comments and recommendations, here and via continued consultation with Commission staff, pursuant to Fish and Game Code section 2050 et seq. as it would relate to an Incidental Take Permit (ITP) for the Project. Compliance with CESA's incidental take provisions is required for any otherwise lawful activities which could result in the "take" (as defined in Section 86 of the Fish and Game Code) of any species listed under CESA. The Department is also providing comments and recommendations pursuant to its Lake and Streambed Alteration Agreement (LSAA) program under Fish and Game Code section 1600 et seq. in regard to any proposed activity that would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any waterway that could adversely affect any fish or wildlife resources. Jurisdiction under section 1600 et seq. may apply to all lands within the 100-year floodplain, including the numerous desert washes on site that will be affected by the Project, which will require LSAA permitting compliance via the FSA/FEIS. The Department continues to work with the Commission to clarify authorities and roles under Fish and Game Code section 1600 et seq. as it relates to the Warren-Alquist Act and intends to provide additional clarifying recommendations at a later date.

In regards to CESA, the FSA/FEIS must: 1) provide a full and complete analysis and disclosure of the impacts of the proposed taking; 2) provide an analysis of whether project certification will jeopardize the continued existence of desert tortoise (or any other State-listed species) for which "take" coverage is being sought; 3) provide a proposed plan for compliance and effectiveness monitoring for mitigation measures, inclusive of an adequate desert tortoise translocation/relocation plan; 4) provide measures that minimize and fully mitigate the impacts of the proposed taking; and 5) provide a description of funding source and level of funding available for implementation of the minimization and mitigation measures.

The Desert Tortoise Recovery Plan (Recovery Plan) previously had the Ivanpah Project location within the proposed Desert Wildlife Management Areas (DWMAs) in the eastern and northeastern Mojave recovery units (Figure 9 of the Recovery Plan and states, "These desert tortoises (tortoises outside of DWMAs) may be important in recovery of the Mojave population by providing a source of adult desert tortoises for repopulating extirpated populations in DWMAs once translocation techniques have been perfected. Habitat outside DWMAs may provide corridors for genetic exchange and dispersal of desert tortoises among DWMAs.") The Recovery Plan also states, "In addition, isolated populations of healthy desert tortoise found outside of DWMAs should be noted, but no active management is recommended for these populations unless it is needed to ensure their viability. These isolated populations may have a better chance of surviving the potentially catastrophic effects of URTD [upper respiratory tract disease] or other diseases than large, contiguous populations." The Department believes this known population of desert tortoise in its natural habitat within the northern portion of Ivanpah Valley, but outside of a DWMA, may be valuable to the recovery of the species for the same reasons stressed in the Recovery Plan.

The Recovery Plan also states, "The desert tortoise is also listed as a threatened species under the California Endangered Species Act of 1984. Similar to the Federal Act, this legislation requires State agencies to consult with the California Department of Fish and Game on activities that may affect a listed species. Compensation is required by the California Department of Fish and Game for projects which result in loss of desert tortoise habitat." As previously described, CESA requires full mitigation for take of endangered and threatened species. Full mitigation is based on habitat and population characteristics present at the site. This CESA mitigation standard is more restrictive than the federal Endangered Species Act (FESA) "mitigate to the maximum extent practicable" standard.

The Department, the Commission, the U.S. Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (Service) are working toward establishing a process to provide

renewable energy applicants a combined mitigation standard meeting both state and federal obligations regarding FESA/CESA. The attached letter from the BLM demonstrates the progress made among the members of REAT to closely coordinate mitigation requirements for the Ivanpah Project and signals collaboration among the agencies to this end. In the interim, we recommend the Commission require mitigation sufficient to meet both the federal and state mitigation standards outlined above.

Also, in recognition of the landscape scale of renewable energy projects across the California desert and as part of the DRECP, work continues in an effort to identify mitigation and/or enhancement projects that directly meet the unique requirements of large-scale renewable energy projects in the California desert where conservation opportunities exist on both private and public lands. The vision for a completed Natural Community Conservation Plan (NCCP) for the California desert – as contemplated in the Desert Renewable Energy Conservation Plan (DRECP) – includes processes and mechanisms for pooling biological resource conservation funds and directing funding to the actions that most effectively produce conservation and recovery of target species. Early implementation of this conservation and renewable energy balance vision is a top priority for the REAT and is manifested through several actions currently underway for RPS projects. The NCCPA offers opportunities for consideration of early implementation through an "interim process" clause that provides for some flexibility in developing and directing project-level mitigation and conservation prior to approval of the DRECP.

The Department recommends consideration of an in-lieu fee program currently under development by the REAT to facilitate the processing and directing of impact compensation and conservation funding that may be provided by the applicant for the Ivanpah Project. The conceptual in-lieu fee program being developed for the DRECP would base habitat acquisition compensation on current land prices via appropriate appraisals and assign per-acre values for the purposes of habitat acquisition. Actual acquisition, through fee title, deed restriction, easements, or other mechanism, would then be carried out by a designated third-party and directed to areas identified through the DRECP process as supporting the highest conservation values. The REAT anticipates having a fully operational program in place early in 2010 that could accommodate an in-lieu fee from the applicant.

CEQA and LSAA Comments

Alternatives

CEQA and NEPA require a meaningful range of alternatives to be analyzed in the FSA/FEIS. The PSA is lacking in specific information to support many of the statements regarding the limited alternatives evaluated for the Project. The conclusions in the FSA/FEIS should be supported with the best available data for impacts to desert tortoise and plant species of concern that clearly indicate a comparable or at least higher level of impact to those resources than they are being impacted by the Project. For example, Ivanpah and Broadwell Dry Lakes should be studied and fully analyzed in the FSA/FEIS regardless of existing recreational use vs. "take" of an endangered species (Ivanpah), or the reported "equal" mitigation requirement due to presence of desert tortoise when the FESA standard may not represent the state CESA requirement for the location, and a significant reduction in total combined desert tortoise compensation may apply (Broadwell).

The Department also recommends a full analysis of alternate siting locations and scenarios in relative proximity to the existing Project footprint given the fact the current Project area is excellent tortoise habitat, with a low level of disturbance and high plant species diversity, yet lower quality habitat is clearly within range to potentially reduce the overall Project impacts to endangered and sensitive species.

Biological Resources Table 1

State Regulations- Fish and Game Code section 3503.5 Birds of Prey or Eggs should be included in

this table. The code states it is unlawful to take, posses, or destroy any birds in the orders Falconiformes or Strigiformes or to take possess, or destroy the nest or eggs of any such birds.

Biological Resources Table 4
Waters of the State- The mitigation includes "....implement terms and conditions of state and federal permits." This is not adequate since the Department may not be issuing a Lake & Streambed Alteration Agreement (LSAA). Thus, the FSA/FEIS must include all measures that would be required in a LSAA, including all modification to the Project scope and mitigation as required in an LSAA.

For sensitive plant species, seeds could be collected for redistribution on compensation lands or within the general area. Specific types of compensatory mitigation must be identified in the FSA/FEIS.

Banded Gila Monster- Stating "Compensatory mitigation for desert tortoise may also offset impacts to Gila monsters" is inadequate. There must be a plan in place to address impacts to Gila monster should desert tortoise mitigation be insufficient to reduce Gila monster impacts to less than significant levels.

Construction Impacts and Mitigation

Impacts to Special-Status Plants
Since the drainage report is not completed, rare plants adjacent to the Project site may also be indirectly impacted by the diversion of Waters of the State.

The FSA/FEIS must address the outstanding conditions (BIO-14 and BIO-17) in enough detail to determine if the impacts to the plants species will or will not be reduced to less-than-significant levels.

Migratory/Special-Status Bird Species
"...the compensatory mitigation plan could offset the significant loss of habitat for these species." This section should be updated to either show that the compensatory mitigation does offset the loss, or other measures may need to be developed that will reduce impacts to less-than-significant levels.

Impacts to Special-Status Mammals
American Badger (*Taxidea taxus*)
The FSA/FEIS should include what will occur if a badger is found. Performing surveys for them does not avoid or minimize the impacts to the species. The process that will occur if a badger is found should be discussed in this section.

Nelson's Bighorn Sheep (*Ovis Canadensis nelsoni*)
Historically, Nelson's Bighorn sheep utilized the site during wet seasons when foraging in this area would have been the best. Since potential impacts to the sheep are not known at this time, it would be advantageous to enlist some basic measures to minimize direct or indirect impacts to bighorn that may utilize the area; e.g. moving back the fence at the base of the mountain range, not using barbed wire fencing in this location, checking known big horn sheep springs data periodically to ensure the Project wells are not adversely impacting sheep watering locations, and ensuring invasive plants have not taken over the springs are valid minimization measures that should be evaluated.

Desert Tortoise (*Gopherus agassizii*)
The draft translocation/relocation plan developed to date is inadequate to state that the desert tortoises are going to a "safe location". Based on past experiences, translocation in itself is not a "safe" process nor is it considered minimization or avoidance for the desert tortoises, but is a measure to salvage individuals on the site. Additional survey and biological assessment data and

information must be included in regards to translocation sites and identified in the FSA/FEIS.

Indirect Effects

Raven and Other Predators

For the Raven and other predators section, coyotes should be included in the evaluation as a predator to desert tortoise. As experienced during the Ft. Irwin translocation/relocation effort, coyotes can cause significant predation to desert tortoise, especially around areas where there is human activity and translocations of desert tortoise.

Increased Risk from Roads/Traffic

Another potential measure to minimize predation in the area would to be to require road kill, or other observed dead animals to be picked up and appropriately disposed of as soon as possible.

Impacts to Waters of the State/United States

The Department would like to stress that if waters are determined to have federal jurisdiction and/or permits which require modification of the drainage plan, those changes could directly or indirectly impact the Project scope and/or description, which could impact the final LSAA compliance conditions. The final jurisdictional requirements and conditions for federal and state agencies will need to be determined and disclosed in the FSA/FEIS.

Operation Impacts and Mitigation

In this section, it might be advantageous to mention the affect of night lighting on bats in the area. The bats may currently be using the site for foraging and will on occasion utilize the insect swarms that occur under bright lights. Monitoring of impacts to bats, including mortality found on-site, should be discussed with reduction of artificial lighting proposed as a potential mitigation measure.

Cumulative Impacts

Biological Resources Table 5

The last sentence of this section states "This significant cumulative impact may be reduced to less than significant levels with appropriate levels of compensatory mitigation..." The Department believes that it is premature to determine if the levels can be reduced to a level of less than significant due to the limited information on the compensatory mitigation being implemented for this Project. Without more detailed information, the Department does not agree that this Project will reduce impacts to a level of less than significant as it pertains to biological issues.

Permits/Consultations Required

It should be noted that the Department will not be issuing an Incidental Take Permit for this Project, but will work with Commission staff to ensure all requirements and conditions for those permits will be integrated into the conditions of certification recommended in the FSA/FEIS.

Proposed Conditions for Certification

Bio-1- The PSA's description of the Designated Biologist should be more in line with the U.S. Fish and Wildlife Service (Service) definition of a desert tortoise authorized biologist. As written, the Designated Biologist is not required to have any knowledge or approval to handle or survey for desert tortoise, yet the biologist will be directing the monitors to complete those tasks. Also, the designated biologist or a monitor should have knowledge on burrowing owl, gila monsters and badgers. The Department recommends for a project this long in duration that more than one designated biologist be approved and/or there be a mechanism which states how a new designated biologist will be approved.

Bio-3 – There are usually two classes of desert tortoise biologists; authorized biologist and biological monitor(s). In this condition, the description of the "biological monitor" is one the Department would use for the "authorized biologist". Some projects prefer to have what is normally considered a biological monitor, who is allowed to perform surveys, but does not have the

qualification to handle desert tortoise. In addition, all biologists and monitors must complete and submit the U.S. Fish and Wildlife Service Desert Tortoise Biologist Qualification form.

Bio-4- The PSA states: "Biological monitors shall be or any aspect of desert tortoise surveys or handling..." It is unclear what point or issue is being stated here.

Bio-5- This section gives the biological monitors the same exact level of authority as the designated biologist without the monitors having the same over all knowledge of the Project components.

Bio-6- It would be advantageous if the Worker Environmental Awareness Program (WEAP) specifically addressed the protected species in the area with pictures. Also, if applicable, this presentation may be required in a different language. The WEAP should discuss that a gila monster is venomous and should only be handled by the biological monitor(s) with specific knowledge on how to handle them for the safety and well being of the species and humans on the Project site. Finally, the WEAP should discuss that species such as snakes and reptiles should be allowed to leave the site or be relocated by the biologist/monitor instead of being killed.

The Department recommends the biological information within the WEAP be taught by a biologist so specific questions, if asked by the workers, can be correctly answered on-the-spot.

Bio-7- Number 4 states: "terms and conditions, such as those provided in the permits or agreements with the Department and RWQCB." Since the Department will not be issuing permits or agreements for this Project this information must be discussed in the FSA/FEIS and reflected in the Biological Resources Mitigation Implementation and Monitoring Plan.

Bio-8 - Number 1 states for the clearance surveys, transects will be no more than 30 feet apart, but the Service guidelines for clearance surveys state transects are to be no more then 10 feet apart.

Number 2 states the permanent tortoise exclusionary fencing shall consist of galvanized hard wire cloth l-cm mesh sunk 15 cm into the ground (USFWS 2008). The fencing would be buried approximately 6 inches. The Service's usual recommendations are that the fencing be a 1" X 2" mesh size and buried 12", but no less than 6 inches underground. In addition, this section should state the fence should be 24" above ground, but not less than 18".

Number 6 states "Any pre-activity tortoise surveys for other construction areas would be performed within 72 hours of ground disturbing activities." This should only be allowed if there is a temporary fence enclosing the area. Otherwise, surveys must be performed immediately prior to any work because desert tortoise could, in certain seasons, move into and establish pallets in an area within the 72-hour time frame.

Bio-9-This section states a translocation plan will be developed and then states at least 60 days prior to start of any Project-related ground disturbance activities a final version shall be provided. For CESA and CEQA compliance purposes, relocation site surveys and assessment should be completed and the final plan should be included in the FSA/FEIS. Although the translocation plan is considered for some measures to be a working document, the critical information requested to date for this plan is required to determine the level of impact to the species as a result of translocation/relocation, and should be disclosed in the FSA/FEIS.

Bio-10- Number 9 should have any compliance reports or incidents of tortoise injury and/or mortality submitted to the Service and Department. The Department also needs to be included in any discussion on the determination of the final disposition or further actions to be taken for the injured animal.

Bio-11- Number 12 should include coyotes. Coyotes will, much like ravens, be able to access the

site even with fencing, so the prevention of unnatural ponding water should be done both on and offsite.

Number 15 should state that the trash containers should be removed once full and removed or repaired if the self-closing mechanism breaks. Also, the WEAP should also stress that cigarettes and cigars are trash and should not be left on the ground within or outside the site, even if buried.

Bio-14- Until a revegetation and reclamation draft plan has been developed, the Department cannot make comments and recommendations necessary for implementation of revegetation and reclamation measures, but these measures should be in the FSA/FEIS.

Bio-18- The Department will not be issuing a separate LSA Agreement or ITP for this Project. All measures and mitigation that would normally be required in such permits will need to be included in the FSA/FEIS.

Bio-19 - The Department agrees the applicant should develop a facility closure plan addressing biological resource related mitigation measures. Any seed or plant mixtures used for revegetation of the Project site prior to closure will need to be approved by the Department and Commission.

Thanks again for all the effort to coordinate with the Department and agencies for this Project. Questions or comments regarding this letter may be directed to me at (916) 653-1070.

Attachments

cc: Mr. Terry O'Brien, Commission Deputy Director
Mr. Rick York, Commission Staff Biologist
Ms. Susan Sanders, CEC Staff Biologist
Ms. Misa Milliron, Commission Staff Biologist

Mr. Bruce Kinney, Inland Deserts Region
Mr. Scott Flint, CDFG, Habitat Conservation Branch
Mr. Curt Taucher, CDFG, Inland Deserts Region
Ms. Tonya Moore, CDFG, Inland Deserts Region
Ms. Becky Jones, CDFG, Inland Deserts Region

United States Department of the Interior

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JUL 23 2009

In Reply Refer To:
2800 (CA930)P
(CACA-48668)

Mr. Kevin Hunting
California Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

Subject: Coordination of Mitigation for BrightSource Solar Development

Dear Mr. Hunting:

This letter confirms agreement between the Bureau of Land Management (BLM) and the California Department of Fish and Game (DFG) regarding mitigation measures for the BrightSource Energy solar development project near Ivanpah, California (CACA-48668).

The current per acre mitigation fee established by the California State Director should be updated to reflect current land value and recent purchase prices. BLM will work with DFG and the applicant to establish the updated value.

The BLM mitigation ratio of 1 to 1 will be applied within the mitigation ratio that DFG has determined for the BrightSource project. The BLM acknowledges and accepts that BLM's mitigation requirement will primarily fund implementation of recovery actions jointly recommended by BLM, DFG and the United States Fish and Wildlife Service (FWS) biologists, while the remaining mitigation requirement will fund land acquisition.

Deed restriction language approved by the Department of Justice will be included in the deeds for lands acquired for project mitigation and donated to BLM for long-term management.

For any land enhancement actions or recovery actions implemented on existing BLM-owned lands as part of mitigation for this project, BLM will develop a Memorandum of Understanding with DFG containing provisions for notification of any proposed projects affecting those lands. The BLM agrees that future projects that may degrade or diminish the recovery value of this mitigation action will be compensated at a higher rate.

Thank you and your staff for your effort in working with the BLM and the FWS in determining a solution that meets all of our agencies' goals and missions. We look forward to continuing our collaborative efforts to promote renewable energy while protecting a healthy and functional desert ecosystem.

Sincerely,

James W. Abbott
Acting State Director

Federal Officials Set Aside Worries Over Desert Tortoise, Rare Plant

March 26, 2004|Louis Sahagun, Times Staff Writer

Reversing an earlier opinion, federal wildlife managers have concluded that expanding tank training at the Army's Ft. Irwin in the Mojave Desert is not likely to jeopardize desert tortoises or the last remnants of a rare plant.

The U.S. Fish and Wildlife Service warned in 2001 that it would be almost impossible for the sprawling 643,000-acre base to expand by 118,000 acres without wiping out a population of endangered tortoises and patches of Lane Mountain milk vetch.

Fish and Wildlife biologist Ray Bransfield said Thursday that the agency's new finding had been based on recent studies that had examined the possibility of moving tortoises from a site in Las Vegas to new environs.

In addition, he said, the Army had agreed to relocate about 1,300 adult tortoises in the expansion area so that they wouldn't get "smushed by tanks." It also plans to create milk vetch conservation areas outside the expansion area.

"The Army will be very happy.... This is one of the big approvals it's been waiting for," Bransfield said.

It may be two years before the expansion, which includes 75,000 acres of critical desert tortoise habitat, gets underway. Meanwhile, the Army aims to hold public hearings on the potential environmental effects of the expansion, a process that could take months.

"We can begin planning for the expansion," said Ft. Irwin spokesman Capt. Dan Gannod. "But we still have a set of city and town hall meetings to go through, and we still have to prep the land."

The tortoise recovery effort is expected to begin sometime next year. The Army has set aside $75 million for "buying land, fencing roads, translocating animals, then monitoring them," Bransfield said. "If ravens or dogs start eating translocated tortoises, they'll do something about the ravens and dogs."

Details of the proposal to move the tortoises were still being worked out.

"We aren't going to have a bunch of privates marching across the desert just picking up tortoises," he said. "The plan is to send out a bunch of environmentally aware privates."

In any case, the battle between tanks and tortoises in the desert near Barstow is far from over. Environmental groups are expected to mount a legal challenge against the expansion.

"Why did the Fish and Wildlife Service do an about-face on the expansion proposal? Because of the antienvironmental politics of the Bush administration," said Daniel Patterson, desert ecologist for the Center for Biological Diversity.

Patterson also criticized the Fish and Wildlife Service's most recent opinion on the proposed expansion. "You cannot kill and destroy critical habitat for wildlife," he said, "without having all your mitigation details set in concrete at the time a federal biological opinion is issued."

Mike Connor, executive director of the Desert Tortoise Preserve Committee in Riverside, said that he hadn't seen the army's report, but feared "it's a disaster in the making."

"This expansion proposal is a political decision that has nothing to do with the Army's needs or the tortoises' needs -- it's been in the pipeline for years," he said. "The desert tortoise is California's state reptile for good reasons, and politicians need to think about them. It's inoffensive, readily approachable and it has a lot of charisma -- people like them."

The Fish and Wildlife Service considers the Mojave population of desert tortoises, which once numbered 300 per square mile, to be endangered. The Lane Mountain milk vetch, an herb that often grows inside low bushes, is also endangered.

The agency's report is part of a lengthy process of study and consultation.

"I think it is a good day for the United States," Gannod said. "We need more land to test our soldiers and their equipment in order to figure out where their limitations are."

Army grants a stay to desert tortoises

Efforts to move them have stopped because many have been killed.

October 11, 2008|Louis Sahagun, Times Staff Writer

The Army's National Training Center at Ft. Irwin on Friday suspended its effort to move California desert tortoises off prospective combat training grounds and onto nearby public lands because the animals are being hit hard by coyotes.

The first phase of the $8.7-million translocation effort began in March, when about 670 tortoises were airlifted by helicopter out of the southern portion of the desert base northeast of Barstow to new homes in drought-stricken western Mojave Desert areas.

Since then, at least 90 translocated and resident tortoises in those areas have died, most killed and eaten by coyotes, according to federal biologists monitoring the project.

"We shut it down because of the mortality rate," said John Wagstaff, spokesman for the base.

"It will remain on hold until the Army and U.S. Fish and Wildlife Service determine the reasons behind it."

Biologists theorize the problem may be connected to severe drought conditions, which have killed off plants and triggered a crash in rodent populations.

As a result, coyotes, which normally thrive on kangaroo rats and rabbits, are turning to tortoises for sustenance.

They also point out that translocated tortoises tend to wander, sometimes for miles, making them lumbering targets for hungry predators.

Gashes and tooth marks in the shell of one translocated tortoise discovered in April by federal biologists indicated that it had been ripped out of the front of its carapace.

Other threats include vehicle traffic and an infectious respiratory disease.

The disease was prevalent in the relocation area and now the newcomers are catching it.

In July, the Center for Biological Diversity, a Tucson-based environmental group, sued the Army, the U.S. Fish and Wildlife Service and the U.S. Bureau of Land

Management, accusing them of violating the federal Endangered Species Act in their management of Gopherus agassizii.

In a prepared statement released on Friday, Ileene Anderson, a biologist with the center, said, "We predicted that the translocation of tortoises from Ft. Irwin's expansion would be disastrous and, unfortunately, we were proven right.

"This whole debacle needs to be significantly rethought," Anderson said.

"The loss of so many tortoises is certainly not helping this threatened population."

The tortoise, whose population has fallen to an estimated 45,000 on the public lands in the western Mojave, is protected under state and federal endangered species acts.

In 2001, Congress authorized Ft. Irwin to expand into prime tortoise habitat. As mitigation, the Army agreed to move the tortoises to unoccupied public lands.

"The Army cares very much about these tortoises," Wagstaff said.

"That's why we've devoted a lot of money and research to them over the past 20 years."

Michael J. Connor, Ph.D.
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Working to protect and restore Western Watersheds

By E-mail

August 31, 2009

Chris Otahal
U.S. Department of the Interior
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
<caftirwin@blm.gov>

Re: **Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058**

Dear Mr. Otahal:

On behalf of Western Watersheds Project and myself, please accept the following comments on the Environmental Assessment for the Translocation of Desert Tortoises onto Bureau of Land Management and Other Federal Lands in the Superior-Cronese Desert Wildlife Management Area, San Bernardino County, California Bureau of Land Management Environmental Assessment CA-680-2009-0058 ("EA").

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Western Watersheds Project has a particular interest in the desert tortoise and recently petitioned the Department of Interior to list the Sonoran desert tortoise population under the Endangered Species Act.

The purpose of the project is to translocate large numbers of desert tortoises from areas that are now within the boundaries of Fort Irwin and that will be used by the Army for training, to public lands and compensation lands acquired by the Army. The proposed action outlined in the EA encompasses two desert tortoise translocation efforts; the continued removal of tortoises from critical habitat in the Southern Expansion Area according to protocols in the "Original Plan" which is predicted to require moving up to 89 tortoises on to eight sections of BLM managed lands within the Superior-Cronese DWMA; and, the removal of 516 to 1,143 tortoises

from the Western Expansion Area according to the USGS "Amended Translocation Plan" onto Army and BLM managed lands within the Superior-Cronese DWMA (EA at 9-10). The BLM is deciding whether or not to authorize translocation of desert tortoises onto public lands managed by BLM, consistent with the USGS Original and Amended Translocation Plans, and with the associated Biological Opinions.

The proposed project is highly controversial, of great public interest, and of special interest to Western Watersheds Project members. In 2008, the Army translocated 569 desert tortoises from the Southern Expansion Area ("SEA") and then halted the project when massive fatalities of translocated and resident tortoises occurred. According to the U.S. Fish and Wildlife Service's draft Biological Opinion, over 252 resident and translocated tortoises died, many of these deaths (67%) being attributed to predation by coyotes. The actual number of deaths is unknown in part because not all affected tortoises are being tracked, and mortalities continue to be reported. Large scale desert tortoise translocation is experimental, and thus scientifically controversial, and the large number of tortoise mortalities engendered in the 2008 translocation fueled public indignation. Despite this, the BLM released the EA with only a 15-day comment period and without adequate public notice in defiance of both the Federal Land Policy Management Act ("FLPMA") and the National Environmental Policy Act ("NEPA"). Although we submitted timely scoping comments on the proposed project (see attached letter dated 02/18/09) we received no official notification of the release of the EA. When we asked the Bureau why we had not been notified we were informed that there was no record of our involvement. After we forwarded a copy of Dr. Quillman's acknowledgment of our scoping comments we were then told that our comments were indeed in the record. Evidently, the BLM has either erred in not informing all the interested public or has ignored our scoping comments. Either way, the agency falls short of its obligations under NEPA and FLPMA. Notices to interested individuals and organizations are also required by BLM Handbook 1745 which sets out BLM policy governing species relocations.

On August 6, 2009 we submitted a joint request with five other interested organizations requesting a 60-day extension of the comment period because of the complex and controversial nature of the project. The BLM agreed to extend the comment period to August 31, 2009. We applaud the BLM for granting the extension. However, NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. We requested copies of various personal communications that are referenced in the EA that relate directly to the environmental effects of the proposed project. We were told that obtaining these would require a FOIA request, which we immediately submitted. We received these documents at the end of the comment period, leaving little or no time to review and digest the information. This flaunts both the spirit and intent of the NEPA and FLPMA requirements to involve the public in making decisions.

The National Environmental Policy Act requires agencies to take a "hard look" at the environmental impacts of its actions. The purpose of an EA is to provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement ("EIS") or issue a finding of no significant impact ("FONSI") for a project. NEPA requires considerations of both context and intensity of the impacts of a project in determining if it significantly impacts the human environment. As we show below, based on these two criteria the project clearly falls into

the "will significantly impact" category and an EIS is required. The Bureau has determined that its proposed action, to allow the Army to release desert tortoises from Fort Irwin onto public lands in the western translocation area, is likely to adversely affect the desert tortoise.[1]

(1) Baseline Data on the Prior Desert Tortoise Translocation.

The large scale translocation of any animal, especially a listed species, is inherently complex. In this regard, the results of the Army's prior desert tortoise translocation effort should inform the process. *A priori*, at least the basic data from that effort needs to be presented. However, there is considerable confusion in the EA and associated documents even over the numbers of desert tortoises that have been affected and have died. The EA and the USFWS draft Biological Opinion[2] indicate that 569 desert tortoises were translocated from the Southern Expansion Area ("SEA"). Transmitters were left in place on 357 (i.e. 63%) of these animals following translocation. Some of the resident tortoises at the receptor sites and at control sites (sites where no tortoises were translocated to) were also processed and fitted with transmitters. Both the EA and draft Biological Opinion set this at 289 tortoises (149 controls and 140 recipients). The total number of tracked (i.e. transmittered) tortoises is thus 646. The actual number of resident desert tortoises at the receptor and control sites has not been determined. However, according to the EA, over 430 resident desert tortoises have been monitored in various studies. Since this was referenced by a personal communication, it is unclear if the 141 (i.e. 430-289) non-tracked resident tortoises were simply encountered during monitoring, if they were located in systematic surveys, were used in the various research projects, or what percentage of the total number of resident tortoises they represent. On August 27, 2009 we received a copy of the referenced personal communication (Email from R. Averill-Murray, dated 07/17/09). It was not helpful in clarifying this question.

The EA cites an unreleased analysis of predation of the tracked tortoises performed by the Desert Tortoise Recovery Office ("DTRO"). This analyzed population included 149 control, 140 recipient, and 357 translocated tortoises, i.e. 646 animals. Of these 646 tortoises, 147 died from "various causes". This number calculates to 23% of the tracked tortoises. The EA (at 3) states that animals that were lost due to transmitter failure, difficulty in tracking, or undetected predation events were excluded from this analysis but does not provide the number that was excluded. Assuming that this was greater than zero, the overall mortality rate was higher than 23%. The EA is silent on the number of tortoise deaths attributed to predation versus other causes. The draft Biological Opinion (at 48) states, "To conduct research on how translocation affected desert tortoises, workers placed transmitters on 149 control, 140 resident, and 357 translocated desert tortoises. As of April 2009, coyotes had killed 169 desert tortoises; an additional desert tortoise was reported as 'depredated.' Five desert tortoises died of natural causes, 7 were killed by common ravens, 1 was killed by a vehicle, and 15 were euthanized. The cause of death was reported as unknown in 43 cases and as 'other' for 5 desert tortoises; no cause of death was reported for 6 desert tortoises. In total, approximately 252 desert tortoises died while translocation was under way (unpublished data: Excel file 'mortalities 071709'). We

[1] Letter from the BLM California Desert District Manager to Diane Noda, USFWS, requesting initiation of consultation over the plan to translocate desert tortoises from Fort Irwin to Public Lands, dated July 23, 2009.
[2] Biological Opinion for the Proposed Addition of Maneuver Training Lands at Fort Irwin, California (8-8-09-F-43R). Draft dated July 30, 2009. 89 pp.

understand that a small number of desert tortoises have died since April but we have not received final reports on these animals." Assuming that the 252 mortalities were among the 646 tracked tortoises as indicated in the quote, this would give a mortality rate of 39%. The 170 deaths by predation would amount to 26%.

It is unclear why the DTRO and draft Biological Opinion numbers are so disparate, especially since they were generated within the same agency. The loss of at least 252 adult desert tortoises is appalling in itself, even more so as it does not account for an unknown number of untracked tortoises that may have been affected. The lack of clarity relating to what happened during the first translocation is not helpful, and simply fuels further controversy. The various agencies involved need to better communicate with each other and with the public, and develop a clear and transparent process that will allow for the realistic documentation of the effects of the translocation that is required to meet NEPA's requisite "hard look".

(2) Baseline Desert Tortoise Data & Carrying Capacity at Proposed Translocation Sites.

The proposed action is to translocate up to 89 tortoises from the SEA and 516 to 1,143 tortoises from the Western Expansion Area ("WEA") (EA at 3-4). The draft Biological Opinion cites the same number from the SEA and assumes about 1,100 tortoises could be moved from the WEA based on the midpoint of the upper estimates from two separate studies. The numbers of resident desert tortoises at the various receptor sites identified in the map (EA Figure 2) are unknown since no site specific abundances have been determined nor apparently are any planned. Instead, the agencies rely on density estimates generated in the range-wide line distance sampling ("LDS") surveys, so we will follow their lead.

The EA identifies 205 sections in the Superior-Cronese DWMA as suitable for translocation of tortoises from the WEA based on modeling analysis. The EA (at 9) assumes an abundance of 19 desert tortoises per square mile, i.e. 3,952 tortoises on the 205 sections.[3] The draft Biological Opinion assumes 16.4 desert tortoises per square mile, i.e. 3,362 tortoises on the 205 sections.[4] If 1,100 tortoises are translocated this would increase the density on the 205 sites by 28% based on the EA numbers and 33% based on the draft Biological Opinion numbers. The most recent LDS data available, that provided in the DTRO's draft 2007 Monitoring Report[5], gives an estimate of 5.9 tortoises/sq km (with 95% confidence intervals of 3.72- 9.25), i.e. 15.2 tortoises per square mile (with 95% confidence intervals of 9.6- 24). Using that data, which we consider to be the most reliable estimate based on the recent improvements in sampling and statistical methodologies, the population estimate would be 3,132 and the translocation of 1,100 tortoises would increase the density on the 205 sites by 35%. These numbers are of course very simplistic estimates. Ten years ago, as part of the West Mojave Plan planning effort, tortoise sign surveys were conducted across what would become the Superior-Cronese DWMA. While not quantitative, this exercise indicated that the distribution of desert tortoises is patchy. The applicability of the DWMA-wide based LDS estimate to specific sites is also unclear since this

[3] The EA cites Medica, personal communication as the source of the 19/sq mile number. In the response to our FOIA request we were sent an earlier, undated draft version of a translocation plan that cites "Medico [*sic*], personal communication". Confusion could have been avoided if the BLM had used the actual DTRO monitoring reports.
[4] Yet again, an example of the agencies using different datum.
[5] Range-Wide Monitoring of the Mojave Population of the Desert Tortoise: 2007 Annual Report U.S. Fish and Wildlife Service Desert Tortoise Recovery Office, Draft dated November 2008. 50pp.

technique is geared towards obtaining trends at the range-wide and recovery unit levels. The new USGS proposed plan will avoid translocating tortoises within a 5 km buffer zone around any diseased resident tortoises. While this is an important improvement to the protocol, it will likely diminish the available receptor sites since *Mycoplasma*-positive animals have been detected in the area. Other factors too, may diminish the available receptor sites. However, the bottom line is that translocation of the WEA tortoises could increase tortoise densities by one third, and could directly impact over 3,000 resident tortoises. This level of impact cannot be discounted as minor and underscores the need for a complete EIS. Among other things, the increased density plus stress of capture, translocation, and release into foreign habitat may increase susceptibility of desert tortoises to *Mycoplasma* infections across a large area of the Superior-Cronese DWMA.

In our scoping comments, we had raised the need for the current desert tortoise carrying capacity to be estimated at the translocation sites. In the EA's response to comments section, by the comment "Need for analysis of carrying capacity of receptor sites" is the response "Addressed in sections 2.1.1.1 and 2.1.1.2". However, the issue is not addressed in either section (or elsewhere) unless the EA is referring to the unsupported claims in the sentence "Also, since there seems to be little connection between drought and non-drought conditions and mortality levels of translocated tortoises, the developers of the translocation plan considered food availability not a factor which needs be considered in the timing of translocation efforts" (EA at 7). Carrying capacity is the inherent ability of the land to support a given number of tortoises per unit area (West Mojave Plan at 3-94). While forage availability may be one factor the BLM uses in determining carrying capacity for livestock, it is not an appropriate delimiter for the ability of an area to support more desert tortoises. Instead, site-specific consideration of all the resources required over the life of a tortoise with respect to the size of the population is required: including food plants, cover sites, social hierarchies and territories, predators, essential constituents of habitat, and other ecological parameters (USFWS, 1994). This is especially important for receptor sites identified as being in "die-off regions", because the actual cause of the die-offs is so rarely known. If the translocation sites are not at carrying capacity, there must be an ecological reason. As such, adding more tortoises may create a surplus to what the local, receptor site can handle successfully. This could fuel increased density-dependent mortality via various means including parasites, disease, predation, and take by automobiles. Under the ESA, agencies must utilize their authorities in furtherance of the purposes of the Act and thus must take the most conservative approach in favor of the species and habitat when there are data gaps, like there are here. The lack of basic site-specific information such as desert tortoise abundance at each receptor site is a significant data gap.

According to the EA (at 8), relocation of the remaining SEA tortoises would result in the density increasing up to approximately 30 animals per square mile on eight sections of land. Apparently, this is to maintain the integrity of the ongoing tortoise research project. This could thus impact 240 desert tortoises in the Southern Translocation Area. The EA (at 28) states, "While this increased translocation density (relative to the Amended Translocation Plan) may exasperate the issues of disease transmission and predation, the USGS/University of Nevada-Reno team (and independent reviewers) have concluded that this increased density would not significantly raise the threat of disease or predation above background levels and that the conservation benefits gained by the on-going research would outweigh these potential drawbacks

(Todd Esque, USGS, personal communication)." The EA is silent on why the threat of disease or predation would not be above background levels. In fact, since the research sites are well within the range of movement of translocated tortoises, the carrying capacity of the SETA sites is unknown, and these sites are within the same general area that experienced massive coyote depredation rates in 2008, the benefit of staying with the original translocation protocol is not only unclear but appears to be outweighed by the risks not just to these 240 resident and translocated tortoises but even to the tortoises at the nearby research sites. The ESA requires the agencies to minimize incidental take. We see no evidence in the EA that staying with the original translocation protocol for the remaining SEA tortoises will do so.

(3) The Fort Irwin Desert Tortoise Translocation and Predation.

The EA and supporting documents take the view that the Fort Irwin translocation had no effect on coyote depredation but rather that the massive loss of tortoises would have occurred anyway. This is based on similar predation rates observed among translocated, control and resident tortoises that were tracked as part of the research effort in the original translocation. However, no data is available (and evidently was never collected) on the fate of the resident tortoises that were not part of the research study; nor is it clear if survival data was collected on those translocated tortoises whose transmitters were removed at release. The EA (at 3) references a personal communication as the source of its information on these similar predation rates. This was the email from Roy Averill-Murray dated 07/17/09. It contains the two paragraphs that were cut and pasted into the EA with no additional supporting data.

The translocation involved extensive manipulation of the tracked desert tortoises including transmitter attachment and removal, repeated monitoring, and the presence of large numbers of biologists and support staff at the receptor sites. Some of the receptor sites were close to human habitation. All these factors could contribute to alerting predators and altering predation rates. Boarman *et al* (1998) reviewed possible effects of transmitter attachment on chelonians. They concluded "Studies should be conducted to evaluate the effect that transmitters and their attachment methods have on turtles and tortoises with the results reported in the literature." That observers may influence predation rates is a known issue for desert tortoises. For example, Bjurlin and Bissonette (2004) raised concern that monitoring may facilitate predator detection of desert tortoise nests and cautioned that a systematic study of researcher impact on predator behavior is warranted. In a preliminary study of the possible risks of tracker dogs attracting predators such as coyotes when being used to locate desert tortoises, Cablk *et al* (2004) found that human presence alone may attract coyotes especially with prolonged stays. Cablk also provides a brief literature review of related studies. The large scale of the Fort Irwin translocations would make these kinds of observer effects of particular concern.

The Draft Biological Opinion includes the following table; a similar table was shown by Dr. Esque during his presentation at the 2009 Desert Tortoise Council Symposium.

Location	Sample Size	Number Dead	Percent Loss
Superior-Cronese, CA	15	1	6.7
Marine Corps Air Ground Combat Center, CA	11	1	9.1

Coyote Springs Valley, NV	26	4	15.4
River Mountains, NV	19	4	21.1
Piute Valley, NV	14	3	21.4
Fort Irwin, CA	647	147	22.6
Soda Mountains, CA	29	12	41.4
Chuckwalla Bench, CA	16	7	43.8
Chemehuevi, CA	11	5	45.5

How the data was collected, actual site locations, the level of manipulation of the animals, the demographics of the sampled tortoises, when the sites were sampled, the statistical significance of the losses, how the losses to predation were actually determined, and what other causes of death were observed are not explained. However, the authors speculate that this data provides evidence of range-wide coyote depredation. The documents provide no data showing trends in coyote depredation rates over time at any of these locations. Without these data, it is difficult to determine whether depredation rates changed in 2008 and what contribution manipulation of a tortoise may have made to it subsequently being preyed upon. Certainly, if the tabulated numbers are taken at face value and the none-Fort Irwin data is representative of un-harassed tortoises, the observation of only a 6.7% loss (a single tortoise) at the Superior-Cronese site compared to the 22.6% loss in the Fort Irwin translocation is deeply troubling.[6] It suggests that the magnitude of the intervention may have contributed to the massive loss of tortoises in the Fort Irwin translocation. There is no foundation for the claim reiterated in the documents that the Fort Irwin translocation did not contribute to the massive losses. Accordingly, predation cannot be discounted and must be fully factored into the environmental analysis.

We included a brief review of literature related to coyote predation on desert tortoises in our scoping comments. Over 60 years ago, Woodbury and Hardy (1948) found evidence for coyote predation on desert tortoise and concluded that the rate probably increased in dry years when rabbit populations were low. Given the background literature and recent experience, canid depredation of desert tortoises following translocation is clearly likely to occur, and needs to be mitigated for to minimize take. We do not advocate lethal control of local coyotes, since this is at best a stopgap measure and it is unclear as to how effective coyote removal would be at reducing depredation (cf. Goodrich & Buskirk, 1995). Rather, predator distribution and presence should be criteria used in selecting translocation sites. Appropriate predator mitigation measures (such as temporary protective fencing and stringent protocols to minimize prolonged human presence at translocation sites) should be incorporated into the translocation plan. Any proposals for control of coyotes and other predators need to be fully analyzed in the NEPA documents. Coyote removal could result in new packs moving in from adjacent areas and occupying the now vacant territory, potentially compounding the problem. Lethal coyote control could have potential long-term consequences for the local desert ecosystem. Coyote removal could trigger an increase in the local rabbit and black-tailed hare population and change the availability of tortoise food plants in subsequent years. Coyote eradication could lead to increased kit fox numbers and increased predation on desert tortoise nests.

[6] On August 31, 2009 we obtained a copy of a table provided by USGS in response to a FOIA request entitled "Working Tortoise Predation Table 10Aug2009". This included the same information provided in the draft Biological Opinion with additional data columns for 2006 and 2007. The mortality for 2007 at the Superior Cronese plot was 1/16 = 6.3%, i.e. a statistically identical result to 2008. No data was provided for 2006.

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age. Yet as we mentioned in our scoping comments, Berry et al (2009) reported that more females than males were killed by predators in the 2008 translocation. In the EA's response to comments section, by the comment "Need for development of protocols to address gravid females." is the response "Discussed in section 4.3.1.1". However, no such discussion occurs in that section (or elsewhere in the EA). The translocation plan must include mitigation measures to address this imbalance. The plan should include specific guidelines related to the translocation of gravid females to minimize risks to this crucial demographic group.

(4) The Experimental Nature of Large Scale Translocation.

The 1994 Recovery Plan considered translocation as a potentially important conservation tool if the techniques can be perfected, and recommended that research be conducted to achieve this. It was with this in mind that the Fort Irwin translocation was built around conducting vital research. This research is still ongoing, and large scale desert tortoise translocations remain experimental and the object of scientific controversy. This is recognized in the EA, and is why different protocols were adopted for the SEA versus WEA tortoises. The remaining SEA tortoises cannot be released according to the amended protocols (i.e., dispersed across the Southern Expansion Translocation Area), because they would compromise the study design (control animals) in the research projects currently under way.[7]

Certainly there has been some welcome progress in desert tortoise translocation related research. A recent paper by Field *et al.* (2007) provides data from a small scale translocation conducted at the LSTS in 1997-1998. They translocated tortoises that had been held at the Desert Tortoise Conservation Center in Las Vegas. They observed a 21.4% fatality in the first year that they attributed to drought conditions at the release site, and zero the second year (1998) which was one of wettest years on record for the area. Despite the small sample size, short duration of the study, and absence of long term follow up, they concluded that tortoise translocation should be considered a valid tool for desert tortoise conservation. At its March 13, 2009 meeting, the DTRO's Science Advisory Committee reached consensus that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option.[8] Given the high degree of scientific uncertainty, large scale translocation remains experimental, scientifically controversial, and unproven as a tool for desert tortoise conservation.

The 1994 Recovery Plan proposed DWMA as protected areas within Recovery units where preserve level management would be implemented to recover the desert tortoises. While the Recovery Plan entertained the concept of "experimental zones" within DWMA, it recommends that these be limited to no more than 10% (Recovery Plan at 36). Neither the

[7] Per 07/16/2009 e-mail from Roy Averill Murray to Chris Otahal.
[8] Meeting Summary Desert Tortoise Science Advisory Committee Meeting, March 13, 2009, San Diego Wild Animal Park, Escondido, CA. 4 pp.

Recovery Plan nor the governing land use plan (West Mojave Plan) envisioned making entire DWMA experimental zones.

(5) Range of Alternatives.

The NEPA implementing regulations specify that NEPA documents must analyze a full range of alternatives. Based on the information and analysis presented in the sections on the Affected Environment (40 C.F.R. § 1502.15) and the Environmental Consequences (40 C.F.R. § 1502.16), the NEPA document should present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. The regulations specify that agencies shall:

> (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
> (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
> (d) Include the alternative of no action.
> (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
> (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

In our scoping comments, we had recommended that the BLM consider an alternative based on the recommendations of the 1994 Desert Tortoise Recovery Plan. This alternative would fully implement the recommendations of the 1994 Desert Tortoise Mojave Population Recovery Plan Appendix B. This alternative would identify translocation sites outside the DWMA. Analysis of this alternative would have provided a baseline for fully analyzing risks to the tortoises and to the DWMA, since tortoises would be translocated outside the DWMA under this alternative. We are surprised that the BLM has not just ignored our proposed alternative but has failed to consider any alternative based on the current Desert Tortoise Recovery Plan in the EA. In doing so, the BLM has failed to explore and evaluate a reasonable range of alternatives.

The EA reviews four alternatives; the proposed action under which tortoises would be translocated onto BLM managed and Army owned lands in the Superior-Cronese DWMA guided by the USGS original and amended translocation plans; alternative A which is the same as the proposed action but would also allow tortoises from the SEA to be translocated onto 65 square miles of the Soda Mountains Wilderness Study Area ("WSA") at the east end of the Superior-Cronese DWMA; alternative B under which tortoises would be translocated onto 62 square miles of Army and state owned lands in the Superior-Cronese DWMA; and "no action", under which no translocation and no army training would occur.

Although the BLM claims to have analyzed alternatives A and B in depth, the habitat quality of the WSA lands, the Army acquired lands, and the state lands is not described and no

maps are provided to even indicate the locations. Again, the BLM is failing to take a hard look at environmental consequences and what's best for this listed species. The EA (at 12) states, "For the purposes of the analysis in this EA, it is assumed that all of these lands would be available for receiving translocated animals, though[t] it is likely that some locations would be deemed unacceptable for translocation". The absence of habitat quality and suitability data, and basic maps of the locations make it difficult for the public to appreciate the relative merits of these alternatives. The EA also makes incorrect assertions about management on the state and the Army's acquired compensation lands. The general management of these lands essentially reflects what is going on, on the public lands around them. What is different though is that these lands are not open to BLM's multiple use policy and therefore are not available for mining and energy development, etc. If the Army's compensation lands are transferred to the BLM they will be open to these developments and other consumptive uses. The EA should consider alternatives under which the Army's compensation lands are not transferred to BLM or are only transferred if the BLM guarantees that these lands will be conserved in perpetuity for the purposes of conserving and recovering desert tortoises and other special status species.

For alternative B, receptor sites would be on Army compensation lands and state lands only. However, state lands were considered unsuitable in the site selection decision support model (Amended Translocation Plan at 30). Further, according to the Amended Translocation Plan, State lands are not being considered due to the administrative burden related to such activities (Amended Translocation Plan at 6). Thus, it is unclear why this alternative is even being considered in the EA.

Under the "no action" alternative the translocation effort would not take place on BLM managed lands and no military activities would take place. For the purposes of analysis, it is assumed that conditions on BLM managed lands would not change from the current baseline conditions. Yet, based on bald claims made in the EA and associated documents, some 25% or so of the DWMA's adult tortoises were depredated by coyotes in 2008. This is a catastrophic level of change that cannot be ignored. Why does the BLM not expect densities of desert tortoise to change if predation is such an issue? Assuming that densities will not change is not helpful in establishing the base-line for impacts from the proposed action, particularly if mortality continues at the rates observed in the prior translocation.

(6) Clearance Surveys.

The clearance surveys for the WEA tortoises described in the EA and Amended Translocation Plan could result in large numbers of tortoises being left in the training area. The proposed action is to undertake a single pass survey by tortoise pedestrian survey teams through one kilometer blocks. If more than four adult tortoises are found within any one square kilometer block, then the block would be surveyed a second time in its entirety. Four tortoises per square kilometer equal 10.3 tortoises per square mile. But the Amended Translocation Plan (at 4) also indicates that the percentage of tortoises detected on a single pass was only 70%. Assuming this detection rate is correct and is achievable under field conditions, the trigger for a second survey would be an abundance greater than 14.8 tortoises per square mile. This density is similar to the actual Superior-Cronese DWMA abundance of 15.2 adult tortoises per square mile

determined in the most recent range wide LDS monitoring. Thus, the trigger for a second "sweep" is finding an average number of tortoises for the area.

Because the second sweep will only occur on habitat that supports equal or higher numbers of tortoises than the average abundance for the area, the clearance surveys will leave a large number of tortoises within the WEA. It is difficult for us to calculate the number of tortoises that would be left since we do not have access to the agencies' survey data.[9] However, for a worse-case scenario if we assume that the LDS abundance of 5.9 tortoises/km^2 (15.2 tortoises/$mile^2$) is a median value, half of the WEA (125 km^2) would not receive a second pass, and 221 (i.e. 5.9 x 125 x .3) adult tortoises would be missed from areas that received only a single pass. The total number of adult tortoises actually left in the WEA would be higher since the detection rate for 2 passes is 95% (i.e. 5% missed), and an unknown number of hatchlings and young tortoises will also be missed. The criteria for triggering a second sweep will not minimize incidental take and should be reconsidered.

(7) Selection of Translocation Sites.

Translocation sites should be selected based on sound, science-based criteria and manageability to maximize likely success.

The Amended USGS plan incorporates "die-off" as a positive factor in choosing translocation sites. Die-off regions are identified as areas in which the carcass encounter rate exceeded the live encounter rate in the range-wide LDS monitoring. However, the efficacy of using this ratio is unclear since both carcasses and live tortoises are likely to be more frequently encountered in higher tortoise density areas, but available carcasses are easier to find than are live tortoises depending on the conditions on the day of the survey. Use of this factor in choice of translocation sites also assumes that whatever caused the die-off is no longer an issue in those areas. Since we rarely know the cause of die-offs, this hypothesis needs critical evaluation, and requires ground-truthing at each translocation site. Recent studies of tortoise and wildlife translocations emphasize the need to abate existing threats for translocations to be successful (Fischer and Lindenmayer, 2000; Fields *et al.*, 2007). The cause of any die-offs needs to be determined so that the threat(s) can be ameliorated.

Translocation sites should be selected in areas where resident desert tortoises share similar genetic backgrounds. In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct "Central Mojave" population of desert tortoises (Murphy *et al.*, 2007). Murphy *et al.* considered the range of this population to encompass Rowlands' Central Mojave botanic region (Rowlands, 1995). The Superior-Cronese DWMA boundary was based on administrative boundaries, roads and other defined barriers. While it includes much of the Central Mojave it also overlaps with the West Mojave botanic unit. The USGS (Amended Translocation Plan at 21) apparently considered

[9] Today, August 31, 2009, we obtained a copy of Walde, A. D., Boarman, W. I. and Woodman, A. P. *Desert Tortoises Estimates on the Western Expansion Area of Fort Irwin dated 6 February 2009*. They surveyed 62 sq km plots in the WEA in a single pass survey. They found densities of 5 or fewer tortoises on 44 plots and 6 or more tortoises on 18 plots. This suggests that our worse-case scenario may be over-optimistic; more than half of the plots may only get a single sweep.

genetic integrity in choosing possible translocation sites but did not explicitly acknowledge the significance of the Central Mojave desert tortoise population. Since no maps were provided, it is unclear if the lands that would be used under alternative B fall within the Central Mojave region. The Central Mojave botanic region boundary, not the Superior-Cronese DWMA boundary, should be the delimiter for translocation sites used in the decision support modeling, so that translocation does not compromise the genetic integrity of the Central Mojave desert tortoise population.

We had commented that the habitat quality of translocation sites should be comparable to the habitat from which the tortoises have been removed based on site-specific surveys of soils, hydrology, vegetation, invasive species, and anthropogenic threats. The BLM describes the tortoises and their habitat within the DWMA as having been "adversely affected by multiple stress factors, including anthropogenic factors and disease and drought that swept through populations in the 1990's" (EA at 4). It is unclear if these factors have been ameliorated. The decision support model appendix mentions the condition of vegetation at receptor sites but it is unclear if this consideration was added to the model (Amended Relocation plan at 31). Nor does the model seem to have incorporated invasive weed presence and fire risk. The feasibility of being able to close off the area around translocation sites should disease containment be required was not addressed. The decision support model has also not explicitly addressed predator distribution. While proximity to human habitation may be of some value, the model could certainly have factored in proximity to open waters since water availability may be rate-limiting for coyote distribution, and coyote sign is much higher around developed waters (DeStefano *et al*, 2000).

(8) Biological Goals, Objectives, Outcomes, Criteria for Success.

The EA does not provide explicit biological goals and objectives for the translocation project. Is the translocation a large experiment, is it meant as a conservation measure, or is it merely to address the human-tortoise conflict created by the expansion of Army training activities?

The EA claims that the translocation project may have a positive long-term effect on the upward or stationary trend of desert tortoise within the DWMA by increasing the available pool of healthy adult females of reproductive age (EA at 25). Certainly, adding tortoises will temporarily increase the number of tortoises, but there is a difference between temporarily increasing the total population size by releasing tortoises and increasing the breeding or effective population size. The latter will require that the translocated tortoises integrate with residents, adapt to the new local ecological conditions, and form a stable, breeding population. The claim that the translocation may positively benefit the population trends is hypothetical at best, and should be clearly construed as such.

The EA describes large-scale monitoring that will occur but does not explain how this data will be used, and without any stated biological goals and objectives its utility cannot be determined. The Amended Translocation Plan mentions the development of testable hypotheses several times, but does not specify these.

The lengthy time-scale over which translocations must be monitored to determine their success or failure is an important consideration that is repeated extensively in the scientific literature (see for example, Dodd and Seigel, 1991; Fischer and Lindenmayer, 2000). Both the method of release and the distance of release from capture sites affect the behavior of translocated desert tortoises (Walde *et al.*, 2009). If the goal of the large-scale translocation is population augmentation, then measurable long term objectives must be specified. The 5 year monitoring period may provide information on initial survival, but it is an insufficient to determine the success of population augmentation and the success of translocation as a conservation tool. The NEPA documents should provide clear biological and conservation goals and objectives, expected outcomes, and benchmark criteria that measure the success in achieving the established goals and objectives.

(9) Health and Disease Issues, and Contingency Planning.

The USGS have incorporated important, additional protocols to evaluate the health status of translocated desert tortoises into the Amended Translocation Plan. These protocols will reduce but not eliminate the risk of infectious tortoises being moved into the DWMA.

The Amended Translocation Plan also proposes sampling resident tortoises at 64 sample points located across the translocation area. This will provide data on the disease status of tortoises that will be used to modify the translocation area. Translocated tortoises will not be released within a 5 km buffer around any detected diseased resident tortoises.[10] This is an important improvement over the Original Translocation Plan, however its likely effectiveness is not addressed and no alternative buffer sizes are considered. Since 5 km is less than half the maximum distance moved by many tortoises in previous translocations, the measure may reduce but will not eliminate the risk of translocated tortoises moving into the home range of infected resident tortoises. This factor is of particular concern with species like the desert tortoise that have complex social behavior, since translocated tortoises may disrupt the social structure of resident populations by displacing residents (Berry, 1986). Long distance movements by both translocated and resident tortoises could lead to disease spread and place the larger population at risk of epidemics. In this respect, Walde *et al.* (2009) reported that one of the 2008 translocated tortoises moved as far as 23 km. The translocation plan should include an epidemiological analysis, and the EA should consider additional measures such as temporary fencing to reduce the risk posed by tortoises making long distance movements.

We are concerned about the adequacy of the sampling of resident tortoise populations in the Western Expansion Translocation Area ("WETA") to determine their health status. The Amended Translocation Plan proposes to sample tortoises at 64 sites throughout the WETA. The number of tortoises to be sampled at each site is unclear. Sample sizes for the resident tortoises need to be appropriate to detect the presence of *Mycoplasma* and other diseases. In the 2008 translocation, some 7 of 142 sampled translocated tortoises (i.e. about 5%) initially tested positive or suspect positive for *Mycoplasma agassizii* or *M. testudineum* (Berry et al, 2009). Based on that report, a large sample size would be needed to determine absence of disease among residents at each of the 64 sites. This must be addressed in the EA and supporting

[10] Presumably, the buffer zones will have a 5 km radius, not diameter. Neither the Plan nor the EA are explicit on this.

documents. In addition, none of 64 proposed disease sampling sites are on the "red squares" on the Amended Translocation Plan maps. These "red squares" are not slated as translocation sites but may be adjacent to the "green square" translocation sections and form a checkerboard in some areas. Because a higher live tortoise to carcass ratio was a negative factor in the model used to select translocation sites, the adjacent and nearby "red squares" may have higher tortoise densities. Since disease transmission may be density dependent, sampling should also be conducted in any "red squares" with higher tortoise densities that are within the expected range of movement of translocated tortoises.

In our scoping comments, we raised the need for contingency planning to deal with potential disease outbreaks that could be triggered by the translocation including quarantine measures. This has not been done. The agencies must do more than simply monitor tortoises for disease but describe specific remedies that will taken to avoid disease outbreaks reaching epidemic levels. The NEPA analysis should identify counter-measures should disease epidemics be detected, and should include specific triggers for implementation of these counter-measures.

(10) Risk Assessment.

The BLM recognizes that this large-scale translocation will adversely affect desert tortoises. It may result in some lethal and non-lethal Section 9 ESA take, and if the carrying capacity at a translocation site is exceeded, may result in adverse modification of critical habitat and retardation of recovery of the population. Translocated tortoises may undergo long-distance movements, can disrupt the social behavior of residents (Berry, 1986) and may result in other stresses such as weight loss (Gowan *et al.*, 2009) that could contribute to the outbreak of clinical signs of disease and disease spread. Because negative social interactions could result in resident tortoises moving off site, there is a risk of both resident and relocated tortoises contracting and spreading infectious disease. The USGS amended plan has recognized the importance of this issue in building in a 5 km buffer around areas with infected tortoises. The 5 km buffer is based in part on a distance that is 50% of the maximum linear movements made by tracked tortoises in prior translocations. Since tortoises are known to move considerably more than 5 km, the buffer may diminish but does not remove the risk. The large-scale proposal to translocate tortoises throughout the Superior-Cronese DWMA places the entire West Mojave population, particularly the Central Mojave type tortoises described by Murphy et al, at risk. The agencies should formally evaluate this risk not just recognize it, and a credible, quantitative risk assessment should be made for each alternative analyzed in the NEPA process.

(11) Use of Best Available Science.

The Endangered Species Act clearly mandates that "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an ''agency action'') is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. <u>In fulfilling the requirements of this</u>

paragraph each agency shall use the best scientific and commercial data available." (Emphasis added). In this case, the project would translocate desert tortoises throughout the range of what has been identified as a genetically distinct "Central Mojave" population of desert tortoises (Murphy *et al.*, 2007). This entire Central Mojave population would be placed at risk by the proposed action. Loss of this population would produce a significant gap in the range of the species. None of the documents including the EA, the various translocation plans, and the draft Biological Opinion even mention Murphy *et al.* let alone analyze the potential impacts to this identified population.

The EA list of references does not include a single citation from the primary literature; all the listed references are derivative agency documents. Instead, the EA relies heavily on "personal communications". In many cases, these "personal communications" consist of nothing more than the actual wording that was inserted into the EA and contain no substantive, supportive data or references. This is particularly egregious with respect to the controversial claims that there is little connection between drought and predator prey base availability and the success of desert tortoise translocation. The claims made in the personal communications all cite the similar mortalities among the 2008 translocated, resident, and control tortoises. These provide no data on mortality among non-manipulated residents, and as discussed above, data in the Biological Opinion shows lower mortality at a nearby Superior-Cronese site and does not support this claim.

The EA also misrepresents existing literature. For example, the EA (at 8) states that "Climate change and drought were not regarded as threats to the desert tortoise in the 1994 Recovery Plan". The Recovery Plan certainly recognized drought as an issue (USFWS, 1994). And, even though the Recovery Plan was written in 1994, it was a far-seeing document that incorporated climate change considerations. Climate change was incorporated into the population viability analysis (Recovery Plan at C3), threats analysis including fire (Recovery Plan at D24), and research on "climate and vegetation" was included in its implementation schedule. While criticizing the Recovery Plan, the EA fails to mention that the proposed translocation does not follow the science-based recommendations of that plan.

(12) Monitoring Programs.

The NEPA documents must explain the monitoring programs that will be in place to judge both the short and long term effectiveness of the translocation based on sound biological goals and objectives. Because most of the affected resident tortoises will not be tracked, funding should be ear-marked to assure routine inclusion of the Superior-Cronese DWMA in the range-wide LDS monitoring effort, or additional population monitoring protocols developed to ensure that the non-transmittered resident tortoises that will be affected by the translocation receive appropriate short and long term monitoring. The NEPA documents should include the timelines, and estimated costs and sources of funding for all components of the monitoring programs.

(13) Compliance with BLM Policy and Land Use Plans.

All translocations must fully comply with relevant BLM policies. BLM Handbook 1745 requires that "Decisions for making introductions, transplants, or reestablishments should be

made as part of the land use planning process (see BLM Manual Section 1622). Releases must be in conformance with approved RMPs. A Land Use Plan Amendment must be prepared for proposed releases if management direction is not provided in the existing Land Use Plan (see BLM Manual Section 1617, emphasis added)." There is no consideration in the California Desert Conservation Area Plan as amended by the West Mojave Plan EIR/EIS for using the designated DWMAs for large-scale desert tortoise translocations. This is recognized in the EA at 4 – "translocation of desert tortoises is not specifically addressed in the CDCA Plan, as amended". Therefore, a plan amendment is required to comply with BLM policy.

In addition, BLM Handbook 1745 at .1.12A requires that the activity plan be site-specific and include "Site-specific and measurable vegetation/habitat population objectives which are based on existing ecological site potential/condition, habitat capability, and other important factors. (See BLM Manual Sections 1619, 6780, and 4120)." As we discussed above, the EA does not adequately describe existing ecological conditions nor does it address the capability of the habitat at the translocation sites to support additional tortoises.

The BLM should adheres to its own policy and prepare an EIS that proposes and analyses an amendment to the CDCA Plan that provides the required management direction with respect to desert tortoise translocation. It could then use that guidance to develop a translocation plan for the Fort Irwin tortoises that includes the required site-specific analyses to comply with BLM policy, FLMPA, and NEPA.

(14) Miscellaneous Issues.

Under the proposed action desert tortoises would not be translocated to wilderness. However, the USGS proposes to monitor tortoises in Wilderness as a "control" group in its Amended Translocation Plan. In addition, some of the potential translocation sites are in areas under active consideration for wilderness designation by Senator Feinstein and thus may not be available. The NEPA documents should analyze potential impacts of monitoring to Wilderness values and any potential cumulative impacts to areas being considered as wilderness.

The different alternatives may have different impacts on cultural resources. For example, Alternative A apparently would include the Cronese Lakes ACEC, although the maps are inadequate to ascertain this and the ACEC is not mentioned by name. The proposed action appears to include translocation sites within the Blackwater Well Archeological District. All ground-disturbing activities in these areas should be scrutinized and fully analyzed in the NEPA documents.

(15) Continued Public Involvement.

We requested in our scoping comments that the translocation plan should incorporate specific measures aimed at keeping the public informed on the progress of translocations, including providing daily or weekly updates of translocation numbers, demographics, and any losses on the California Desert District website. Given the high level of interest in the desert tortoise, providing meaningful and timely data should be an essential component of management if the agencies are to engender public support for this highly controversial project.

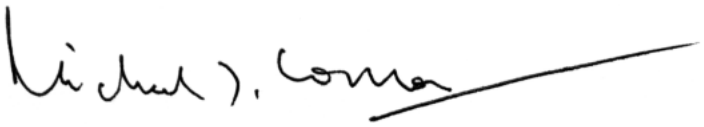
(16) Conclusions.

The purpose of an EA is to provide sufficient evidence and analysis to determine whether a project requires preparation of an environmental impact statement (EIS) or whether issuance of a finding of no significant impact is merited. [CEQ NEPA Implementing Regulations, 40 C.F.R. §1508.9]. Given the significance of the proposed translocation to desert tortoise survival and recovery, the unanswered questions outlined above, the need for a land use plan amendment, the considerable scientific controversy, and the intense public interest the 2008 translocation generated, the EA provides no basis for a FONSI and a comprehensive EIS is clearly required for this project. Given the Army's wish to begin training in the SEA and WEA, the BLM should immediately embark on initiating the required EIS.

We hope that you find our comments useful. Please continue to keep Western Watersheds Project informed of all further substantive stages in the NEPA process and document our involvement as members of the 'interested public' in the record.

If I can be of any assistance or provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,



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Mickey Quillman, Roxie Trost, BLM Barstow Field Office

Attachment: Western Watersheds Project Scoping Comments on the Proposed Fort Irwin Desert Tortoise Translocation. Dated February 18, 2009.

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Electronic copies of these documents are available on request.

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Working to protect and restore Western Watersheds

By E-mail

February 18, 2009

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Re: BLM Seeks Public Comments on Desert Tortoise Translocation near Fort Irwin

Dear Dr. Quillman:

On behalf of Western Watersheds Project and myself, please accept the following scoping comments as you embark on the NEPA analysis for the translocation of desert tortoises from the Fort Irwin expansion areas to nearby public and private lands.

Western Watersheds Project works to protect and conserve the public lands, wildlife and natural resources of the American West through education, scientific study, public policy initiatives, and litigation. Western Watersheds Project and its staff and members use and enjoy the public lands, including the lands at issue here, and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Western Watersheds Project has a particular interest in the desert tortoise and recently petitioned the Department of Interior to list the Sonoran desert tortoise population under the Endangered Species Act.

The scoping notice for the proposed translocation was posted as a press release on the BLM website on February 4, 2009. It provided for a 15-day period for submission of scoping comments, with an ending date of February 18, 2009. We understand the urgency in undertaking the analysis since desert tortoise translocation is most likely to be successful in the spring months, but this is an unreasonably short comment period for such an important and controversial project. We are not aware of any Federal Register notice, so our comments are based on the sparse information provided in the press release.

Specific issues of concern that should be addressed in the NEPA documents to ensure compliance with NEPA and to ensure that NEPA's requisite "hard look" at the environmental impacts include:

(1) Range of Alternatives.

The NEPA implementing regulations specify that NEPA documents must analyze a full range of alternatives. Based on the information and analysis presented in the sections on the Affected Environment (40 C.F.R. § 1502.15) and the Environmental Consequences (40 C.F.R. § 1502.16), the NEPA document should present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. The regulations specify that agencies shall:

> (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
> (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
> (d) Include the alternative of no action.
> (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
> (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

Based on prior experience, the agencies should consider the following reasonable alternatives in addition to any proposed action. Comparison of these alternatives will help define the issues and provide a clear basis for making an informed decision.

(a) No Action Alternative. This alternative is required. Full analysis of "no action" will help clarify the need for the translocation by identifying both the tortoise population that will be impacted by the Army's training program and by identifying and characterizing the resident tortoise populations in any proposed translocation sites.

(b) Desert Tortoise Recovery Plan Alternative. This alternative would fully implement the recommendations of the 1994 Desert Tortoise Mojave Population Recovery Plan Appendix B. This alternative would identify translocation sites outside the DWMA.

(c) Fort Irwin Translocation Plan Alternative. This alternative would consider implementation of the July 29, 2005 USGS Plan (Esque et al., 2005). Review of this alternative will provide a frank assessment of the successes and failures of the 2008 translocation effort and inform both the public and the decisionmakers as to appropriate mediation measures.

(2) Purpose of an Environmental Assessment

The scoping announcement indicates that the BLM is preparing an Environmental Assessment (EA) for this project. The purpose of an EA is to provide sufficient evidence and analysis to determine whether a project requires preparation of an environmental impact statement (EIS) or whether issuance of a finding of no significant impact is merited. [CEQ NEPA Implementing Regulations, 40 C.F.R. §1508.9]. Given the significance of the proposed translocation to desert tortoise survival and recovery, the considerable scientific controversy, and

the intense public interest the 2008 translocation generated we expect that the EA will result in a determination that an EIS is required. The BLM should seriously consider initiating the EIS process immediately.

(3) Population Assessments.

The NEPA documents must clearly identify the number of tortoises that will be translocated and their demographics. The desert tortoise populations currently resident at any proposed translocation sites should be similarly characterized.

The NEPA documents should provide frank estimates of the expected losses of both translocated and resident desert tortoises that may occur for all alternatives considered.

(4) Selection of Translocation Sites.

Translocation site should be selected based on sound, science-based criteria and manageability to maximize likely success.

There is no consideration in the current West Mojave Plan EIR/EIS for using designated DWMAs for large-scale desert tortoise translocations. This should be addressed in the NEPA documents if use of habitat within the DWMAs as translocation sites is considered. All translocations should fully comply with relevant BLM policies.

A threat assessment should be conducted for all potential translocation sites. Threats that should be assessed include vehicle routes, off-road vehicle activity, livestock grazing and residual impacts from livestock use, invasive species and fire risk, predator levels (including ravens and coyotes) and proximity to human developments including housing, energy transmission corridors, and roads. Translocation sites should be located in areas with defensible boundaries and that can be conserved. This should include the feasibility of closing the area around translocation sites should disease containment be required.

Habitat quality of translocation sites should be comparable to the habitat from which the tortoises have been removed. This should be based on site-specific surveys of soils, hydrology, vegetation, invasive species, and anthropogenic threats. The current desert tortoise carrying capacity should be determined for each translocation site. Translocation sites should be designated for conservation use only.

Where possible, desert tortoises should be relocated to immediately adjacent protected sites. This would include tortoises located on the base close to the training area boundaries and those tortoises located close to conservation areas on the base itself including the Lane Mountain Milkvetch refuges.

Translocation sites should be selected in areas where resident desert tortoises share similar genetic backgrounds. Murphy et al (2007) have identified at least three measurably distinct populations within the West Mojave recovery unit. The translocation must not compromise the genetic integrity of these populations.

It is well established in the literature that desert tortoises may make long-distance movements following translocation. Translocation sites should be selected such that the tortoises can be safely confined to minimize risks posed by this behavior, but any enclosed sites must be of sufficient size for the tortoises to establish new home ranges.

The NEPA analysis should address the threats that have contributed to localized population declines for any potential translocation sites where resident tortoise populations have declined or have been extirpated, and explain how these threats will be ameliorated. Where disease and predation issues are of concern, appropriate mitigations should be specified.

Translocation sites for diseased tortoises should be double fenced to minimize potential risks to healthy tortoises. These confined animals could theoretically continue to contribute to the gene pool through future headstarting projects and the like. However, fencing off areas within the DWMA boundaries amounts to a direct loss of habitat to the free ranging population. Accordingly, translocation sites for diseased tortoises should be located outside the DWMA in accordance with the 1994 Desert Tortoise Recovery Plan. Alternatively, measures need to be taken to mitigate for the loss of habitat. The proposed mitigation ratio for the Superior-Cronese DWMA is 5:1 under the West Mojave Plan.

(5) Predation Issues.

Desert tortoise depredation by coyotes has been documented at least as far back as Woodbury and Hardy (1948) who found tortoise remains in coyote scat. Boarman (2002) reviewed more recent literature related to coyote predation on desert tortoise. Based on their observations of tortoise fatalities, Woodbury and Hardy concluded that coyote predation on desert tortoise increased when rabbit populations were low. In his review, Boarman (2002) also explores the coyote-desert tortoise relationship, and the hypothesis that coyotes switch to predating desert tortoises following drought-induced reduction in the coyotes' normal prey. Field et al, 2007 also includes an extensive review of the topic in the discussion section.

The 2004 Biological Opinion for the Fort Irwin expansion briefly reviewed aspects of the proposed desert tortoise translocation (USFWS 2004). The Biological Opinion discusses the Bird Springs Valley, Nevada desert tortoise translocation study conducted by Dr. Nussear (USFWS 2004, pages 40-41). It notes that predation by canids was the cause of death for all but one of the resident and translocated desert tortoises that died in the first year (USFWS 2004, page 40). The Biological Opinion concludes: "In summary, predation comprised the most dramatic source of mortality for both translocated and resident desert tortoises over the 3 years of the study." (USFWS 2004, page 41).

In his subsequent thesis, Dr. Nussear reports that at Bird Spring Valley, 7 of 53 (13%) resident and 7 of 48 (15%) translocated tortoises were lost to predation by large canids in the first year (Nussear, 2004). He concluded that predation was the leading cause of mortality.

Given the background literature, the USFWS Biological Opinion, and recent experience, canid depredation of desert tortoises following translocation is clearly likely to occur. We do not advocate lethal control of local coyotes, since this is at best a stopgap measure and it is unclear

as to how effective coyote removal would be at reducing depredation. Rather, predator distribution and presence should be criteria used in selecting translocation sites. Appropriate predator mitigation measures (such as temporary protective fencing) should be incorporated into the translocation plan. Any proposals for lethal control of coyotes and other predators need to be fully analyzed in the NEPA documents. Coyote removal could result in new packs moving in from adjacent areas and occupying the now vacant territory, potentially compounding the problem. Lethal coyote control could have potential long-term consequences for the local desert ecosystem. Coyote removal could trigger an increase in the local rabbit and black-tailed hare population and change the availability of tortoise food plants in subsequent years. Coyote eradication could lead to increased kit fox numbers and increased predation on desert tortoise nests.

Berry et al (2009) report that more females were predated than males in the 2008 translocation. The translocation plan must include mitigation measures to address this imbalance. The plan should include specific guidelines related to the translocation of gravid females to minimize risks to this crucial demographic group.

The translocation sites should also consider risks of raven predation at each site on the offspring of translocated tortoises since this may limit the ability of the translocated animals to continue to contribute to the recovery of the species.

(6) Health and Disease Issues.

The plan should evaluate the health status of all translocated and resident desert tortoises and analyze how the translocation may be expected to change this.

The denser a given population is, the more likely it is that individuals in that population will encounter other individuals and present opportunities for disease transmission. This factor is of particular concern with species like the desert tortoise that have complex social behavior. Translocation can lead to disrupted social behavior (Berry, 1986) and may result in other stresses such as weight loss (Gowan et al., 2009) that could contribute to the outbreak of clinical signs. Relocated tortoises are at risk of both contracting and spreading infectious disease.

Wildlife disease epidemiologists should be consulted with respect to known infectious disease issues, and the direct, indirect and cumulative risks for disease spread fully assessed.

(7) Monitoring Programs.

The NEPA documents must explain the monitoring programs that will be in place to judge the short and long term effectiveness of the translocation. This should include the timelines, and estimated costs and sources of funding for the monitoring programs.

(8) Contingency Planning.

The translocation plan and NEPA analysis must include contingency plans, including specific triggers, for potential future impacts including quarantine measures that could be

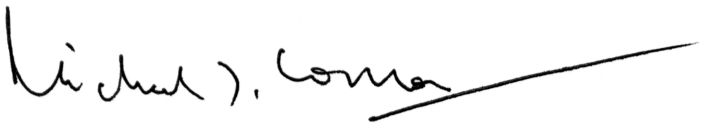
implemented should disease outbreaks be triggered. Spread of *Mycoplasma* has been shown to be host density-dependent in other species such as house finches and domestic chickens (Hochachka and Dhondt, 2000) and this seems likely true for the desert tortoise too as evidenced by the rapid collapse of the high-density tortoise population at the Desert Tortoise Natural Area in the late 1980s. Given the presence of *Mycoplasma agassizii* and *M. testudineum* in tortoises in the area and the well-known propensity of translocated desert tortoises to move long distances following translocation, the risk of triggering a URTD epidemic remains a serious concern.

(9) Public Involvement.

The translocation plan should incorporate specific measures aimed at keeping the public informed on the progress of translocations. This should include providing daily or weekly updates of translocation numbers, demographics, and any losses on the CDD website. Given the high level of interest in the desert tortoise, providing meaningful and timely data should be an essential component of management if the agencies are to engender public support.

If I can be of any assistance or provide more information please feel free to contact me by telephone at (818) 345-0425 or by e-mail at <mjconnor@westernwatersheds.org>.

Yours sincerely,



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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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APPLICATION FOR CERTIFICATION
FOR THE *IVANPAH SOLAR ELECTRIC GENERATING SYSTEM*

DOCKET NO. 07-AFC-5
PROOF OF SERVICE
(Revised 11/23/09)

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DECLARATION OF SERVICE

I, Joshua Basofin, declare that on December 18th, 2009, I served and filed copies of the Attached Exhibit list and exhibits, dated December 18th, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/ivanpah]**. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

_X_ Exhibit list sent electronically to all email addresses on the Proof of Service list;

_X_ Exhibits on CD by personal delivery or by depositing in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above.

AND

_X_ sending two paper copies and one electronic copy on CD, hand delivered and emailed respectively, to the address below (***preferred method***);

OR

__ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

_____