

DESERT TORTOISE COUNCIL

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Via email only

11 November 2022

Attn: Dana Stephenson
Bureau of Land Management
Ridgecrest Field Office, 300 South
Richmond Road, Ridgecrest, CA 93555.
dstephenson@blm.gov, smb-plms-isdea@usmc.mil, mwiegmann@blm.gov

RE: King of the Hammers Competitive Offroad Race Event Special Recreation Permit (2023 to 2027) (DOI-BLM-CA-D010-2022-0001-EA)

Dear Ms. Stephenson,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

As of June 2022, our mailing address has changed to:

Desert Tortoise Council
3807 Sierra Highway #6-4514
Acton, CA 93510

Our email address has not changed. Both addresses are provided above in our letterhead for your use when providing future correspondence to us.

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats known to be occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments pertain to enhancing protection of this species during activities funded, authorized, or carried out by the Bureau of Land Management (BLM), which we assume will be added to the Decision Record for this project as needed. Please accept, carefully review, and include in the relevant project file the Council's following comments and attachments for the proposed project.

The Mojave desert tortoise is among the top 50 species on the list of the world's most endangered tortoises and freshwater turtles. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021), as it is a "species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), population size fewer than 50 individuals, other factors." It is one of three turtle and tortoise species in the United States to be critically endangered. This status, in part, prompted the Council to join Defenders of Wildlife and Desert Tortoise Preserve Committee (Desert Tortoise Council 2020) to petition the California Fish and Game Commission in March 2020 to elevate the listing of the Mojave desert tortoise from threatened to endangered in California.

The project summary included in the email received from the BLM on 10/12/2022 indicated, "The Bureau of Land Management (BLM), in coordination with the Marine Corps, is seeking public input on a Draft Environmental Assessment that analyzes potential environmental effects associated with a request by Hammerking Productions Incorporated to use public land and military land for the annual King of the Hammers competitive off-road race event in Johnson Valley. A proposed Finding of No Significant Impact (FONSI) is also available for public review. The BLM is the lead agency and the Marine Corps is a cooperating agency for the Environmental Assessment (EA) prepared in accordance with the National Environmental Policy Act. Each agency would issue a separate FONSI, if appropriate."

Additionally, "The agencies are evaluating Hammerking Productions Inc. request for the proposed action to issue a five-year BLM Special Recreation Permit, BLM Land Use Permit, and Department of the Navy land use license to authorize event activities on public land, and provide for limited, restricted access for routes crossing through the Marine Corps Air Ground Combat Center. The action would also require a temporary closure of public land within the Johnson Valley Off-Highway Vehicle Recreation for public safety."

We are excited about this opportunity, for the first time since the Hammer events have occurred, to provide feedback. To our knowledge, thanks to the Marine Corps involvement, this is the very first time a very concerned public has been given an opportunity to comment on this devastating event. Based on the following input, we firmly believe that the event is (and has been from its inception) controversial, and clearly exceeds the anticipated use of BLM-designated open areas for dispersed recreational uses, which warrants an Environmental Impact Statement (EIS) rather than a Draft Environmental Assessment (DEA), as currently treated. Furthermore, the Hammer event, which apparently attracts as many as 50,000 spectators (a statistic that is stated but not quantified in the DEA) warrants a project-specific formal Section 7 Biological Opinion, as take of desert tortoises will occur, and likely has already occurred with previous Hammer events.

The BLM, either for lack of data or as an oversight, provides no information that helps the reader understand how previous Hammer events have affected tortoises and their habitats. Except for the air quality analysis (BLM 2022) that was actually performed by the Marine Corps, there are no monitoring data in the DEA that set the baselines for conditions prior to the 2008 Hammers event that can be compared to impacts between 2016 when the first EA was written and 2022 with the current Proposed Action. Nor does the DEA suggest that any third-party monitoring will be implemented by either the BLM or Marine Corps for the current Proposed Action.

We contend that BLM has been negligent in monitoring this event, which has apparently occurred since 2008 with no National Environmental Policy Act- (NEPA) mandated public review before or after the 2016 EA. The DEA fails to provide any analysis as to how the event does or does not fit within the anticipated use of the Johnson Valley open area as envisioned in an archaic 1991 U.S. Fish and Wildlife Service (USFWS) Biological Opinion. In short, we cannot judge the environmental impact of previous events and the likelihood of future impacts based on the information given in the DEA. There is no evidence that BLM has implemented a “cumulative impact tracking system” that will inform the public as to what is being lost to past and future Hammer events. This tracking system has not been applied to numerous authorized events in BLM-designated vehicle open areas that facilitate direct and indirect impacts to the tortoise in the project area and adjacent areas, including critical habitat, in the absence of state-authorized incidental take.

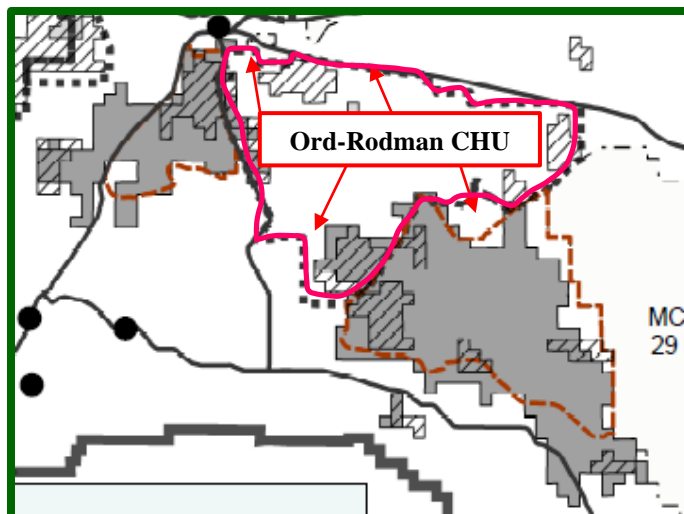
Unless otherwise noted, the page numbers referenced below are taken from the DEA prepared by the BLM, with the U.S. Marine Corp as a cooperating agency, and dated October 2022.

To begin, the Council asserts that this project must be addressed in a formal Environmental Impact Statement (EIS), not an EA, for the following reasons:

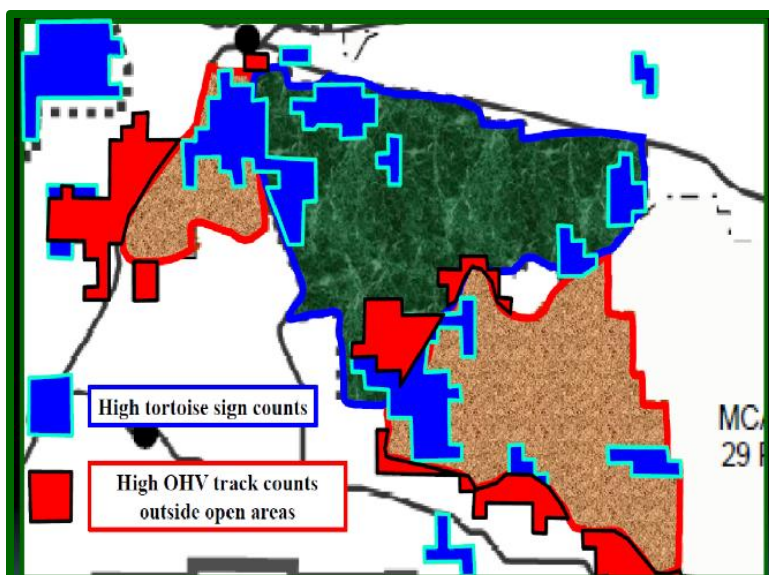
Reasons for completion of an EIS as opposed to an EA

(1) The affected area is proximate to the Ord-Rodman Critical Habitat Unit, and given BLM’s failure to contain vehicle impacts within designated areas, including BLM-designated vehicle open areas within the Mojave Desert (BLM 2005), we believe that the project’s direct and indirect effects will adversely modify critical habitat for the desert tortoise (USFWS 1994a) and undermine survival and recovery of the tortoise population in the Ord-Rodman Tortoise Conservation Area (TCA; USFWS 1994b, 2011). For example, of the 296 square miles surveyed within and adjacent to the Johnson Valley Off-Highway Vehicle (OHV) Open Area in support of the West Mojave Plan (BLM 2005), there were 205 square miles of above average vehicle impacts inside the open area and 90 square miles outside the open area. This means that 30% of the heaviest vehicle impacts were *adjacent* to the Johnson Valley open area, and much of it in critical habitat. In total, 40% of all the heaviest vehicle impacts observed between 1998 and 2000 on the 3,362 transects surveyed were adjacent to open areas, including critical habitat (BLM 2005). We note that the absence of this kind of data in the DEA, which was generated by the BLM, is evidence that an EA is insufficient to analyze impacts and that an EIS is appropriate.

The gray polygons in the following figure (BLM 2005) show areas within and adjacent to the Johnson Valley and Stoddard Valley open areas (signified by red boundaries) where “Above Average Vehicle Impact Areas” exceeded the boundaries of those open areas, including lands in critical habitat in the Ord-Rodman Critical Habitat Unit (CHU) (indicated by the red box and associated arrows) and tortoise concentration areas (signified by cross-hatched polygons). We note on page 1 of the DEA that these OHV areas were “...designated in 1980 (BLM 1992, BLM 1980)... [where] ... general motorized vehicle use is allowed anywhere within the designated area and is not restricted to designated routes. Designated routes do not exist within open OHV areas.”



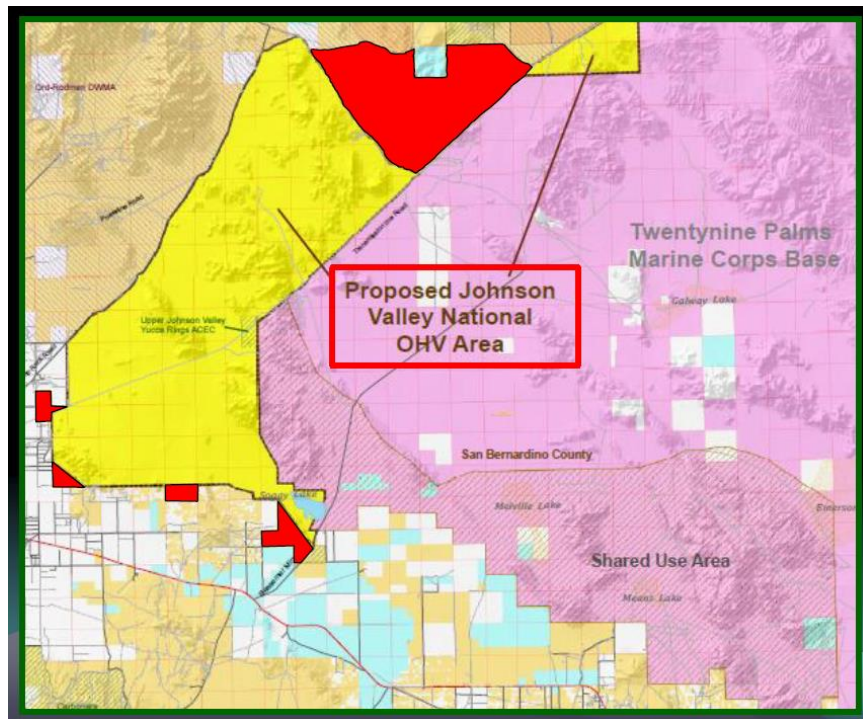
The same figure (BLM 2005) given below with highlights shows the Ord-Rodman CHU in dark green, the Stoddard Valley (upper left) and Johnson Valley (lower right) OHV areas inside red boundary lines, high tortoise concentration areas in blue, and above average vehicle impacts outside the two open areas in red. Keeping in mind that these data were collected between 1998 and 2000, they clearly show – then, and likely worse now – that vehicle impacts are not contained within designated open area boundaries. We firmly believe that the Proposed Action will generate similar ancillary impacts outside the proposed project area, possibly including the Ord-Rodman CHU.



(2) It is counterintuitive that BLM and the Marine Corps are ostensibly closing the area to “public use,” meanwhile expecting, in fact inviting, 50,000 members of the public to enter into the area as a result of authorizing the Proposed Action. Closing the open area to non-event-related uses may protect humans who are unaware of the event from encounters with competitors and spectators traveling at excessive speeds, but it does nothing to minimize impacts to the natural environment, and particularly tortoises.

For many years, and particularly the last few, the BLM has demonstrated preferential treatment to vehicle recreation despite its regulatory responsibility to conserve and recover the federally-listed desert tortoise on public lands it purportedly manages. BLM has failed “to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality” under the Federal Land Policy and Management Act.

In 2019, the Dingell Act resulted in the expansion of the Johnson Valley OHV area into 20,240 acres (page 2 in the DEA), most of which was into the Ord-Rodman Critical Habitat Unit, signified by the upper, red polygon in the following figure. It also newly created the “Johnson Valley National OHV Area,” which is irreversible without a Congressional decision and can no longer be modified by a California Desert Conservation Area (CDCA) Plan amendment. This single public law, facilitated by the BLM without regard to available data documenting significant tortoise declines in the West Mojave (Allison and McLuckie 2018, USFWS 2020, 2021, 2022a, and 2022b), resulted in expansion of three BLM-designated vehicle open areas onto tens of thousands of acres of critical habitat in the West Mojave, where populations have declined by 51% (Allison and McLuckie 2018).



That same year, BLM (2019) in its final EIS on the West Mojave Route Network Project provided for unrestricted vehicle impacts on Coyote and Cuddeback dry lakes, which are surrounded by tortoise critical habitat, without any regard that elevated vehicle use would affect adjacent critical habitat supporting the essential elements for tortoise recovery; introduced a competitive corridor through the Ord-Rodman CHU that had not been available since 2005, when the Stoddard to Johnson Valley Competitive Event Corridor and Johnson Valley to Parker Competitive Event Corridor were eliminated from the region (BLM 2006); determined they may unilaterally open new routes “as needed” without any opportunity for public review and input; eliminated a

mandatory education program for vehicle users in the Rand Mountains, which are located within the Fremont-Kramer CHU, where vehicle impacts are specifically implicated in tortoise declines (Berry 2014); and increased the available route network from 5,098 linear miles in 2006 (BLM 2006) to 5,997 linear miles in 2019 (BLM 2019). Importantly, these unsolicited enhanced vehicle opportunities were introduced and codified in the 2019 Record of Decision in response to a lawsuit that only asked BLM to add an alternative with fewer than the 5,098 linear miles, which characterized every alternative in the 2006 document.

(3) Although we read the following statement at the top of page 7, we are unaware of any publicly-available documentation analyzing impacts of previous King of the Hammer events: “Because OHV use in the Johnson Valley OHV Area has been previously authorized and analyzed under the management plans and NEPA documents listed herein, this EA would largely tier to these documents and rely on available data.”

We read the following information on page 17: “Spectators could number up to 50,000 and would not generally camp at the event but would attend specific races during the day.” How has BLM and the Marine Corps arrived at this conclusion? Are there data from previous Hammer events that are being cited here, or is this speculation?

Page 17 also states, “The majority, if not all, participants and spectators camp in recreational vehicles (motorhomes and trailers).” It has been our personal observation that most spectators bring their own all-terrain vehicles, motorcycles, and particularly technical vehicles like rock-crawlers and side-by-side, “dune buggies” to the event. It is misleading and underestimates the impact to imply that everyone is confined to their motorhomes in several designated staging areas. The DEA offers no impact analysis for the proposed event by using data from the previous Hammer events, nor has the Council as an Affected Interest been contacted by the BLM to provide public input on any previous Hammer events. In the absence of any BLM monitoring data analyzing impacts of these events, which should have been applied to the analysis of the proposed event in this DEA, we believe that the proponent is obligated to complete an EIS and use the best available science to fully describe and analyze the direct, indirect, and cumulative impacts of the Proposed Action.

Specific comments with regards to the EA

(1) We note the following discussion on Section 1.4 on page 7: “Executive Order 13112, Invasive Species (64 FR 6183 et seq.) – Provides that no federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions. See Section 3.1 of this EA.” There is an abundance of data (see bibliography in Appendix A) that cross country vehicle travel is one of the primary promoters of non-native weed proliferation in the desert. We also note in her study of the Johnson Valley open area and adjacent Ord-Rodman CHU (Berry 2013), that the incidence of Saharan mustard (*Brassica tournefortii*) were significantly more common in the open area than in the adjacent critical habitat. So, we ask that the BLM and Marine Corps explain in the EIS (or final EA if the EIS recommendation is ignored, as anticipated) how the Proposed Action is not in violation of this Executive Order. In fact, please explain how BLM continues to allow unrestricted cross country vehicle travel in all its designated OHV open areas without violating this Executive Order.

(2) With regards to Section 1.5.1 Resource or Issues Considered but not Analyzed in Detail, we contend that the analysis is both erroneous and incomplete. Page 13 in the unnumbered table indicates, “Soggy Dry Lake Creosote Ring ACEC [Area of Critical Environmental Concern] is located adjacent to and outside of the Johnson Valley OHV Recreation Area. The proposed race event would not affect the relevant and important values of this ACEC. The racecourse will be adjacent to the Upper Johnson Valley Yucca Rings ACEC but will not cross it; therefore, the event would not impact these unique vegetation assemblages (BLM 1980).”

Importantly, the statements are erroneous because the several iterations of the BLM’s (2005) figures given herein clearly show that OHV impacts are not restricted to or contained within designated areas, including those where there are occasionally fences and more often signs. So, claiming that there are no impacts because these two ACECs are adjacent to the Project Area is not supported by BLM’s own 2005 data, nor has BLM collected any monitoring data on previous Hammer events to demonstrate that impacts are contained within the Project Area or that these ACECs have not already been adversely affected.

We believe that the BLM’s and Marine Corps’ discussion is incomplete because it does not recognize the Ord-Rodman ACEC, which shares the western and northwestern boundaries of the Johnson Valley OHV area along Camp Rock Road, as an important TCA that will undoubtedly be impacted by the Proposed Action. We note that the Cinnamon Hills, which are within the Ord-Rodman ACEC west of Camp Rock Road, have been hammered by illegal OHV activity for so many years that large portions of this critical habitat are barren as a result of this illegal use.

Importantly, an unknown number of tortoises translocated as the result of the Marine Corps expansion have been placed into northern Lucerne Valley, which is located inside the Ord-Rodman ACEC and adjacent to Camp Rock Road and the Proposed Action. Some of these tortoises may still have transmitters, but many do not, and we believe that all are at risk from the Proposed Action, which may serve to undermine any successes the Marine Corps has achieved by the largest translocation of tortoises to date within the listed range of the Mojave desert tortoise.

Perhaps even more to the point, the statement on page 28 reveals, “Route L directs race drivers into one of the Combat Center’s desert tortoise control sites for translocation monitoring (Figure 5) (DON 2017 and USFWS 2017). Such OHV use is not consistent with MAGTFTC’s [Marine Corps’] commitment for desert tortoise monitoring for the translocation effort. However, the overlap of this control site with the northeast triangle of the Johnson Valley OHV Area (Figures 1, 2 and 5) is not severely compromised given prior low OHV use of this area.” We note that the Proposed Action is promoting a prohibitive action, inconsistent with the Marine Corps’ commitments, by identifying current conditions of low OHV use.

(3) Within the same section and table, on page 15, we read the following: “Although invasive, non-native species may occur within the Project area on BLM lands or the Shared Use Area, **the proposed event would be limited to pre-existing roads and designated staging areas** [emphasis added] within the Open Use Area; this would not be expected to change the overall occurrence or distribution of invasive, non-native species.” Is this statement supported by BLM data and observations from previous Hammer events, or is this unsubstantiated speculation? Has the BLM actually monitored prior Hammers events to know that competitors are remaining on established routes? Noting the following statement on page 1 of BLM’s (2016) original Hammers EA, “The event is proposed to...combine high-speed racing with extreme rock-crawling,” how can event impacts be restricted to established routes and still allow for rock-crawling, which by its nature is not associated with routes?

Also, we note that OHV open areas do not require either participants or, particularly, spectators to remain on roads, as stated on page 1: "...general motorized vehicle use is allowed anywhere within the designated area and is not restricted to designated routes. Designated routes do not exist within open OHV areas." So, how is the public, particularly the spectators, expected to stay on roads when BLM-designated OHV areas do not have that restriction? We believe that this conundrum will inevitably result in increased cross-country vehicle impacts and that these unmonitored impacts are undoubtedly associated with all previous Hammer events. We believe that the Proposed Action will result in both a proliferation of weeds and increased levels of fugitive dust that will not be monitored by BLM or the Marine Corps for this event because there is no evidence in the DEA or elsewhere that previous Hammer events have ever been monitored, or that this and future events will be monitored.

(4) Also, within this unnumbered table, on page 15, we read: "There are no lands with Wilderness Characteristics located in the project area." For reasons given herein, we believe that it is naïve for BLM or the Marine Corps to assume that no impacts will occur because wilderness is not *inside* the Project Area. Because the southern boundary of the Rodman Wilderness Area is contiguous with the Project Area, we expect that there will be vehicle trespass into this wilderness area, and that *but for* the Proposed Action, this impact would not occur. As such, these potential impacts, and monitoring data from previous Hammer events, which is entirely lacking from the DEA, must be discussed and documented in the EIS.

(5) We see that BLM does not consider that the Proposed Action will affect cattle for the stated reason that "The proposed racecourse would cross the active Ord Mountain Allotment; however, **due to a lack of livestock water** [bold emphasis added] in the vicinity of the overlap, interactions between livestock and participants or spectators in the KOH [King of Hammers] event are not anticipated. Therefore, the alternatives would not be expected to interfere with pre-existing rights and authorizations." Although cattle certainly congregate around water sources, it is inaccurate and misleading to assume that is the only place they occur. In fact, we have observed cattle well outside the boundaries of the Ord Mountain Allotment, which attests to their mobility. We believe that this statement is speculative, unless BLM has data from previous Hammer events that substantiate the statement? The EIS should consider this impact in a meaningful and realistic manner, rather than dismiss it due to the absence of water sources in the area.

Does the following statement mean that January and February comprise "winter," and that the event is restricted to these two months? "The event would generally begin in late January and run approximately two weeks into early February, but could occur anytime in the winter." Please clarify in the EIS.

We read the following on page 18, "Event staff would be stationed along the racecourse, at check points, and in the pit areas to monitor the participants' progress, confirm course readiness before a race can begin, and provide for safety at road crossings." However, there is no mention that BLM or Marine Corps personnel or neutral third-party monitors will also be assigned to monitor impacts, which the BLM and Marine Corps now seek to promote. There is also no indication that "Event staff" will monitor the event in such a way as to, for example, ensure and enforce the requirement that 500-600 race drivers will remain on the routes. We note in November 1994, that 87 motorcyclists traveling under noncompetitive, regulated yellow flag conditions, left the designated route in 22 places for a total linear distance of 1,074 feet (LaRue 1994), so how much more will the racers traveling at top speeds stray from designated Hammer routes?

Also on page 18, we read, “Spectators would be allowed to view the race from three to five spectator areas, the primary areas being, Backdoor, Chocolate Thunder, and Jack Hammer in addition to the main camp (Hammertown).” How confident is BLM and the Marine Corps that spectators will be confined to these areas? Are there any data from previous Hammer events to confirm this statement? Again, it has been our observation that most of the motorhomes and miscellaneous vehicles accessing Bessemer Mine Road off Highway 62 are pulling trailers with OHVs, which suggests that the motorhomes may be stationary but the spectators are not. The BLM and Marine Corps are implying that spectators are observing the races from lawn chairs. But our suspicion – lacking any BLM data on previous events to the contrary – is that most of the spectators are mobile, which conflicts with the BLM and Marine Corps’ assertions that impacts will be contained within existing designated routes (which the DEA on page 1 states do not exist in open areas) and specific staging areas.

We note on page 22 and 23 under the section dismissing certain alternatives that, “An alternative to limit the number of event spectators was also considered. This alternative was developed to respond to the issues of environmental and health-related impacts from concentrating individuals, vehicles, and equipment in Hammertown and the spectator areas.” What are these environmental and health-related issues? Have there been human injuries or deaths associated with previous Hammer events? Answers to these and other questions should be answered in the EIS.

Also on page 22 and 23 we read, “The information contained in this EA indicates that there is no immediate need to limit the capacity of the proposed King of the Hammers race events over the next five years.” Here, we will take the opportunity to ask why there was not a scoping comment period associated with this Proposed Action? Had there been, we would have asked that the BLM completely analyze environmental impacts associated with previous Hammer events, which is lacking from the DEA and must be addressed in an EIS and Biological Opinion. In the absence of any impact data for previous Hammer events, we believe that potential injury and death of tortoises and habitat degradation are two very good reasons why the BLM and Marine Corps “...need to limit the capacity of the proposed King of the Hammers race events over the next five years.”

We strongly disagree with the following statement on page 28: “As to ESA [Federal Endangered Species Act] compliance, the potential effects to the desert tortoise from use of the Combat Center’s EMUA would be within the scope of its 2012 and 2017 biological opinions for ongoing Combat Center operations (USFWS 2012 and USFWS 2017), which covered the EMUA.” Biological Opinions are written to address specific impacts associated with a specific project. They generally include a very specific project description and assess associated impacts. Although the BLM and Marine Corps did not make either of the Biological Opinions available as attachments in the DEA, unless the Hammers event is specifically mentioned in either of these opinions, in no way would they adequately address or even foresee the types of impacts associated with Hammers events, both past and future.

Further, we note on page 28 that the Marine Corps intends to amend one of its existing Biological Opinions (or create a new one, which is not clear?) ostensibly to promote this use on military lands, which seems prudent. It is not so clear why BLM is not also amending its 1991 Biological Opinion for impacts on our public, nonmilitary lands. That being said, in the absence of the loose nexus with Marine Corps training procedures (within their training area but not outside it) and their proactive role in pursuing authorized take in either an amended or new Biological Opinion, under which Biological Opinion has BLM authorized take for previous Hammers events?

We anticipate that the BLM will respond with something like the following verbiage that appears on page 46: “As no impact to listed species on BLM lands are expected beyond such impacts already authorized in the 1991 USFWS Biological Opinion for the Johnson Valley OHV Area Management Plan, no formal ESA consultation would be required of BLM.” What were the annual harassment and mortality take limits established in the 1991 Biological Opinion, and how has BLM monitored its events to know if those take limits have been met or exceeded? Given the changed circumstances that are documented, among other places in Appendix B of this comment letter, we assert that the 1991 Biological Opinion is outdated, lacks the benefit of recent data particularly since 2004, and that BLM should reinstate consultation to remedy the deficiencies.

Again, as it pertains to this point, EA-level analysis is insufficient to ascertain the impacts of both past and future Hammer events. In the EIS, we ask that the BLM and Marine Corps provide data as they pertain to a “cumulative impact tracking system.” How has BLM monitored implementation of the 1991 Biological Opinion to know how many tortoises have been killed by U.S. Fish and Wildlife- (USFWS) authorized take under that opinion? Even more to the point, which is entirely lacking in the DEA, how many tortoises have been injured or killed and how many acres of tortoise habitats have been substantially degraded by BLM’s authorization of previous Hammers events? How is BLM implementing its Mitigation Policy (BLM 2021a, 2021b, 2021c) that includes monitoring and adaptive management with respect to the Proposed Project? Answers to these questions should be discussed in the EIS.

We read in Table 2 on page 41, “Approximately 130 events (**not including King of the Hammers**) [bold emphasis added] of various sizes have been permitted over the past 5 years at a rate of approximately 26 permits per year. Impacts of those events were analyzed through Environmental Assessment CA-068-9-2.” And, for the first time, we have discovered the original 39-page EA for the Hammers event (BLM 2016), which was not made available to the Council as an Affected Interest. We note on page 7 of the BLM’s (2016) EA that the proponent anticipated 20,000 spectators, which, at 50,000 individuals, has more than doubled since 2016. Yet, the 2022 DEA varies little from the 2016 EA in how it will minimize impacts associated with so many spectators.

We note on page 1 of the 2016 EA that, “This [Hammers] event has been held annually for the past 8 years.” Were there any EAs prior to 2016 or Special Recreation Permits (SRPs) issued for the event prior to 2016? Such documentation is missing from the DEA and should be published, assuming it exists, in an EIS. We also note that, unlike the current 2022 DEA that would permit the event for the next five years, the 2016 EA authorized that year’s event but not any others. So, under what authority have the Hammer events been conducted between 2017 and 2022?

We note the following statements in Section 3 on page 23, “Indirect effects are those further removed but foreseeable and likely to occur, with a common example being growth inducing effects (40 CFR 1508.8(b)). For this EA, the effects of past actions are considered part of the affected environment (CEQ 2005).” Has the BLM monitored pre-Hammer event conditions so that it can ascertain the full extent of impacts that occur during the event? We just assume that many of the 50,000 spectators have discovered this part of the desert because of the Hammer events, and that many of them are likely to return to the region, including areas adjacent to the Johnson Valley open area that are not as degraded by OHVs and lands within the OHV area, which we recognize as an indirect effect that is not described in the DEA but should be in the EIS.

For reasons given elsewhere (i.e., unrestricted use of all lands within the open area), we believe that the following statement in Table 1 on page 23 is inaccurate and misleading: “Potential impacts to biological resources would be avoided and/or minimized under all Action Alts. **because the event would operate on pre-existing routes, trails, and disturbed areas** that have been used for previous events.” Even if the event competitors achieve this assumption, we have no doubt that the spectators will not be restricted to routes and disturbed areas, either during the event or afterwards when they return to reminisce about their experiences, at which time no such restrictions will be in place. We note that the quoted phrase given above is cited seven times in the DEA, and for reasons just given, are erroneous and misleading wherever they occur, although we have not reiterated our concerns wherever this statement appears.

Given the Marine Corps’ understanding of the full range of impacts to tortoises, we are surprised to see they have concluded in Table 1 on page 23 that “Potential **adverse impacts to desert tortoise from high-speed race unlikely due to time of year** and proposed routes modified to avoid mid and high-density tortoise areas.” Even if tortoises are not active at the time of the Hammer event (although our members regularly see tortoises aboveground in this area as early as the first week of February), tortoises may be crushed in their burrows, and the naïve statement completely misses the fact that the event will, and has for every previous Hammer event, result in degraded habitat. That it is a repetitive, use-inducing event that has occurred unabated year after year since 2008, and would be permitted for another five years in the absence of scientific monitoring that could be used to further minimize impacts, ensures that the habitat will be degraded and likely take decades to recover, if ever.

With regards to the following statement in Table 1, page 24 relative to soils impacts, we ask that the BLM and Marine Corps provide the before-and-after data from previous events that would support this otherwise speculative statement: “Events such as this have not created any discernible lasting effects to soil resources beyond those sustained by casual recreational use.”

With regards to the following statement on page 25, “Three federal special status species are known or have the potential to occur in the Johnson Valley OHV Recreation Area: desert tortoise, Mojave fringe-toed lizard, burrowing owl,” please note that a fourth species, golden eagle, is newly identified on page 26. We also question BLM’s and Marine Corps’ decision to ignore special status species designated by California Department of Fish and Wildlife (CDFW), which include prairie falcon, Cooper’s hawk, loggerhead shrike, LeConte’s thrasher, American badger, a half dozen bat species, and several winter-resident raptors (e.g., short-eared owl, ferruginous hawk, Swainson’s hawk, sharp-shinned hawk), among others. Are not BLM and the Marine Corps also tasked with minimizing impacts to CDFW-listed and -designated species? We believe that these and any other CDFW special status species should be addressed in the EIS.

Furthermore, how have BLM, and now the Marine Corps, provided for take authorization under the California Endangered Species Act (CESA) for this and previous Hammer events? Has a 2081 incidental take permit (ITP) been issued for this event, which has undoubtedly resulted in take, given the invitation of 50,000 spectators into tortoise habitats with their personal off-road vehicles in tow? Please explain why CESA is missing from Section 1.4 in the DEA where 15 federal documents/authorizations are listed but there is no mention of requisite state authorizations. Under what authority are BLM and the Marine Corps immune from facilitating incidental take of a state-listed, Threatened species?

The paragraph pertaining to desert tortoises under the Affected Environment section on pages 25 and 26 is woefully inadequate, even for a DEA. In their authorization and facilitation of this project, the BLM and Marine Corps are obligated to accurately document the plight of the desert tortoise, which has declined by 51% in critical habitats in the Western Mojave Recovery Unit since 2004 (Allison and McLuckie 2018). We provide Appendix B as a supplement to the single paragraph on page 43 that cites the above statistics, and expect to see it in the EIS for this project.

We do not believe that the BLM/Marine Corps' Cumulative Impacts analysis in Section 3.7 of the DEA adequately addresses the CEQs "Considering Cumulative Effects under the National Environmental Policy Act" (1997), including the eight principles, when analyzing cumulative effects of the proposed action to the tortoise and its habitats. CEQ states, "Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects." The analysis "must describe the response of the resource to this environmental change." Cumulative impact analysis should "address the sustainability of resources, ecosystems, and human communities." For example, the EIS should include data on the estimated number of acres of tortoise habitats degraded/lost and the numbers of tortoises that may be lost to growth-inducing impacts in the region.

The BLM as the federal lead agency and Marine Corps as a federal cooperating agency have failed to implement CEQs guidance on how to analyze cumulative environmental consequences as given in the eight principles listed below:

1. Cumulative effects are caused by the aggregate of past, present, and reasonable future actions.

The effects of a proposed action on a given resource, ecosystem, and human community, include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to the effects (past, present, and future) caused by all other actions that affect the same resource.

2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.

Individual effects from disparate activities may add up or interact to cause additional effects not apparent when looking at the individual effect at one time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.

3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.

Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resources, ecosystem, and human community that may be affected and developing an adequate understanding of how the resources are susceptible to effects.

4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.

For cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to the affected parties.

5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.

Resources are typically demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.

6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.

Repeated actions may cause effects to build up through simple addition (more and more of the same type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.

7. Cumulative effects may last for many years beyond the life of the action that caused the effects.

Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine damage, radioactive waste contamination, species extinctions). Cumulative effects analysis need to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.

8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.

Analysts tend to think in terms of how the resource, ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

We request in the EIS that the BLM and Marine Corps (1) include these eight principles in their analysis of cumulative impacts to the Mojave desert tortoise and its habitat including critical habitat; (2) address the sustainability of the tortoise given the information on the *Status of the Mojave Desert* given herein in Appendix B; and (3) include mitigation along with monitoring and adaptive management plans that protect desert tortoises and their habitats during all activities associated with the Proposed Project (e.g., impacts from the participants, spectators, vendors, and subsequent visitors introduced to the area by the event).

We appreciate this opportunity to provide comments on this project and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the BLM and Marine Corps that may affect species of desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this project.

Respectfully,



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Attachments

Appendix A - Bibliography on road impacts in desert ecosystems as of December 2019

Appendix B - Status and Trend of the Mojave Desert Tortoise including the Western Mojave Recovery Unit

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Appendix B. Demographic Status and Trend of the Mojave Desert Tortoise (*Gopherus agassizii*)

We provide the following information on the status and trend of the listed population of the desert tortoise to assist the BLM and Marine Corps with their analysis of the direct, indirect, and cumulative impacts of the Proposed Project on the Mojave desert tortoise.

BLM's implementation of a conservation strategy for the Mojave desert tortoise in its resource management plans through 2020 has resulted in the following changes in the status for the tortoise throughout its range and in Nevada from 2004 to 2014 (Table 1; USFWS 2015) and 2004 to 2020 (Table 2). There are 17 populations of Mojave desert tortoise described below that occur in the Critical Habitat Units (CHUs) and Tortoise Conservation Areas (TCAs); 14 are on lands managed by the BLM.

The Desert Tortoise Council (Council) has serious concerns about direct, indirect, and cumulative sources of human mortality for the Mojave desert tortoise given the status and trend of the species range-wide, within each of the five recovery units, and within the TCAs that comprise each recovery unit.

Densities of Adult Mojave Desert Tortoises: A few years after listing the Mojave desert tortoise under the Federal Endangered Species Act (FESA), the U.S. Fish and Wildlife Service (USFWS) published a Recovery Plan for the Mojave desert tortoise (USFWS 1994a). It contained a detailed population viability analysis. In this analysis, the minimum viable density of a Mojave desert tortoise population is 10 adult tortoises per mile² (3.9 adult tortoises per km²). This assumed a male-female ratio of 1:1 (USFWS 1994a, page C25) and certain areas of habitat with most of these areas geographically linked by adjacent borders or corridors of suitable tortoise habitat. Populations of Mojave desert tortoises with densities below this density are in danger of extinction (USFWS 1994a, page 32). The revised recovery plan (USFWS 2011) designated five recovery units for the Mojave desert tortoise that are intended to conserve the genetic, behavioral, and morphological diversity necessary for the recovery of the entire listed species (Allison and McLuckie 2018).

Range-wide, densities of adult Mojave desert tortoises declined more than 32% between 2004 and 2014 (Table 1) (USFWS 2015). At the recovery unit level, between 2004 and 2014, densities of adult desert tortoises declined, on average, in every recovery unit except the Northeastern Mojave (Table 1). Adult densities in the Northeastern Mojave Recovery Unit increased 3.1% per year (SE = 4.3%), while the other four recovery units declined at different annual rates: Colorado Desert (-4.5%, SE = 2.8%), Upper Virgin River (-3.2%, SE = 2.0%), Eastern Mojave (-11.2%, SE = 5.0%), and Western Mojave (-7.1%, SE = 3.3%) (Allison and McLuckie 2018). However, the small area and low starting density of the tortoises in the Northeastern Mojave Recovery Unit (lowest density of all Recovery Units) resulted in a small overall increase in the number of adult tortoises by 2014 (Allison and McLuckie 2018). In contrast, the much larger areas of the Eastern Mojave, Western Mojave, and Colorado Desert recovery units, plus the higher estimated initial densities in these areas, explained much of the estimated total loss of adult tortoises since 2004 (Allison and McLuckie 2018).

At the population level, represented by tortoises in the TCAs, densities of 10 of 17 monitored populations of the Mojave desert tortoise declined from 26% to 64% and 11 have densities less than 3.9 adult tortoises per km² (USFWS 2015).

Population Data on Mojave Desert Tortoise: The Mojave desert tortoise was listed as threatened under the FESA in 1990. The listing was warranted because of ongoing population declines throughout the range of the tortoise from multiple human-caused activities. Since the listing, the status of the species has changed. Population numbers (abundance) and densities continue to decline substantially (please see Tables 1 and 2).

Table 1. Summary of 10-year trend data for 5 Recovery Units and 17 CHUs/TCAs for the Mojave desert tortoise, *Gopherus agassizii* (=Agassiz’s desert tortoise). The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km² and standard errors = SE), and the percent change in population density between 2004-2014. Populations below the viable level of 3.9 adults/km² (10 adults per mi²) (assumes a 1:1 sex ratio) and showing a decline from 2004 to 2014 are in red (Allison and McLuckie 2018, USFWS 2015).

Recovery Unit Designated CHU/TCA	Surveyed area (km ²)	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/km ² (SE)	% 10-year change (2004– 2014)
Western Mojave, CA	6,294	24.51	2.8 (1.0)	-50.7 decline
Fremont-Kramer	2,347	9.14	2.6 (1.0)	-50.6 decline
Ord-Rodman	852	3.32	3.6 (1.4)	-56.5 decline
Superior-Cronese	3,094	12.05	2.4 (0.9)	-61.5 decline
Colorado Desert, CA	11,663	45.42	4.0 (1.4)	-36.25 decline
Chocolate Mtn AGR, CA	713	2.78	7.2 (2.8)	-29.77 decline
Chuckwalla, CA	2,818	10.97	3.3 (1.3)	-37.43 decline
Chemehuevi, CA	3,763	14.65	2.8 (1.1)	-64.70 decline
Fenner, CA	1,782	6.94	4.8 (1.9)	-52.86 decline
Joshua Tree, CA	1,152	4.49	3.7 (1.5)	+178.62 increase
Pinto Mtn, CA	508	1.98	2.4 (1.0)	-60.30 decline
Piute Valley, NV	927	3.61	5.3 (2.1)	+162.36 increase
Northeastern Mojave	4,160	16.2	4.5 (1.9)	+325.62 increase
Beaver Dam Slope, NV, UT, AZ	750	2.92	6.2 (2.4)	+370.33 increase
Coyote Spring, NV	960	3.74	4.0 (1.6)	+ 265.06 increase
Gold Butte, NV & AZ	1,607	6.26	2.7 (1.0)	+ 384.37 increase
Mormon Mesa, NV	844	3.29	6.4 (2.5)	+ 217.80 increase
Eastern Mojave, NV & CA	3,446	13.42	1.9 (0.7)	-67.26 decline
El Dorado Valley, NV	999	3.89	1.5 (0.6)	-61.14 decline
Ivanpah Valley, CA	2,447	9.53	2.3 (0.9)	-56.05 decline
Upper Virgin River	115	0.45	15.3 (6.0)	-26.57 decline
Red Cliffs Desert	115	0.45	15.3 (6.0)	-26.57 decline
Total amount of land	25,678	100.00		-32.18 decline

Density of Juvenile Mojave Desert Tortoises: Survey results indicate that the proportion of juvenile desert tortoises has been decreasing in all five recovery units since 2007 (Allison and McLuckie 2018). The probability of encountering a juvenile tortoise was consistently lowest in the Western Mojave Recovery Unit. Allison and McLuckie (2018) provided reasons for the decline in juvenile desert tortoises in all recovery units. These included decreased food availability for adult female tortoises resulting in reduced clutch size, decreased food availability resulting in increased mortality of juvenile tortoises, prey switching by coyotes from mammals to tortoises, and increased abundance of common ravens that typically prey on smaller desert tortoises.

Declining adult tortoise densities through 2014 have left the Eastern Mojave adult numbers at 33% (a 67% decline of their 2004 levels) (Allison and McLuckie 2018, USFWS 2015). Such steep declines in the density of adults are only sustainable if there are suitably large improvements in reproduction and juvenile growth and survival. However, the proportion of juveniles has not increased anywhere in the range of the Mojave desert tortoise since 2007, and in the Eastern Mojave Recovery Unit the proportion of juveniles in 2014 declined from 14 to 11 percent (a 21% decline) of their representation since 2007 (Allison and McLuckie 2018).

The USFWS and Utah Division of Wildlife Resources have continued to collect density data on the Mojave desert tortoise since 2014. The results are provided in Table 2 along with the analysis USFWS (2015) conducted for tortoise density data from 2004 through 2014. These data show that adult tortoise densities in most Recovery Units continued to decline in density since the data collection methodology was initiated in 2004. In addition, in the Northeastern Mojave Recovery Unit that had shown an overall increase in tortoise density between 2004 and 2014, subsequent data indicate a decline in density since 2014 (USFWS 2016, 2018, 2019, 2020, 2022a, 2022b).

Table 2. Summary of data for Agassiz’s desert tortoise, *Gopherus agassizii* (=Mojave desert tortoise) from 2004 to 2021 for the 5 Recovery Units and 17 CHUs/TCAs. The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km² and standard errors = SE), and percent change in population density between 2004-2014 (USFWS 2015). Populations below the viable level of 3.9 breeding individuals/km² (10 breeding individuals per mi²) (assumes a 1:1 sex ratio) (USFWS 1994a, 2015) or showing a decline from 2004 to 2014 are in **red**.

Recovery Unit: Designated CHU/TCA &	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/ km ² (SE)	% 10-year change (2004–2014)	2015 density/ km ²	2016 density/ km ²	2017 density/ km ²	2018 density/ km ²	2019 density/ km ²	2020 density/ km ²	2021 density/ km ²
Western Mojave, CA	24.51	2.8 (1.0)	–50.7 decline							
Fremont-Kramer	9.14	2.6 (1.0)	–50.6 decline	4.5	No data	4.1	No data	2.7	1.7	No data
Ord-Rodman	3.32	3.6 (1.4)	–56.5 decline	No data	No data	3.9	2.5/3.4*	2.1/2.5*	No data	1.9/2.5*
Superior-Cronese	12.05	2.4 (0.9)	–61.5 decline	2.6	3.6	1.7	No data	1.9	No data	No data
Colorado Desert, CA	45.42	4.0 (1.4)	–36.25 decline							
Chocolate Mtn AGR, CA	2.78	7.2 (2.8)	–29.77 decline	10.3	8.5	9.4	7.6	7.0	7.1	3.9
Chuckwalla, CA	10.97	3.3 (1.3)	–37.43 decline	No data	No data	4.3	No data	1.8	4.6	2.6
Chemehuevi, CA	14.65	2.8 (1.1)	–64.70 decline	No data	1.7	No data	2.9	No data	4.0	No data
Fenner, CA	6.94	4.8 (1.9)	–52.86 decline	No data	5.5	No data	6.0	2.8	No data	5.3
Joshua Tree, CA	4.49	3.7 (1.5)	+178.62 increase	No data	2.6	3.6	No data	3.1	3.9	No data

Recovery Unit: Designated CHU/TCA	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/km² (SE)	% 10- year change (2004– 2014)	2015	2016	2017	2018	2019	2020	2021
Pinto Mtn, CA	1.98	2.4 (1.0)	-60.30 decline	No data	2.1	2.3	No data	1.7	2.9	No data
Piute Valley, NV	3.61	5.3 (2.1)	+162.36 increase	No data	4.0	5.9	No data	No data	No data	3.9
Northeastern Mojave AZ, NV, & UT	16.2	4.5 (1.9)	+325.62 increase							
Beaver Dam Slope, NV, UT, & AZ	2.92	6.2 (2.4)	+370.33 increase	No data	5.6	1.3	5.1	2.0	No data	No data
Coyote Spring, NV	3.74	4.0 (1.6)	+ 265.06 increase	No data	4.2	No data	No data	3.2	No data	No data
Gold Butte, NV & AZ	6.26	2.7 (1.0)	+ 384.37 increase	No data	No data	1.9	2.3	No data	No data	2.4
Mormon Mesa, NV	3.29	6.4 (2.5)	+ 217.80 increase	No data	2.1	No data	3.6	No data	5.2	5.2
Eastern Mojave, NV & CA	13.42	1.9 (0.7)	-67.26 decline							
El Dorado Valley, NV	3.89	1.5 (0.6)	-61.14 decline	No data	2.7	5.6	No data	2.3	No data	No data
Ivanpah Valley, CA	9.53	2.3 (0.9)	-56.05 decline	1.9	No data	No data	3.7	2.6	No data	1.8

Recovery Unit: Designated CHU/TCA	% of total habitat area in Recovery Unit & CHU/TCA	2004 density/ km ²	2014 density/km ² (SE)	% 10-year change (2004–2014)	2015	2016	2017	2018	2019	2020	2021
Upper Virgin River, UT & AZ	0.45		15.3 (6.0)	-26.57 decline							
Red Cliffs Desert**	0.45	29.1 (21.4-39.6)**	15.3 (6.0)	-26.57 decline	15.0	No data	19.1	No data	17.2	No data	
Range-wide Area of CHUs - TCAs/Range-wide Change in Population Status	100.00			-32.18 decline							

*This density includes the adult tortoises translocated from the expansion of the MCAGCC, that is resident adult tortoises and translocated adult tortoises.

**Methodology for collecting density data initiated in 1999.

Abundance of Mojave Desert Tortoises: Allison and McLuckie (2018) noted that because the area available to tortoises (i.e., tortoise habitat and linkage areas between habitats) is decreasing, trends in tortoise density no longer capture the magnitude of decreases in abundance. Hence, they reported on the change in abundance or numbers of the Mojave desert tortoise in each recovery unit (Table 2). They noted that these estimates in abundance are likely higher than actual numbers of tortoises, and the changes in abundance (i.e., decrease in numbers) are likely lower than actual numbers because of their habitat calculation method. They used area estimates that removed only impervious surfaces created by development as cities in the desert expanded. They did not consider degradation and loss of habitat from other sources, such as the recent expansion of military operations (753.4 km² so far on Fort Irwin and the Marine Corps Air Ground Combat Center), intense or large scale fires (e.g., 576.2 km² of critical habitat that burned in 2005), development of utility-scale solar facilities (as of 2015, 194 km² have been permitted) (USFWS 2016), or other sources of degradation or loss of habitat (e.g., recreation, mining, grazing, infrastructure, etc.). Thus, the declines in abundance of Mojave desert tortoise are likely greater than those reported in Table 3.

Table 3. Estimated change in abundance of adult Mojave desert tortoises in each recovery unit between 2004 and 2014 (Allison and McLuckie 2018). Decreases in abundance are in red.

Recovery Unit	Modeled Habitat (km ²)	2004 Abundance	2014 Abundance	Change in Abundance	Percent Change in Abundance
Western Mojave	23,139	131,540	64,871	-66,668	-51%
Colorado Desert	18,024	103,675	66,097	-37,578	-36%
Northeastern Mojave	10,664	12,610	46,701	34,091	270%
Eastern Mojave	16,061	75,342	24,664	-50,679	-67%
Upper Virgin River	613	13,226	10,010	-3,216	-24%
Total	68,501	336,393	212,343	-124,050	-37%

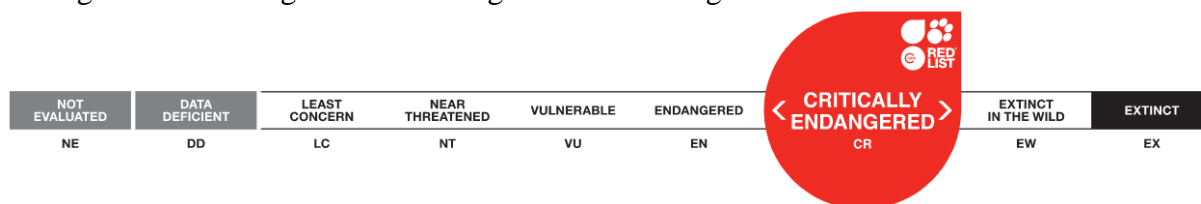
Habitat Availability: Data on population density or abundance does not indicate population viability. The area of protected habitat or reserves for the subject species is a crucial part of the viability analysis along with data on density, abundance, and other population parameters. In the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a), the analysis of population viability included population density and size of reserves (i.e., areas managed for the desert tortoise) and population numbers (abundance) and size of reserves. The USFWS Recovery Plan reported that as population densities for the Mojave desert tortoise decline, reserve sizes must increase, and as population numbers (abundance) for the Mojave desert tortoise decline, reserve sizes must increase (USFWS 1994a). In 1994, reserve design (USFWS 1994a) and designation of critical habitat (USFWS 1994b) were based on the population viability analysis from numbers (abundance) and densities of populations of the Mojave desert tortoise in the early 1990s. Inherent in this analysis is that the lands be managed with reserve level protection (USFWS 1994a, page 36) or ecosystem protection as described in section 2(b) of the FESA, and that sources of mortality be reduced so recruitment exceeds mortality (that is, $\lambda > 1$) (USFWS 1994a, page C46).

Habitat loss would also disrupt the prevailing population structure of this widely distributed species with geographically limited dispersal (isolation by resistance Dutcher et al. 2020). Allison and McLuckie (2018) anticipate an additional impact of this habitat loss/degradation is decreasing resilience of local tortoise populations by reducing demographic connections to neighboring populations (Fahrig 2007). Military and commercial operations and infrastructure projects that reduce tortoise habitat in the desert are anticipated to continue (Allison and McLuckie 2018) as are other sources of habitat loss/degradation.

Allison and McLuckie (2018) reported that the life history of the Mojave desert tortoise puts it at greater risk from even slightly elevated adult mortality (Congdon et al. 1993; Doak et al. 1994), and recovery from population declines will require more than enhancing adult survivorship (Spencer et al. 2017). The negative population trends in most of the TCAs for the Mojave desert tortoise indicate that this species is on the path to extinction under current conditions (Allison and McLuckie 2018). They state that their results are a call to action to remove ongoing threats to tortoises from TCAs, and possibly to contemplate the role of human activities outside TCAs and their impact on tortoise populations inside them.

Densities, numbers, and habitat for the Mojave desert tortoise declined between 2004 and 2014 and densities continue to decline in most Recovery Units since 2014. As reported in the population viability analysis, to improve the status of the Mojave desert tortoise, reserves (area of protected habitat) must be established and managed. When densities of tortoises decline, the area of protected habitat must increase. When the abundance of tortoises declines, the area of protected habitat must increase. We note that the Desert Tortoise (Mojave Population) Recovery Plan was released in 1994 and its report on population viability and reserve design was reiterated in the 2011 Revised Recovery Plan as needing to be updated with current population data (USFWS 2011, p. 83). With lower population densities and abundance, a revised population viability analysis would show the need for greater areas of habitat to receive reserve level of management for the Mojave desert tortoise. In addition, we note that none of the recovery actions that are fundamental tenets of conservation biology has been implemented throughout most or all of the range of the Mojave desert tortoise.

IUCN Species Survival Commission: The Mojave desert tortoise is now on the list of the world’s most endangered tortoises and freshwater turtles. It is in the top 50 species. The International Union for Conservation of Nature’s (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers Mojave desert tortoise to be Critically Endangered (Berry et al. 2021). As such, it is a “species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), a current population size of fewer than 50 individuals, or other factors.” It is one of three turtle and tortoise species in the United States to be critically endangered. This designation is more grave than endangered.



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