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Catherine Darst
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Dear Ms. Darst,

On February 16, 2016, I received a letter from Mr. Stephen Henry, Field Supervisor for the U.S. Fish and Wildlife Service, requesting my review of a proposed rule to delist the San Miguel Island Fox, Santa Rosa Island Fox, and Santa Cruz Island Fox from the federal list of endangered and threatened wildlife, and reclassify the Santa Catalina Island Fox as a threatened species. The request identified me as an expert on this species and since it was my dissertation research that uncovered the factors that drove the decline of the three northern island subspecies, that I have published 21 peer-reviewed scientific articles on this species, that I was Chair of the Wild Population Management Expertise Group for the Island fox Recovery Team from 2004 through 2006, and that I was Coordinator for the Island fox Working Group of the IUCN-SSC Canid Specialist Group from 2001 through 2008, I feel that I have the necessary expertise to evaluate the proposed rule.

The proposed rule centers on meeting two recovery goals. First, that the size of the island fox populations has reached or exceeded their historic levels, and second, that the threats which have caused their declines have been thoroughly mitigated. Based on the information provided in the proposed rule, research that has been published, and my experiences with individuals currently involved in island fox research and recovery, it appears that the first recovery goal has been met and that the four previously listed subspecies have population sizes nearly equivalent to or exceeding historic levels. Further, the main factor contributing to the decline of the three northern island subspecies, namely, predation by Golden Eagles, as been thoroughly mitigated. However, the rule points out that procedures are not in place on Santa Catalina Island that would reduce the risk of future disease introduction to an acceptable minimal level. Therefore, I completely agree with the proposed rule to delist the San Miguel Island Fox, Santa Rosa Island Fox, and Santa Cruz Island Fox from the federal list of endangered and threatened wildlife, and reclassify the Santa Catalina Island Fox as a threatened species.

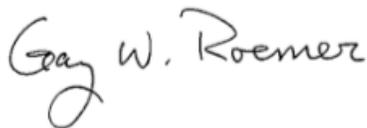
That said, one aspect of the current biology of all island foxes that has not been addressed thoroughly by the proposed rule is the lack of genetic variability present in the current island fox populations. Numerous studies (Gilbert et al. 1990, Wayne et al. 1991, Goldstein et al. 1999, Aguilar et al. 2004, Funk et al. 2016) have now shown that island fox populations lack genetic variation and that this finding is an outcome of long-term small population sizes and bottlenecks, coupled with the pervasive effects of genetic drift. The recent reduction in genetic variation that has most likely occurred on the northern California Channel Islands was, in part, due to the recent bottleneck caused by intense Golden Eagle predation and a lack of

response by the National Park Service. Although it is often touted that this recovery program is a model example of endangered species recovery (Coonan, Schwemm and Garcelon 2010), the fact is that at least one recovery action, in particular the entire captive breeding program, could have been avoided had the federal government acted sooner to remove Golden Eagles (Roemer and Donlan 2004, 2005). The biologists of Channel Islands National Park were alerted by me that Golden Eagles were negatively impacting island foxes as early as 1994 and that they were the likely cause of the documented declines by no later than September 1995. However, Channel Islands National Park biologists did not confirm the factors contributing to the decline of the island fox on the northern California Channel Islands until a study began in October 1998 (Coonan et al. 2005), over three years after being alerted to the cause of the decline; I was also involved in that study. By the time recovery actions were implemented, for example, the first Golden Eagle was not captured and removed until November 1999 (Latta 2004), island fox populations on San Miguel Island and Santa Rosa Island had declined to 15 individuals each (Proposed Rule). If a confirmatory study had been initiated in 1995 the agent of the decline would have been verified and actions aimed at removing Golden Eagles could have begun in earnest. Instead because the confirmatory study was delayed, recovery actions were also delayed, which resulted in the near extirpation of the San Miguel and Santa Rosa island subspecies. These declines necessitated an expensive captive breeding program.

The reason I'm explaining this history is because I do not want to see it repeated in the future. Although the threats to island fox populations on the northern California Channel Islands have been mitigated and the populations have recovered to approximately historic levels, the various subspecies lack genetic variation which could compromise their ability to respond to future environmental change. Further, if the federal government does not respond to a potential decline in a timely manner I fear that these populations could be at risk of extirpation again. I am heartened by the fact that a well thought out monitoring program is being implemented on the northern California Channel Islands, but a monitoring program was in place back in the mid-1990s. One factor that contributed to the extent of the declines was the inaction by the federal government (Roemer and Donlan 2004, 2005).

In closing, I would like to see some mention in the proposed rule that the lack of genetic diversity is an important consideration especially for the continued evolution of island foxes and that if declines are noted in any island fox population that the federal government will act in concert with other resource agencies and land owners in an expedient manner to uncover the agent of the decline and implement necessary management actions to avert it. Timely implementation of recovery actions may be particularly important to conserving the species and to reducing the cost of recovery.

Respectfully,

A handwritten signature in black ink that reads "Gary W. Roemer". The signature is written in a cursive, slightly slanted style.

Dr. Gary W. Roemer
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