



Biological Sciences
College of Science

via email only

January 27, 2015

Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Dear Commissioners,

As a vertebrate zoologist, specializing in herpetology and mammalogy, I am writing in support of the California Department of Fish and Wildlife's (CDFW) finding that listing of the Flat-tailed Horned Lizard (FTHL, *Phrynosoma mcallii*) under the California Endangered Species Act "may be warranted." Although I have not studied the species myself, I have over 50 years of field experience in southern California, 40 years of that while teaching herpetology at Cal Poly Pomona, and I have observed them in their natural habitat. I also was a friend of Dr. Wilbur Mayhew of UC Riverside and was familiar with his work at the time he filed the first petition to list the species in 1988. Further, I witnessed much of the habitat loss experienced by the FTHL between the 1960s and 1990s due to urbanization and agricultural development. Although the pace of these processes has slowed greatly in recent years, due to most of the private land being developed, the remaining state and federal public lands where the lizard still occurs are not sufficiently protected to prevent further, and I'm afraid, potentially fatal loss of habit so far as continued survival of the species is concerned.

The Center for Biological Diversity's petition for listing, and CDFW's evaluation of that petition, clearly document the FTHL's vulnerability to various anthropogenic impacts due to certain life history traits and specialized habitat requirements. Among the anthropogenic factors currently impacting the species, I believe two of the most important are off-road vehicle (ORV) recreation and renewable energy projects, particularly photovoltaics.

ORV recreation has been a significant factor degrading desert habitats since the 1970s. While increasing especially rapidly between the mid-1980s and 2000, then slowing somewhat, there has been a resurgence in demand for this type of recreation in recent years following the Great Recession. ORVs destroy native vegetation, disrupt soil structure, promote establishment of invasive plant species, and decrease the abundance of harvester ants, the principal food of the lizard. Some studies have demonstrated that FTHL abundance is reduced in areas where OHV activity is common.

With both the state and federal governments strongly promoting major renewable energy projects, these projects have increased dramatically since 2010. Large-scale photovoltaic installations don't just destroy habitat outright. Computer modeling by Dr. Barry Sinervo of UC Santa Cruz indicates they likely create local "heat island" effects that have the potential to increase the temperature of adjacent areas by 0.4 to 0.75 degrees Celsius. Over time, warming by the solar panel arrays would add to that expected with climate change, which by itself may be on the order of 3.5 to 4.0 degrees Celsius in the next 50 years or so. Whether or not accelerated locally by photovoltaic projects, the deserts will become hotter and dryer. The FTHL is particularly vulnerable to this because it is restricted to low elevations and strongly dependent on areas of soft, wind-blown sands. Thus, its chances of moving to cooler, suitable areas are nil.

While our ability to effectively meet the challenge of limiting climate change remains uncertain, we definitely can minimize the effects of the other, more immediate anthropogenic impacts to the FTHL with appropriate management of the public lands where it still occurs. However, that is likely to happen only if the FTHL is managed under the guidance of the California Endangered Species Act.

Thank you for your attention to my comments!

Sincerely,

Glenn R. Stewart, Ph.D.
Professor Emeritus of Zoology and Environmental Science

