



CALIFORNIA STATE UNIVERSITY, STANISLAUS
ENDANGERED SPECIES RECOVERY PROGRAM

DATE: 20 November 2018

TO: Jason Storlie
United States Fish and Wildlife Service

FROM: Tory Westall, Brian Cypher, Larry Saslaw
California State University-Stanislaus
Endangered Species Recovery Program

SUBJECT: Bitter Creek National Wildlife Refuge Camera Station Report

The California State University-Stanislaus, Endangered Species Recovery Program deployed remote camera stations at Bitter Creek National Wildlife Refuge from 11 October 2018 to 09 November 2018. Six cameras were deployed on the northwest portion of the refuge as shown in Fig. 1.

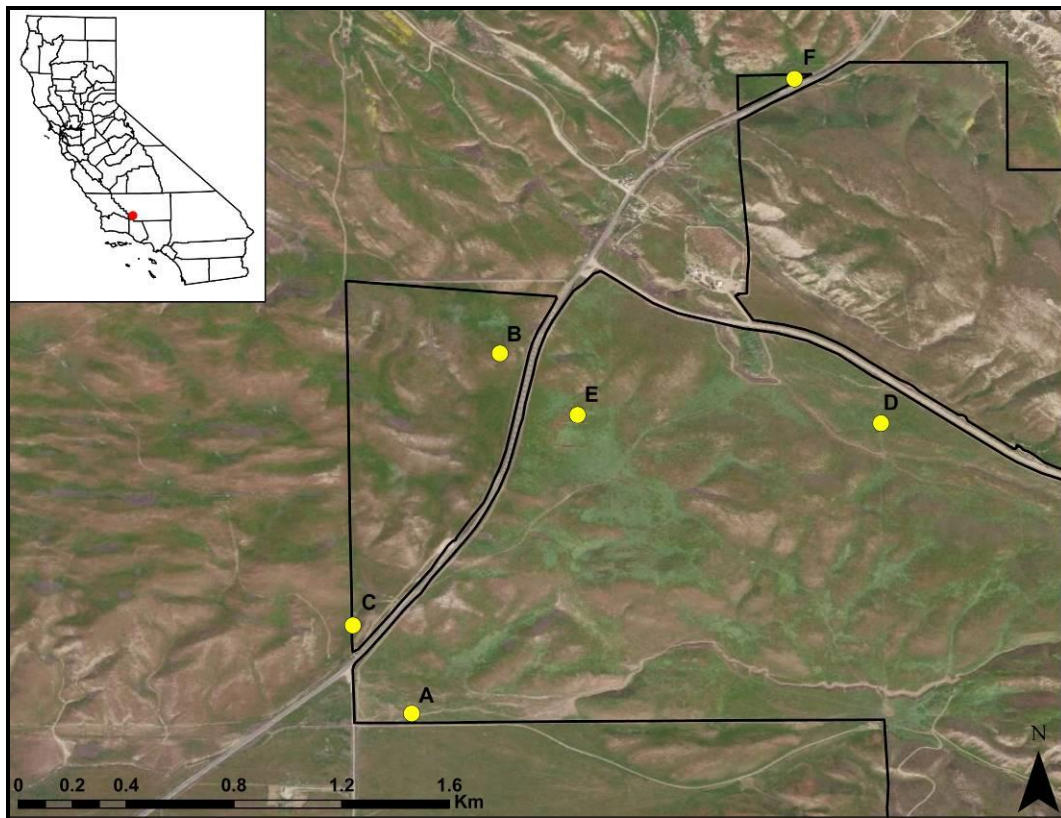


Figure 1. Locations of six camera stations deployed on the northwest portion of Bitter Creek National Wildlife Refuge from 11 October 2018 to 09 November 2018.

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Cameras were attached to a 1.2m U-post approximately 0.4m from the ground and angled to point the camera at a spot approximately 2m in front of the camera. To attract carnivores, a scent lure (Carman's Canine Call Lure, Russ Carman, New Milford, PA) was dripped in front of the camera and on surrounding vegetation. A 0.03L can of cat food was also staked to the ground approximately 2m in front of each camera using 30cm nails to provide a novel object for defecation as well as incentive to remain in the camera's field of view. Wild bird block was also placed as bait for rodents. Species detected on each camera are presented in Table 1.

Table 1. Species detected by camera station at Bitter Creek National Wildlife Refuge from 11 October 2018 to 09 November 2018.

Camera	Management Unit	Species Detected
A	9 West	coyote, black-tailed jackrabbit, common raven, greater roadrunner
B	12	San Joaquin kit fox, coyote, black-tailed jackrabbit, loggerhead shrike, western meadowlark
C	12	San Joaquin kit fox, coyote, deer, black-tailed jackrabbit, California ground squirrel, common raven
D	9 West	coyote, deer
E	9 West	coyote, western meadowlark
F	10 B	coyote, deer, cow, black-tailed jackrabbit, common raven, greater roadrunner

The target species, San Joaquin kit fox (*Vulpes macrotis mutica*) was only detected on cameras B and C within unit 12. The loggerhead shrike (*Lanius ludovicianus*), which is a California Species of Special Concern, was also detected in unit 12. No other special status species were detected.

Detection of kit foxes solely in unit 12 was not unexpected. While all camera locations are in relatively flat areas, units 9 West and 10 B are largely overgrown with non-native grasses, a condition that is unfavorable to kit foxes. Unit 12 has a lower vegetation structure and is in close proximity to the Carrizo Plain National Monument, where kit foxes are known to persist. Kit foxes also occur in the Cuyama Valley which begins at the northwest of corner of the refuge. Unit 12 may be located in a movement corridor for kit foxes between the Carrizo Plain and the Cuyama Valley. Additional monitoring may reveal whether kit foxes are resident on the refuge or just passing through.

Wild bird block was placed at camera stations in an effort to detect California Threatened San Joaquin antelope squirrels (*Ammospermophilus nelsoni*). San Joaquin antelope squirrels also occur on the Carrizo Plain and historically occurred in the Cuyama Valley. However, none were detected at the camera stations.