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Using conservation detection dogs for non-invasive monitoring of an endangered species during green energy development: The San Joaquin kit fox on topaz solar farm

Balancing the needs of endangered species and human land uses requires timely, high quality data, which is often difficult for conservation managers to obtain. From 2009-2012, we used trained detection dogs to locate scats of the endangered San Joaquin kit fox (SJKF; Vulpes macrotis mutica) on and surrounding the Topaz solar farm in San Luis Obispo Co., California. We searched for SJKF scats along a systematic transect route encompassing approximately 29 km2 of land. Scats were located, aged, and collected to determine distribution and provide DNA samples to estimate population size prior to and during construction. Dog/handler teams collected over 450 fresh SJKF scats for DNA analysis and recorded the location of over 700 older scats, thus characterizing recent use of the study area by SJKF. Subsequent surveys will track SJKF numbers during and after construction of the solar farm. Mapping our 3 years of pre-construction data showed that foxes used similar areas from year to year but did not use all areas of the site, allowing solar panel placement that minimizes impacts on SJKF. Finally, surveys of two additional parcels, one 0.7 and another 5 miles from the Topaz solar farm, indicated that SJKF were present, with 16 fresh scats collected and 80 older scats recorded, suggesting that both sites may be suitable for mitigation efforts. Our work adds to the growing number of case studies demonstrating that trained detection dogs can be used to non-invasively monitor endangered animals, providing timely and accurate information for management decisions.

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