

## **A potential range expansion of the coastal fisher (*Pekania pennanti*) population in California**

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Keywords: coast range, fisher, locality record, *Martes pennanti*, *Pekania pennanti*, population, range expansion

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Fishers (*Pekania pennanti*) are a forest-specialist mesocarnivore and are a species of special concern in California (CDFW 2015a, 2015b). Fisher populations are thought to be limited due to a historical over-harvest for their fur, habitat fragmentation, and the impact of logging on their habitat (Zielinski et al. 2005, Tucker et al. 2012). There are three distinct populations of fishers in California: Sierra, Cascade, and coastal (Zielinski et al. 1995). The Sierra population appears to be peninsular and is restricted to the western slopes of the Sierra Nevada south of Yosemite National Park. Recent research indicates the Sierra population is genetically homogenous due to isolation prior to European settlement, but is stable despite possible range contractions in the last 100 years (Tucker et al. 2012). The Cascade population ranges from Plumas and Tehama Counties in the Cascade Mountains north to the California-Oregon border. The population was considered small and restricted and was augmented by translocations in the last decade (Callas and Figura 2008).

In comparison to the Sierra and Cascade populations, the coastal population is under-studied and the southern extent of its range is not clearly documented (Zielinski et al. 1995). The population is found in the Coast Range, from the northern border of California south to the Mendocino National Forest. There have been no confirmed sightings south of the Mendocino National Forest since 1941. Grinnell et al. (1937) reported anecdotal records as far south as Marin County, which was considered the historical southern limit of the population (Figure 1). It is thought that the coastal population has contracted in the last 100 years and that fishers are absent from the southern portion of their historical distribution (CDFW 2015a).

Zielinski et al. (1995) first called for surveys in the coastal population, with one

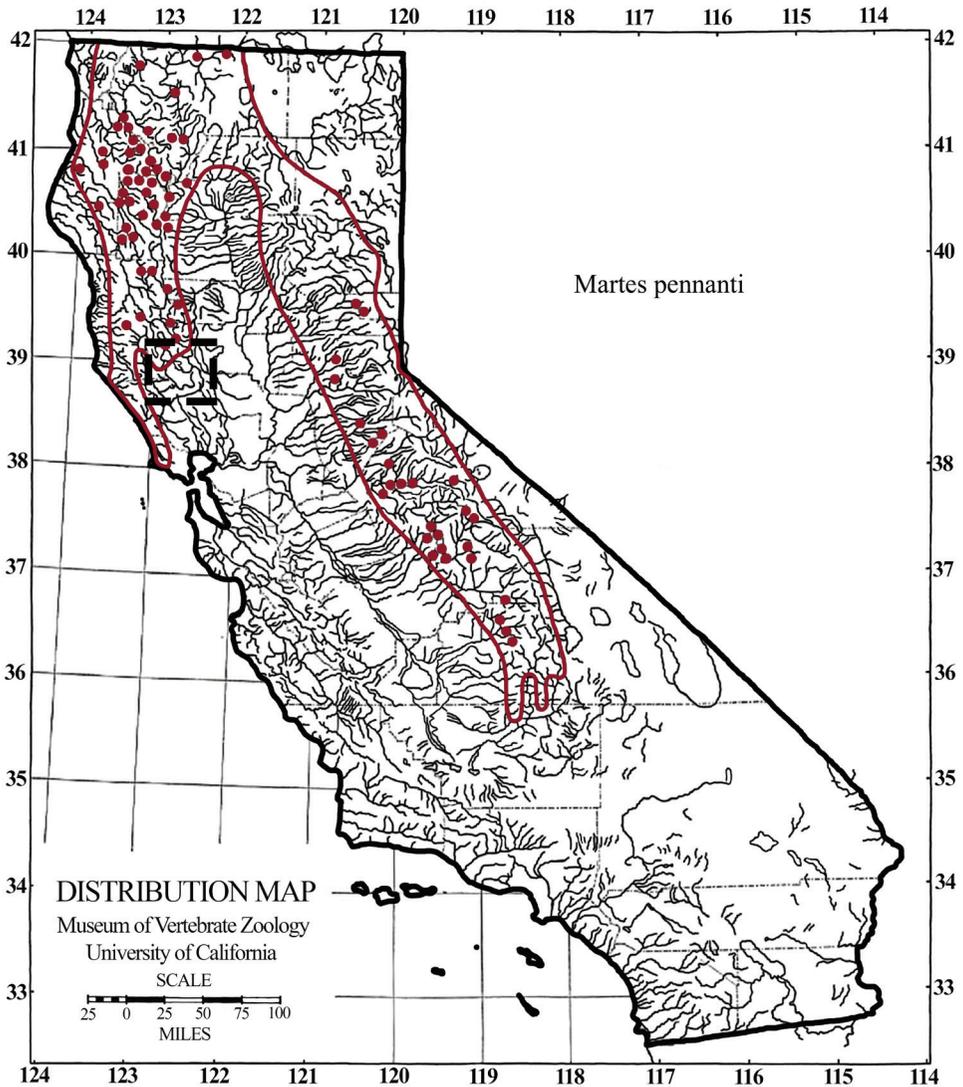


FIGURE 1.—Map of the distribution of fishers in California showing locations from 1919 to 1924 and the historic range of fishers in California as understood at the time (adapted from Grinnell et al. 1937). The inset represents the location of the smaller area detailed in Figure 3.

purpose being to determine the population’s southern boundary. Opportunistic sightings and trapper takes were documented in the Mendocino National Forest from the 1920s through 1940s (Grinnell et al. 1937, Hemphill 1952). Surveys have been completed in the last decade, with fishers detected at half of all track plate stations set for fishers and American martens (*Martes americana*) in 2006 (Slauson and Zielinski 2007). In addition, Evans et al. (2012) reported fishers present at 33% of cameras baited with deer carcasses ( $n=66$ ) in the Mendocino National Forest, confirming what is likely a viable population there. It is unclear, however, if those surveys have clearly defined the southern boundary of the coastal population, or if individuals at the southern end of the range could be going unnoticed. Here we report a recent fisher detection substantially farther south than any other confirmed

detection this century, and its implications for the California coastal range fisher population.

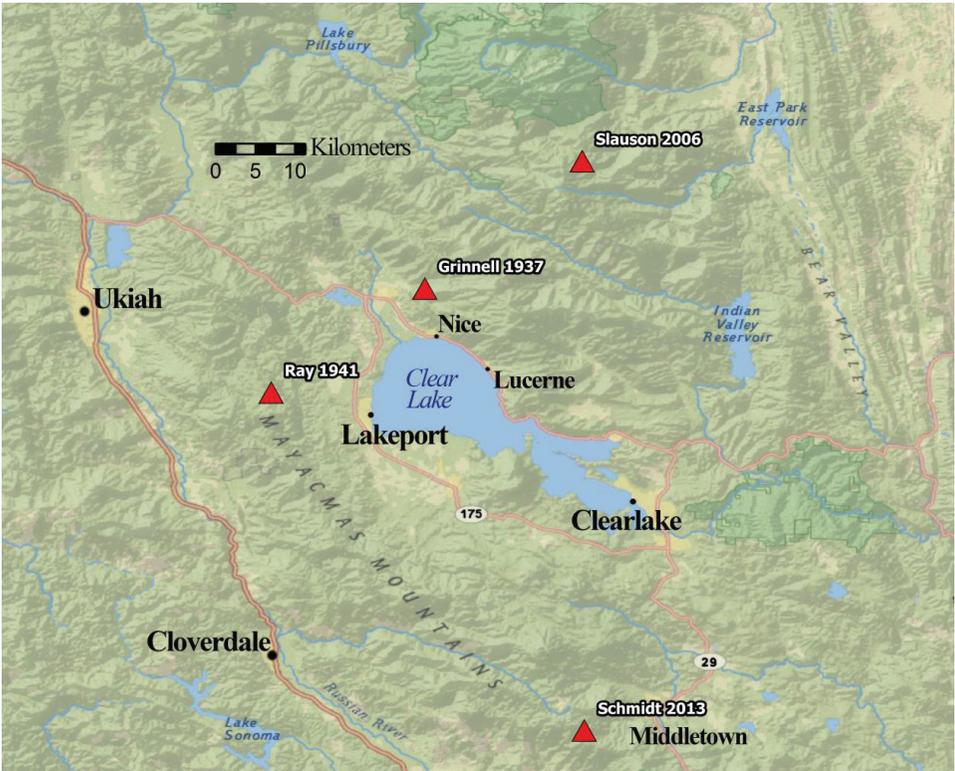
A motion-triggered camera (Bushnell, Overland Park, KS, USA) was deployed on private property to document local wildlife. The camera location ( $38^{\circ} 43' 33.06''$  N,  $122^{\circ} 41' 51.90''$  W) was in Lake County, and was set in a stand of Douglas fir (*Pseudotsuga menziesii*) facing towards a natural spring that had been enhanced as a permanent pool of water by the landowner. The camera was set to record 10 seconds of video, with a time and date stamp for each triggered event. We compared this confirmed sighting with others from published literature including Slauson and Zielinski (2007) and Grinnell et al. (1937), as well as records from the California Natural Diversity Database (CNDDDB; particularly EO Index #78496).

On 22 April 2013 at 0705, a fisher triggered the camera twice, recording a total of 20 seconds of video as the fisher investigated the pool (Figure 2). This detection is notably farther south than any confirmed fisher sighting in the coastal population. The location is approximately 64 km farther south than any confirmed detection of fishers in the coastal range in the last decade (Slauson and Zielinski 2007), approximately 52 km farther south than any confirmed detections reported by Grinnell et al. (1937), and approximately 47 km farther south than any confirmed detection of fishers in the coastal range in the last century (Figure 3).

Grinnell et al. (1937) included anecdotal reports to suggest that fishers extended as far south as Marin County, but did not have direct evidence and these reports could



FIGURE 2.—A photo taken from the videos recorded of a fisher investigating a woodland pool of water at  $38^{\circ} 43' 33.06''$  N,  $122^{\circ} 41' 51.90''$  W. This location is in Lake County, California, approximately 1 km north of the Sonoma County border.



**FIGURE 3.**—Current and historical locations of fishers (triangles) identified in this paper, with their source and year of occurrence. The location labeled Schmidt 2013 is that described in this paper.

have been inaccurate. For example, Grinnell et al. (1937) also considered the Sierra and Cascade populations to be connected, and this has recently been proven to be incorrect by genetic data that indicate the populations have been separated since before the arrival of Europeans in North America (Tucker et al. 2012). Sightings and trapper takes have been documented in the Mendocino National Forest from the 1920s (Grinnell 1937, Hemphill 1952) and continued through the last decade (Slauson and Zielinski 2007, Evans et al. 2012). Nevertheless, this is the first verifiable documentation of a fisher south of the Mendocino National Forest and Highway 20 since 1941.

The previous detections in the Mendocino National Forest combined with the occurrence reported here indicate that one of two scenarios is likely in the coastal range during the last century: that fishers have been present in the area but have gone undetected, or that fishers are expanding back into the southern extent of their historic range. It seems unlikely that a self-sustaining population has been consistently present at the southern edge of the range and has merely escaped detection. Fishers are, however, difficult to detect (Zielinski et al. 1995), and the lack of survey efforts as far south as Sonoma County may have resulted in fishers escaping detection. Alternatively, the coastal population could be expanding and recolonizing parts of its historical distribution, as fishers are quite capable of recolonizing former parts of their range (Carr et al. 2007). If the coastal population is expanding, it could provide valuable insight into the conservation of the southern Sierra population, which also appears to be peninsular and has been thought to be contracting

in distribution. A systematic survey to determine the southern limit of the coastal fisher population would potentially improve our understanding of its distribution and dynamics, and also inform management of the species statewide. Further, the conservation status of fishers currently is under review (CDFW 2015a).

The use of motion-triggered cameras has increased greatly in the last decade, both by citizen scientists, as well as for studies of animal behavior and ecology (Locke et al. 2012). This observation has been recorded in the California Natural Diversity Database as species occurrence number 733 and EO Index 90288. We encourage the documentation of species by the public, as well as the increased use of the CNDDDB to maintain information on the current distributions of rare species.

#### ACKNOWLEDGMENTS

We thank Don Schmidt for sharing his findings, and the many scientists that have contributed to fisher research and conservation over the last century.

#### LITERATURE CITED

- CDFW (CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE). 2015a. Report to the Fish and Game Commission: a status review of the Fisher (*Pekania* [formerly *Martes*] *pennanti*) in California. California Department of Fish and Wildlife, Sacramento, USA.
- CDFW. 2015b. Natural Diversity Database, special animals list. California Department of Fish and Wildlife, Sacramento, USA.
- CALLAS, R. L., AND P. FIGURA. 2008. Reintroduction plan for the reintroduction of fishers (*Martes pennanti*) to lands owned by Sierra Pacific Industries in the northern Sierra Nevada of California. California Department of Fish and Game, Sacramento, USA.
- CARR, D., J. BOWMAN, C. J. KYLE, S. M. TULLY, E. L. KOEN, J.-F. ROBITAILLE, AND P. J. WILSON. 2007. Rapid homogenization of multiple sources: genetic structure of a recolonizing population of fishers. *Journal of Wildlife Management* 71:1853-1861.
- EVANS, B. E., M. L. ALLEN AND D. S. CASADY. 2012. Detection of fishers at bait stations in the Mendocino National Forest, California. Poster presented at: The Wildlife Society West Coast Fisher Symposium, 31 January–1 February 2012, Sacramento, California, USA. Available at: <http://www.fws.gov/yreka/fisherEI.html>
- GRINNELL, J., J. S. DIXON, AND J. M. LINSDALE. 1937. Fur-bearing mammals of California. University of California Press, Berkeley, USA.
- HEMPHILL, D. V. 1952. The vertebrate fauna of the boreal areas of the southern Yolla Bolly Mountains, California. M.S. Thesis, Oregon State College, Corvallis, USA.
- LOCKE, S. L., R. D. PARKER, AND R. R. LOPEZ. 2012. Use of remote cameras in wildlife ecology. Pages 311-318 in N. J. Silvy, editor. *The wildlife techniques manual*, seventh edition, volume I. Johns Hopkins University Press, Baltimore, Maryland, USA.
- SLAUSON, K. M., AND W. J. ZIELINSKI. 2007. Strategic surveys for *Martes* populations in northwestern California: Mendocino National Forest. USDA Forest Service, Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California, USA.
- TUCKER, J. M., M. K. SCHWARTZ, R. L. TRUEX, K. L. PILGRIM, AND F. W. ALLENDORF. 2012.

Historical and contemporary DNA indicate fisher decline and isolation occurred prior to the European settlement of California. PLoS One 7:e52803.

ZIELINSKI W. J., T. E. KUCERA, AND R. H. BARRETT. 1995. Current distribution of the fisher, *Martes pennanti*, in California. California Fish Game 81:104-112.

ZIELINSKI W. J., R. L. TRUAX, F. V. SCHLEXER, L. A. CAMPBELL, AND C. CARROLL. 2005. Historical and contemporary distribution of carnivores in forests of the Sierra Nevada, California, USA. Journal of Biogeography 32:1385-1407.

*Received 23 September 2015*

*Accepted 2 October 2015*

*Associate Editor was V. Bleich*