

California State Polytechnic University, Humboldt Wildlife Department and  
the Wildlife Graduate Student Society (WiGSS) present:

# ECOSERIES

Thursday October 16, 2025 4:00pm



## Deirdre Replinger

**Shaped by shapes: Complex configuration of burn severity patches promotes Pacific marten occupancy following a megafire**

Increasing frequency, size, and severity of western North America threatens forest-dependent wildlife species. Pacific martens (*Martes caurina*) are associated with

mature, structurally complex forests. Recently, we detected martens in forests burned at high-severity in the Dixie Fire, the largest recorded single fire in California's history. We used non-invasive remote camera traps and hair snares (n = 166 stations) to assess marten density and home range composition using spatial capture-recapture models and occupancy using spatial occupancy models. We detected martens across the burn severity gradient (unburned to high-severity) at 98 of 166 (59%) camera stations. We identified individuals through unique markings, trapping, and through SNP assignments, providing sex ratio, density, and an index of home range size. Individually identifiable martens' home ranges spanned multiple burn severity classes and varied in their burn severity composition by individual. We found that marten occupancy is strongly associated with increasing shape complexity of patches burned at high severity on a large scale. We assess effects of spatial heterogeneity of burn severity and forest structural covariates at multiple scales on marten density. We detected multiple martens in burned areas between one and three years post-fire, providing evidence for use, survival, and short-term persistence of a rare forest-associated species within this megafire.



## Amida (Ami) Verhey

**Remnants of the Past: Gray Fox Space Use After a Megafire**

In the western United States, mammal communities are facing habitat loss and degradation from increases in megafire frequency and severity. As a result,

carnivores will likely adjust their behaviors and space use in response to altered vegetation structure. The gray fox (*Urocyon cinereoargenteus*), a common mesocarnivore in California, is expected to shift its occurrence in these heterogeneous post-fire landscapes, but few studies have explored which fire and vegetation characteristics drive gray fox distributions. To examine how gray foxes use post-fire vegetation, we used spatial occupancy models focused on the effect of burn severity and vegetation status on gray fox occupancy probability. We used a remote camera dataset (n = 210 cameras) from 2023, differenced Normalized Burn Ratio, and Normalized Difference Vegetation Index to describe gray fox occurrence following the 2021 Dixie Fire (~1 million acres, 30-40% high severity) in Lassen National Forest, California. Preliminary results suggest that gray foxes use sites that experienced high severity fire rather than those with high contemporary vegetation greenness. We hope that by examining the burned vegetation conditions that shape the space use of a common mesocarnivore, we can help provide a starting place for further examination of mesocarnivore distributions following megafires.

Join us for their in-person only presentation in WDFS

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