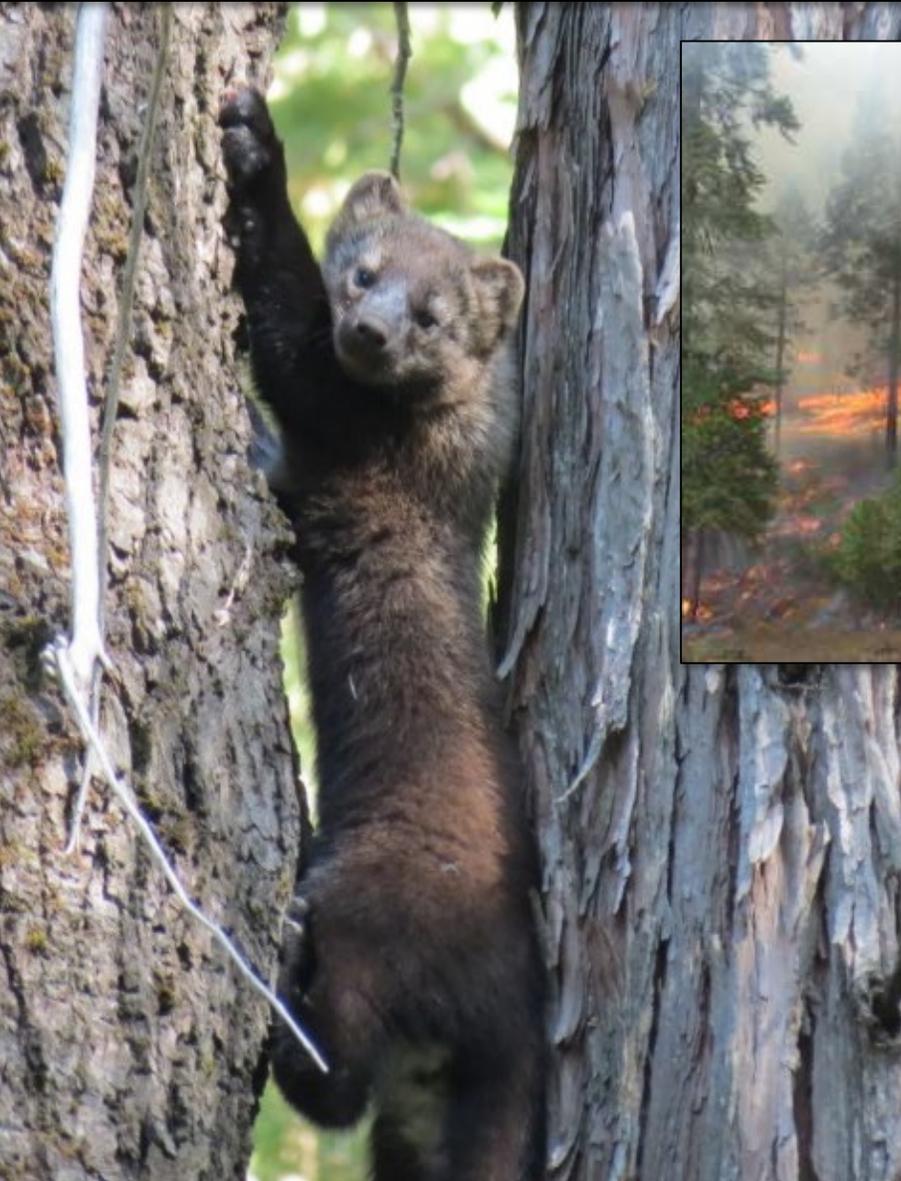


Fire x FAUNA:

Wildfire and prescribed fire effects on wildlife



Threats to California fishers— reconciling optimal and resilient habitat

Craig M. Thompson

USDA Forest Service Region 1

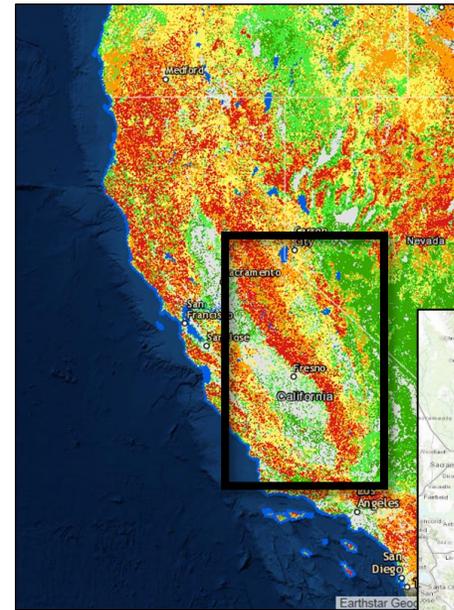
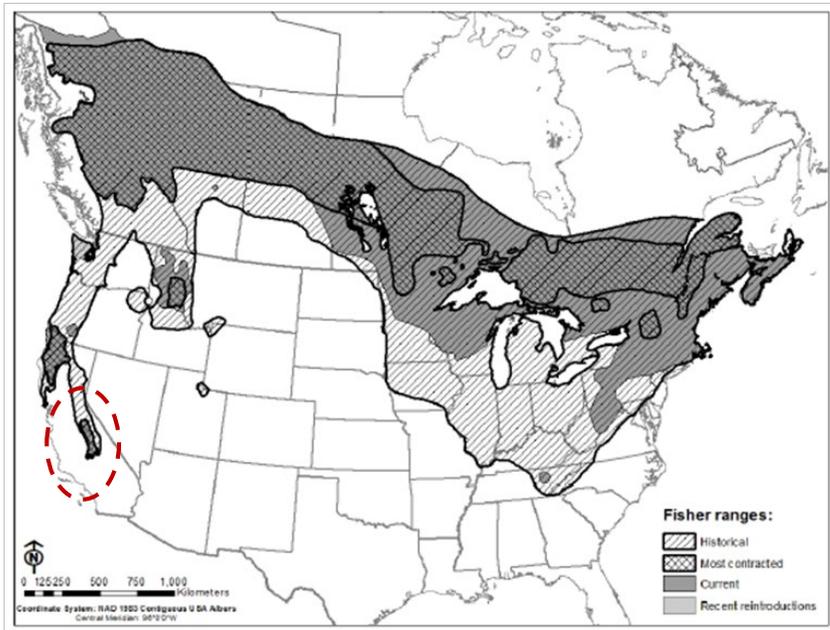
Missoula, MT

craig.thompson@usda.gov



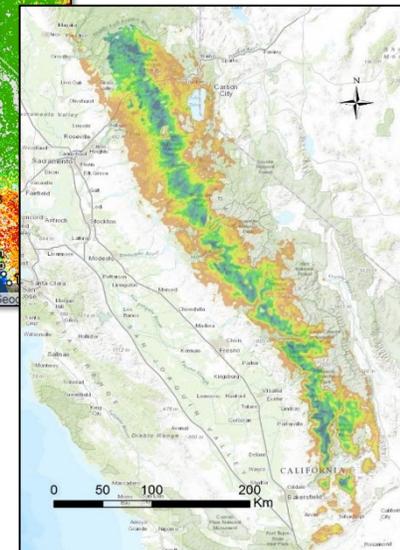
- 1) Southern Sierra Nevada population listed as federally endangered in May 2020
- 2) Fishers typically associated with dense canopy cover, older and complex forest structure
- 3) Therefore, high quality fisher habitat = high fuel loading

Example of high quality fisher habitat in the Sierra Nevada



2014 California fisher habitat

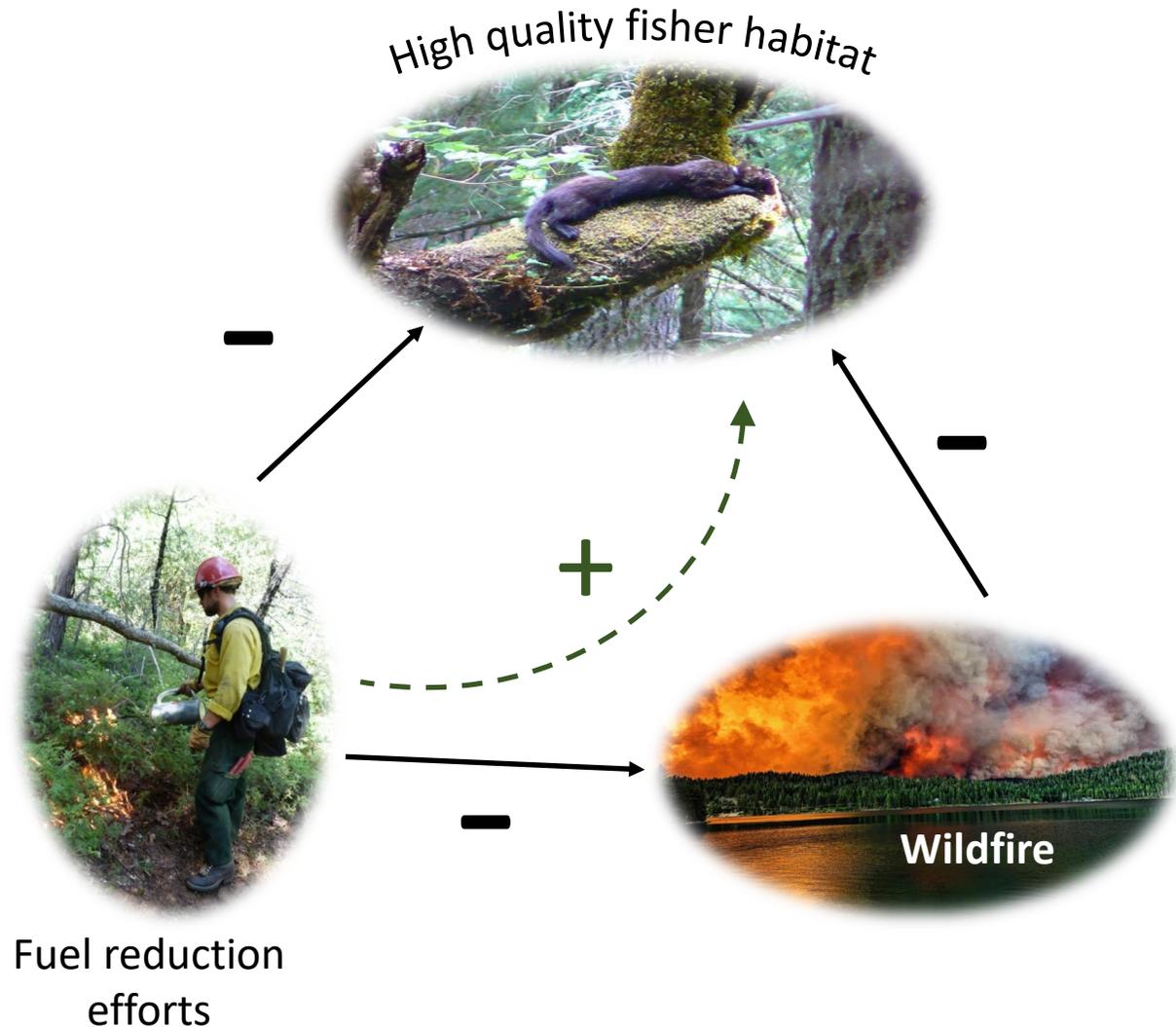
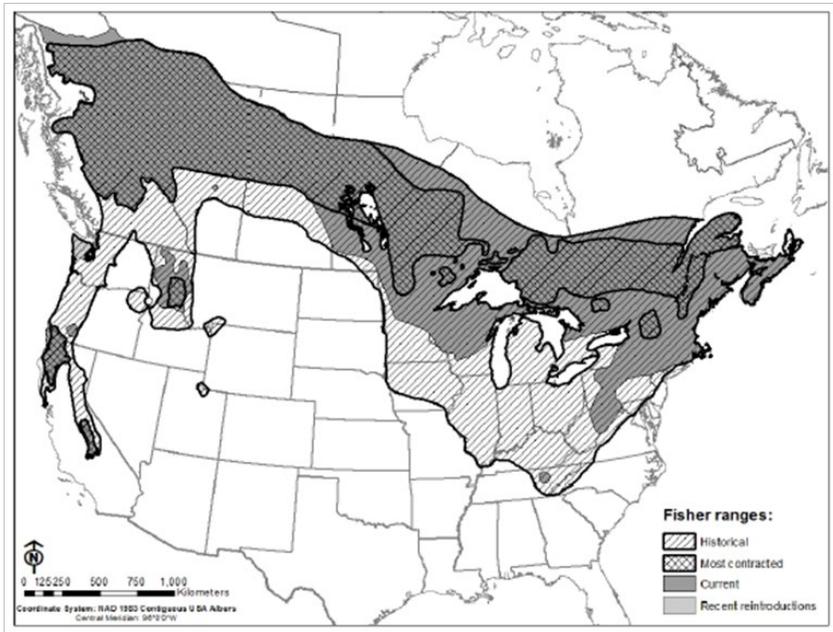
2015 California Fire Risk



FISHER ECOLOGY 101



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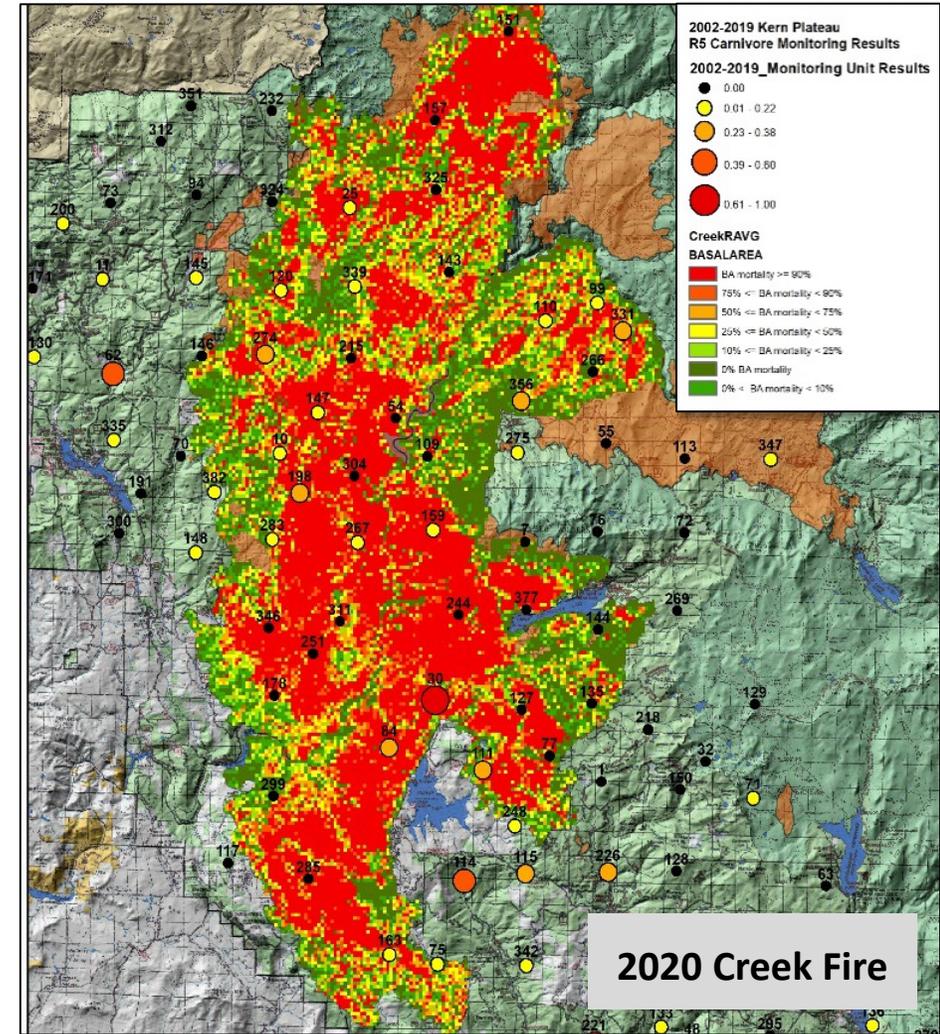


SCALE OF THE ISSUE



Sierra Nevada Carnivore Monitoring Program (J. Tucker, Region 5)

- Monitors long-term forest carnivore occupancy trends across the southern Sierra Nevada
- 35% of monitoring stations burned over in 2020 alone
- Of those stations in occupied fisher habitat that burned and for which RAVG data was available, over 70% were in patches with basal area mortality >75%



OBJECTIVES



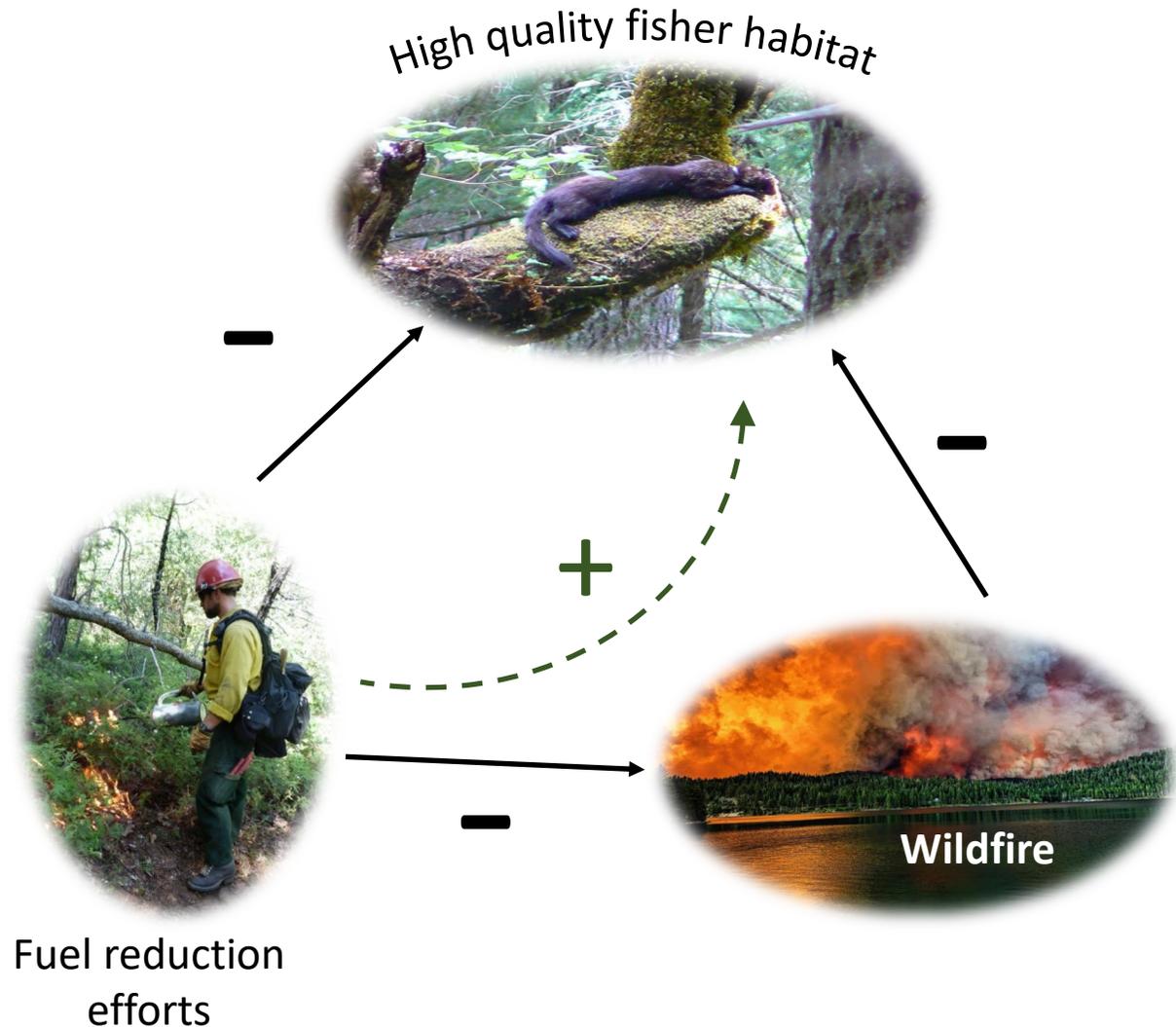
1) Impact of wildfire on fishers

- Klamath National Forest
- Sierra National Forest

2) Fisher response to fuel reduction activities

- Sierra National Forest
- Rogue River-Siskiyou National Forest

3) Provide some suggestions on how this information can be used to guide restoration-based actions and balance management objectives



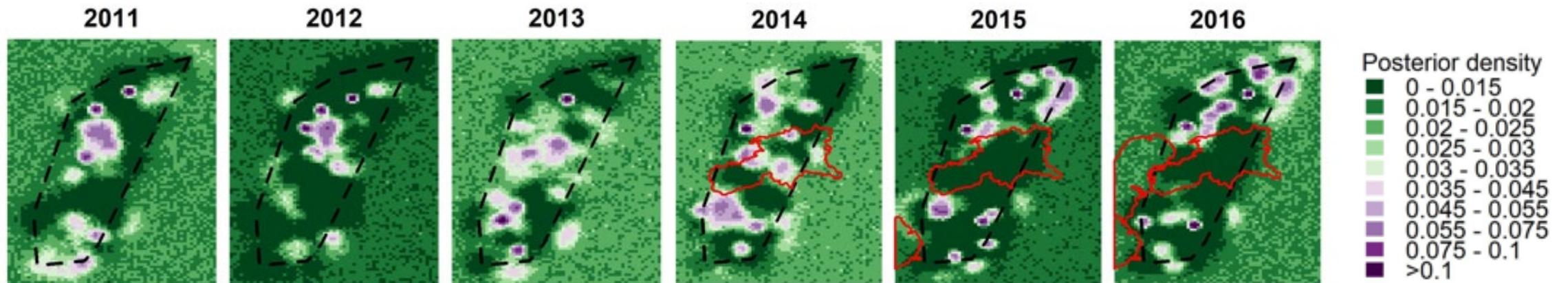
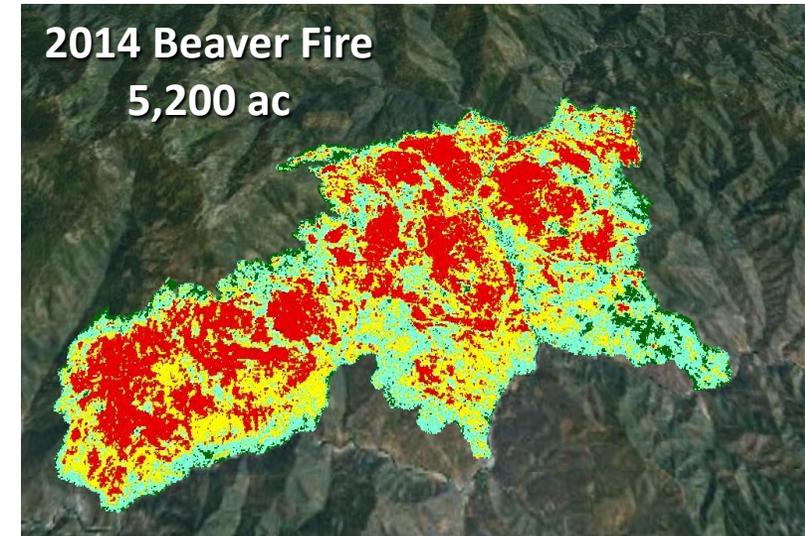
FISHER RESPONSE TO FIRE



Mixed-severity wildfire influences the population of a forest-dependent carnivorian and one of it's competitors.

D.S. Green et al. *In review.*

- Used hair snare devices to conduct a long-term study of fisher density in the Klamath Ecoregion
- Results suggested a 27% decrease in the number of residents
- No pre-fire residents were detected following the fires.



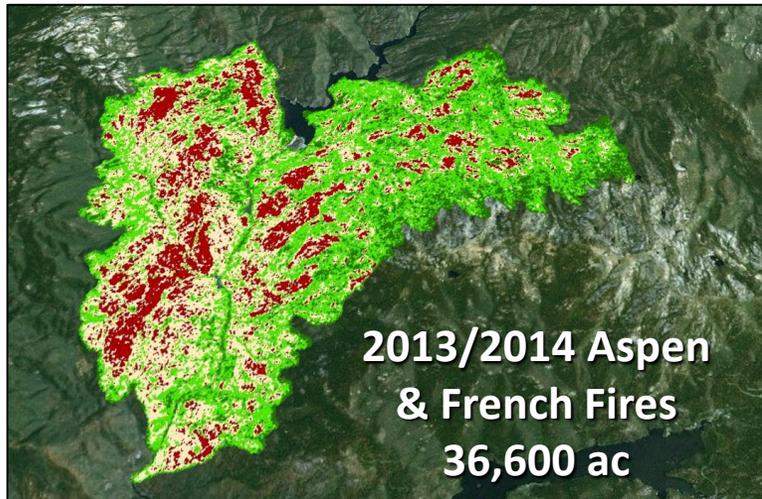
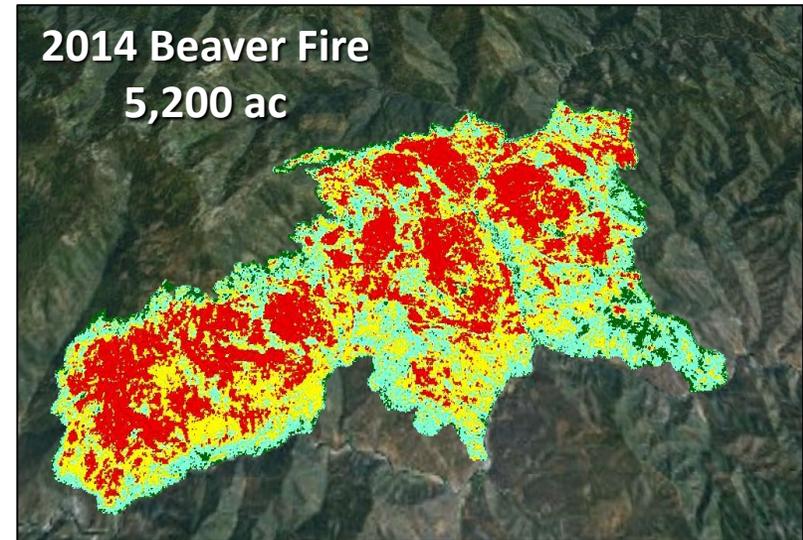
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Fisher use of post-fire landscapes; implications for habitat connectivity and restoration.

C.M. Thompson et al. *In press.*

- Used detector dog surveys to document fire activity 1-3 years post-fire.
- Fishers began reusing the burned area 1-2 years post-fire
- Fisher avoided high severity patches, use centered on larger, contiguous patches of low-severity fire
- Fisher used fire refugia and fine-scale topographic features to facilitate movement.

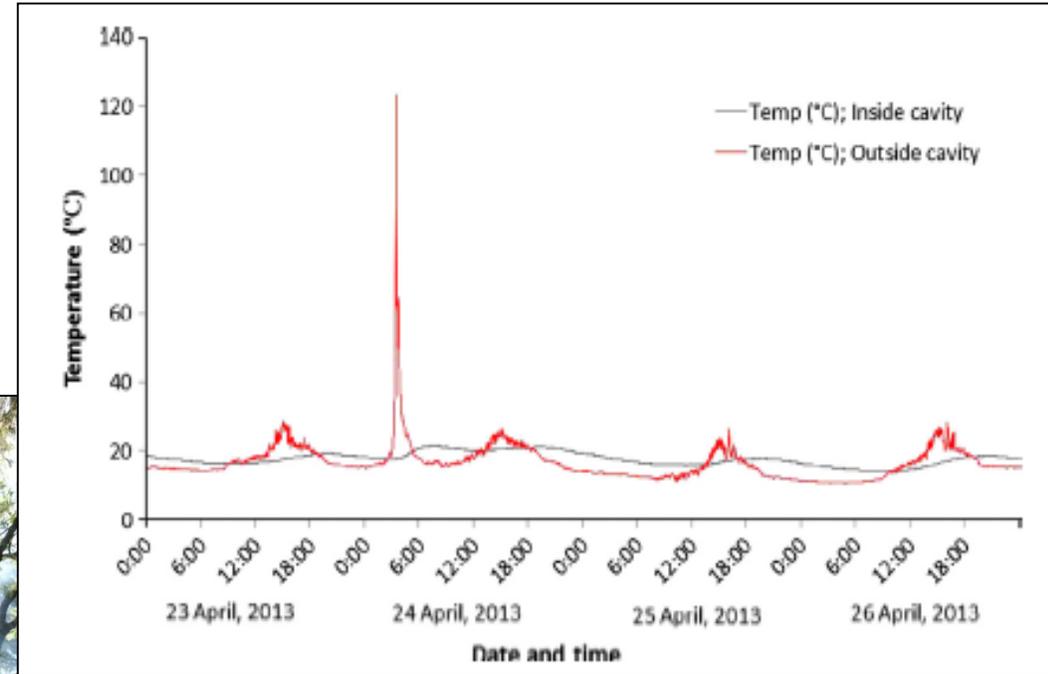
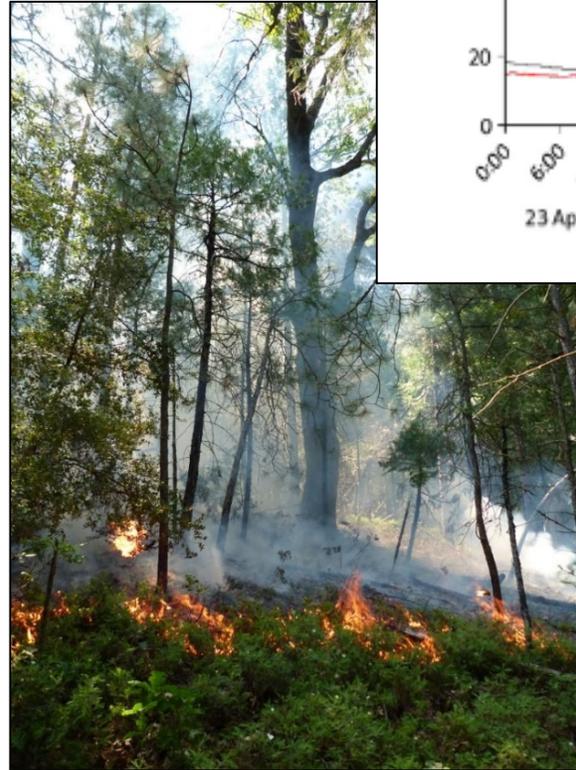
FISHER RESPONSE TO FIRE



Conditions inside fisher dens during prescribed fires: what is the risk posed by spring underburns.

C. Thompson and K. Purcell, 2016. Forest Ecology and Management.

- Equipped tree cavities with temp and CO monitors during prescribed fires.
- Temperature was remarkably stable inside cavities during burns
- In a limited subset of cavities, CO accumulated to potentially hazardous levels
- Recommendations to mitigate smoke accumulation during early spring burns

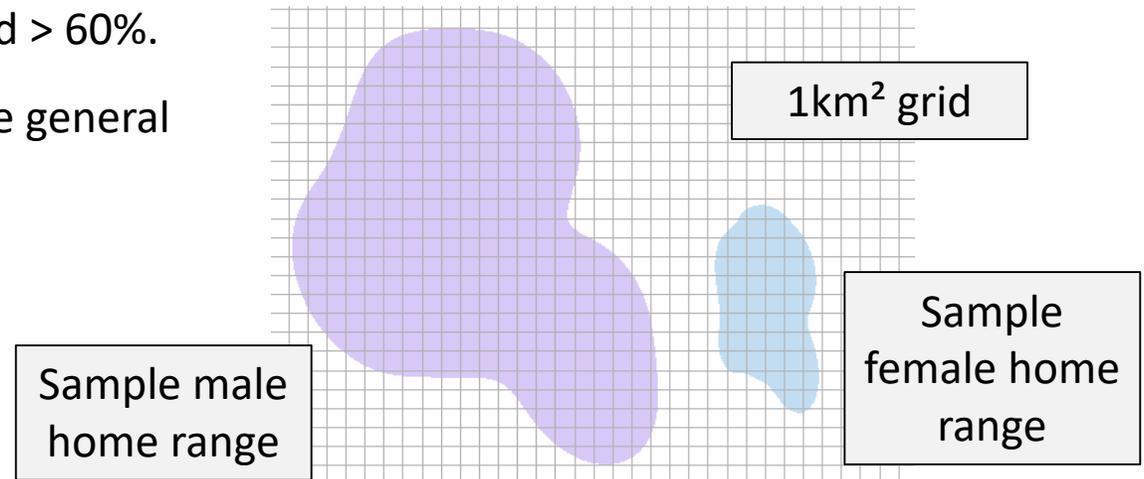
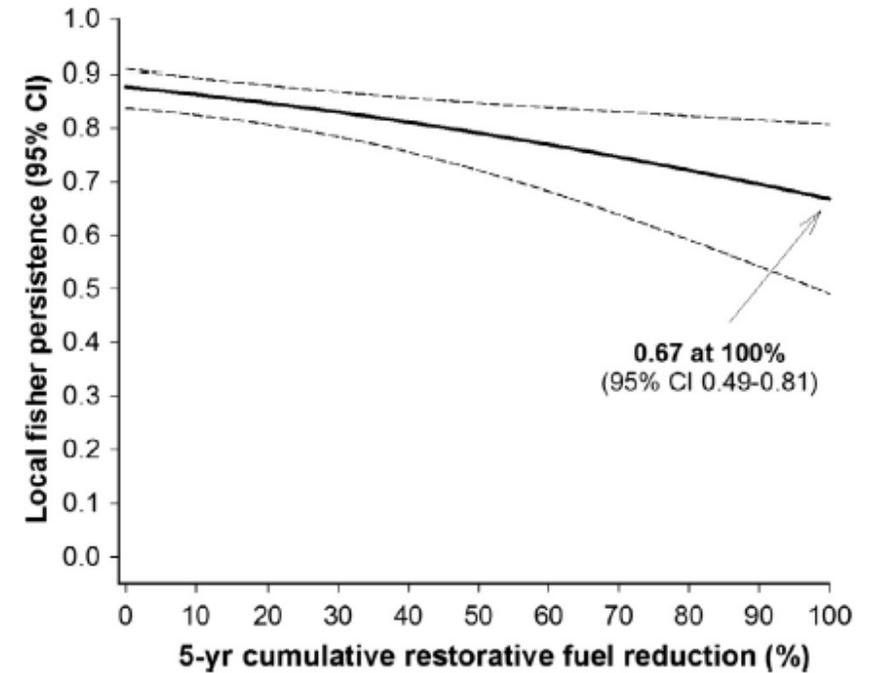


FISHER RESPONSE TO FUEL MANAGEMENT



Landscape fuel reduction, forest fire, and biophysical linkages to local habitat use and local persistence of fishers. R. Sweitzer et al., 2016. Forest Ecology and Management.

- Used camera trap data over 7 years (2007 – 2013) to evaluate impacts of vegetation management on fisher occupancy in 1km² sampling units
- Occupancy was positively linked to canopy cover
- Both occupancy and persistence declined in relation to the amount of habitat impacted
- Even at high levels of treatment, persistence remained > 60%.
- Home ranges remained stable; fishers remained in the general area, moving around treatment units



FISHER RESPONSE TO FUEL MANAGEMENT



Selection of disturbed habitat by fishers in the Sierra National Forest.

J. Garner 2013. Humboldt State Univ.

- Looked at fisher space use in relation to past management actions
- Fishers avoided recently treated areas, but incorporated them into home ranges.



Responses of Pacific fishers to habitat change as a result of forestry practices in southwestern Oregon.

T. Smith 2020. Utah State University

- Used GPS collars to track fisher movements before, during, and after the Ashland Forest Resiliency Project
- High variability in individual response, but home ranges remained stable
- Beyond 2km, fishers were unaffected by management activity

Assessment of fisher tolerance to forest management intensity on the landscape.

W. Zielinski et al. 2013. Forest Ecology and Management

- Used scat detector dog surveys to assess fisher response to treatment intensity
- Fishers regularly occupied forested areas with moderate to high treatment rates.



TAKE HOME MESSAGES



- **Forest carnivores are more resilient than we give them credit for.**
- **Pace, scale, and landscape pattern matter.**
- **Habitat is dynamic, and we need to recognize the importance of ecological processes in creating and maintaining it.**



ACKNOWLEDGEMENTS



USDA United States Department of Agriculture | USFS Research & Development

Fire x FAUNA:

Wildfire and prescribed fire effects on wildlife



National Genomics Center
FOR WILDLIFE AND FISH CONSERVATION



Conservation
Biology Institute



Oregon State
University

