

# Analysis of Potentially High Fire Risk in Butte County, CA

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## Introduction

California is characterized by a Mediterranean climate with cool, wet winters and warm to hot, dry summers where the summer can result in drought like conditions, raising the possibility of wildfire occurrences. My focus is to look at the history of wildfire outbreaks in Butte County over a period of 101 years, from 1911-2012 to then understand the areas that are potentially at high risk of wildfires occurring.

## Data and Methods

### Data

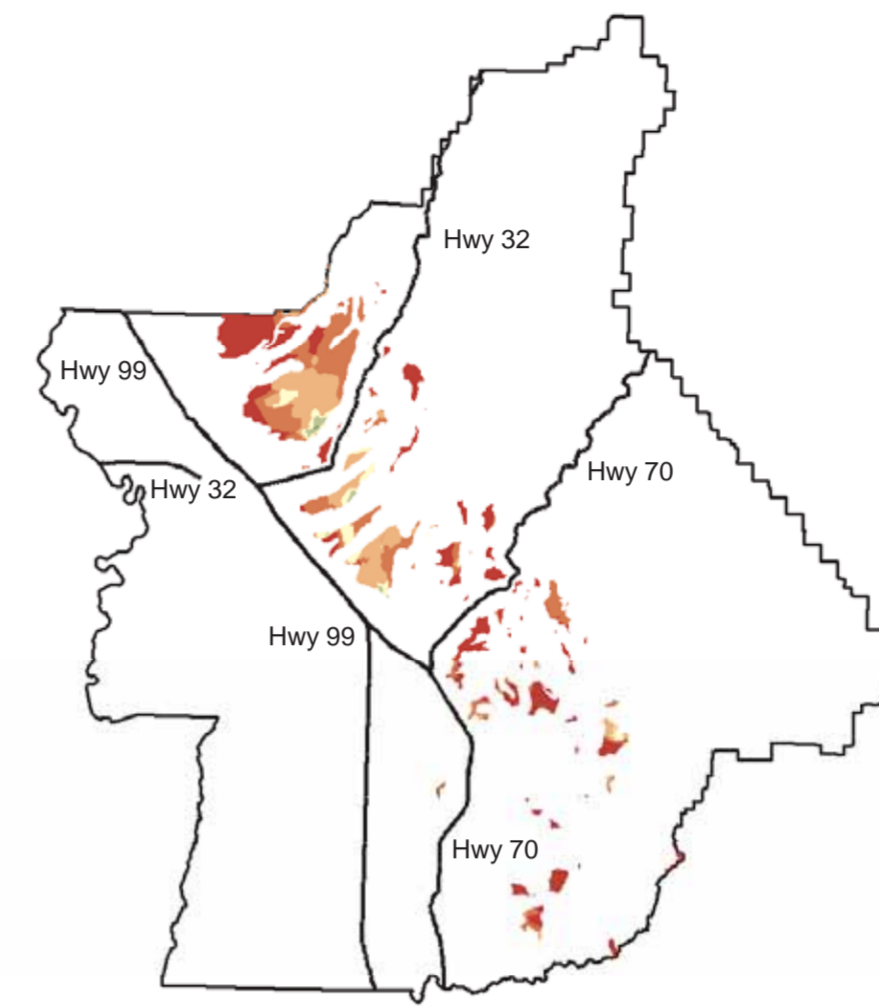
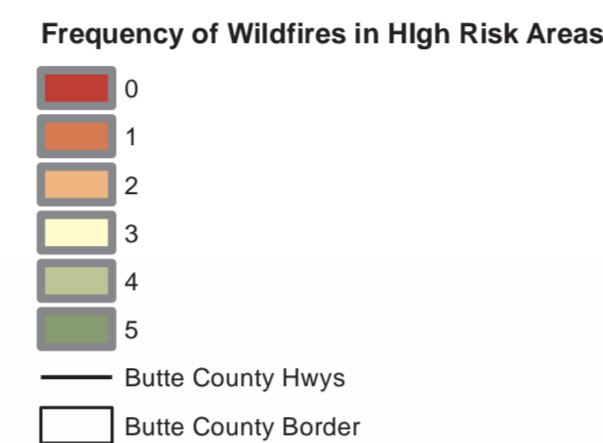
- Butte County Wildfire Frequency 1911-2012
- Butte County Vegetation Cover
- Butte County Roads
- Butte County 30m DEM

### Methods

- Butte County wildfires unioned together and rasterized to form frequency map.
- Separate natural vegetation cover: Woodland, Shrubland, Grassland and Forest.
- Buffer 548m from the roads which converts from 1800 ft of fire hose leading from the fire truck which distinguishes low risk area (pers com. Matt McKenzie, 2014).
- Selected out high risk areas beyond the buffer and overlaid on top of each vegetation type to calculate fire frequency by area.

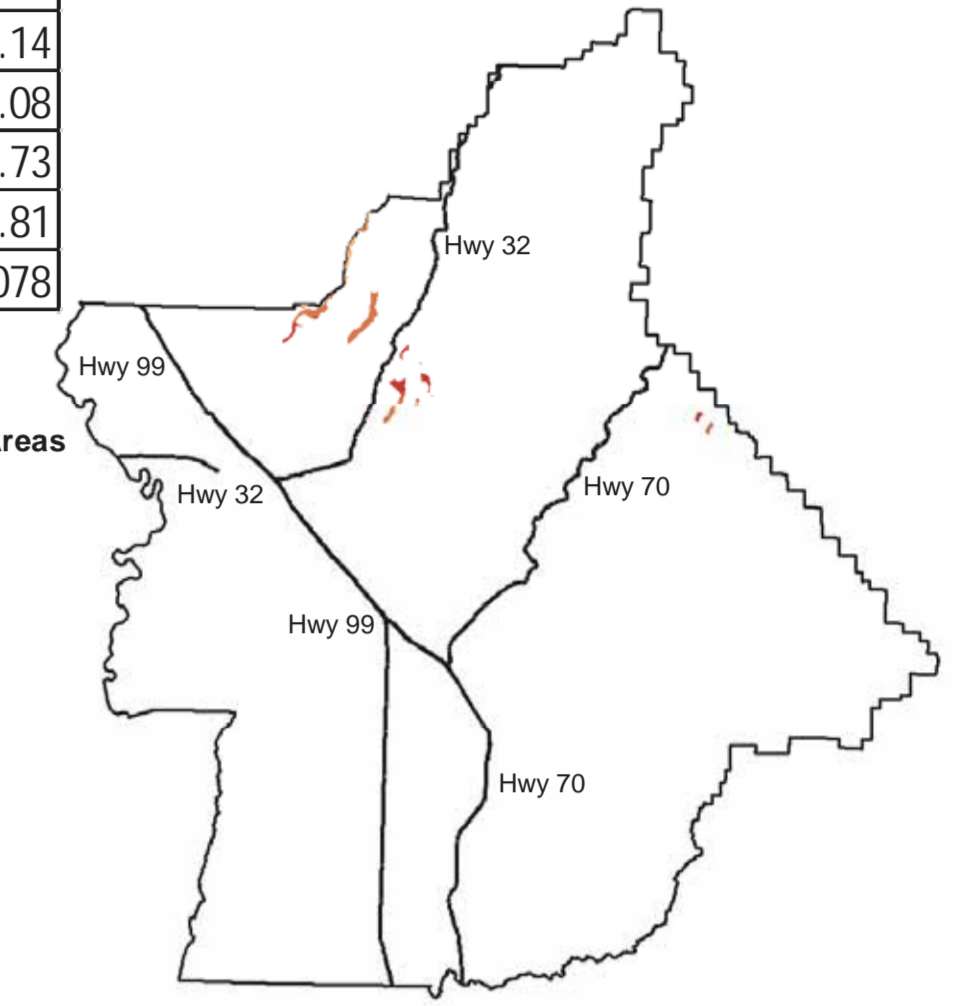
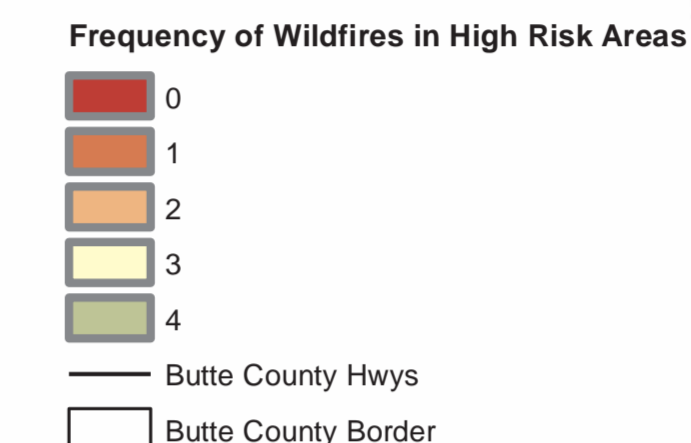
Woodland Fire Hazard Frequency in High Risk Areas

Frequency Value	Frequency %
0	13.92
1	10.87
2	8.34
3	2.09
4	0.397
5	0.019



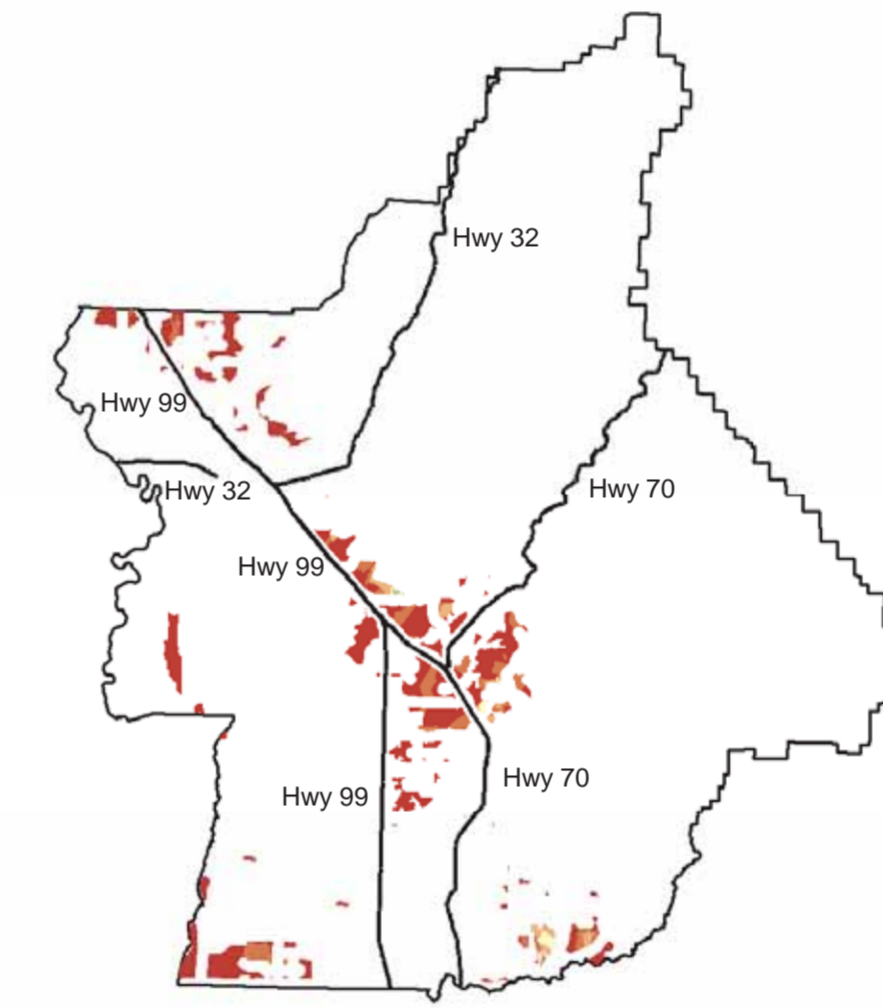
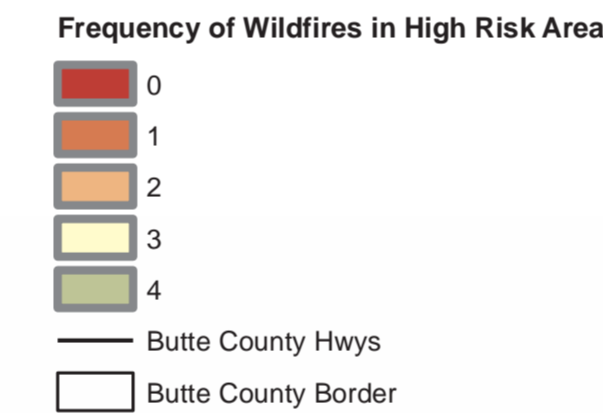
Shrubland Fire Hazard Frequency in High Risk Areas

Frequency Value	Frequency %
0	8.14
1	16.08
2	3.73
3	0.81
4	0.0078



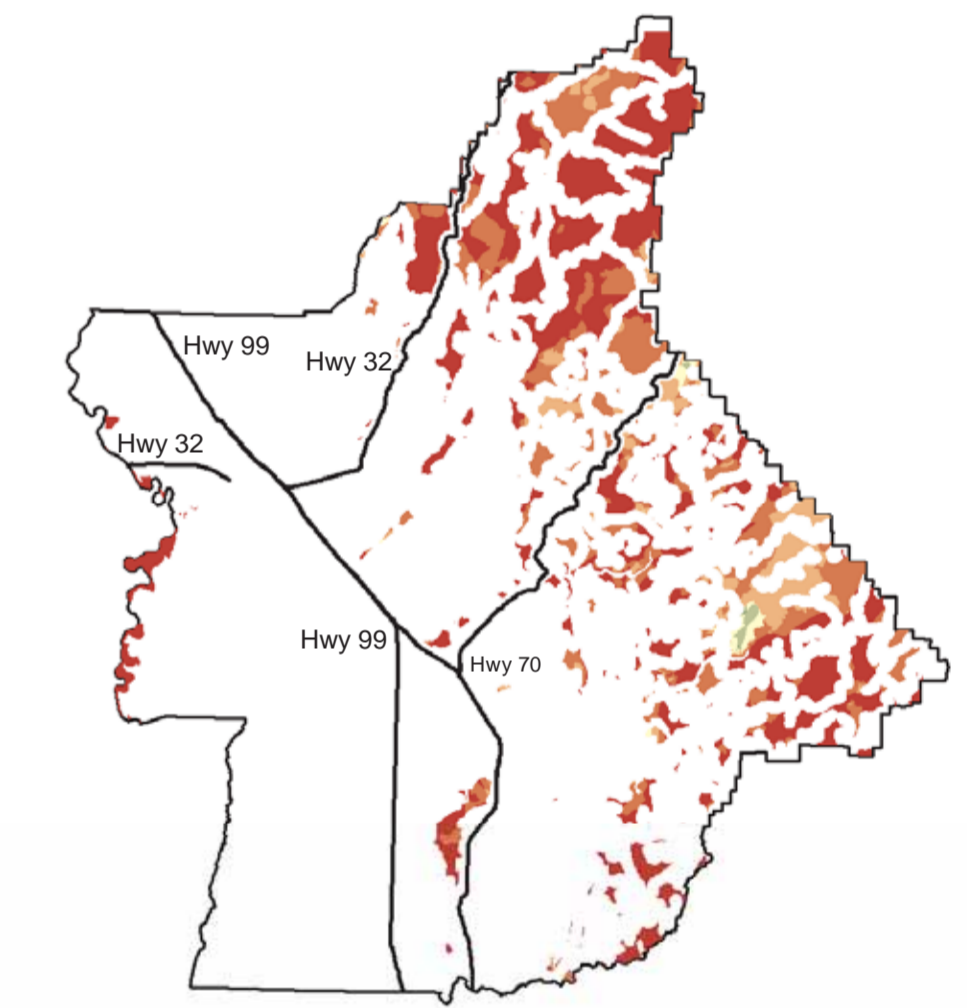
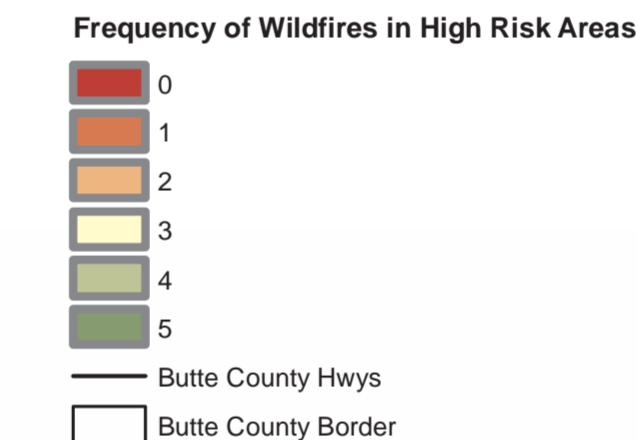
Grassland Fire Hazard Frequency in High Risk Areas

Frequency Value	Frequency %
0	29.18
1	6.95
2	1.99
3	0.71
4	0.079

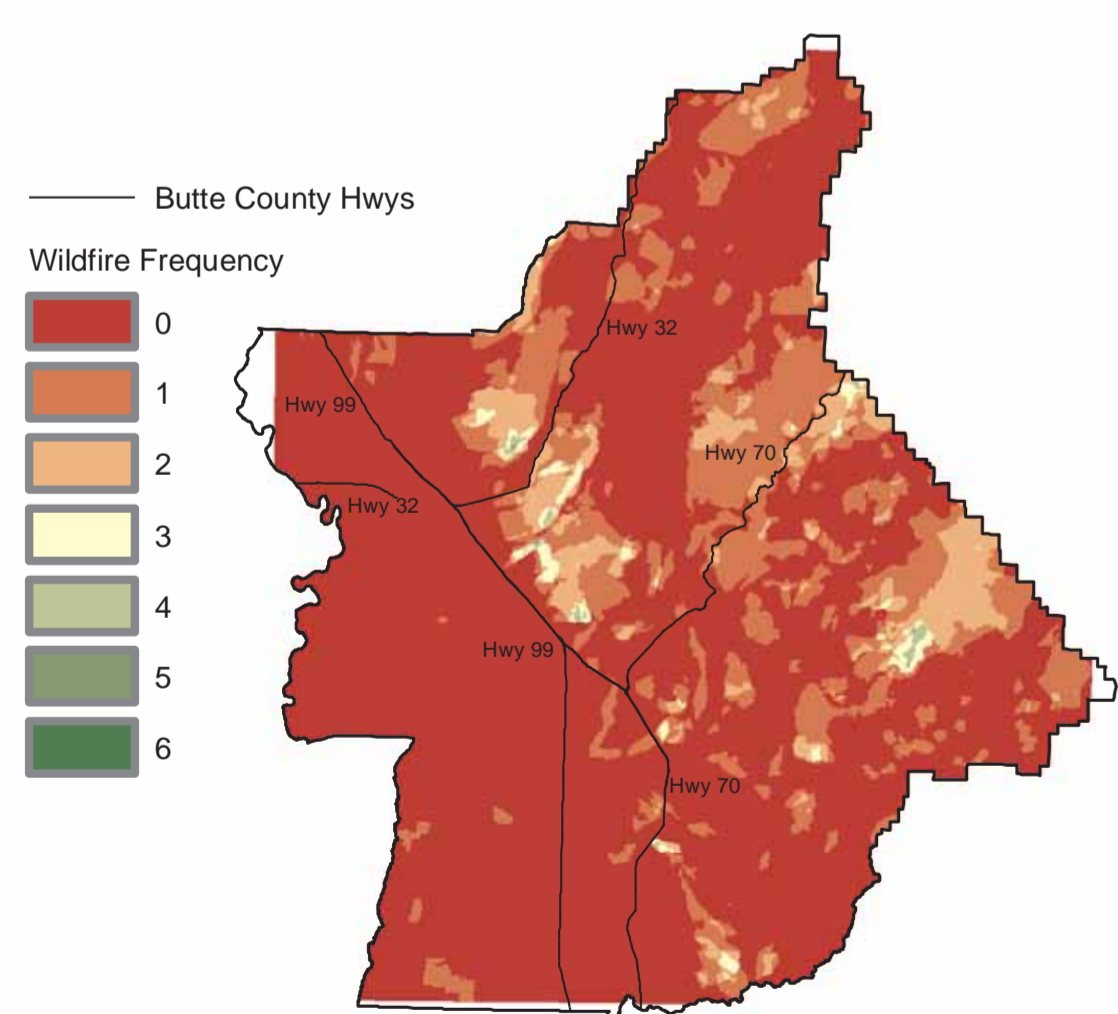


Forest Fire Hazard Frequency in High Risk Areas

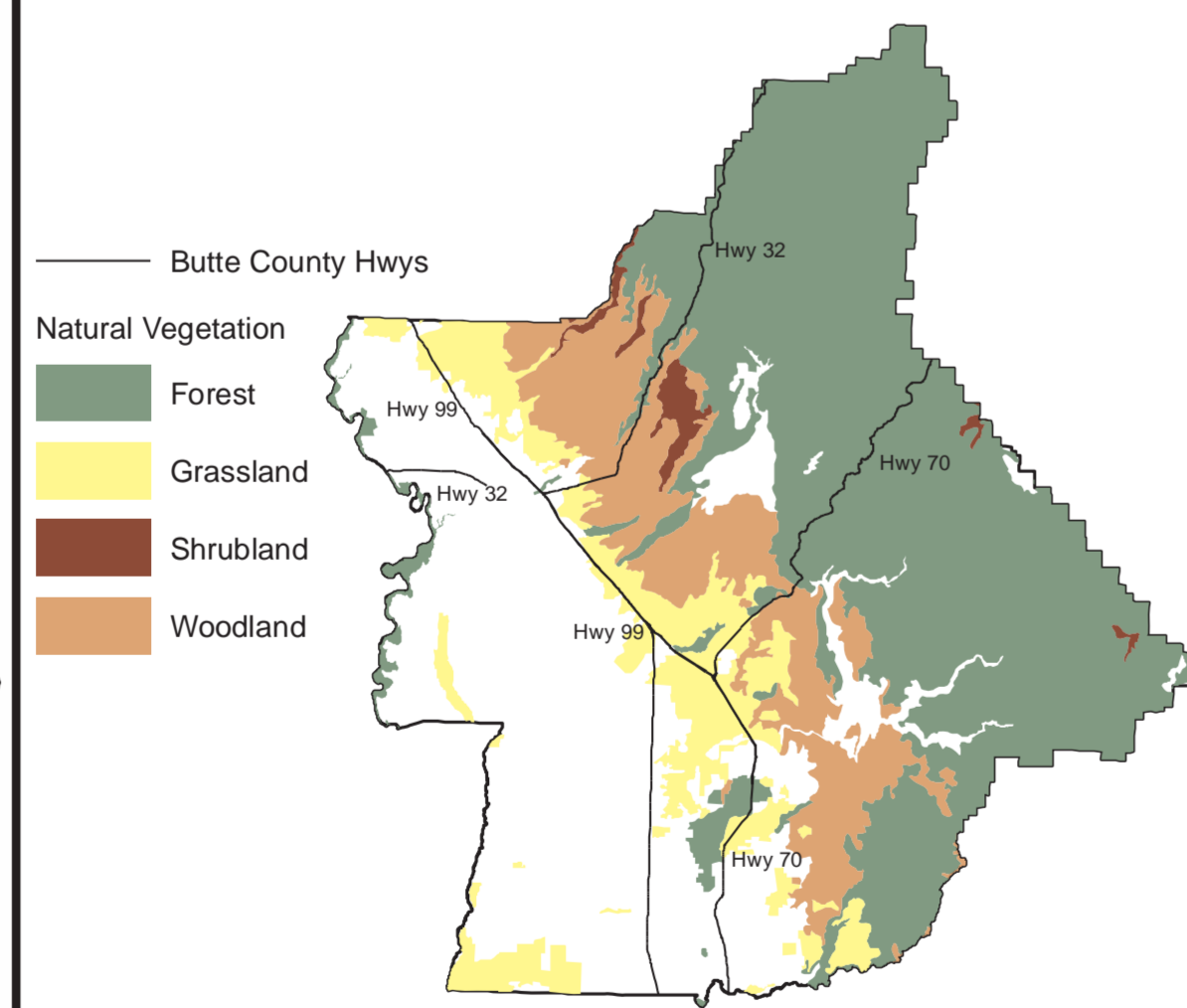
Frequency Value	Frequency %
0	20.38
1	10.77
2	3.45
3	0.43
4	0.2
5	0.006



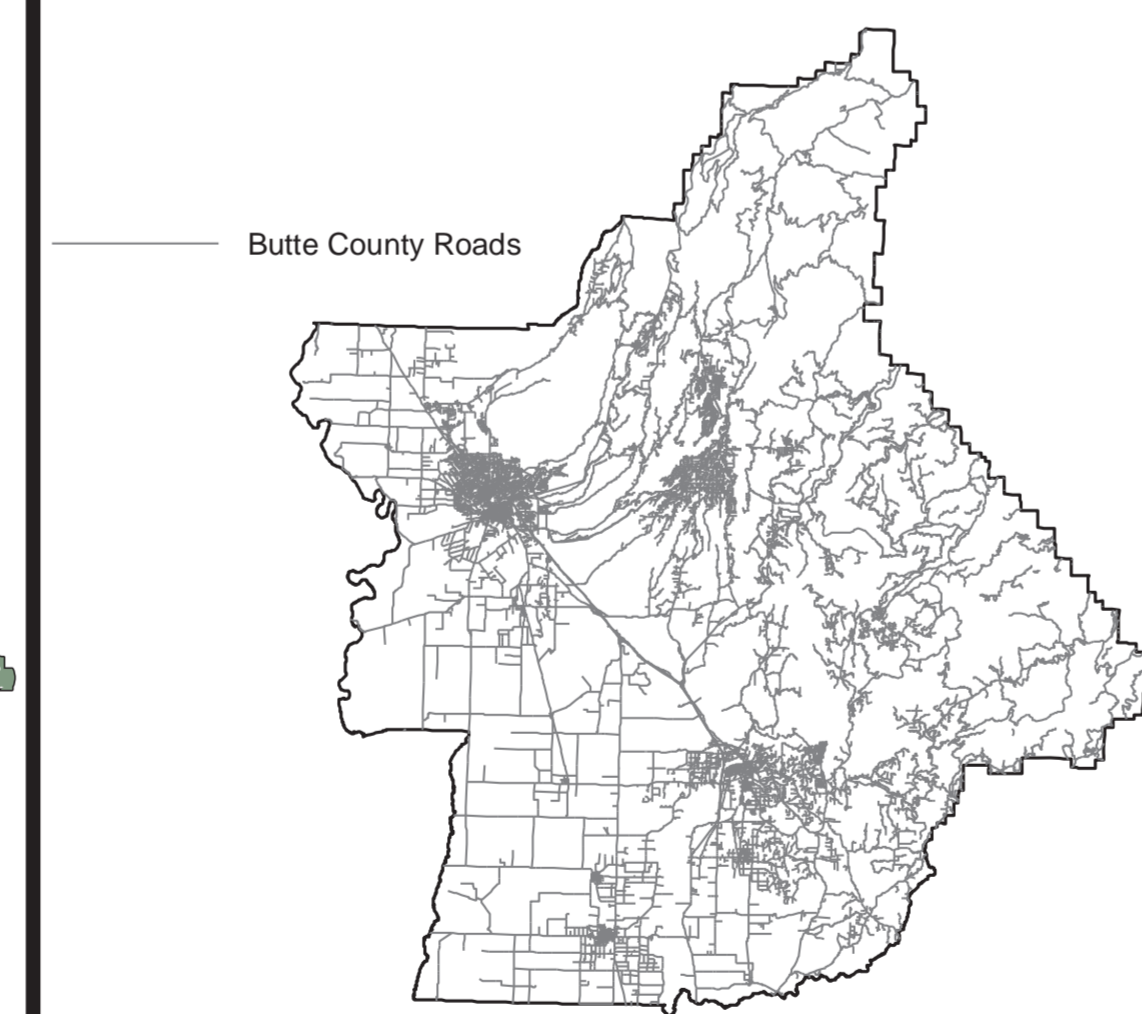
## Butte Wildfire History 1911-2012



## Natural Vegetation



## Butte County Roads



## Conclusion

After running my analyses, there is a better understanding of what areas in the Wildland Urban Interface can potentially be difficult for management agencies to access and lead to overall prevention of wildfires from getting out of hand.

## References

Haas, Jessica R., David E. Calkin, and Matthew P. Thompson. "A national approach for integrating wildfire simulation modeling into Wildland Urban Interface risk assessments within the United States." *Landscape and Urban Planning* 119 (2013): 44-53.

USDA & USDI. *Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire*. Federal Register 66, (2001): 751-777.

Mercer, D. Evan, and Jeffrey P. Prestemon. "Comparing production function models for wildfire risk analysis in the wildland-urban interface." *Forest Policy and Economics* 7, no. 5 (2005): 782-795.

Matt McKenzie, Butte County Fire Department

California Department of Forestry and Fire Protection for Fire Data

## Results and Discussion

The maps displayed to the right show fire frequency in each vegetation type that is considered high risk areas to control. This is summarized by the percentages shown in the tables which were calculated from the total areas of each vegetation type. This was determined by the buffer of 548m from the roads to separate the low risk from the high risk areas.