



Wildfire Effects on Populations of *Cypripedium fasciculatum*

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The Chips Fire

The Chips Fire was ignited by lightning on Saturday, July 28, 2012, and was declared 100% contained on August 31, 2012, after burning 75,431 acres on the Plumas National Forest in California and private ownership.



Cypripedium Habitat

Clustered lady's slippers are most commonly associated with mixed conifer forests. On the Plumas NF, plants most frequently occur in microsites with moist soils, steep slopes, sufficient dogwood, and a relatively open over story canopy. These orchids lack physiological adaptations to regulate and tolerate drought and heat stress.

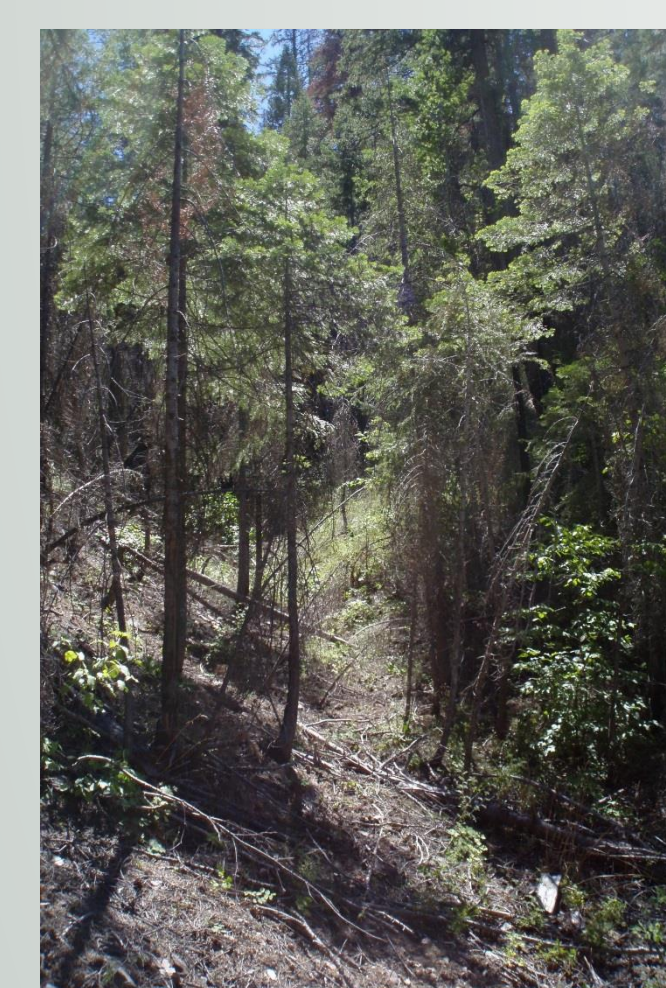


Fig. 1: A site outside the fire perimeter showing typical habitat. This site had a decrease from about 80 plants in 1985 to about 23 in 2015.



Fig. 2: A site that burned at moderate severity that declined from 9 plants in 1989 to zero in 2015.

Monitoring

Post-fire monitoring of forty-six populations in the North Fork Feather River Watershed has found large declines in both population size and density. High severity burn extirpated populations while low severity burns had mixed impacts on populations but an overall decline.

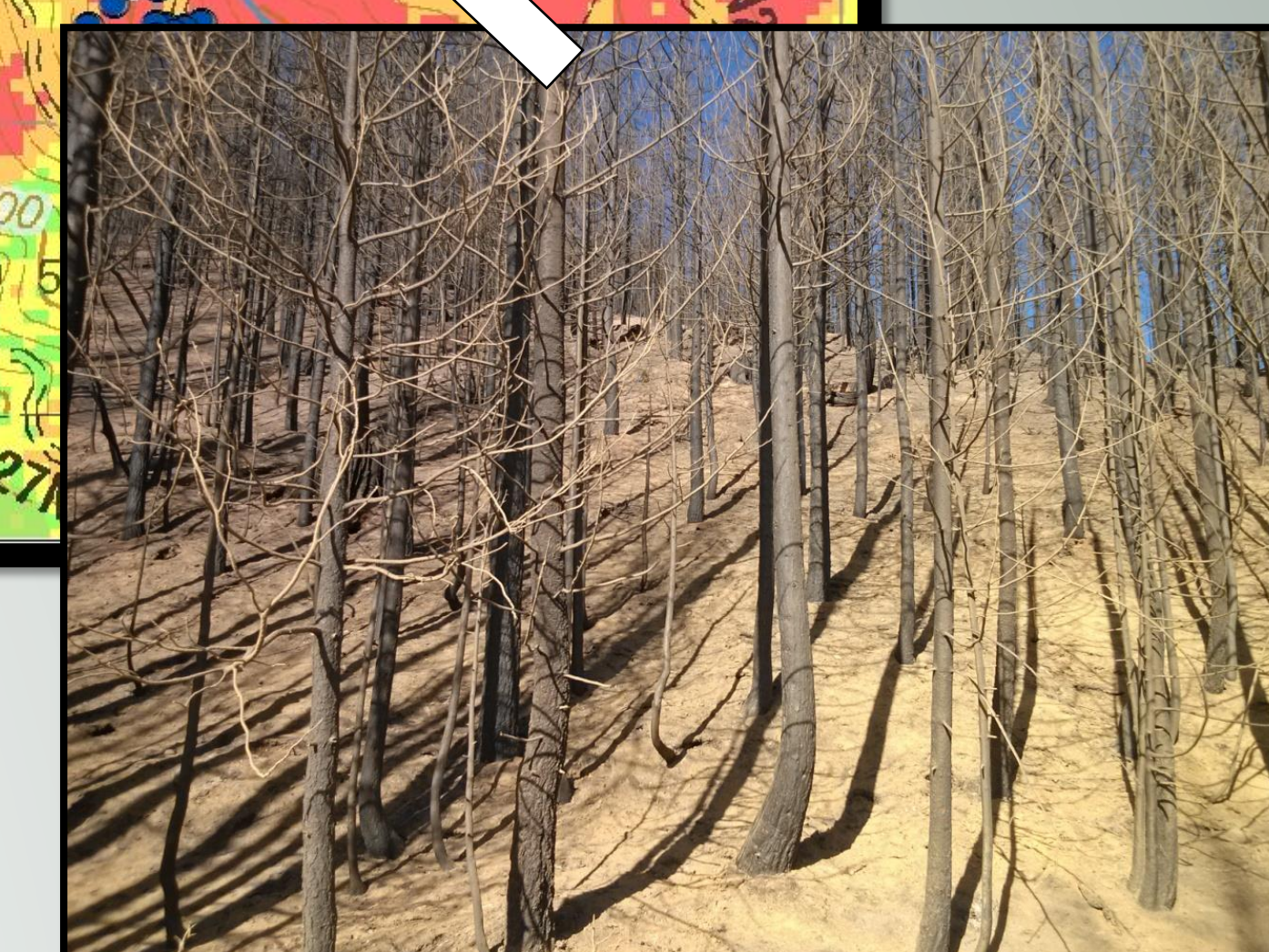
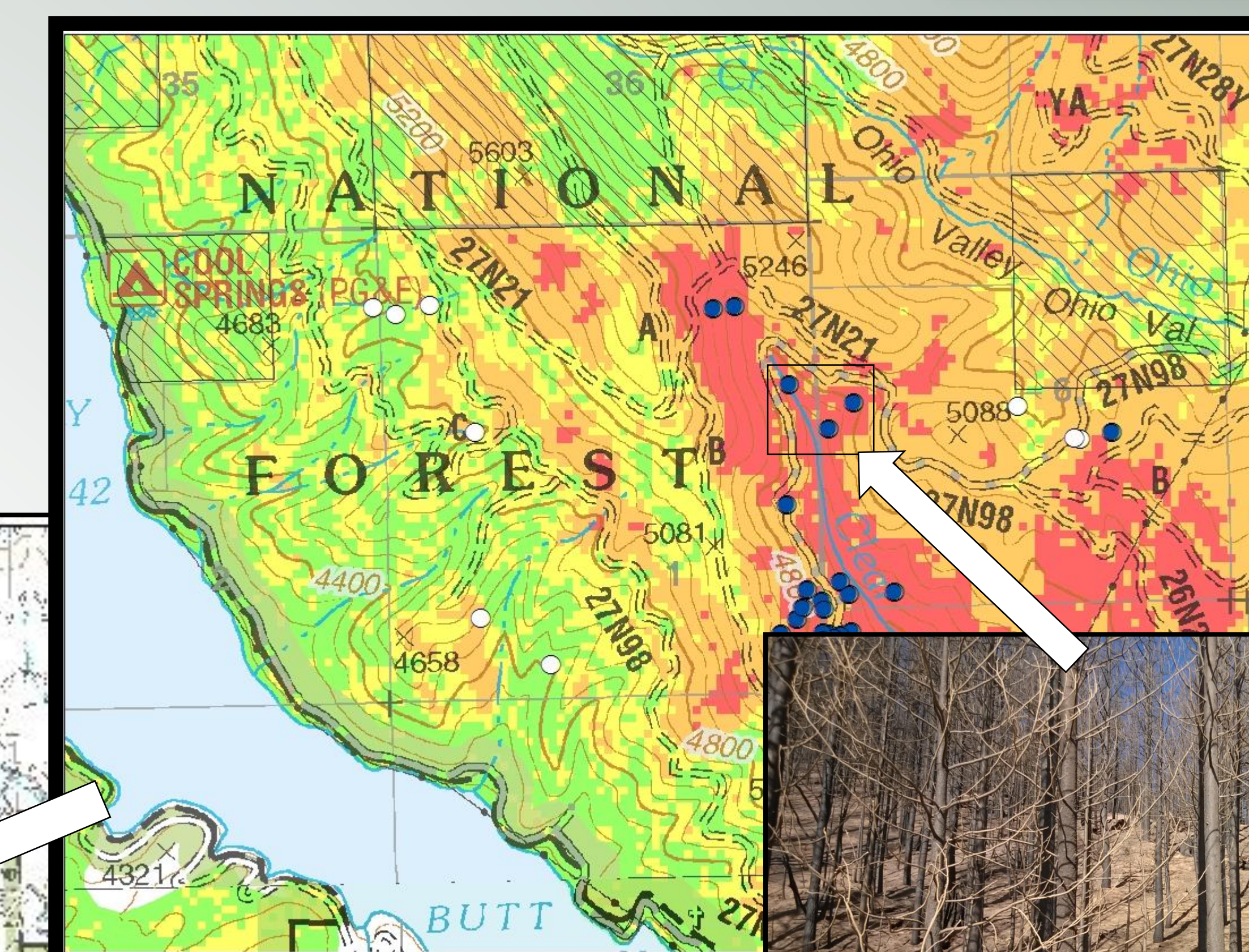
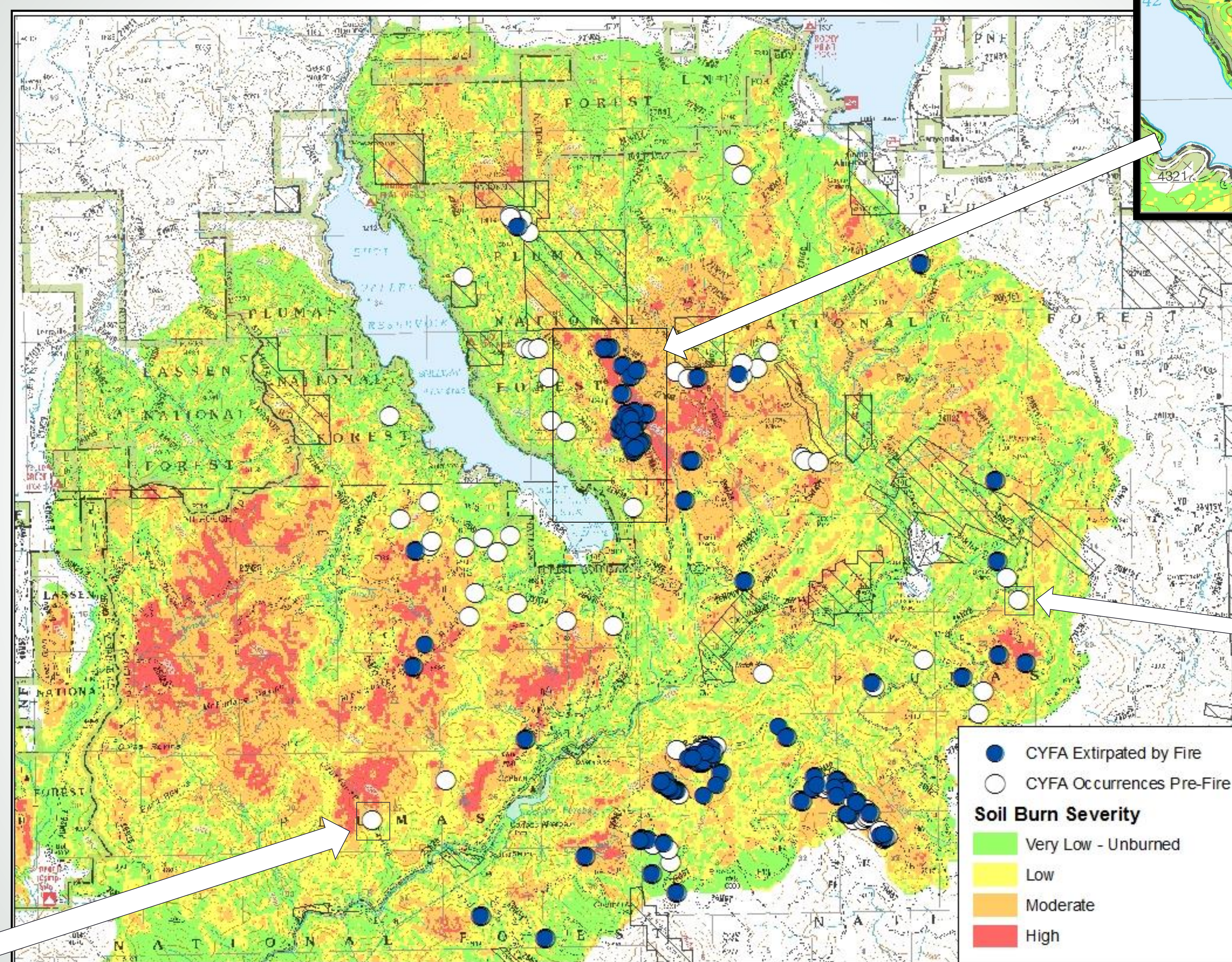


Fig. 3: A 2012 picture of a high severity burn area that had 45 plants in 40 sq. ft. before the fire. No plants have been found during post-fire monitoring



Fig. 4: A site that experienced low severity fire that increased from 13 plants in 2009 to 34 in 2015.

Results

Cypripedium fasciculatum sites experience natural fluctuations in population number over time, reflected in our data by the unburned sites and those outside the fire perimeter. Fire, even low severity, has a detrimental effect on populations. The duration of the effects are unknown but it seems virtually impossible for populations burned at high severity to recover any time soon. It may be possible for populations burned at low or moderate severity to recover and potentially benefit in the long term. Future management includes proactively working to reduce fuels in and around *C. fasciculatum* populations ahead of time to prevent high severity fires.

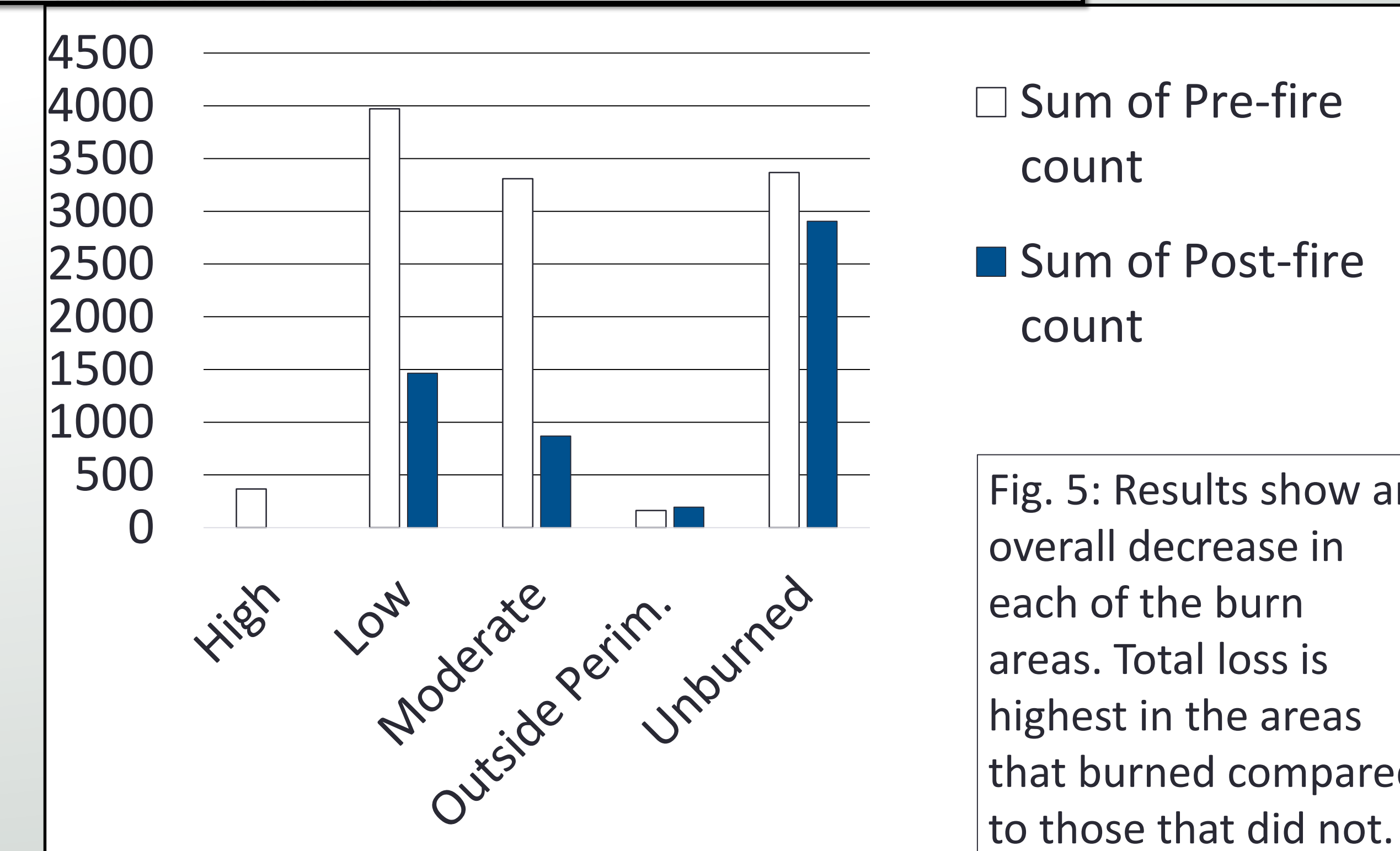


Fig. 5: Results show an overall decrease in each of the burn areas. Total loss is highest in the areas that burned compared to those that did not.

Special thanks to all those who helped collect the data used in this study: Chelsea Begeman, Gabe Cashman, Scott Chamberlain, Michelle Coppoletta, John Dittes, Josephine Guardino, Japhia Huhndorf, Dana Ludington, & Ryerson Pamplin. ☺