



From June to September, nighttime minimum temperatures in the unthinned forest were 1.2 to 2.2 °C warmer than in the group selection and diversity thinning treatments.

Impacts of forest thinning on understory microclimate

In this project, we assessed the intra-annual impacts of group selection and diversity thinning treatments on understory microclimate in a dry, mixed-conifer forest. Specifically, we investigated how group selection and diversity thinning treatments affect understory air temperature, incoming shortwave radiation, wind speeds, and vapor pressure deficit within the North 49 project area on the Hat Creek Ranger District of the Lassen National Forest.

Key Findings

- Group selection increased shortwave radiation by up to a factor of 5; diversity thinning treatments increased shortwave radiation by up to a factor of 2.
- Group selection and diversity thinning each increased wind speeds by up to a factor of 2.
- Group selection and diversity thinning decreased daily minimum air temperature and vapor pressure deficit.
- Group selection and diversity thinning increased diurnal extremes of air temperature and vapor pressure deficit.



Ben performs a routine maintenance check up on the wireless data collection network and central field computer, located in the Group Select.



One of the local bears caught 'bummin' a scratch from the instrument tower in the unthinned forest.

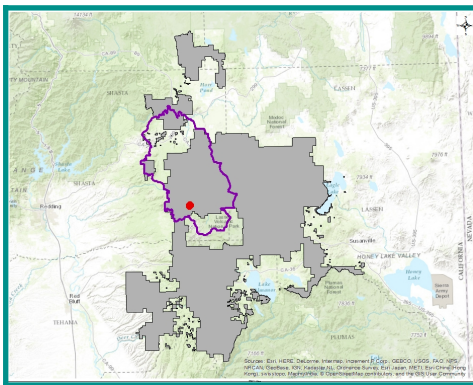
For more information, follow the link below:

<https://unr.idm.oclc.org/login?url=https://www-proquest-com.unr.idm.oclc.org/docview/2445937369?accountid=452>



Project Overview

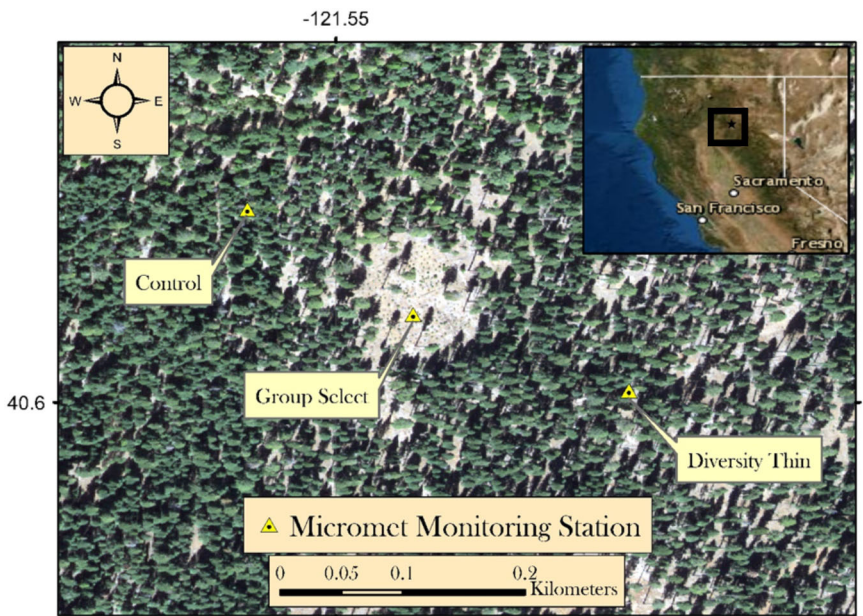
The Ashpan monitoring site was instrumented in late 2013, following implementation of group selection and diversity thinning treatments in 2011 as part of the Panner timber sale. We computed monthly means using four years (2014-2017) of shortwave radiation, wind speed, air temperature, and relative humidity observations at 2-m above the forest floor within the treatments units and an adjacent untreated stand. We found that group selection and diversity thinning increased shortwave radiation inputs by up to a factor of 5 and 2, respectively, and both treatments increased wind speeds by roughly a factor of 2 relative to the untreated stand. Both treatments increased diurnal variability of air temperature and vapor pressure deficit relative to the untreated stand. Future monitoring should consider how changing climate could dampen or exacerbate these impacts to best inform management decisions.



Project location, the Basins CFLRP, and Lassen National Forest



A coyote passes by the central field computer (orange arrow) and Group Select instrument tower (red arrow) on a sunny day.



Overview map of micrometeorological monitoring stations at the Ashpan monitoring site

Management Implications:

1. Both treatments:
 - *Reduce heat storage and buffering capacity of the forest canopy.*
 - *Increase understory water stress, due to higher daytime vapor pressure deficit.*
2. Adjacent group selection and diversity thinning treatments **increase spatial variability of understory microclimate.**