

# Grove Assessments: Existing Plots

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## Overview

Grove assessments are planned for each giant sequoia grove within the boundary of Sequoia Kings Canyon NP. These assessments will allow for the prioritization of treatment efforts within the park to ensure the protection of this valued resource. The assessments will be informed by data from SEKI's longstanding FMH program, bolstered by data from other projects collecting relevant data in the parks. These include projects done by SEKI's fire effects program, USGS, and the Shive Lab at UCB in partnership with SEKI. In addition to utilizing existing plots, additional data will be collected at plots added as needed throughout the groves.

This overview outlines the existing plots in the park that can be used for grove assessment, but is missing the drought plots done by SEKI Fire Effects. It includes a section summarizing existing plots and plot density in all groves as well as plot characteristics across all groves ("All groves"), followed by a section showing summaries of plot characteristics for individual groves and ends with a set of questions that we will need input from the group on.

## All groves

The tabs below outline the characteristics of the groves in the park and give an overview of the existing plots that are in the groves.

There are 39 groves within the SEKI boundary ranging from 0.3 acres to 2615 acres with a total of 11195 acres. The smallest groves are defined by individual trees (Putnam-Francis Tree and Fenced Tree while the largest are thousands of acres (Redwood Mountain and Giant Forest). The median grove size is 48 acres and the mean is 287 acres.

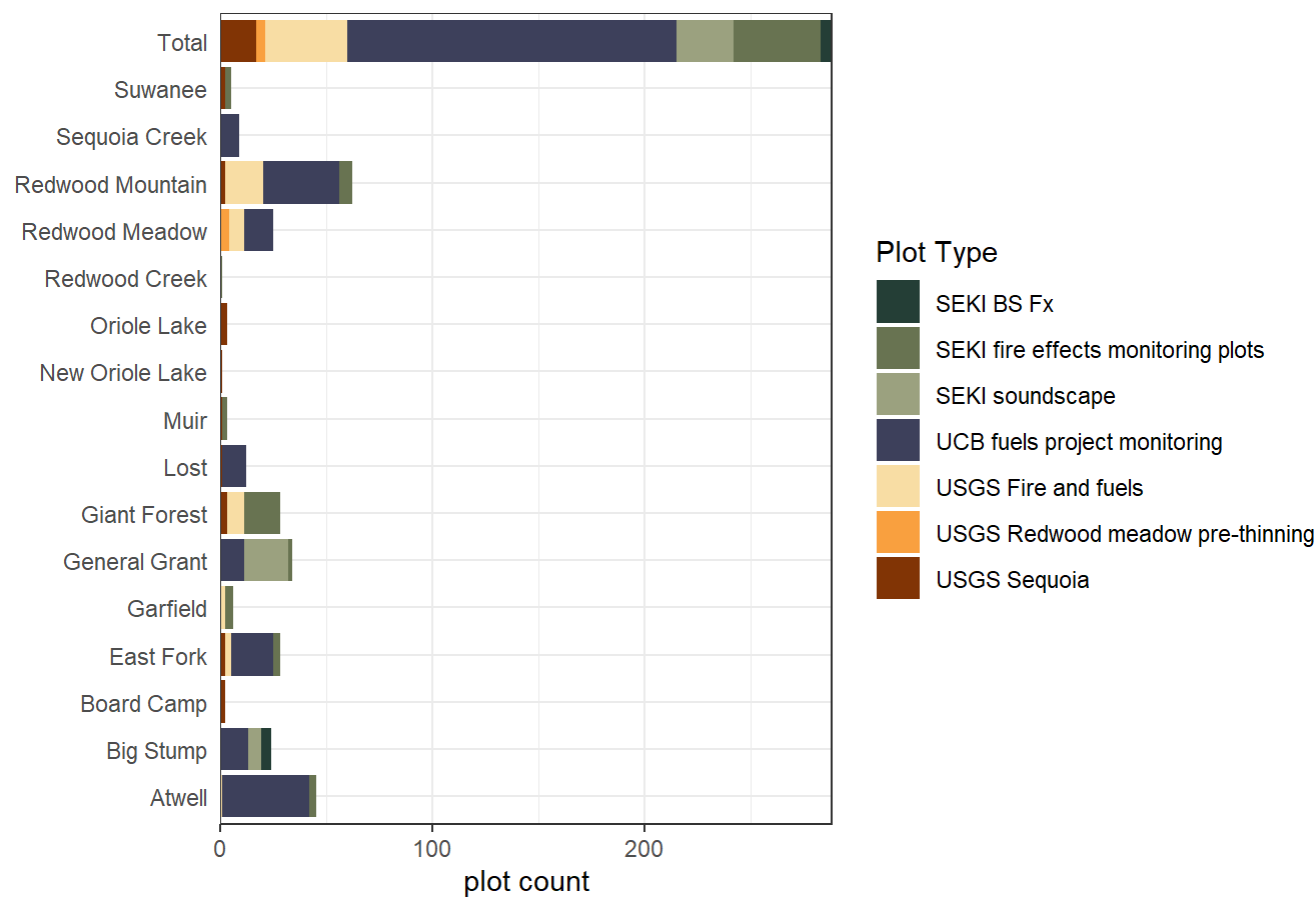
The above areas are estimated with the minimalist grove boundary layer. Since the grove assessments are intended to identify areas where treatment would be effective to reinforce grove resilience to wildfire, we buffered the layer by 75m to encompass area where fire behavior from outside the groves can impact the groves themselves and account for where the grove boundary is too small.

With the buffer, groves range from 7 acres to 3909 acres with a total of 3909 acres. The median grove size is 148 acres and the mean is 490 acres.

# Plot overview

Grove assessments will use plots from a variety of projects. There are 288 plots from 7 projects. There are 16 groves with plots. Redwood Mountain has the most plots by count.

Plot Count and Type by Grove



Plot Breakdown by Grove

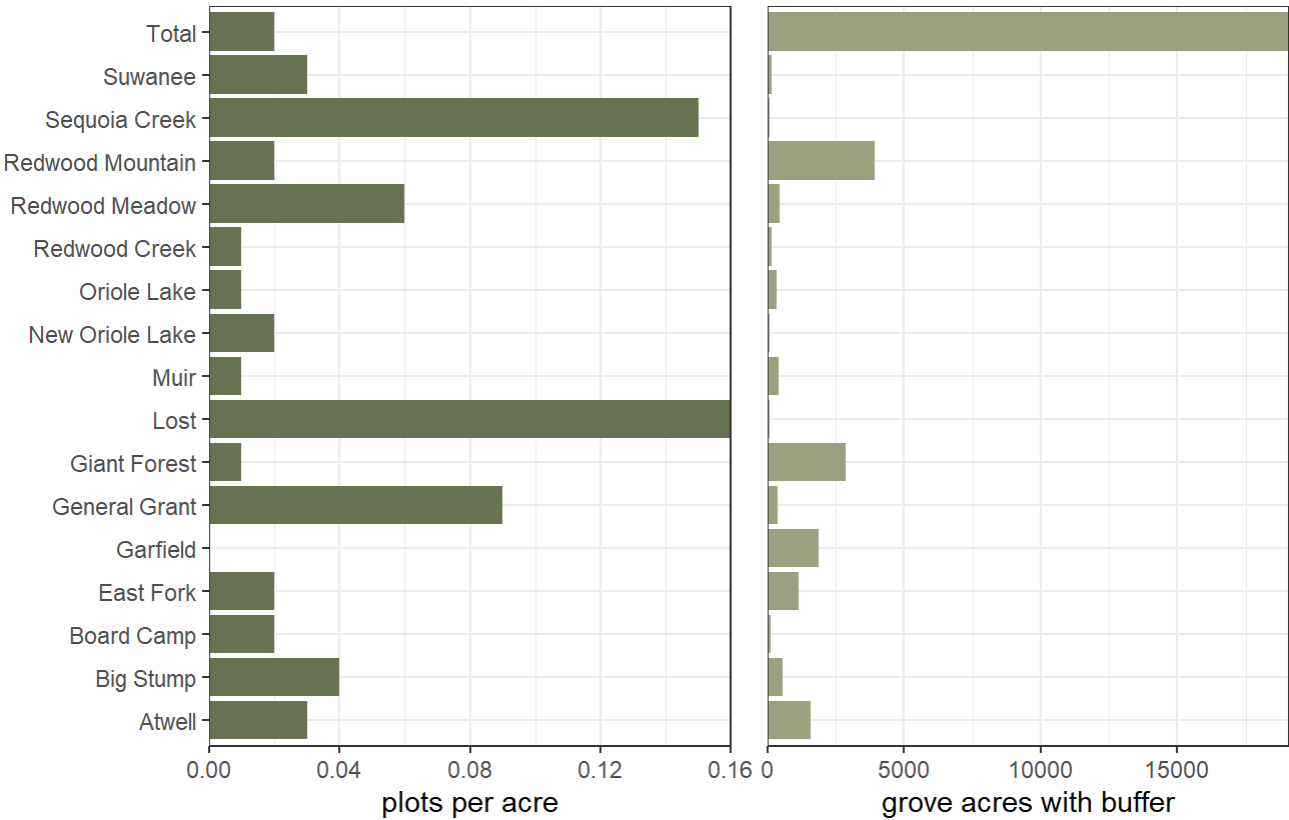
Grove	SEKI fire effects monitoring plots	UCB fuels project monitoring	USGS Fire and fuels	SEKI BS Fx	SEKI soundscape	USGS Sequoia	USGS Redwood meadow pre-thinning	Total
Atwell	3	41	1	0	0	0	0	45
Big Stump	0	13	0	5	6	0	0	24
Board Camp	0	0	0	0	0	2	0	2
East Fork	3	20	3	0	0	2	0	28
Garfield	4	0	2	0	0	0	0	6

Giant Forest	17	0	8	0	0	3	0	28
Lost	0	11	0	0	0	1	0	12
Muir	2	0	0	0	0	1	0	3
New Oriole Lake	0	0	0	0	0	1	0	1
Oriole Lake	0	0	0	0	0	3	0	3
Redwood Creek	1	0	0	0	0	0	0	1
Redwood Meadow	0	14	7	0	0	0	4	25
Sequoia Creek	0	9	0	0	0	0	0	9
Suwanee	3	0	0	0	0	2	0	5
Redwood Mountain	6	36	18	0	0	2	0	62
General Grant	2	11	0	0	21	0	0	34
Total	41	155	39	5	27	17	4	288

Of the groves with plots, Sequoia Creek and Lost Grove have high proportions of plots whereas Garfield has a very low density. Because of the range of grove area, it is not feasible to intend on even plot density across groves.

Average Plot Density Per Grove and Grove Acres

Acreage and density calculated with 75m buffer



Plot Count versus Acres

Grove	Plots per acre	Acres per plot
Garfield	0.00	313.85
Giant Forest	0.01	101.78
Muir	0.01	132.16
Oriole Lake	0.01	106.81
Redwood Creek	0.01	154.69
Board Camp	0.02	58.18
East Fork	0.02	41.15
New Oriole Lake	0.02	62.04
Redwood Mountain	0.02	63.04
Total	0.02	66.32
Atwell	0.03	34.74

Suwanee	0.03	30.25
Big Stump	0.04	22.48
Redwood Meadow	0.06	17.98
General Grant	0.09	10.65
Sequoia Creek	0.15	6.77
Lost	0.16	6.35

## Fire history

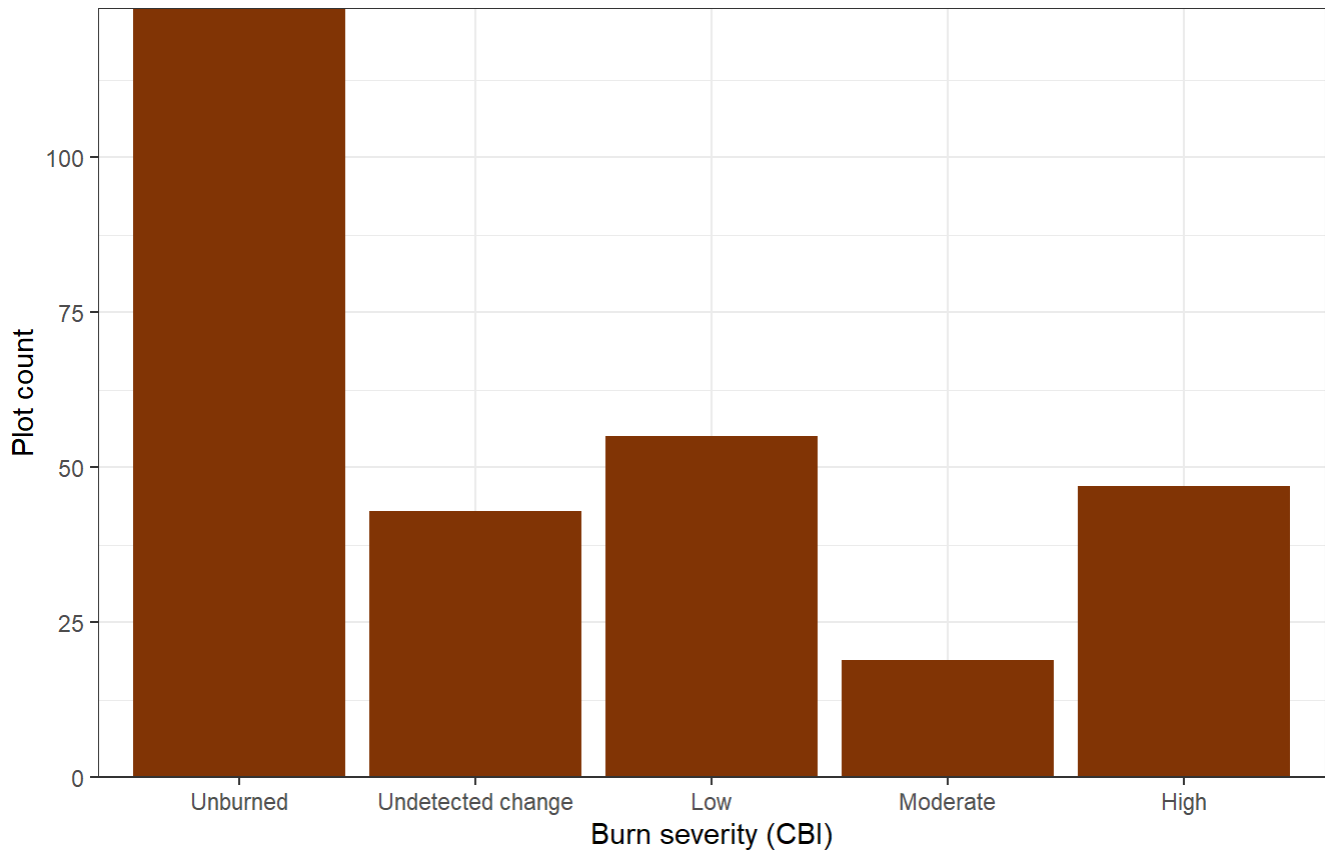
There are 164 plots that have experienced fire. Most of the fire experienced is of low to moderate severity, but there are some plots in high severity.

Plot Breakdown by Number of Wildfires

Fire count	Plot count
0	124
1	148
2	16

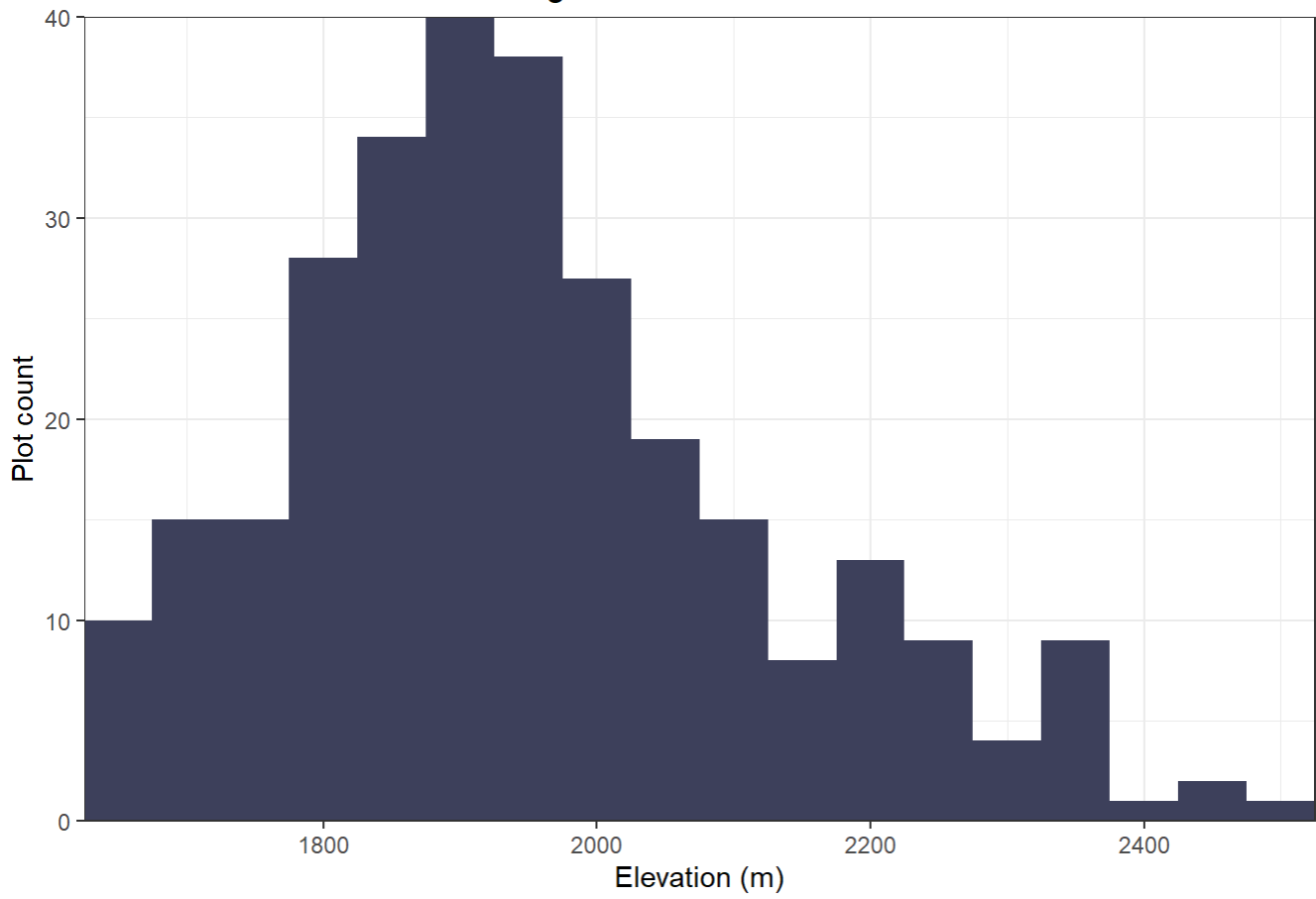
# Distribution of Wildfire Burn Severity in Existing Plots

Most recent burn severity where reburned, 0 includes no fire

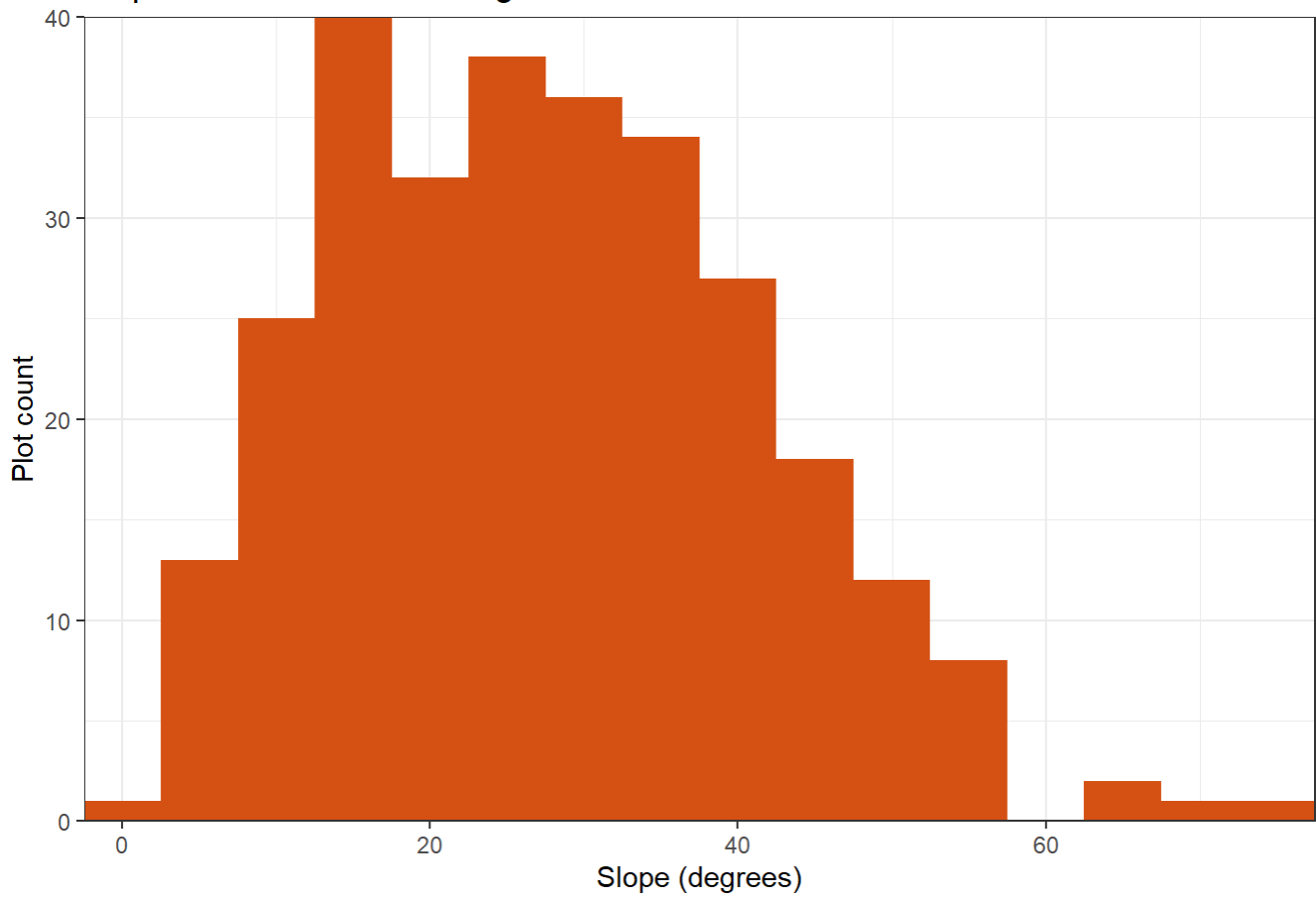


Topographic characteristics

Elevation Distribution of Existing Plots

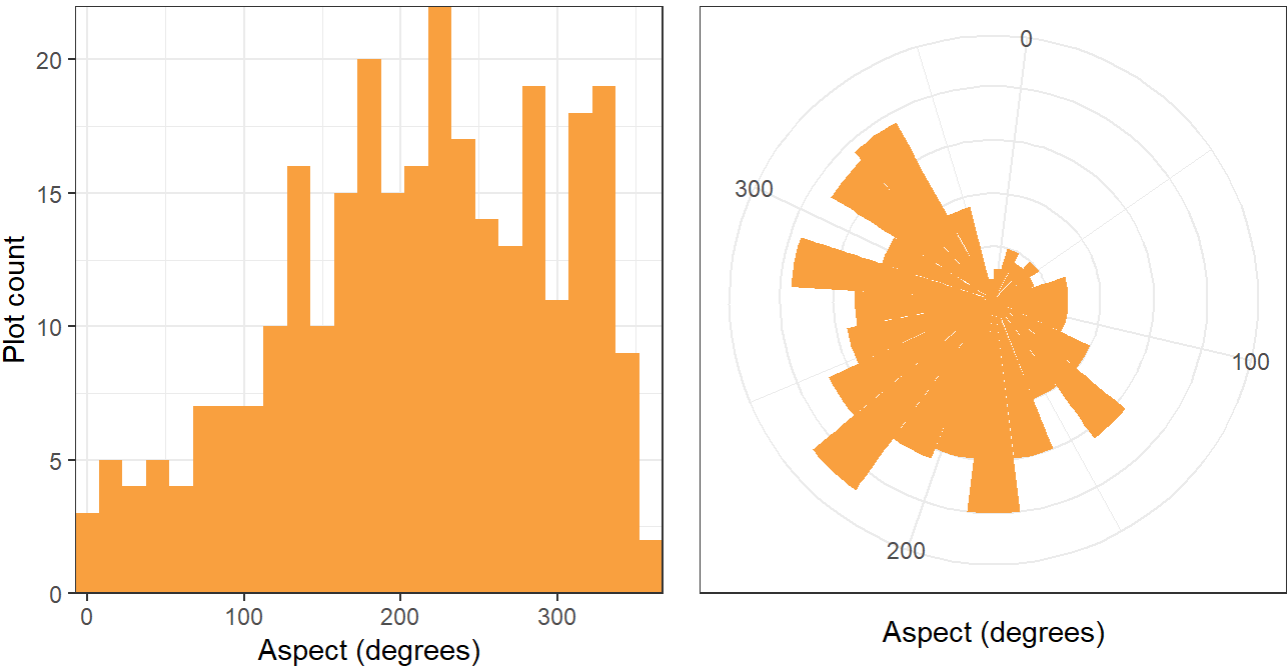


Slope Distribution of Existing Plots





Overall Aspect Distribution of Plots



Grove area table

SEKI Grove Area Summary

Grove	Acres	Acres with 75m buffer
Atwell	914.89	1563.14
Big Springs	2.37	29.79
Big Stump	282.75	539.44
Board Camp	48.20	116.36
Cahoon	14.21	59.79
Castle Creek	218.63	520.15
Cedar Flat	15.21	79.13
Clough Cave	1.41	11.42
Coffeepot Canyon	5.94	25.28

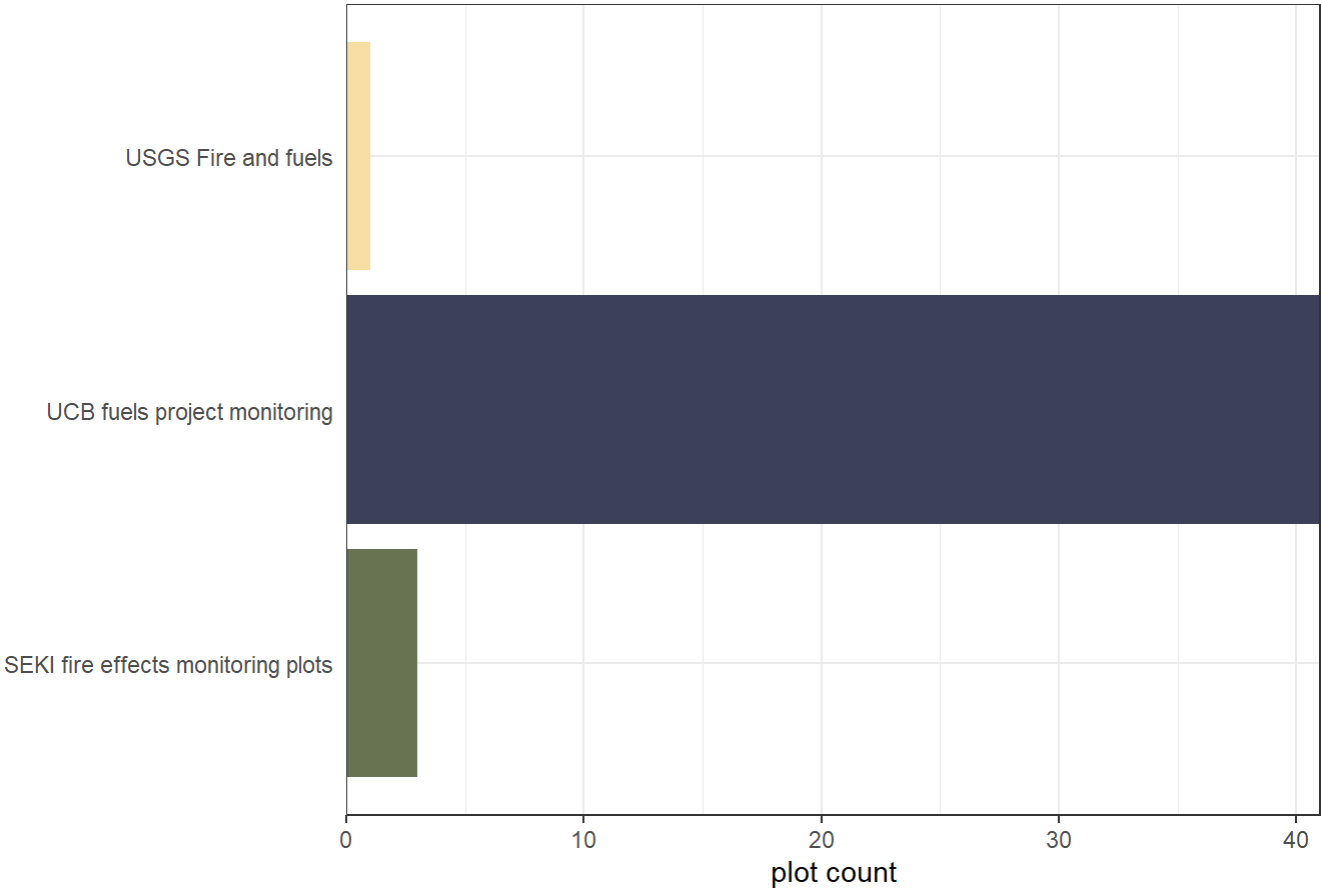
Grove Assessments: Existing Plots

Dennison	13.36	43.14
Devil’s Canyon	8.87	43.63
Dillonwood	1039.51	1928.19
Douglass	1.06	11.15
East Fork	741.76	1152.20
Eden Creek	434.83	802.84
Forgotten	1.83	14.71
Garfield	1232.42	1883.09
Giant Forest	2106.04	2849.78
Granite Creek	1.42	11.95
Homers Nose	118.83	276.26
Horse Creek	50.46	148.68
Little Redwood Meadow	27.92	64.81
Lost	35.40	76.25
Muir	244.89	396.47
New Oriole Lake	14.74	62.04
Fenced Tree	0.56	8.04
Oriole Lake	146.93	320.42
Pine Ridge	43.82	158.02
Putnam-Francis Tree	0.30	7.04
Redwood Creek	47.71	154.69
Redwood Meadow	179.24	449.57
Sequoia Creek	15.85	60.96
Skagway	60.94	147.72
South Fork	241.24	502.48
Squirrel Creek	6.99	55.17
Surprise	22.47	104.31
Suwanee	68.98	151.25
Redwood Mountain	2615.45	3908.67
General Grant	167.38	362.10

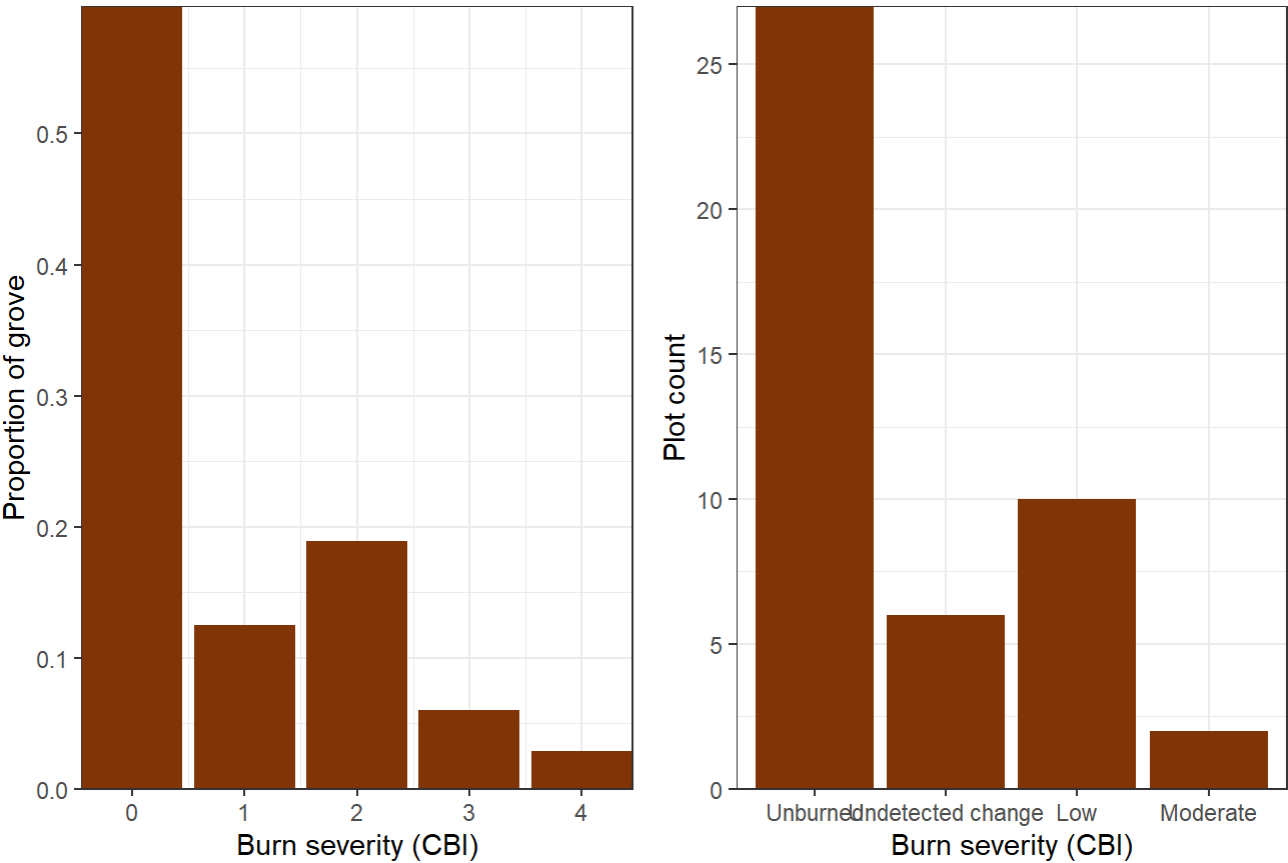
# Individual grove plot comparison

The following are comparisons of grove strata and strata represented by plots in groves that have plots.

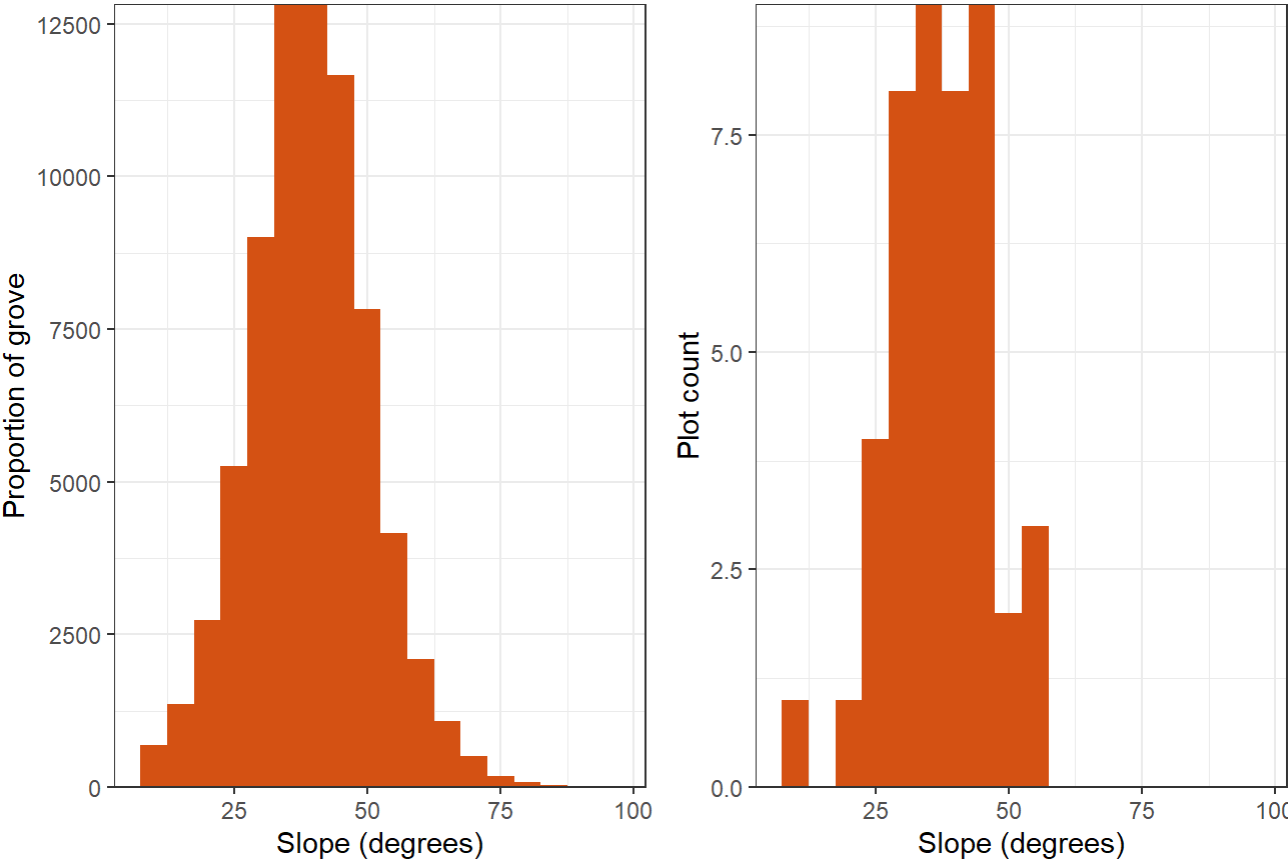
Plot count and type in Atwell grove



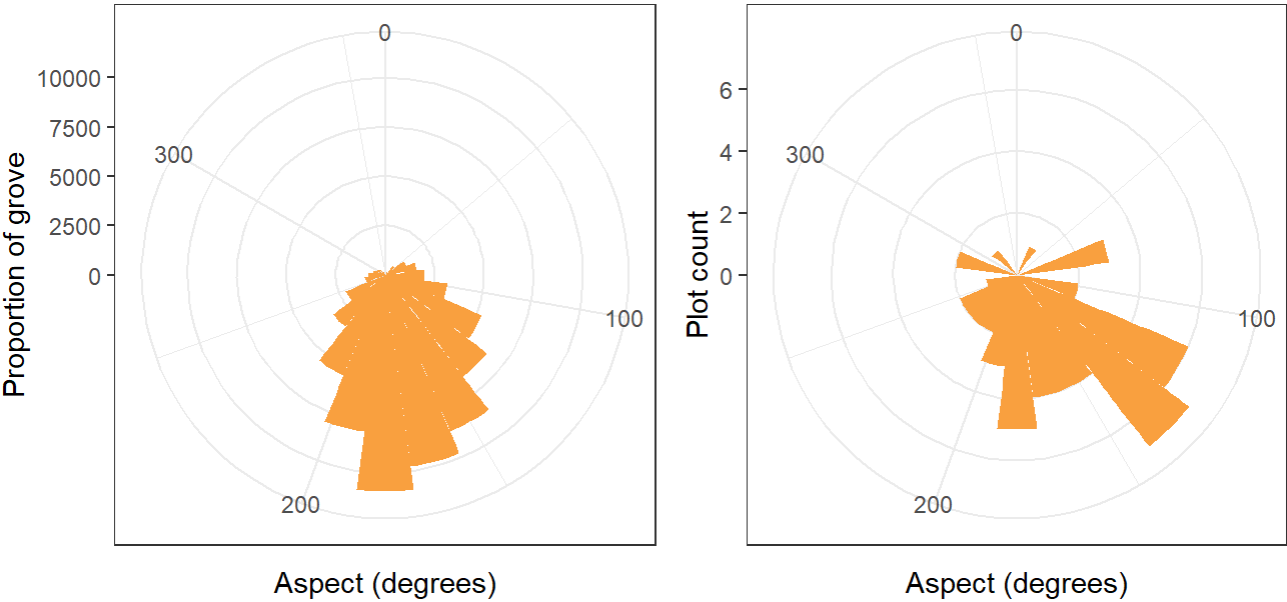
Fire severity distribution in grove and amongst plots in Atwell grove



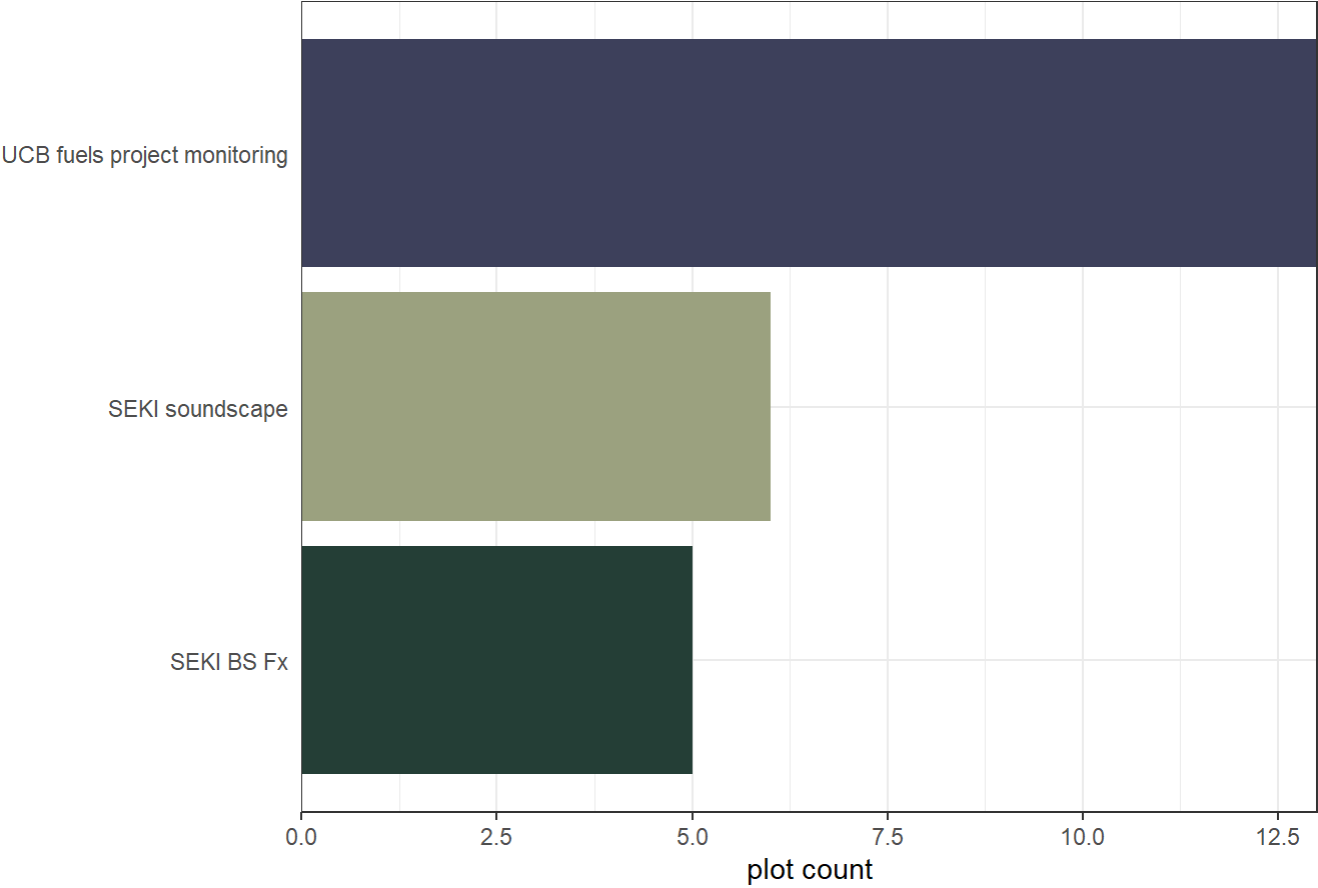
Slope distribution in grove and amongst plots in Atwell grove



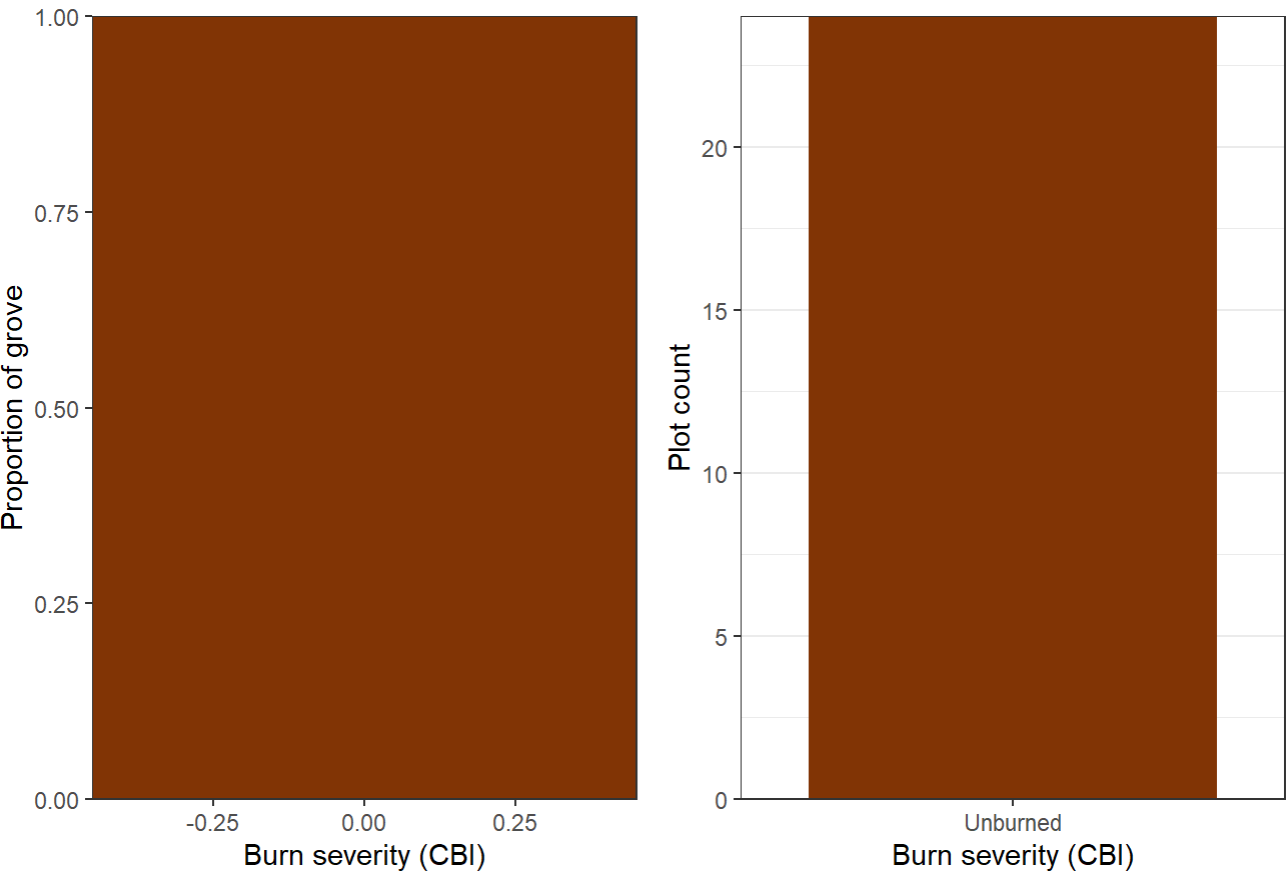
Aspect distribution in grove and amongst plots in Atwell grove



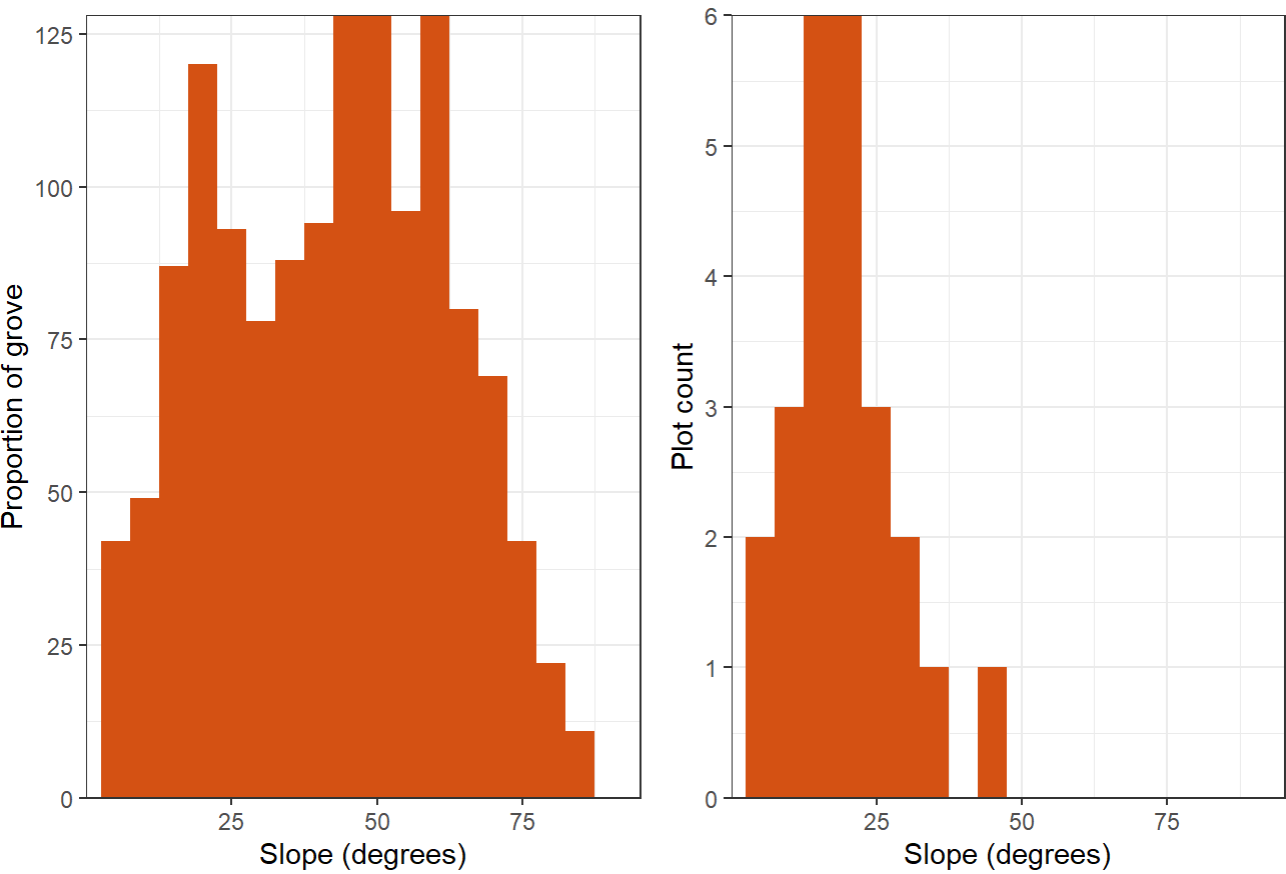
Plot count and type in Big Stump grove



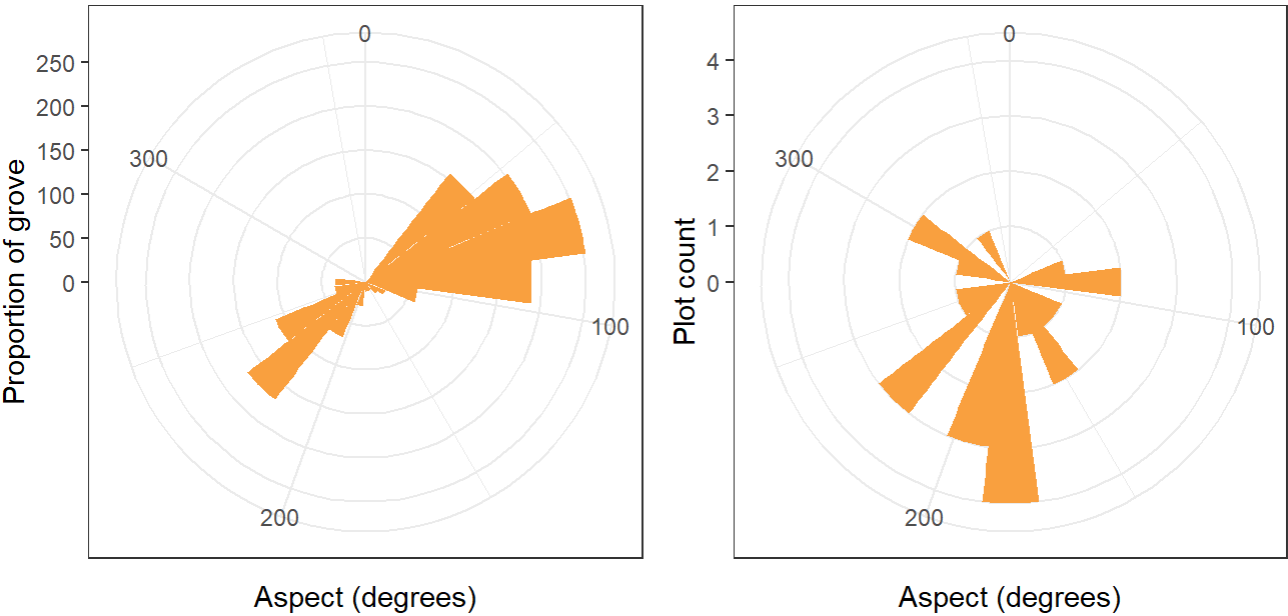
Fire severity distribution in grove and amongst plots in Big Stump grove



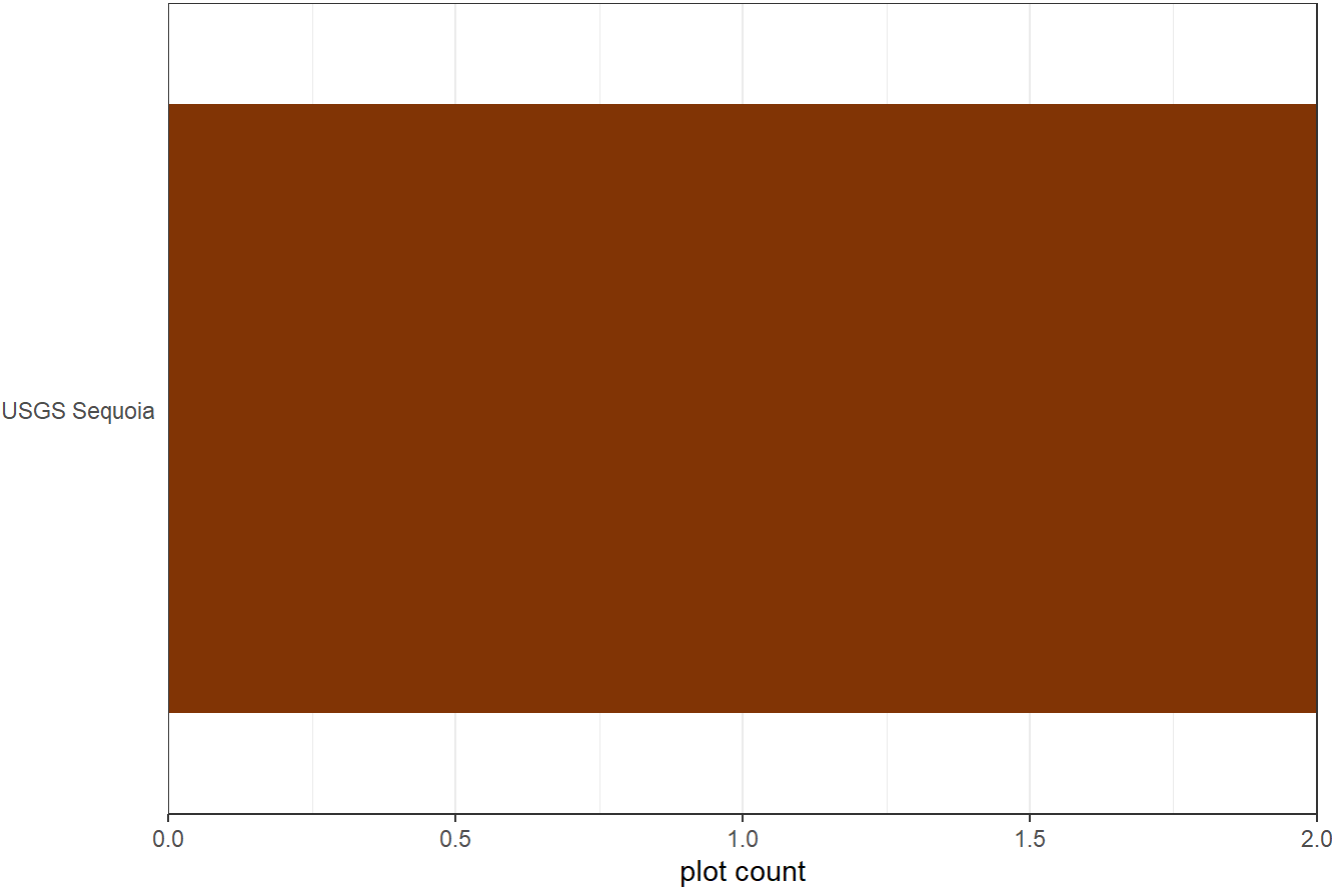
Slope distribution in grove and amongst plots in Big Stump grove



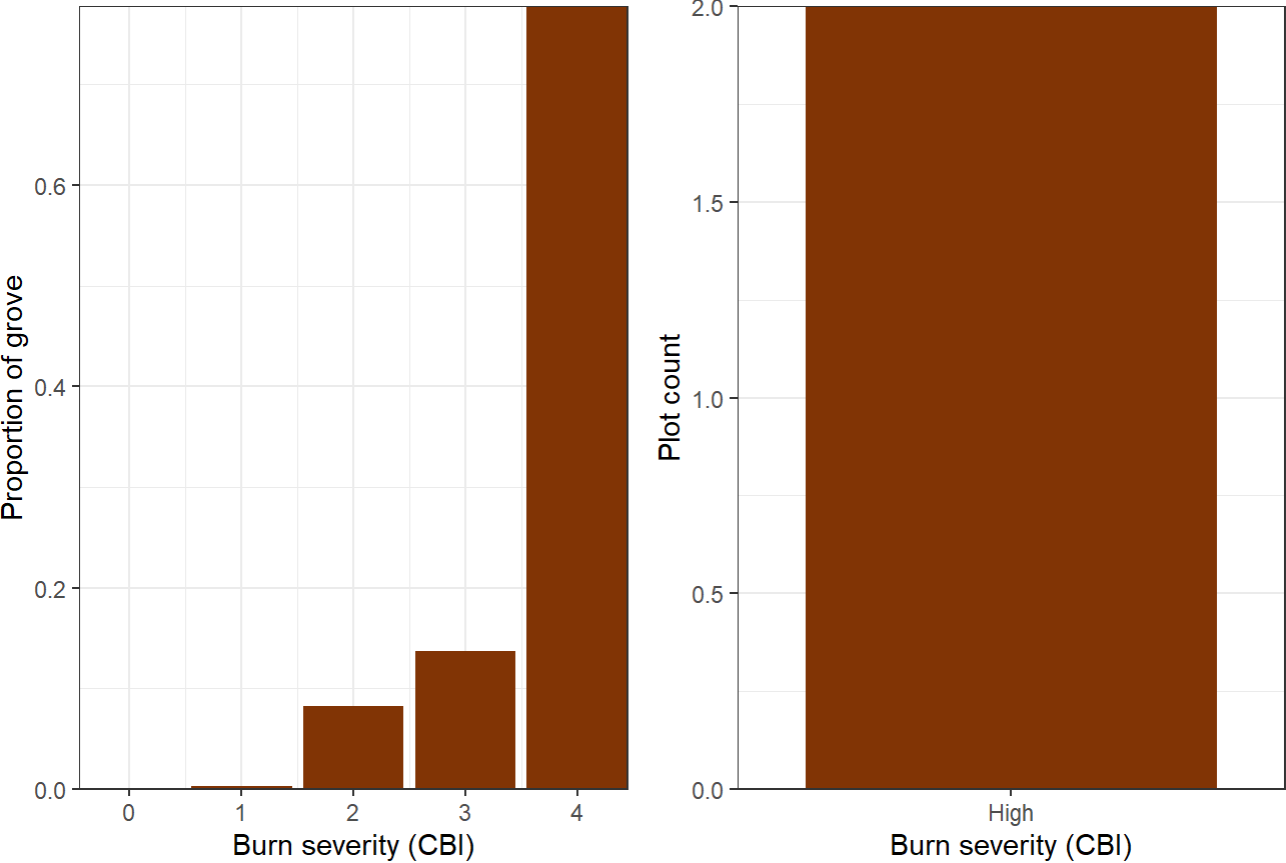
Aspect distribution in grove and amongst plots in Big Stump grove



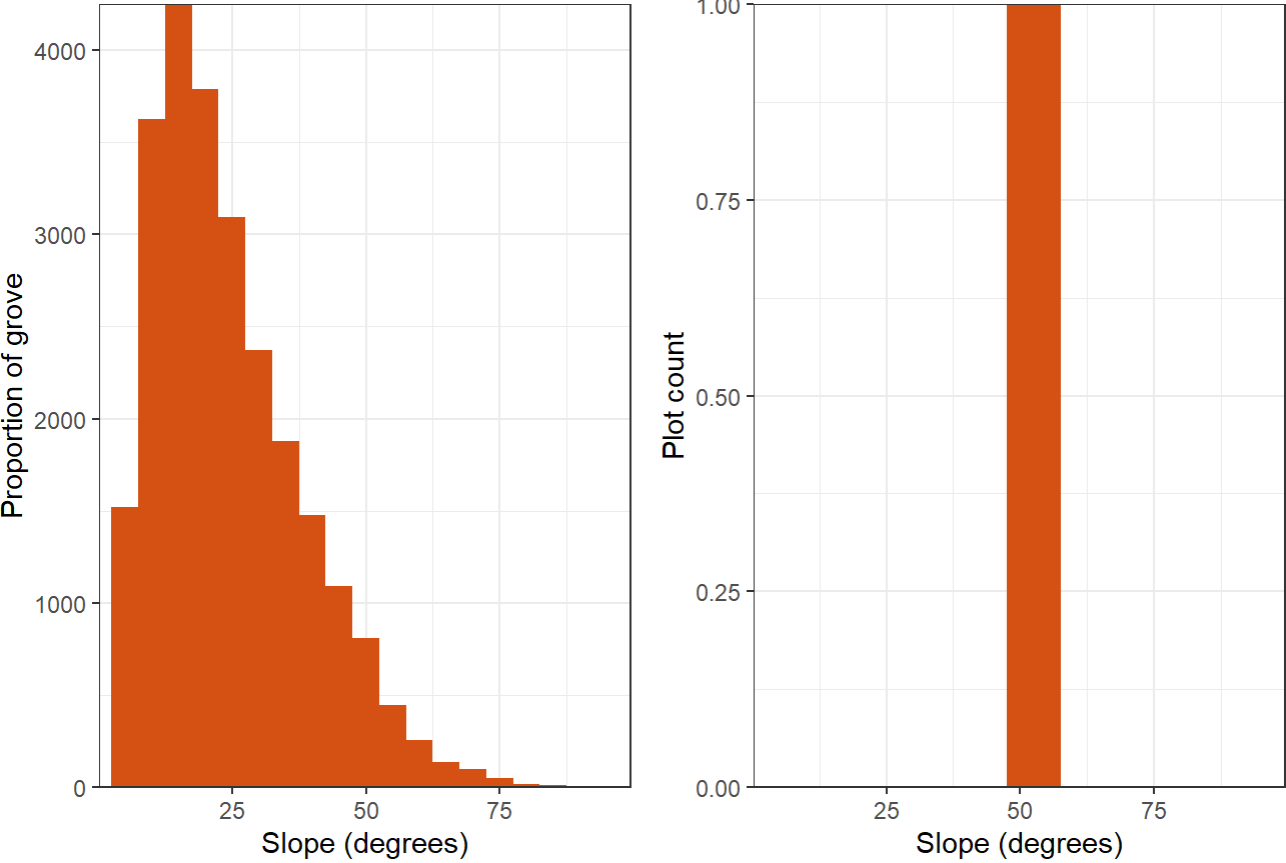
Plot count and type in Board Camp grove



Fire severity distribution in grove and amongst plots in Board Camp grove

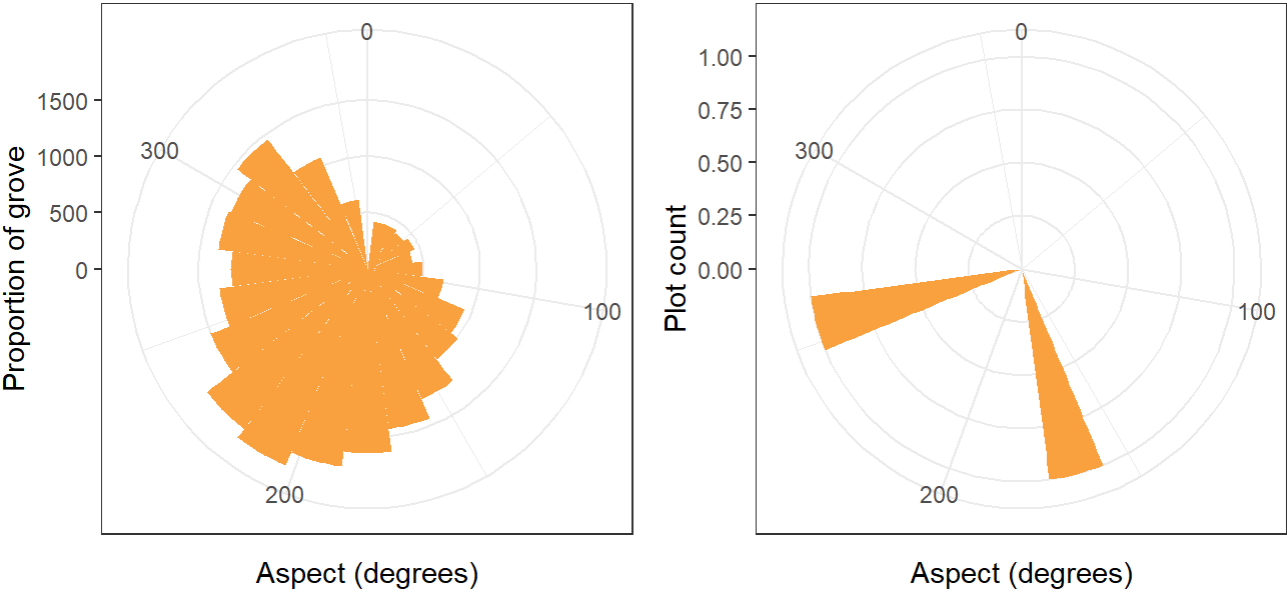


Slope distribution in grove and amongst plots in Board Camp grove

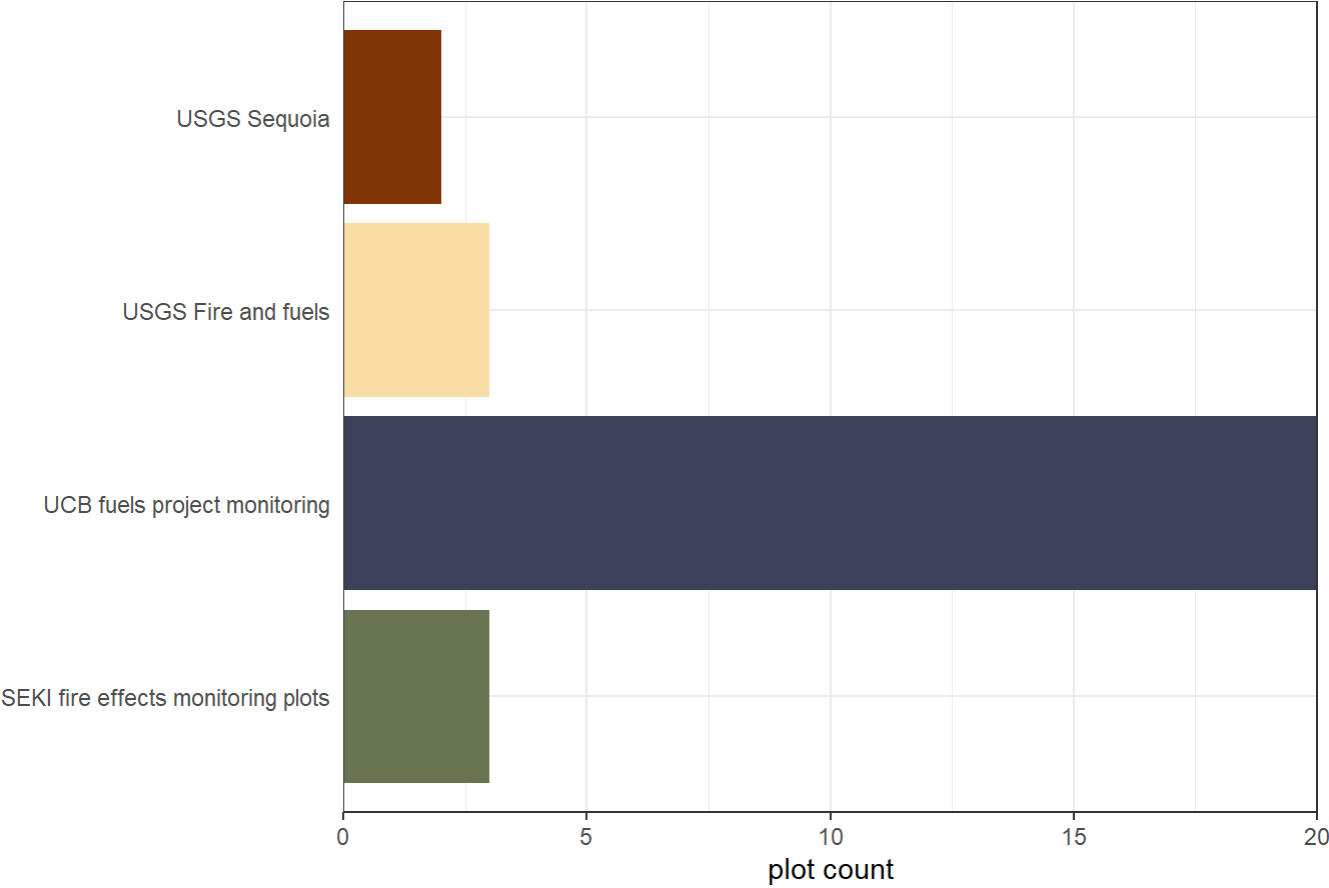




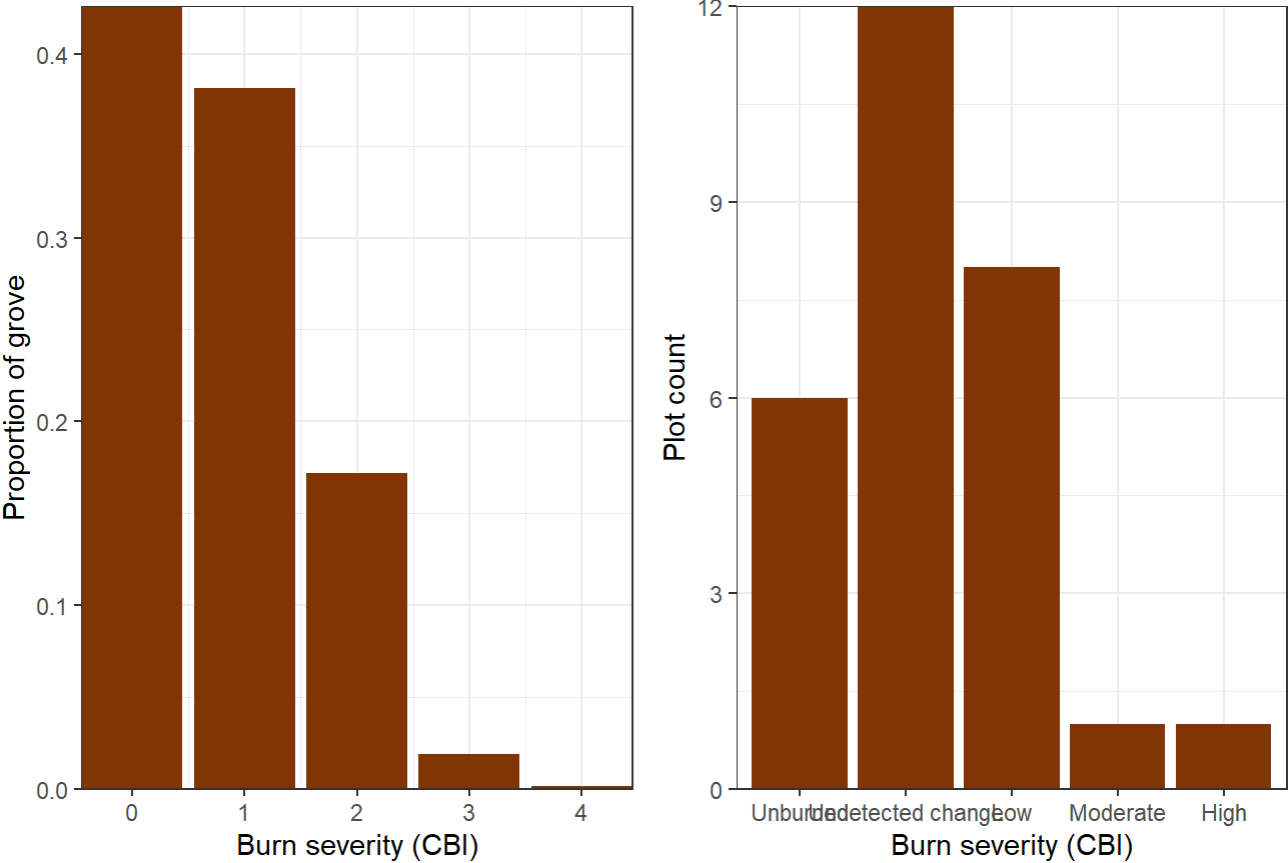
Aspect distribution in grove and amongst plots in Board Camp grove



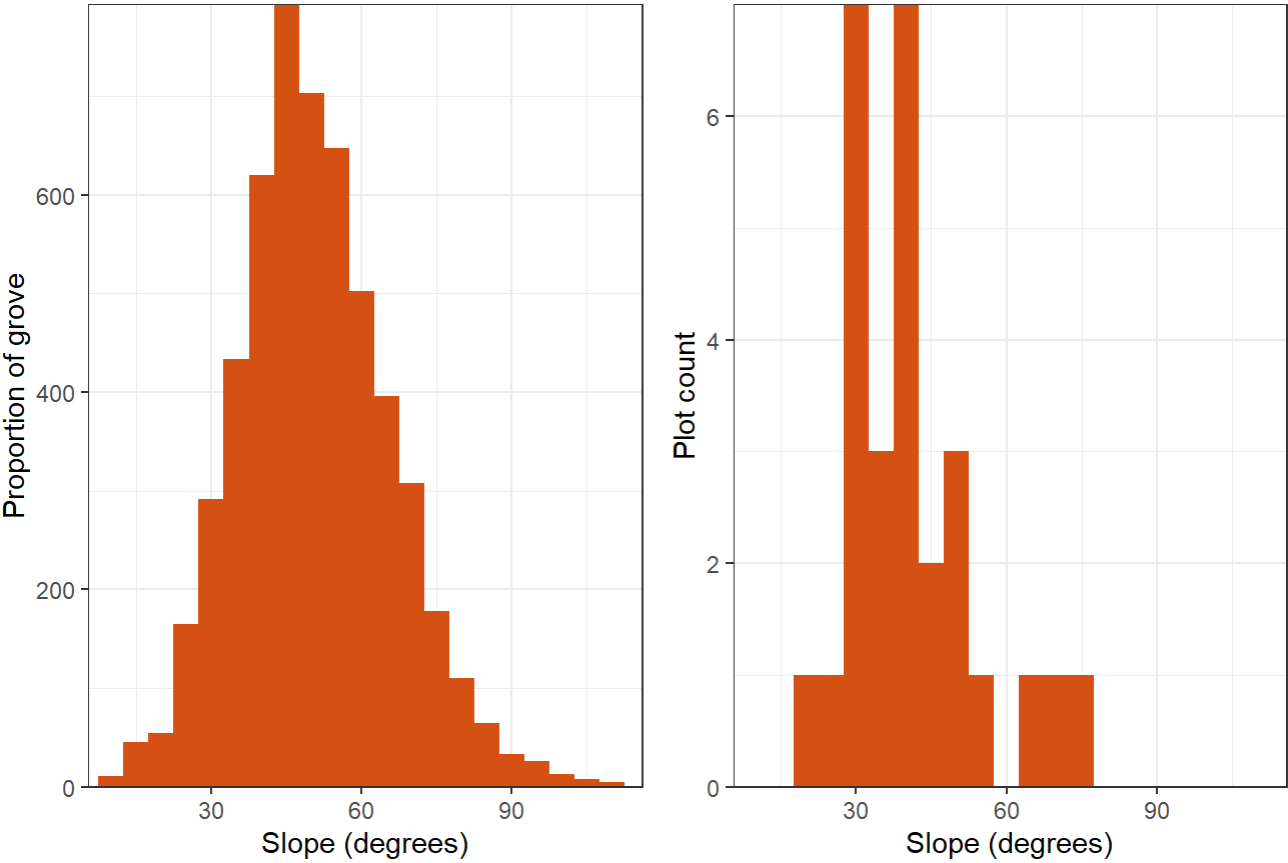
Plot count and type in East Fork grove



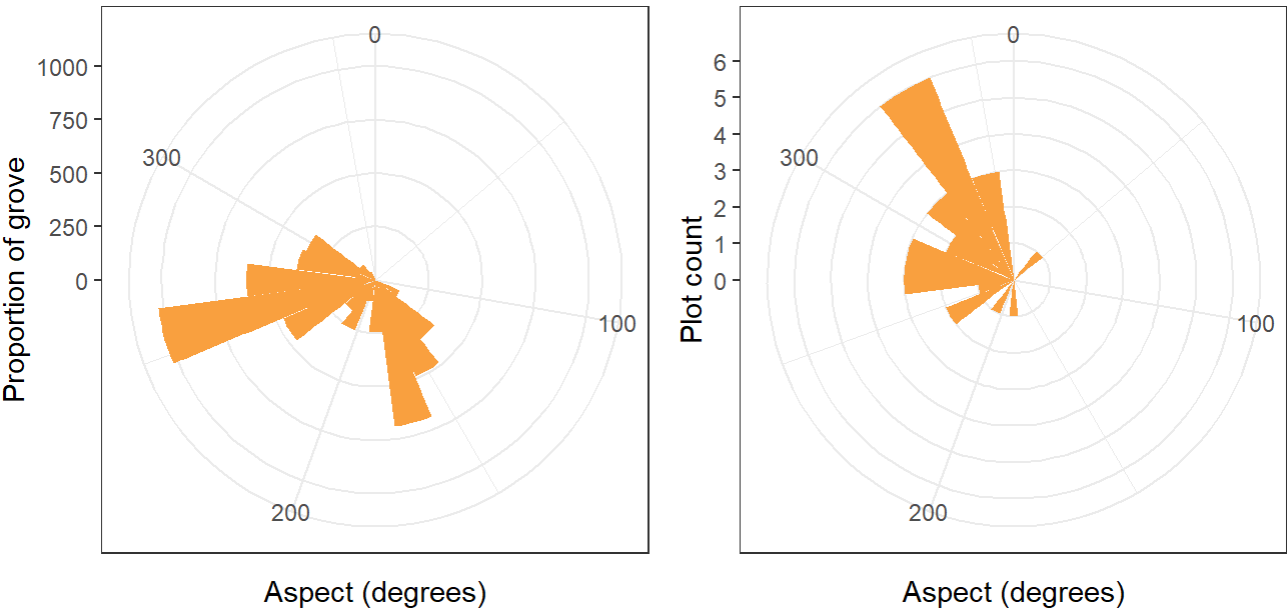
Fire severity distribution in grove and amongst plots in East Fork grove



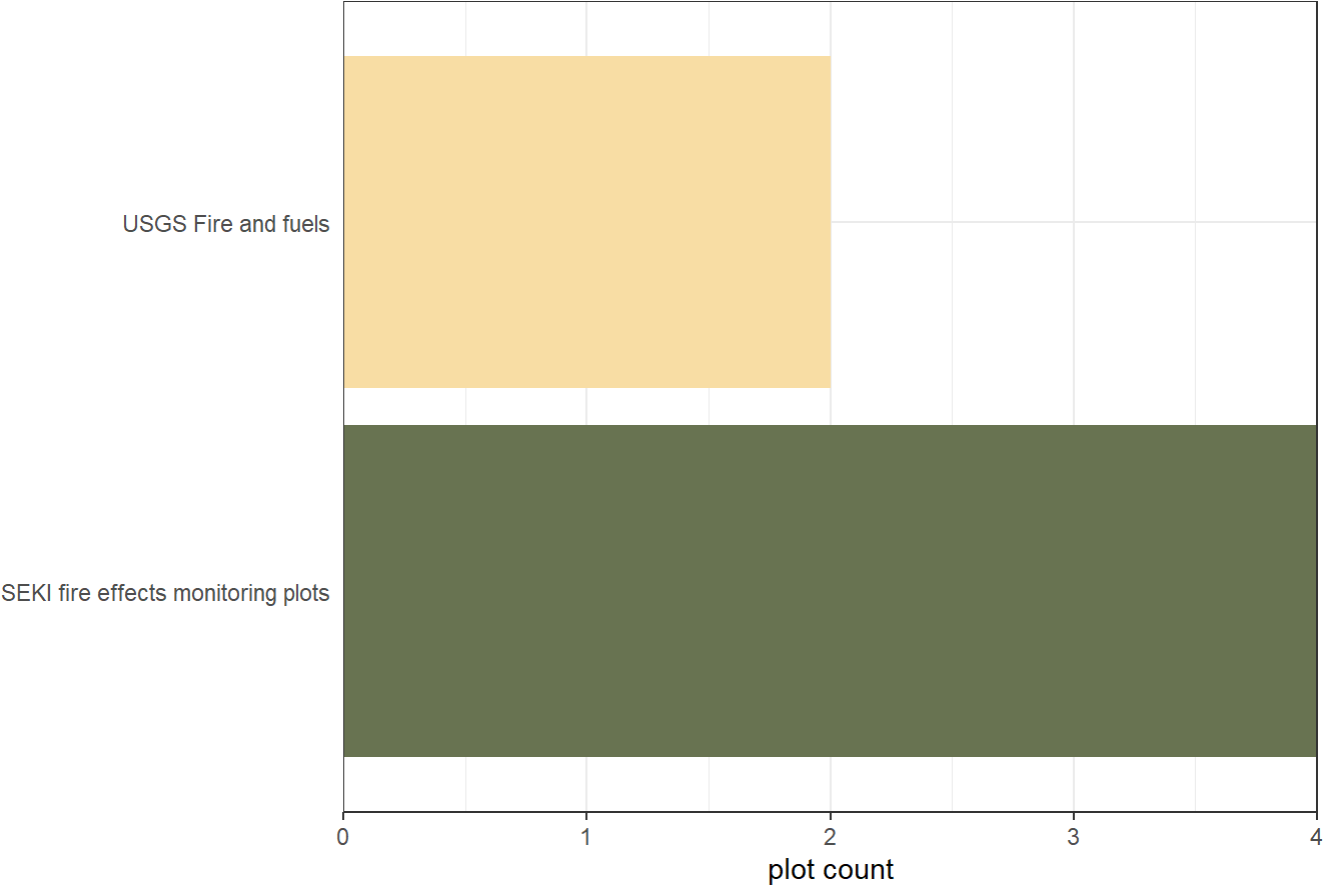
Slope distribution in grove and amongst plots in East Fork grove



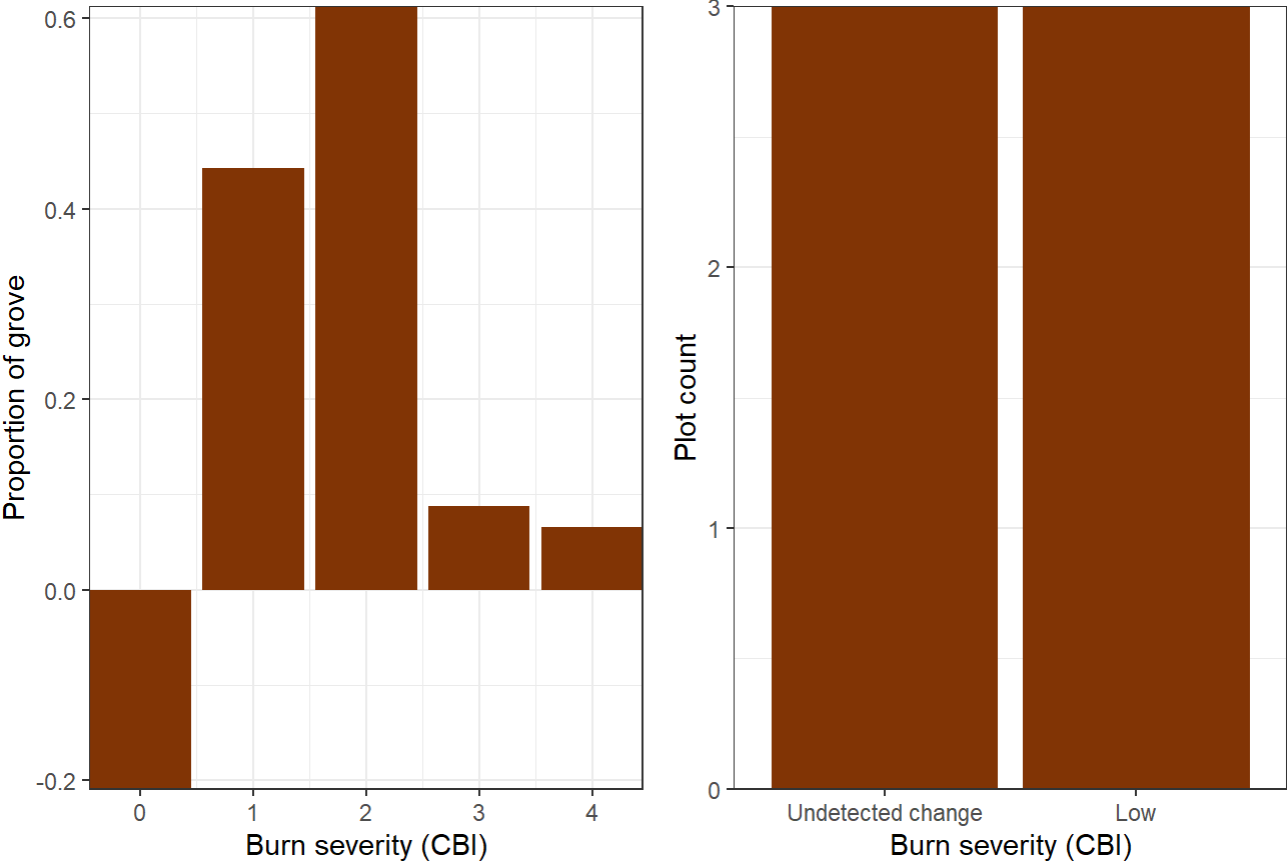
Aspect distribution in grove and amongst plots in East Fork grove



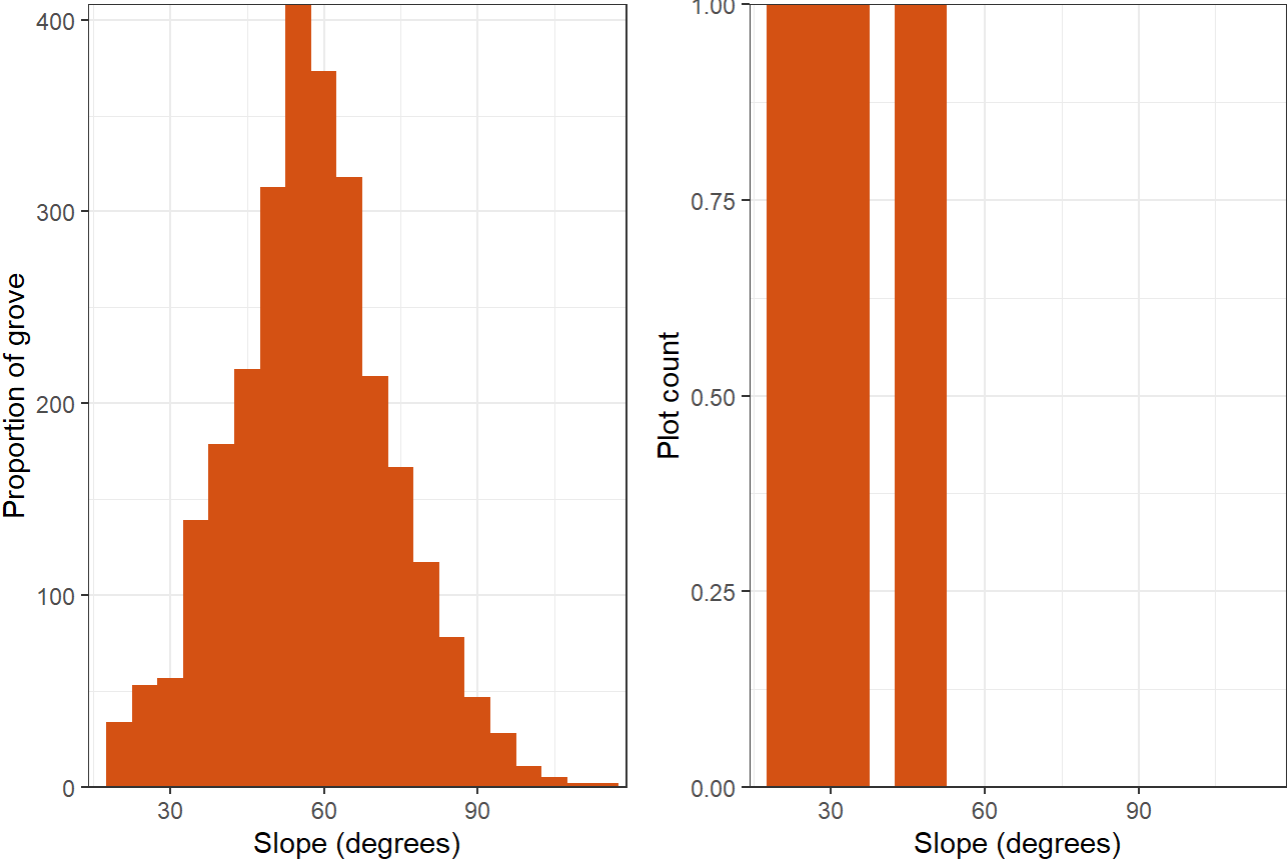
Plot count and type in Garfield grove



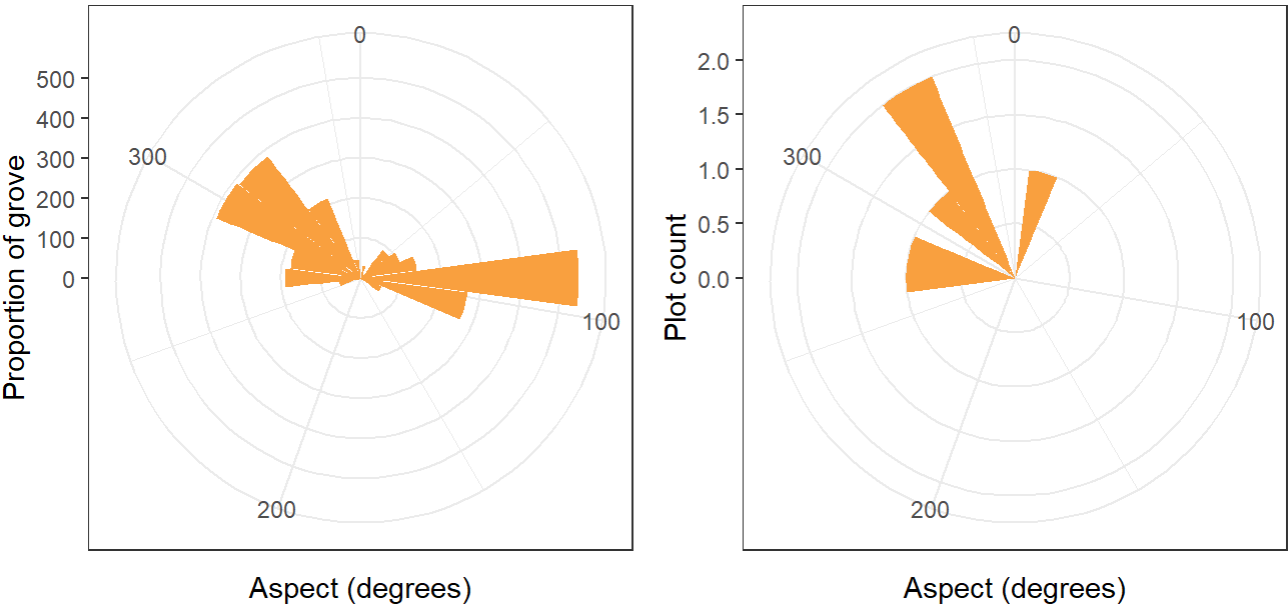
Fire severity distribution in grove and amongst plots in Garfield grove



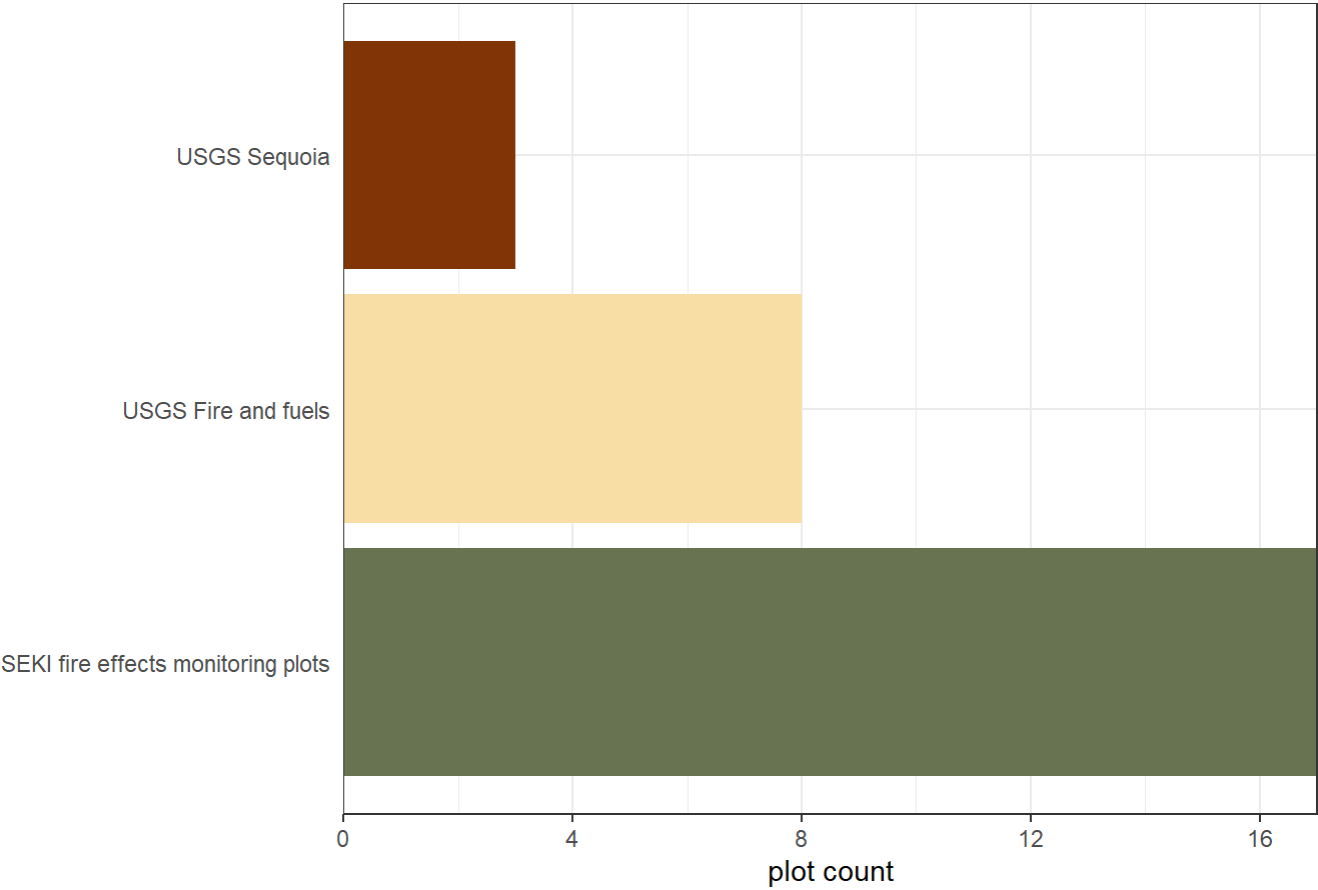
Slope distribution in grove and amongst plots in Garfield grove



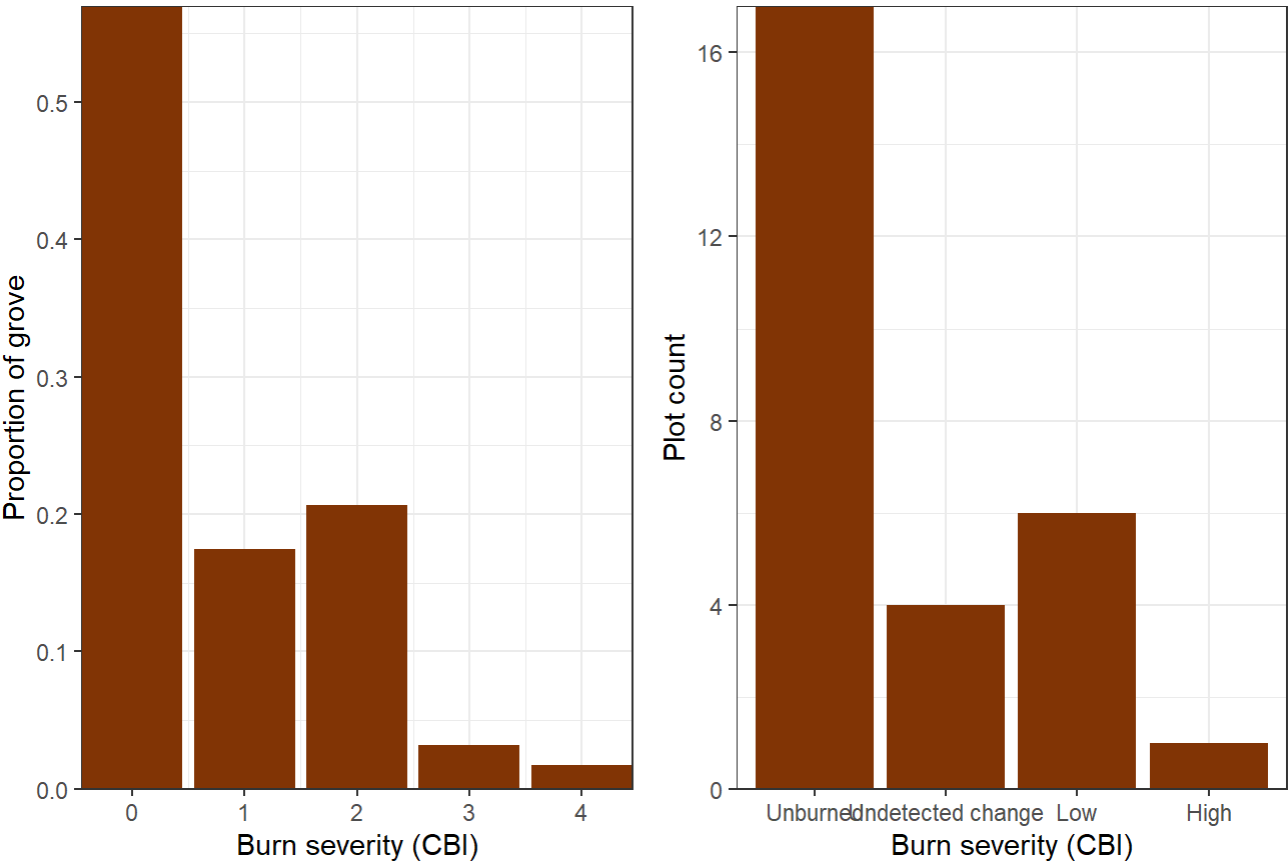
Aspect distribution in grove and amongst plots in Garfield grove



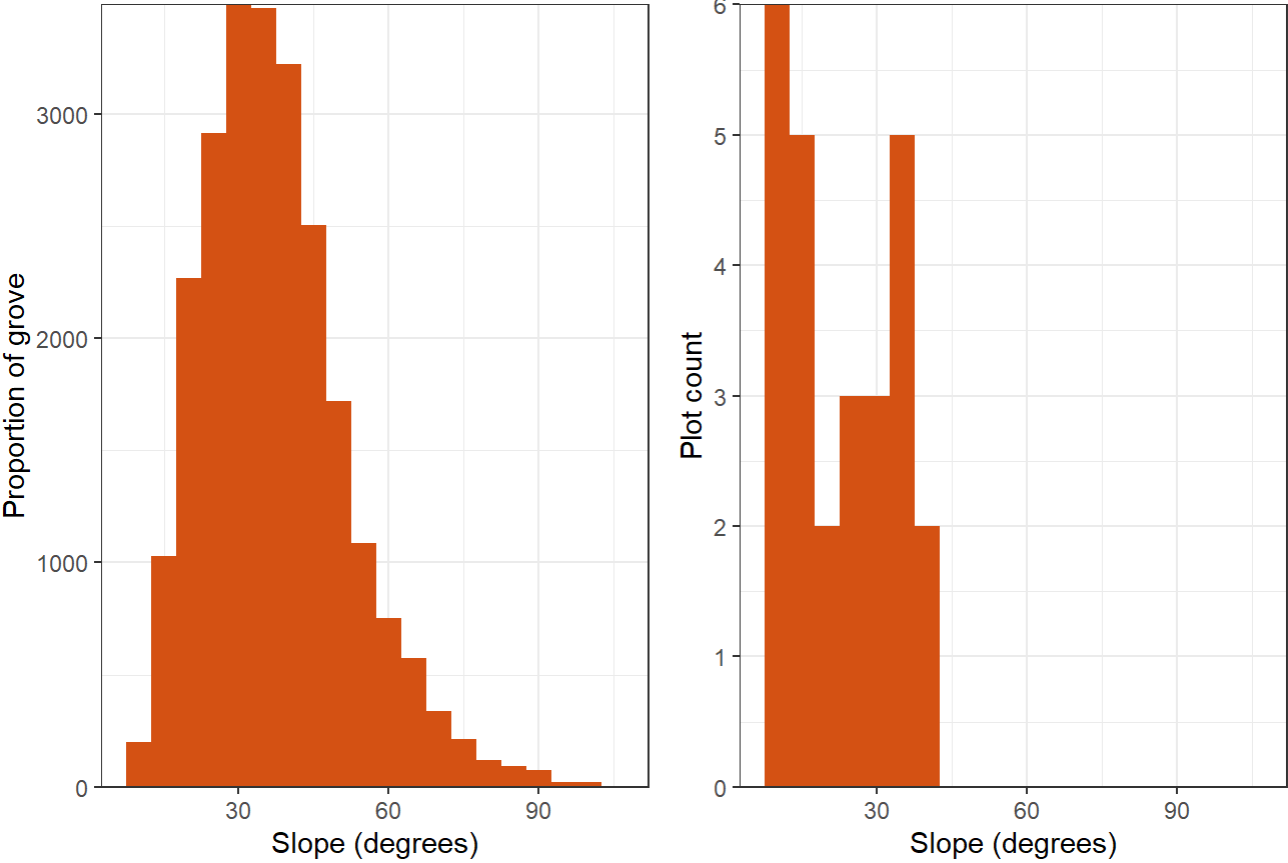
Plot count and type in Giant Forest grove



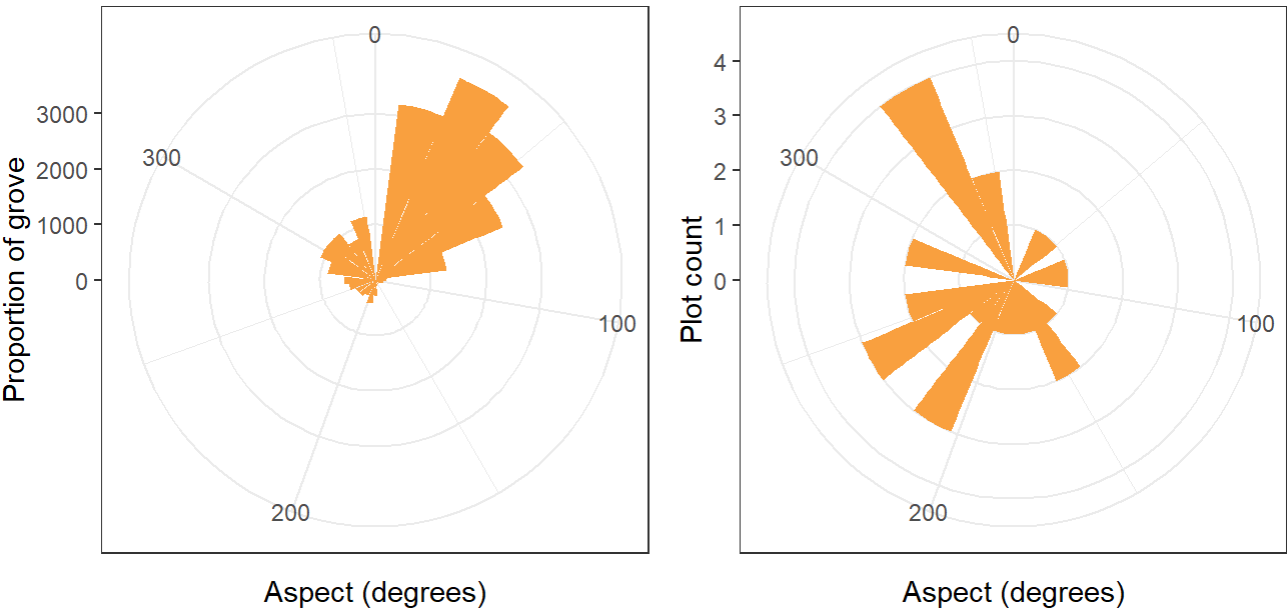
Fire severity distribution in grove and amongst plots in Giant Forest grove



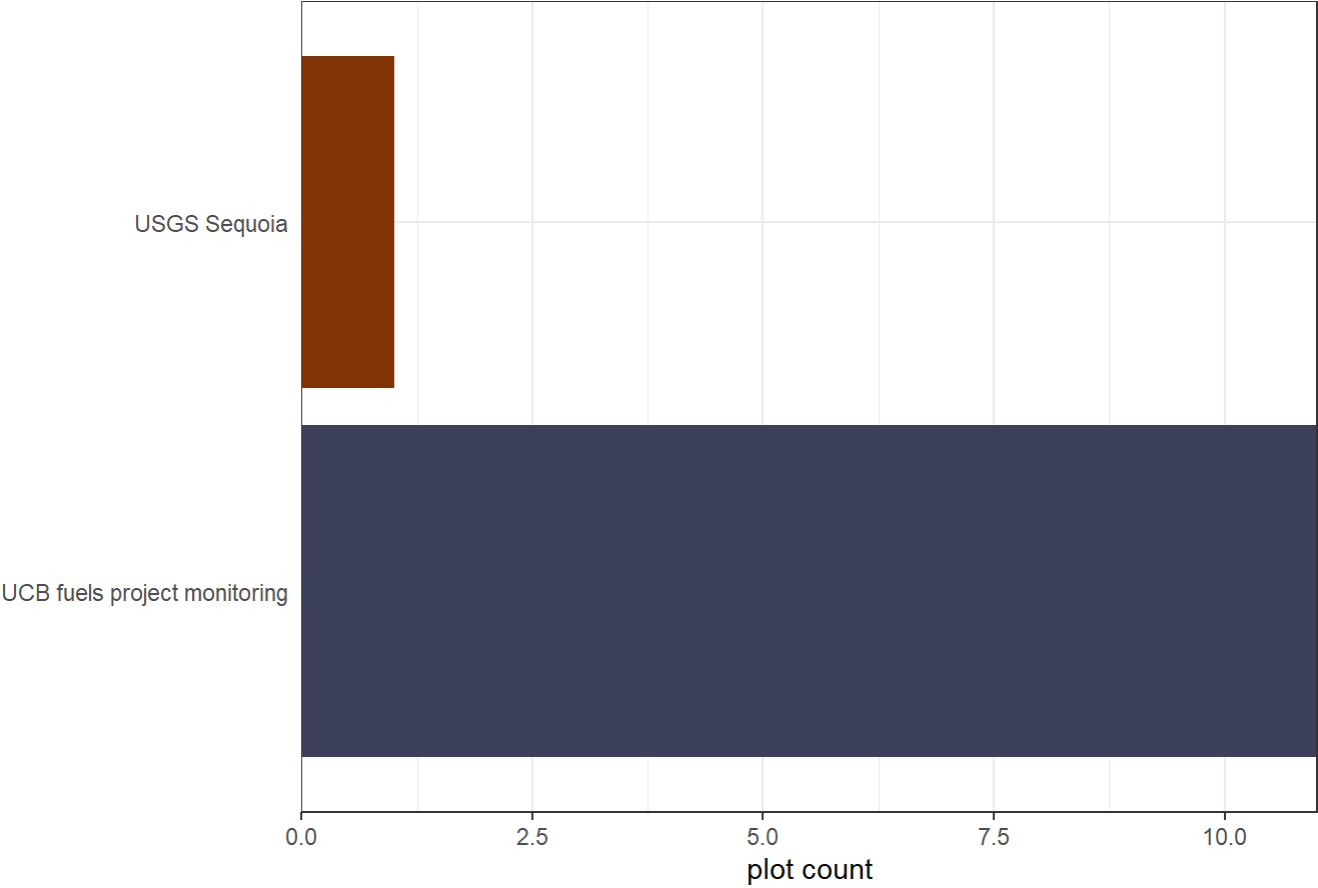
Slope distribution in grove and amongst plots in Giant Forest grove



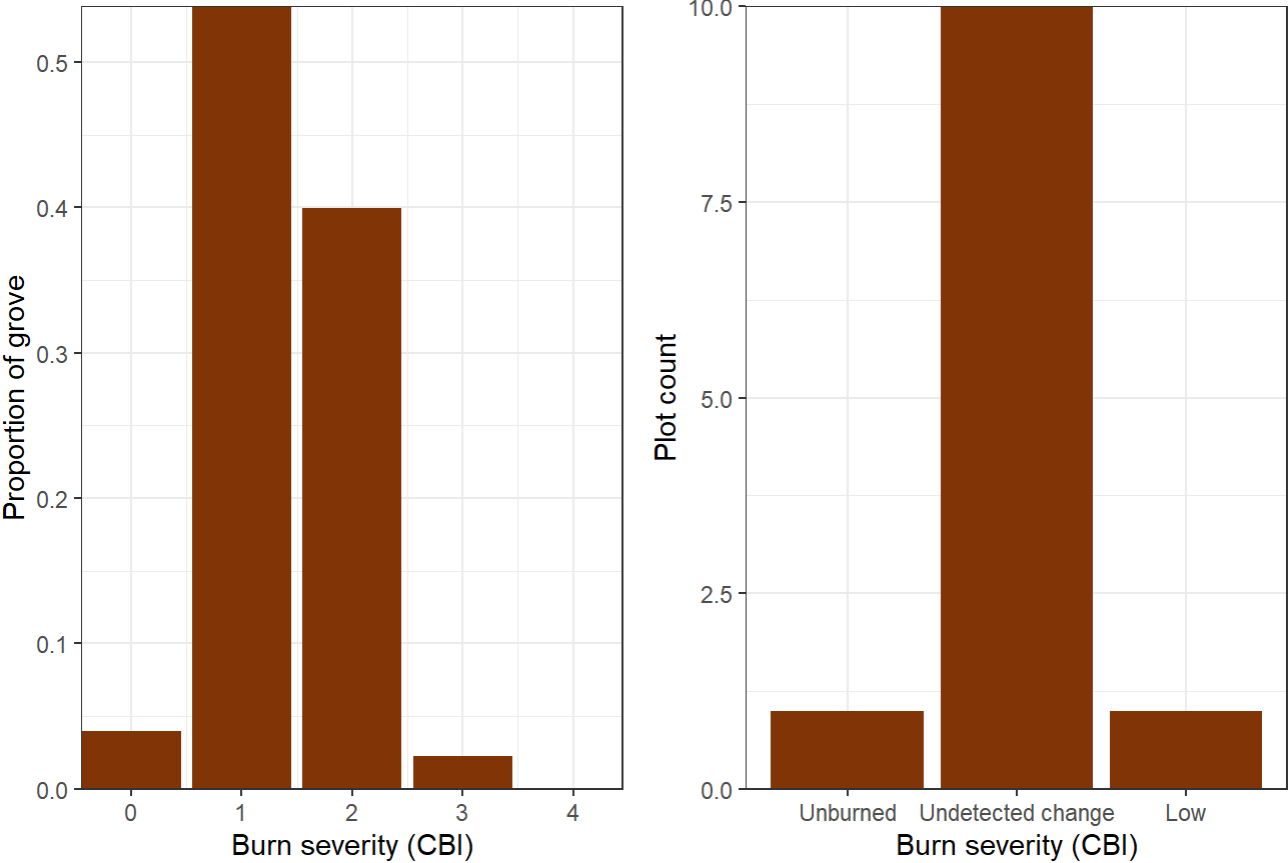
Aspect distribution in grove and amongst plots in Giant Forest grove



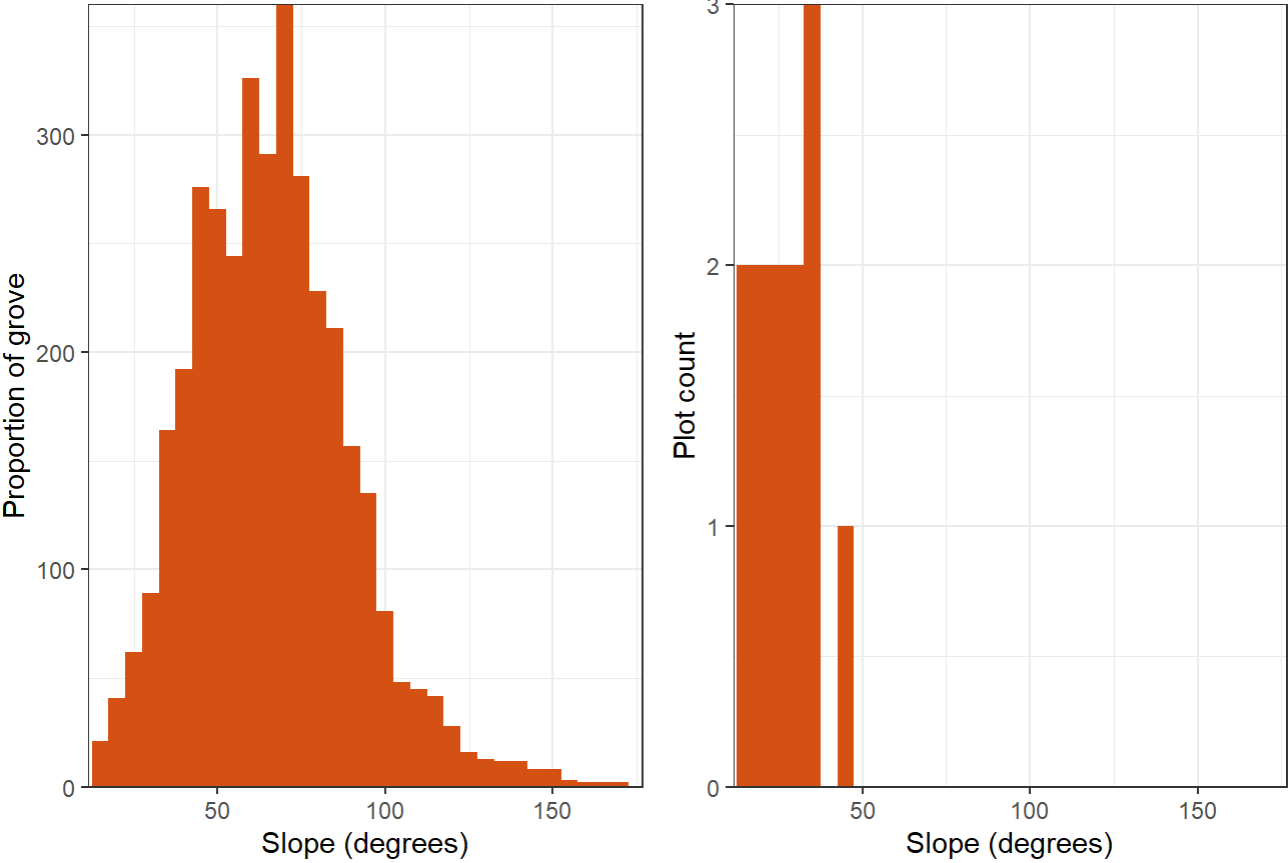
Plot count and type in Lost grove



Fire severity distribution in grove and amongst plots in Lost grove

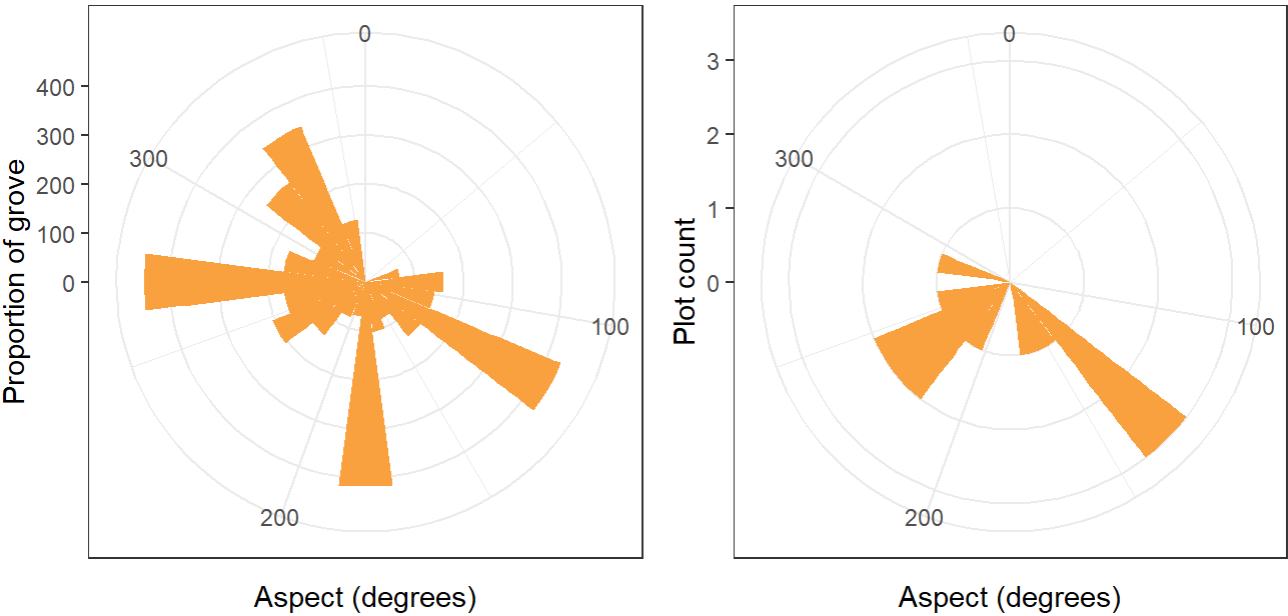


Slope distribution in grove and amongst plots in Lost grove

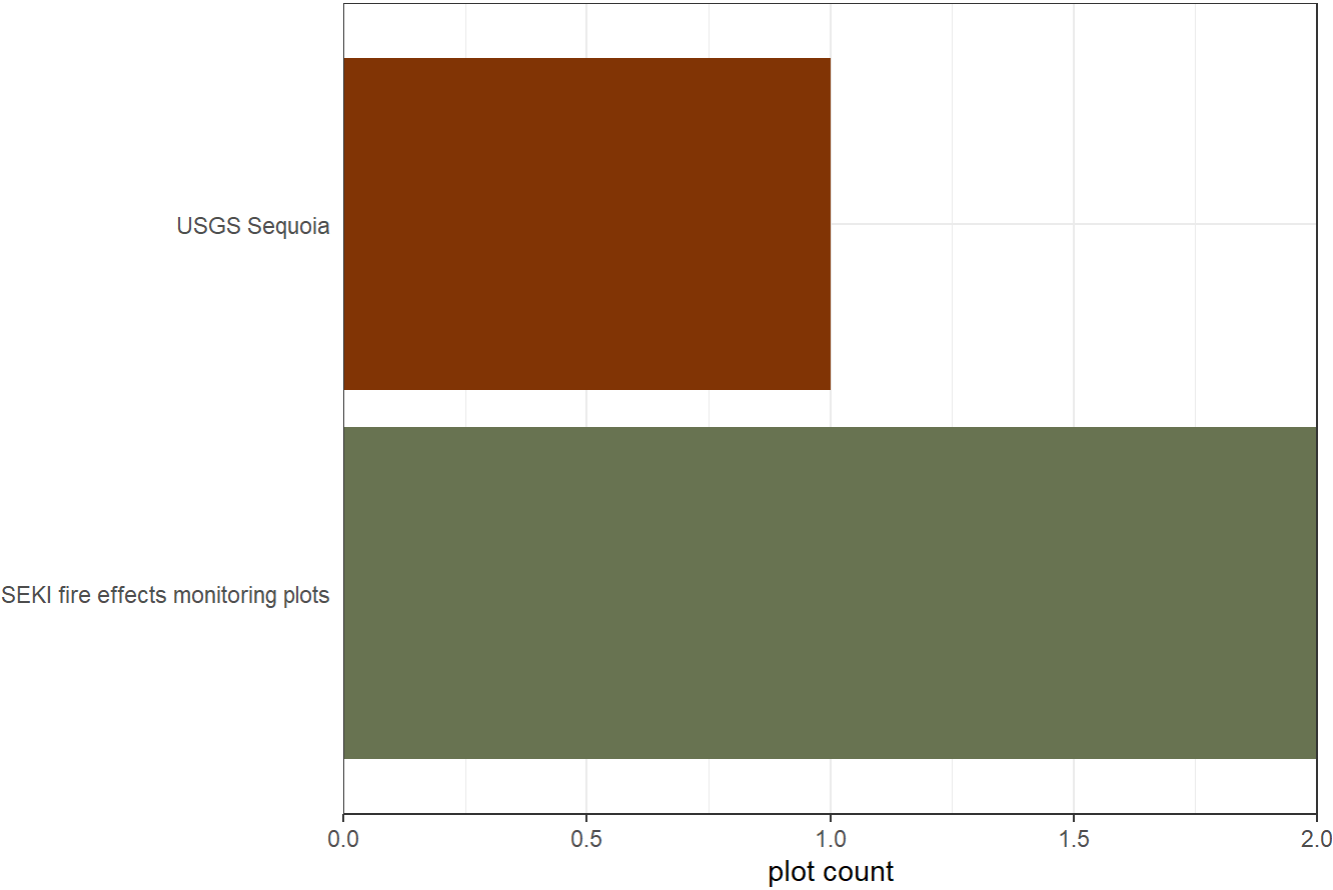




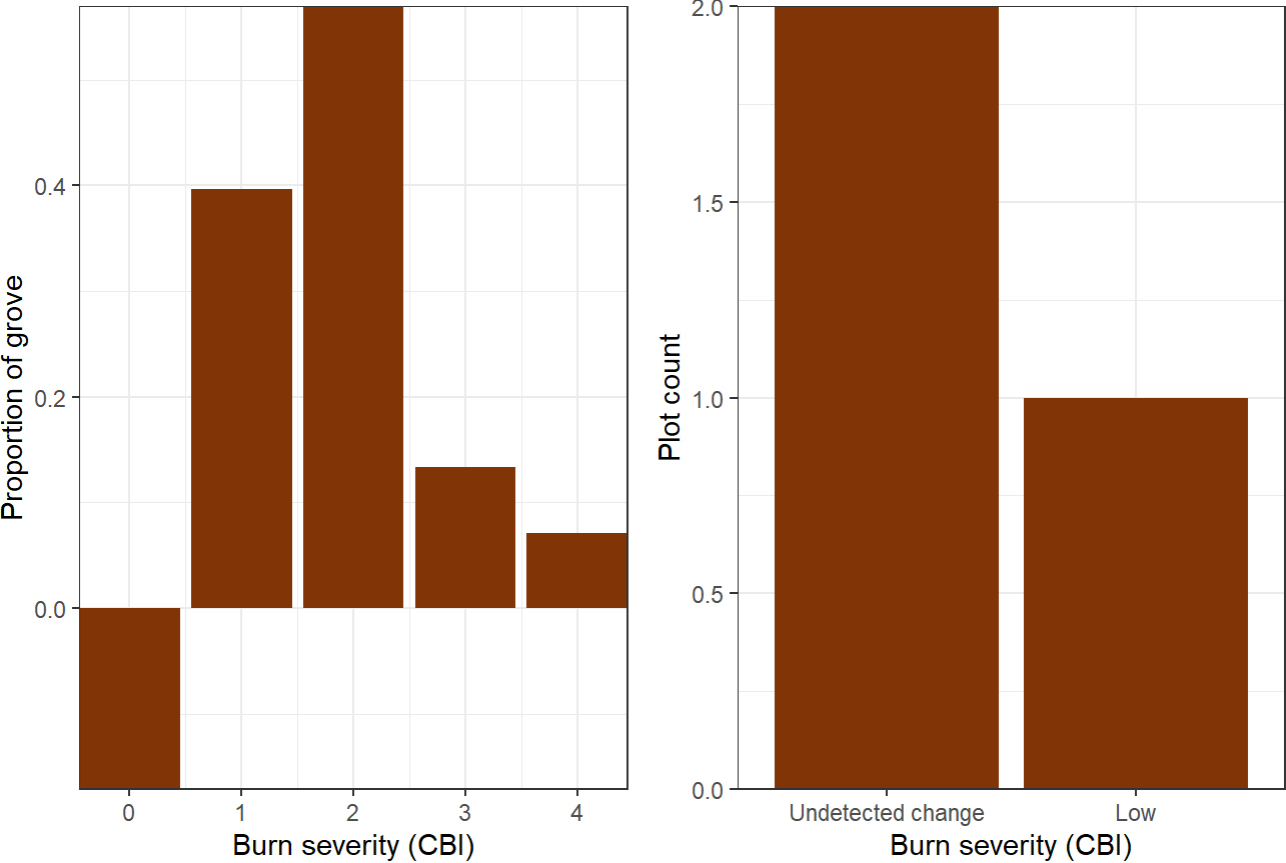
Aspect distribution in grove and amongst plots in Lost grove



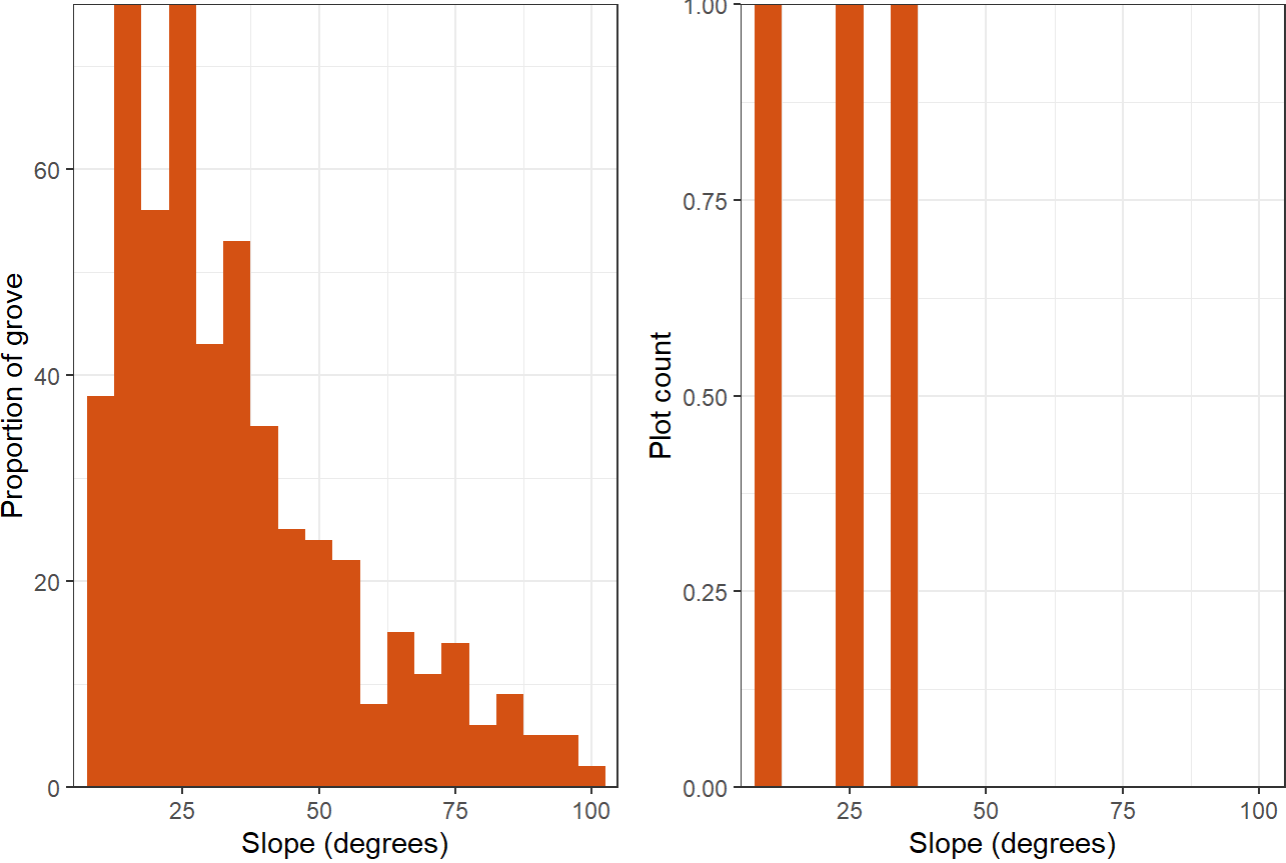
Plot count and type in Muir grove



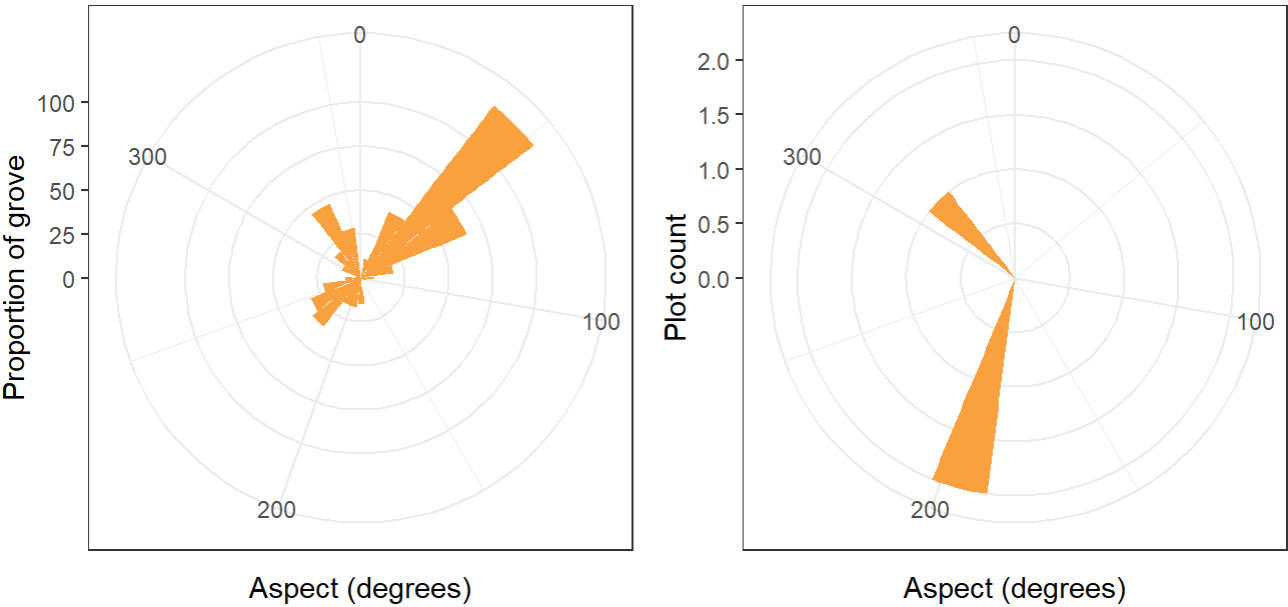
Fire severity distribution in grove and amongst plots in Muir grove



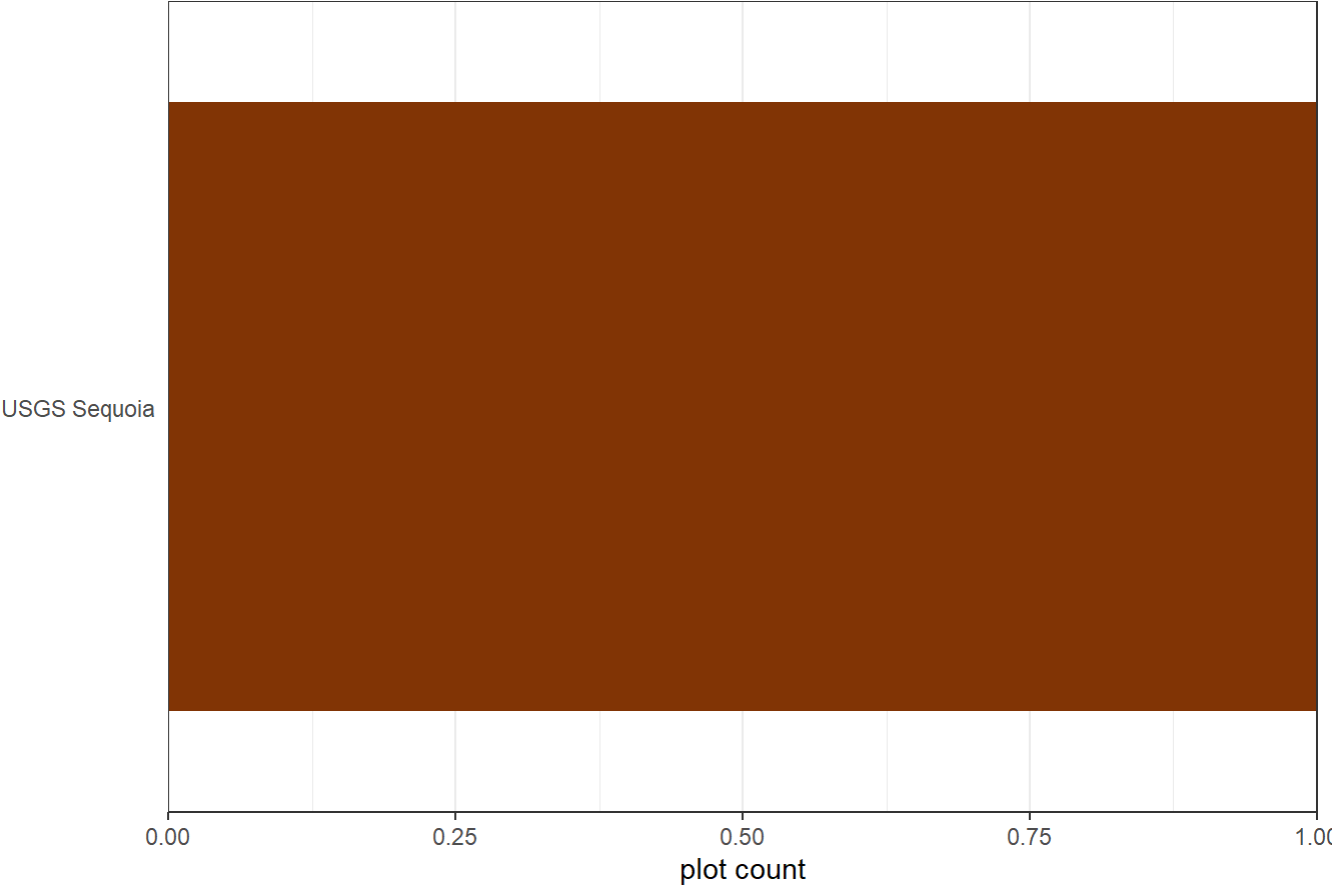
Slope distribution in grove and amongst plots in Muir grove



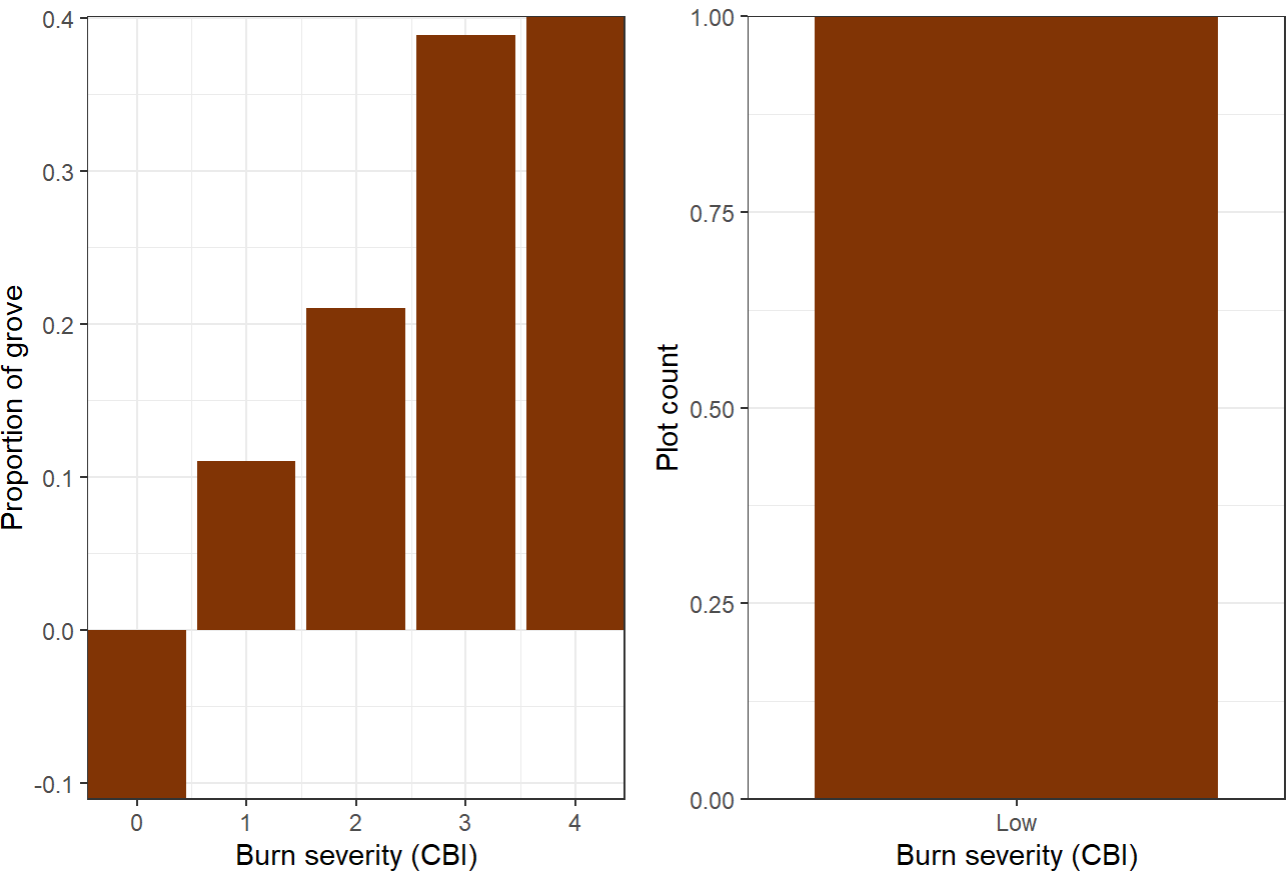
Aspect distribution in grove and amongst plots in Muir grove



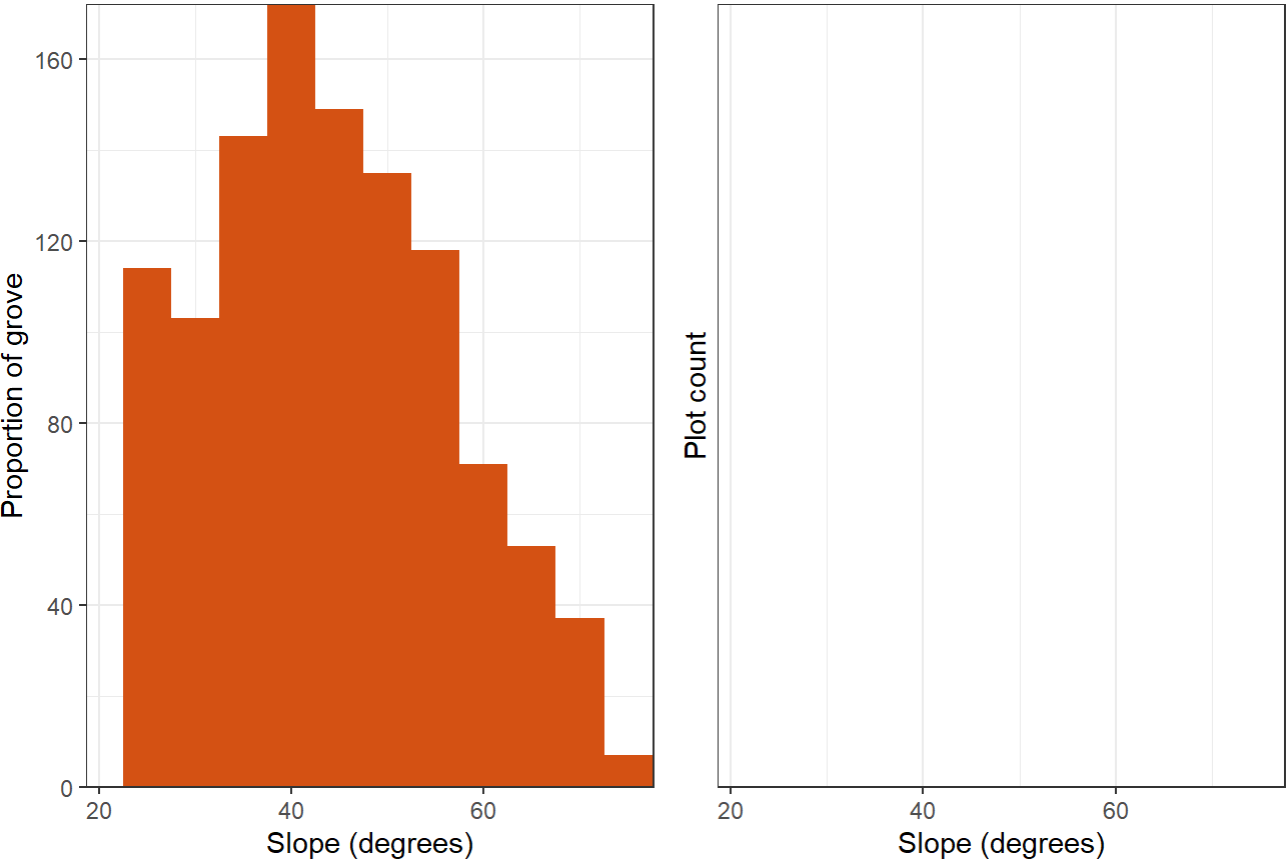
Plot count and type in New Oriole Lake grove



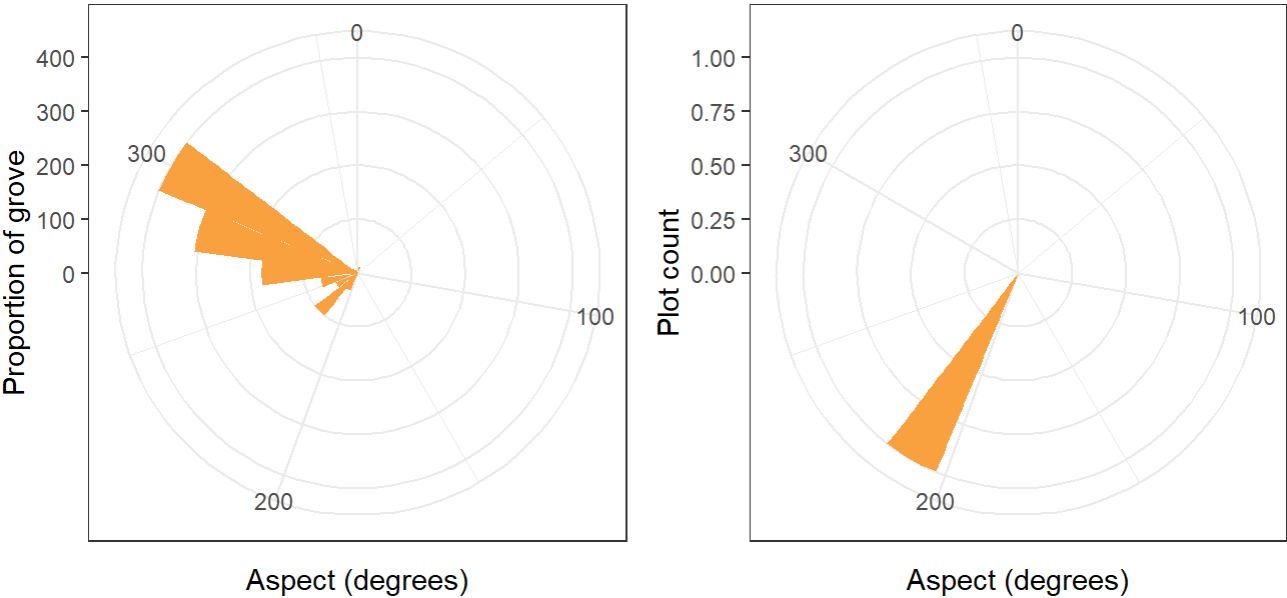
Fire severity distribution in grove and amongst plots in New Oriole Lake grove



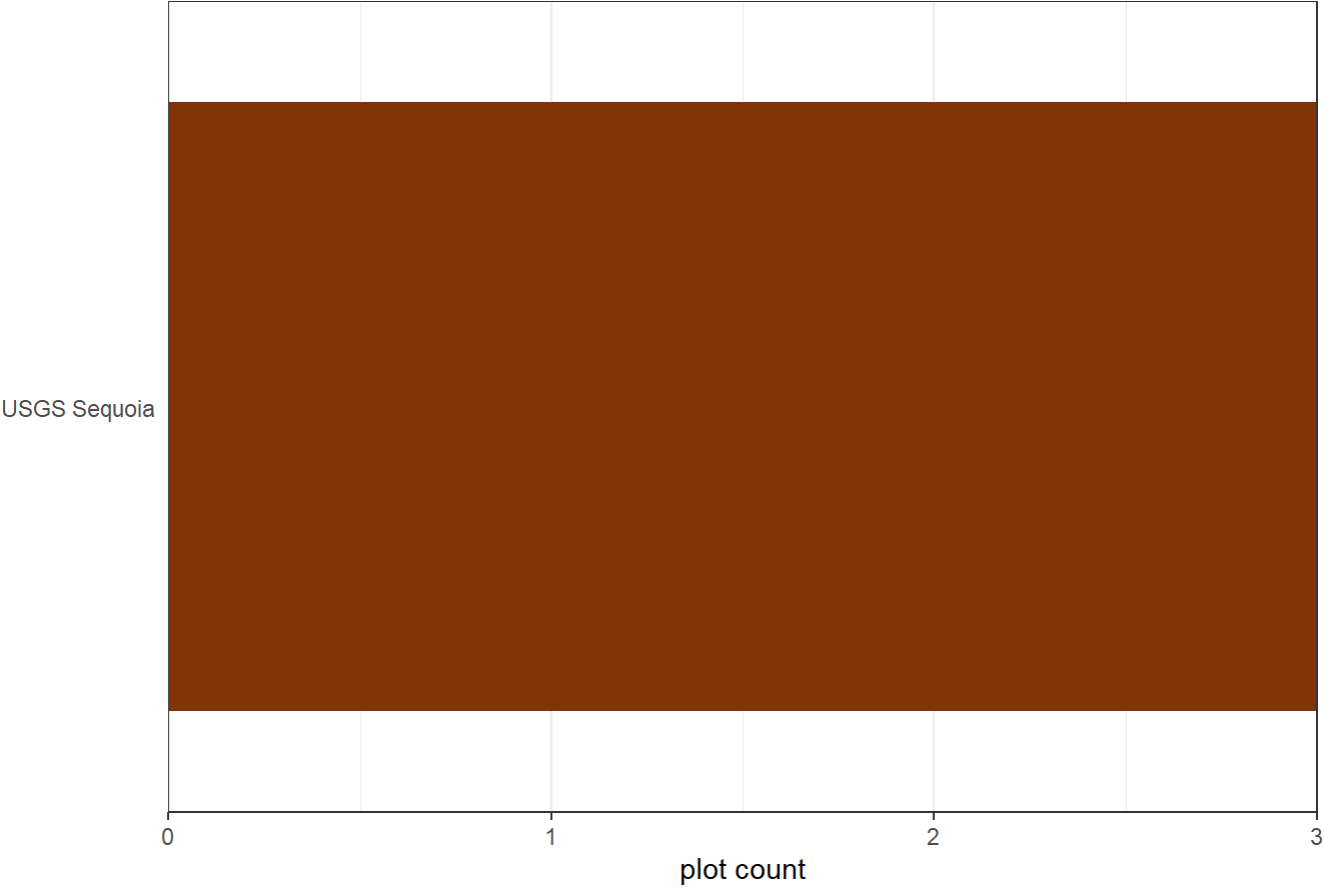
Slope distribution in grove and amongst plots in New Oriole Lake grove



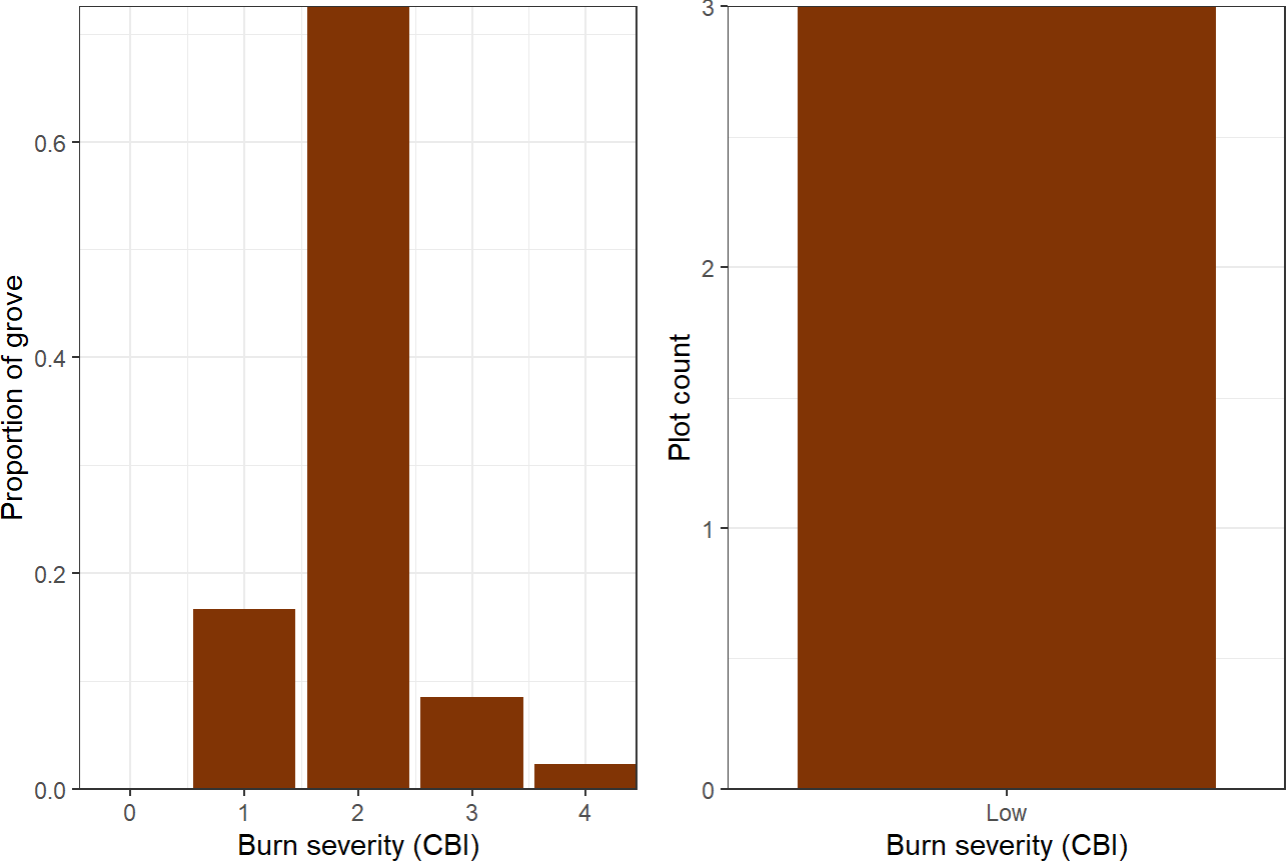
Aspect distribution in grove and amongst plots in New Oriole Lake grove



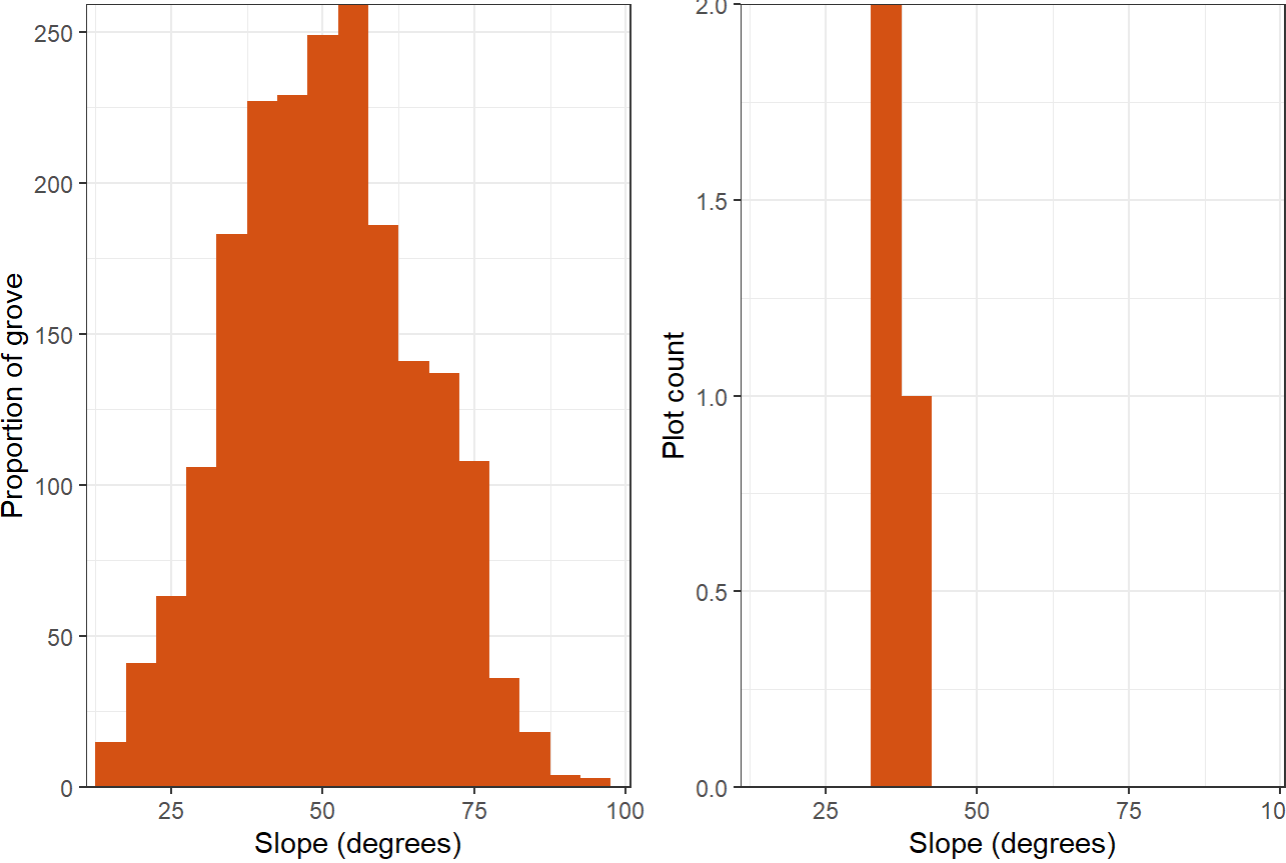
Plot count and type in Oriole Lake grove



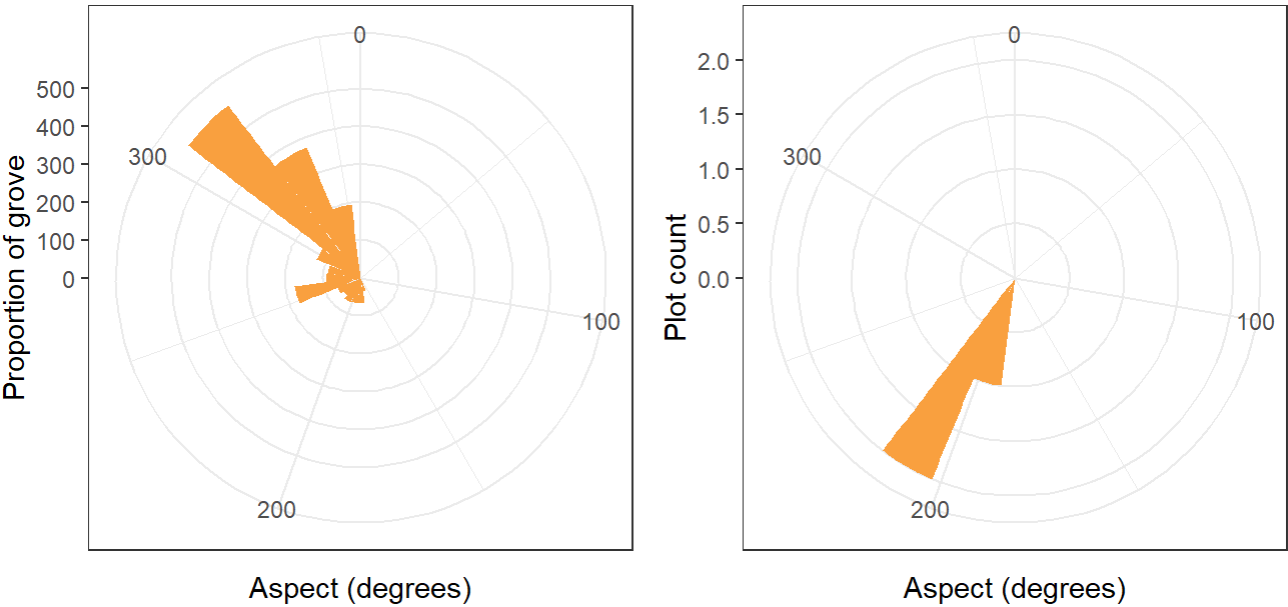
Fire severity distribution in grove and amongst plots in Oriole Lake grove



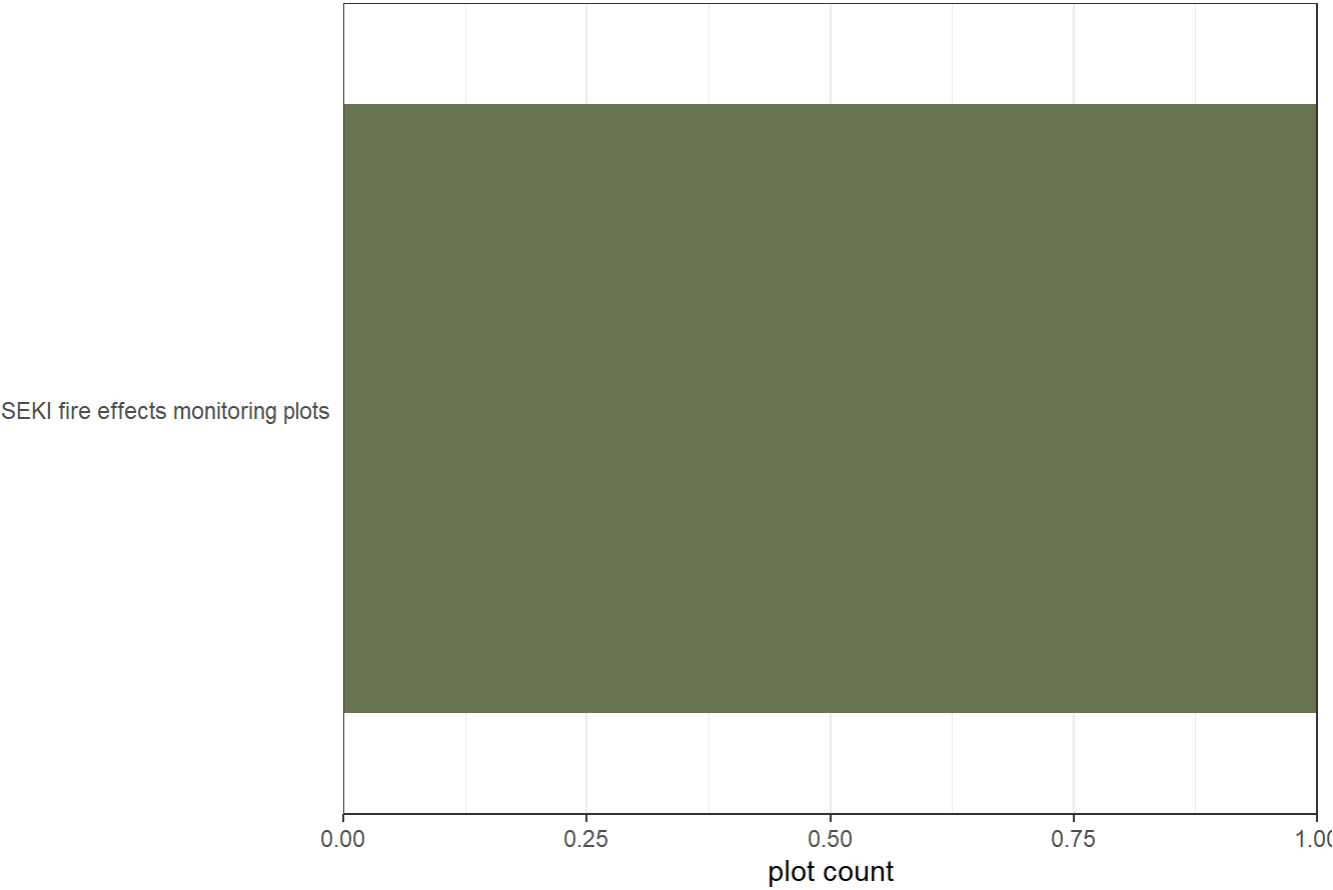
Slope distribution in grove and amongst plots in Oriole Lake grove



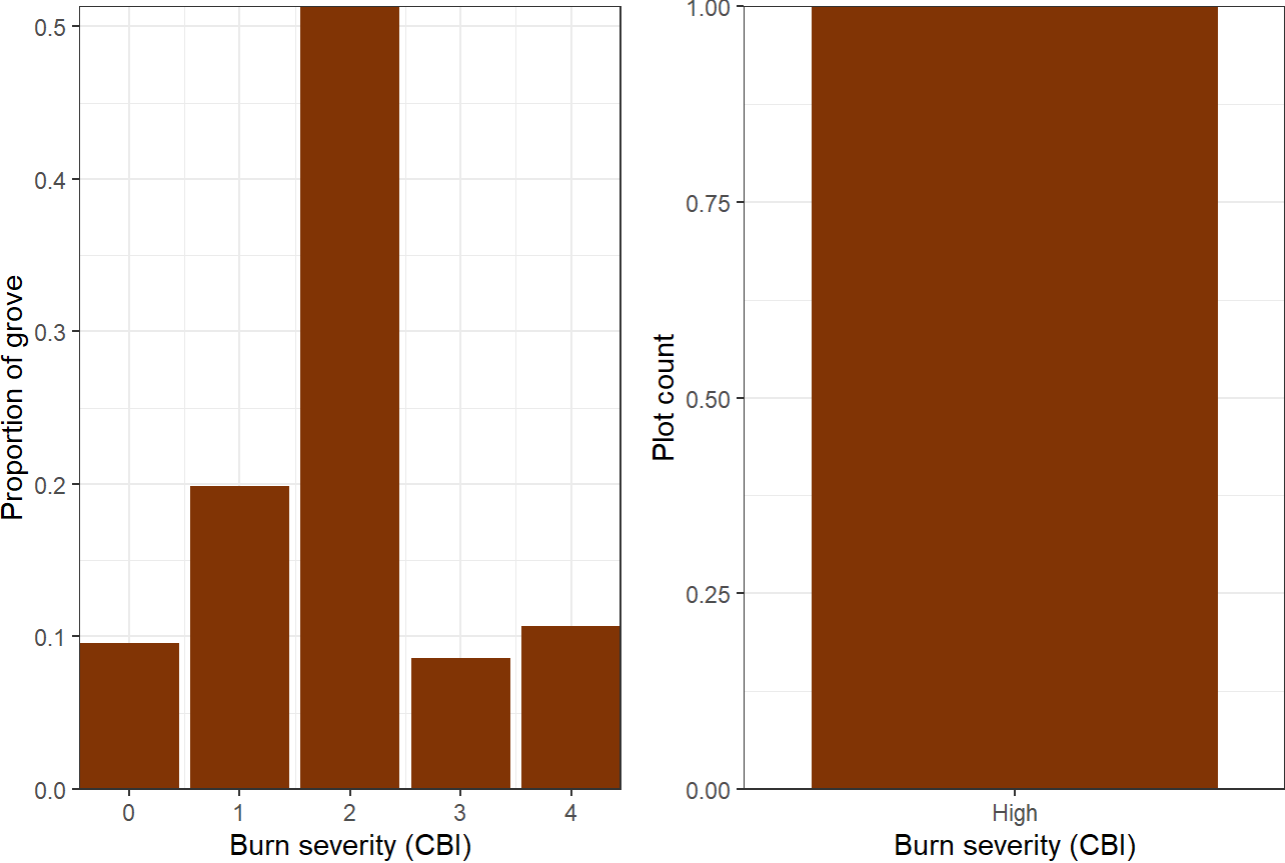
Aspect distribution in grove and amongst plots in Oriole Lake grove



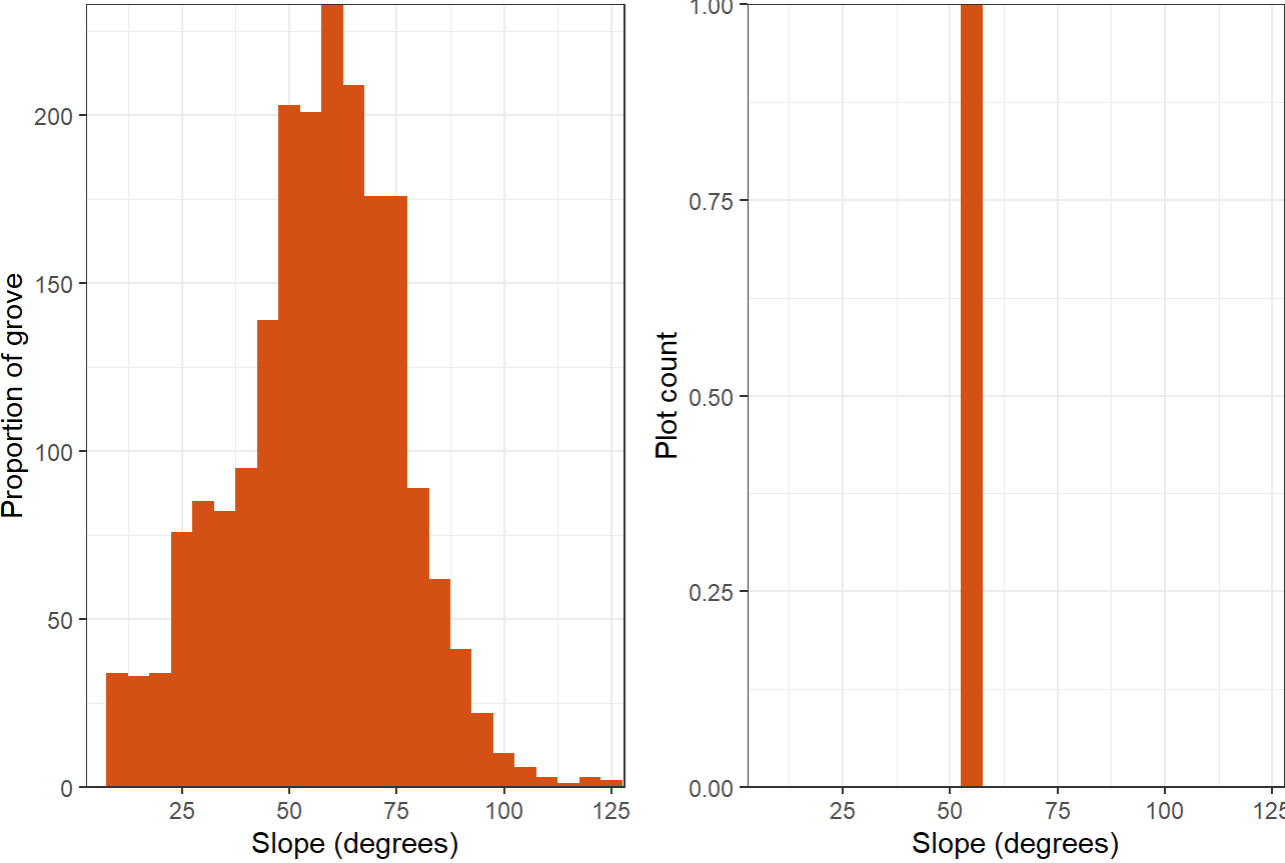
Plot count and type in Redwood Creek grove



Fire severity distribution in grove and amongst plots in Redwood Creek grove

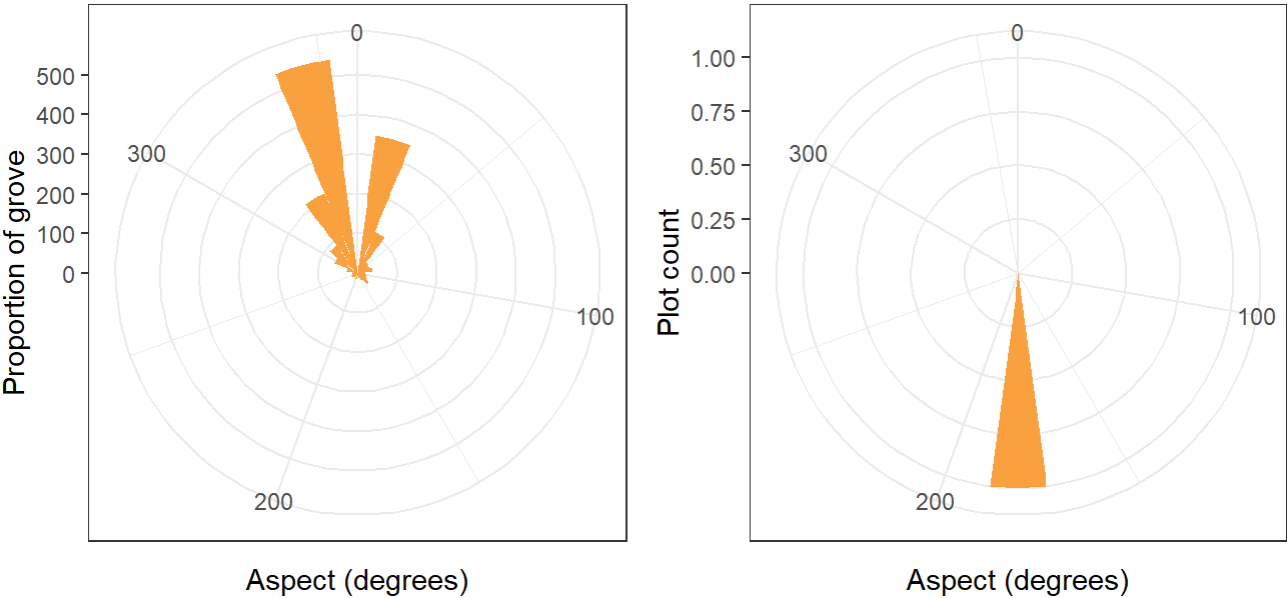


Slope distribution in grove and amongst plots in Redwood Creek grove

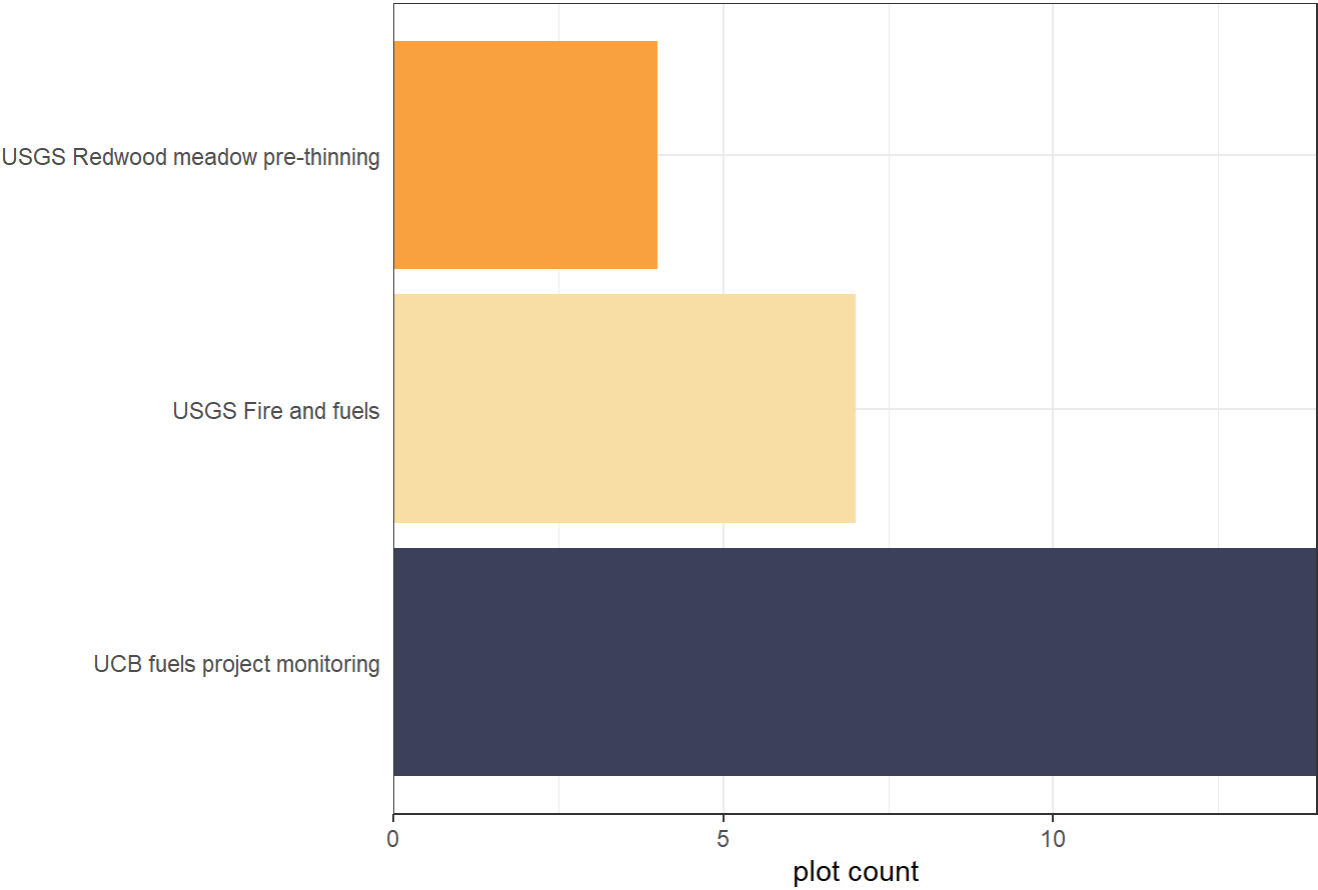




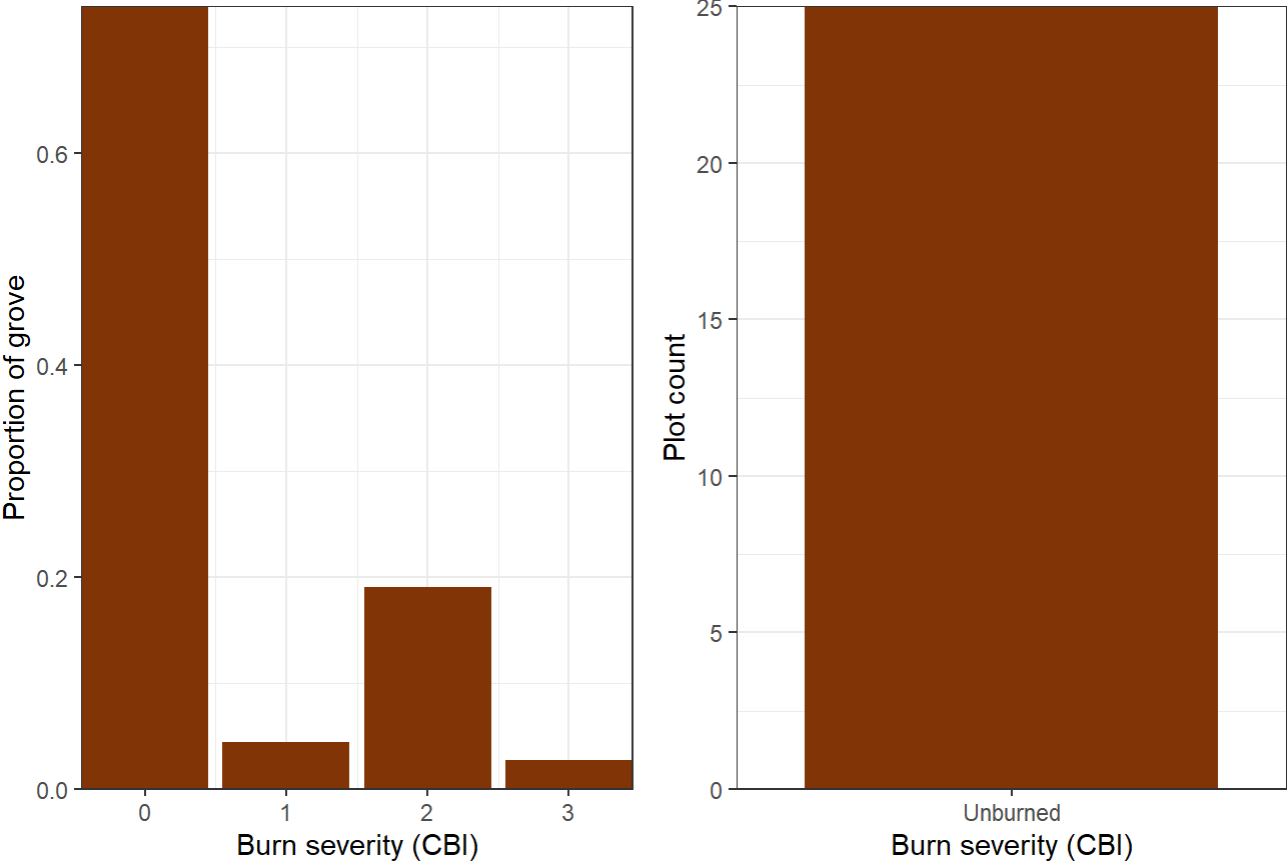
Aspect distribution in grove and amongst plots in Redwood Creek grove



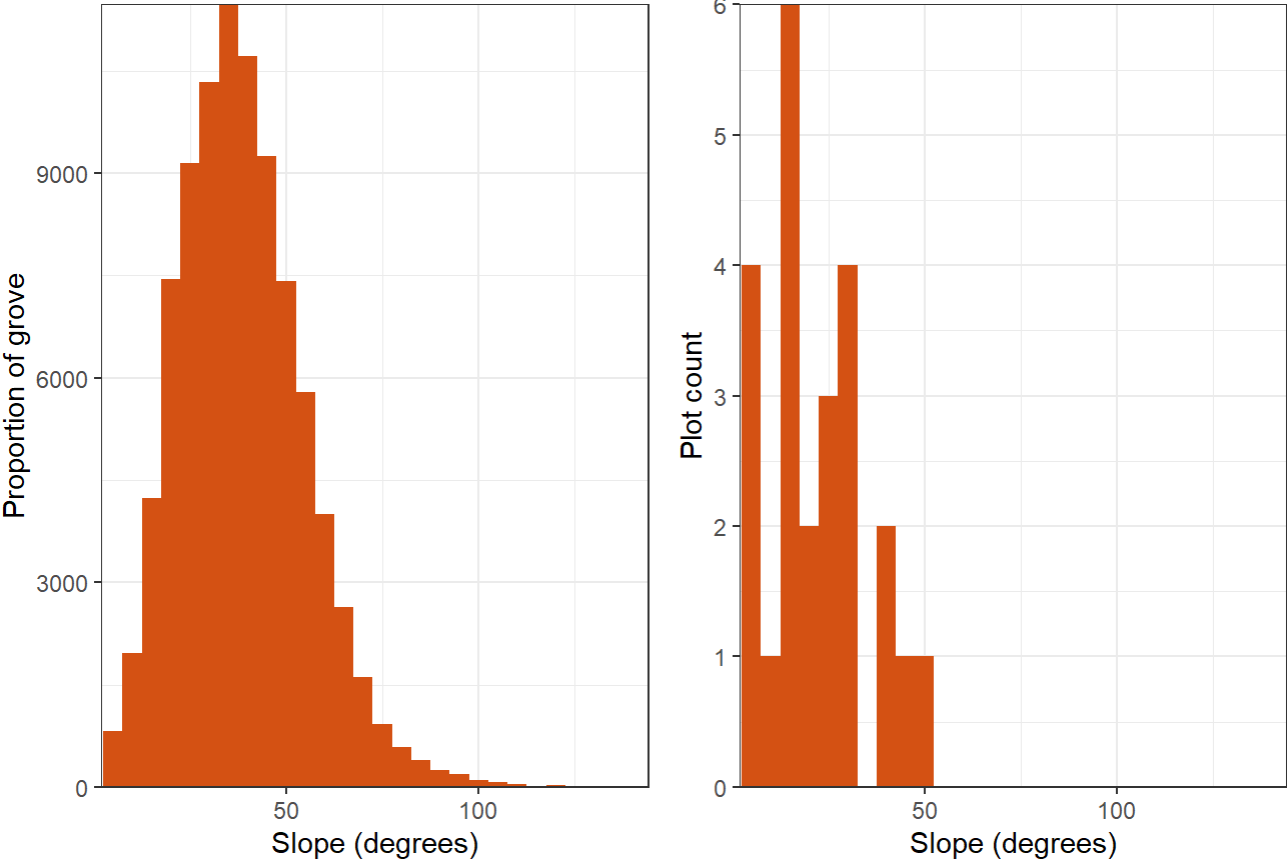
Plot count and type in Redwood Meadow grove



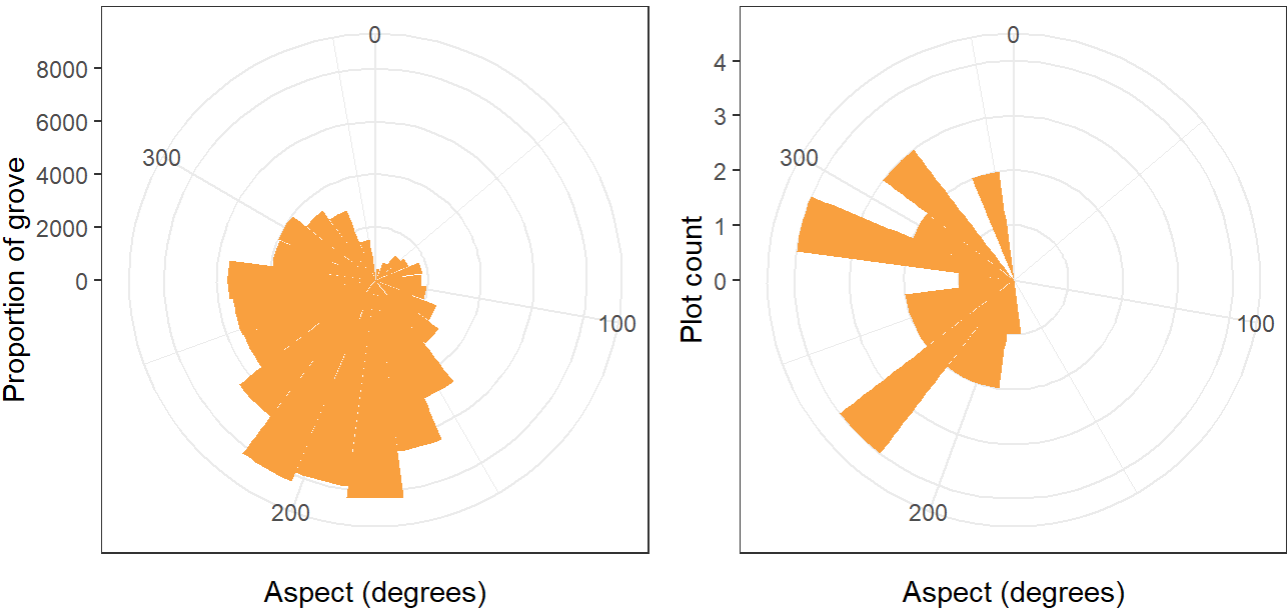
Fire severity distribution in grove and amongst plots in Redwood Meadow grove



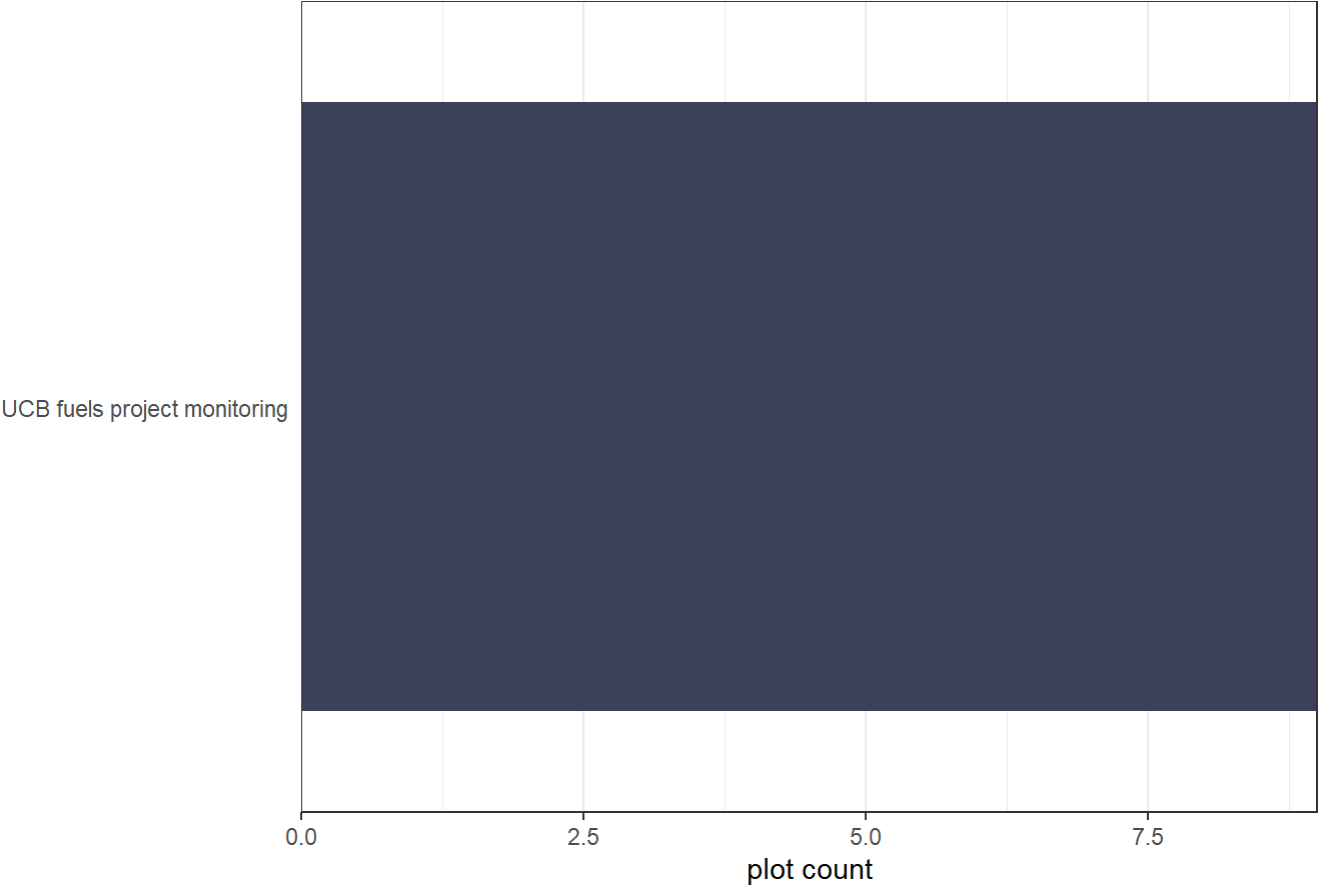
Slope distribution in grove and amongst plots in Redwood Meadow grove



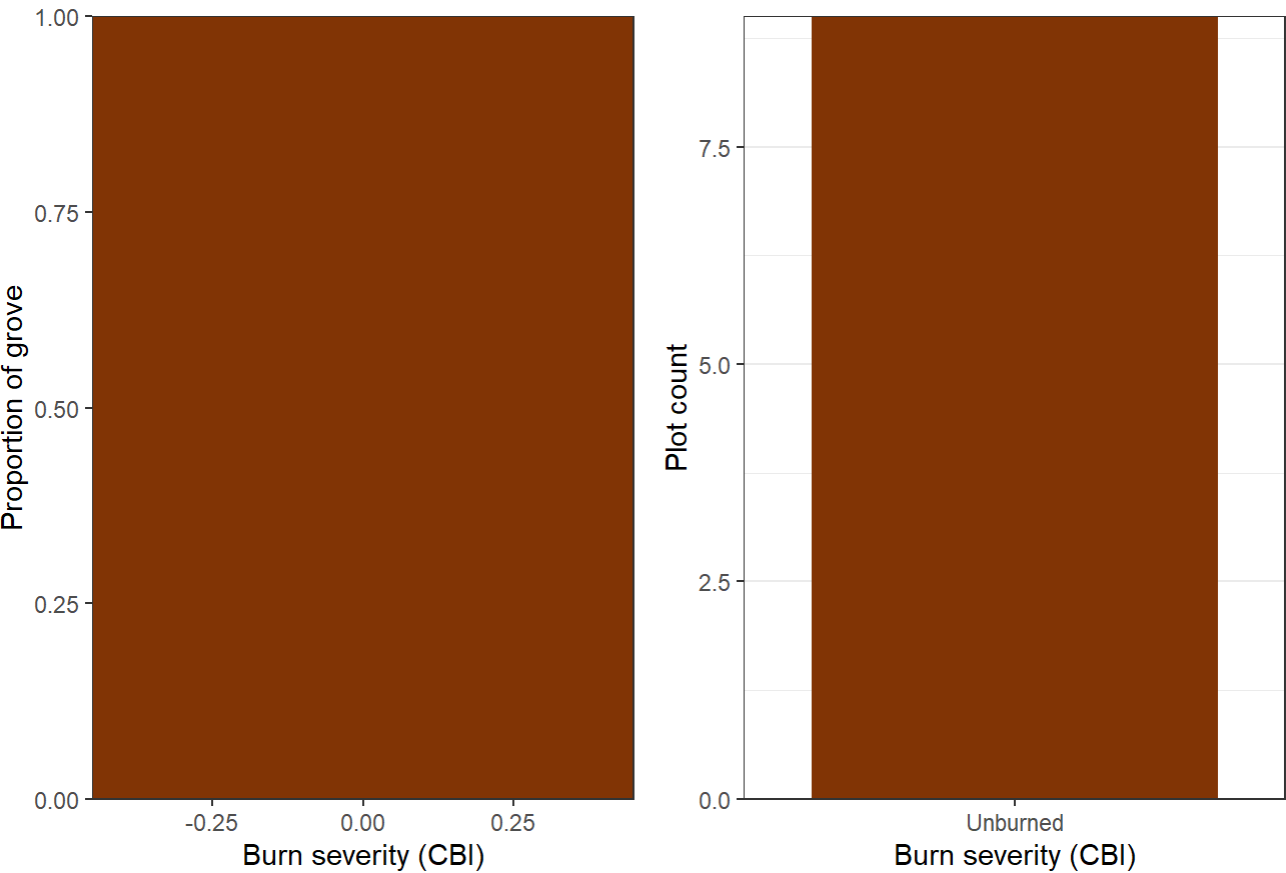
Aspect distribution in grove and amongst plots in Redwood Meadow grove



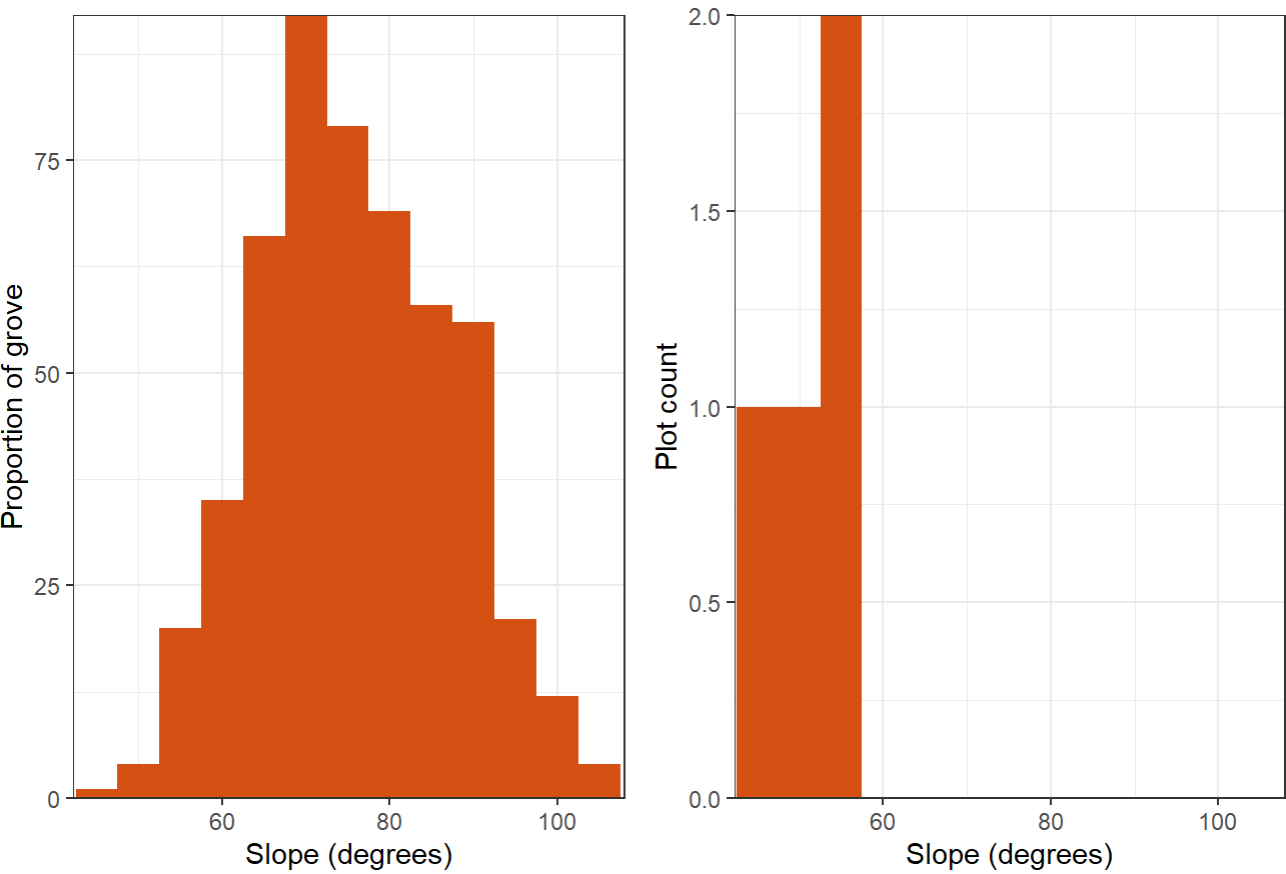
Plot count and type in Sequoia Creek grove



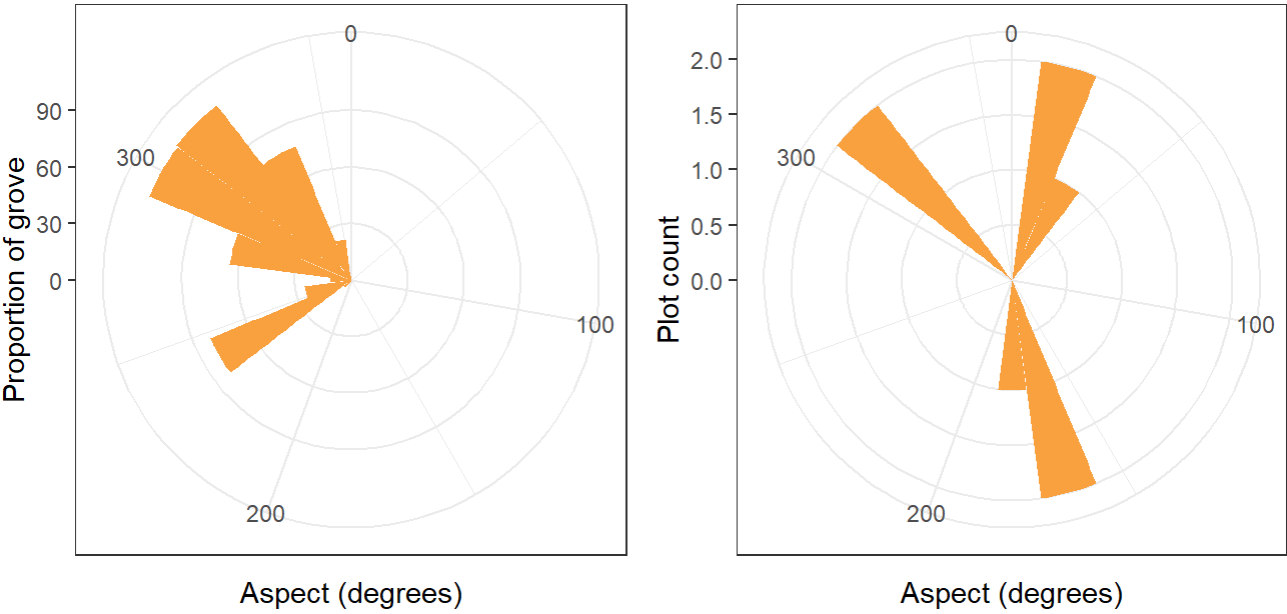
Fire severity distribution in grove and amongst plots in Sequoia Creek grove



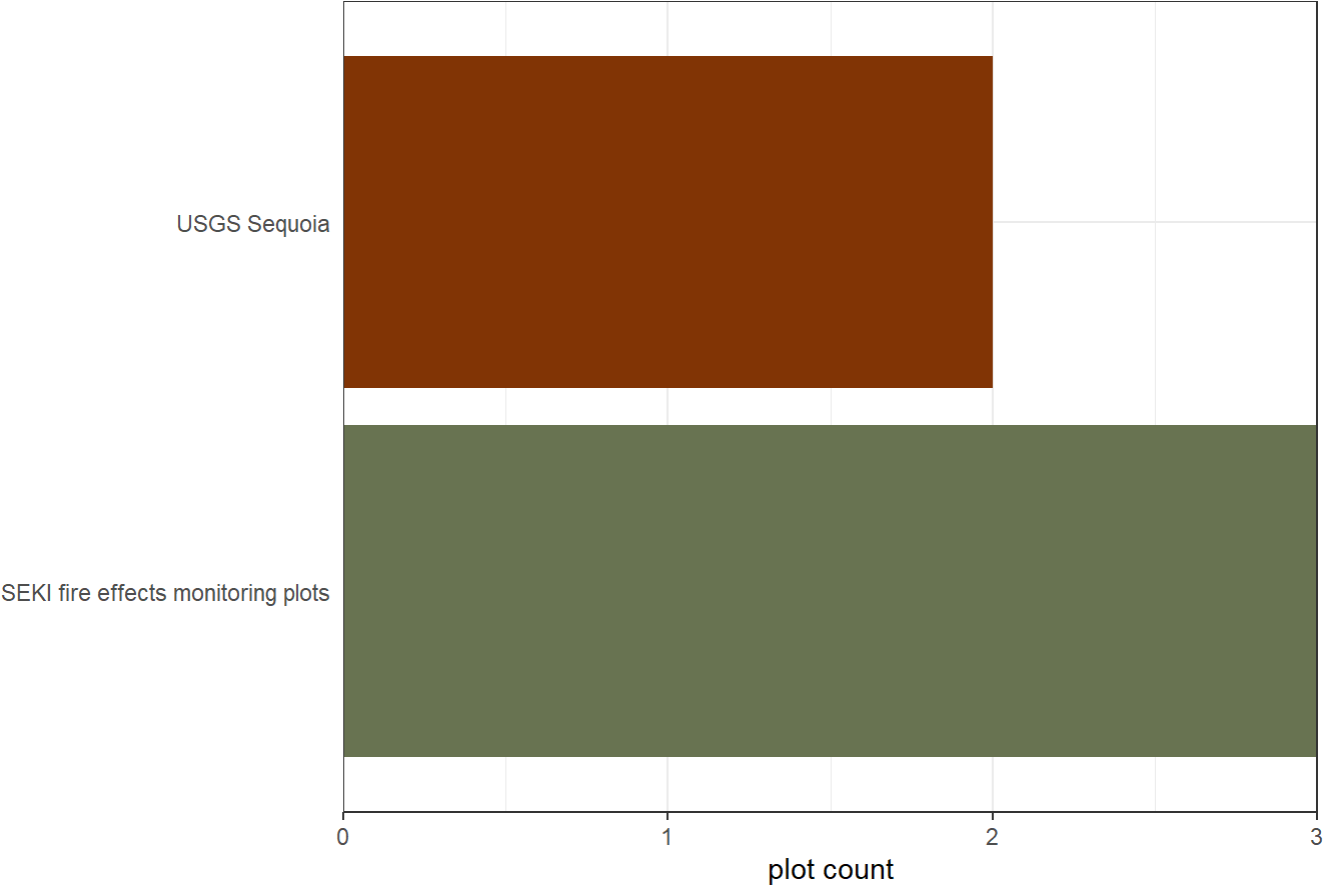
Slope distribution in grove and amongst plots in Sequoia Creek grove



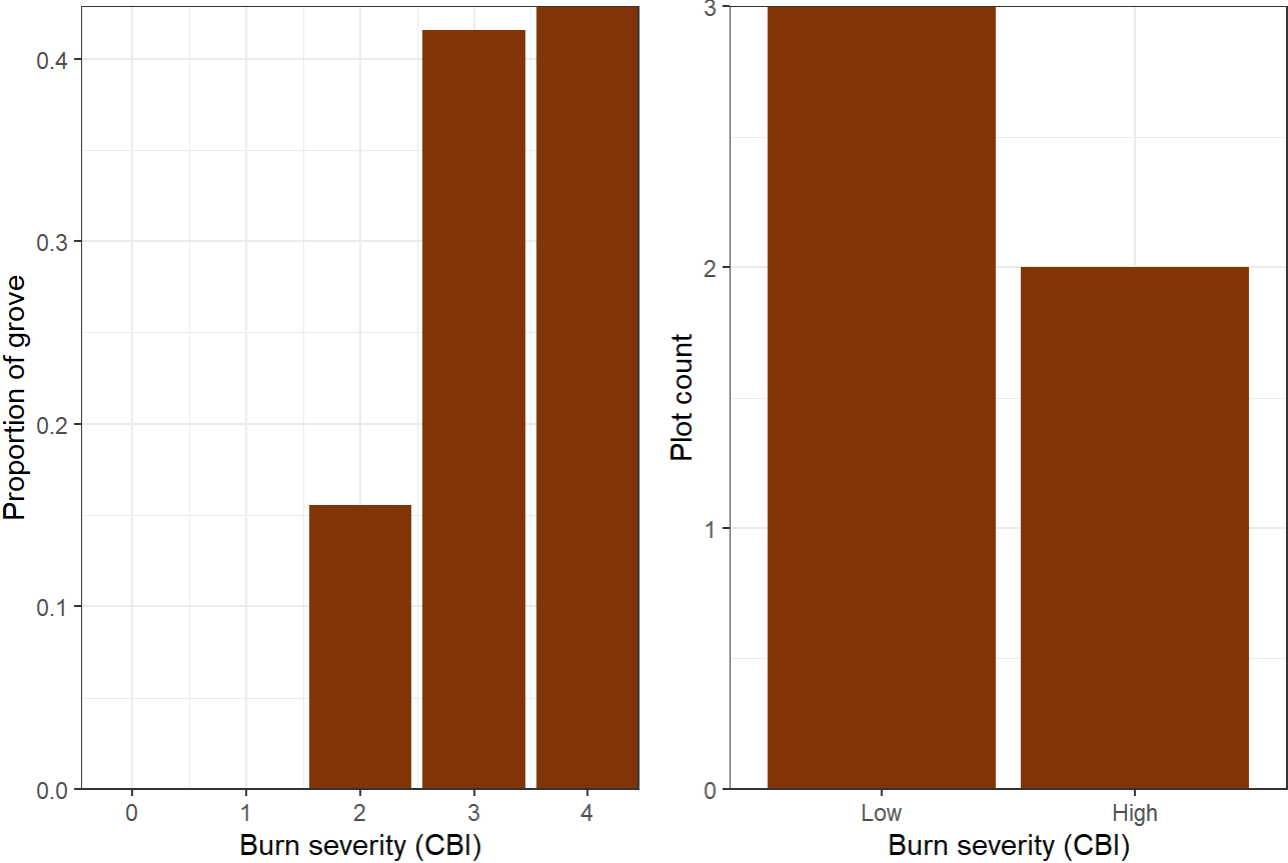
Aspect distribution in grove and amongst plots in Sequoia Creek grove



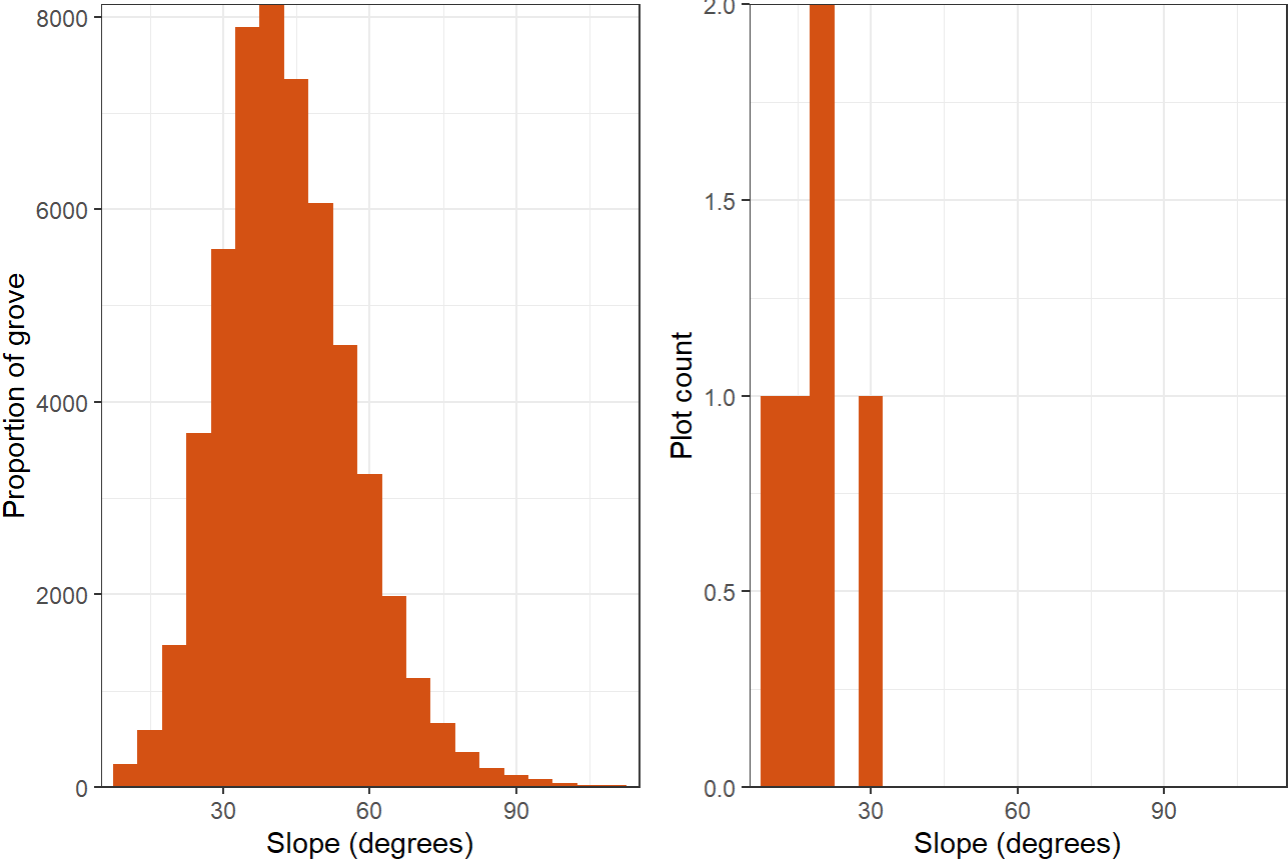
Plot count and type in Suwanee grove



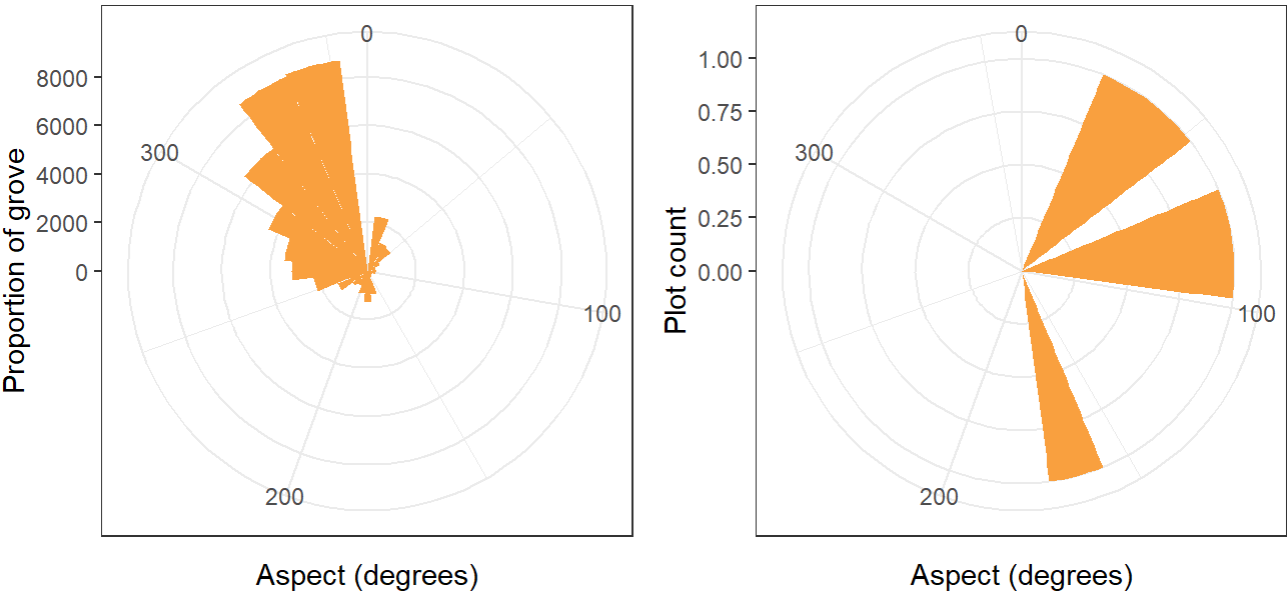
Fire severity distribution in grove and amongst plots in Suwanee grove



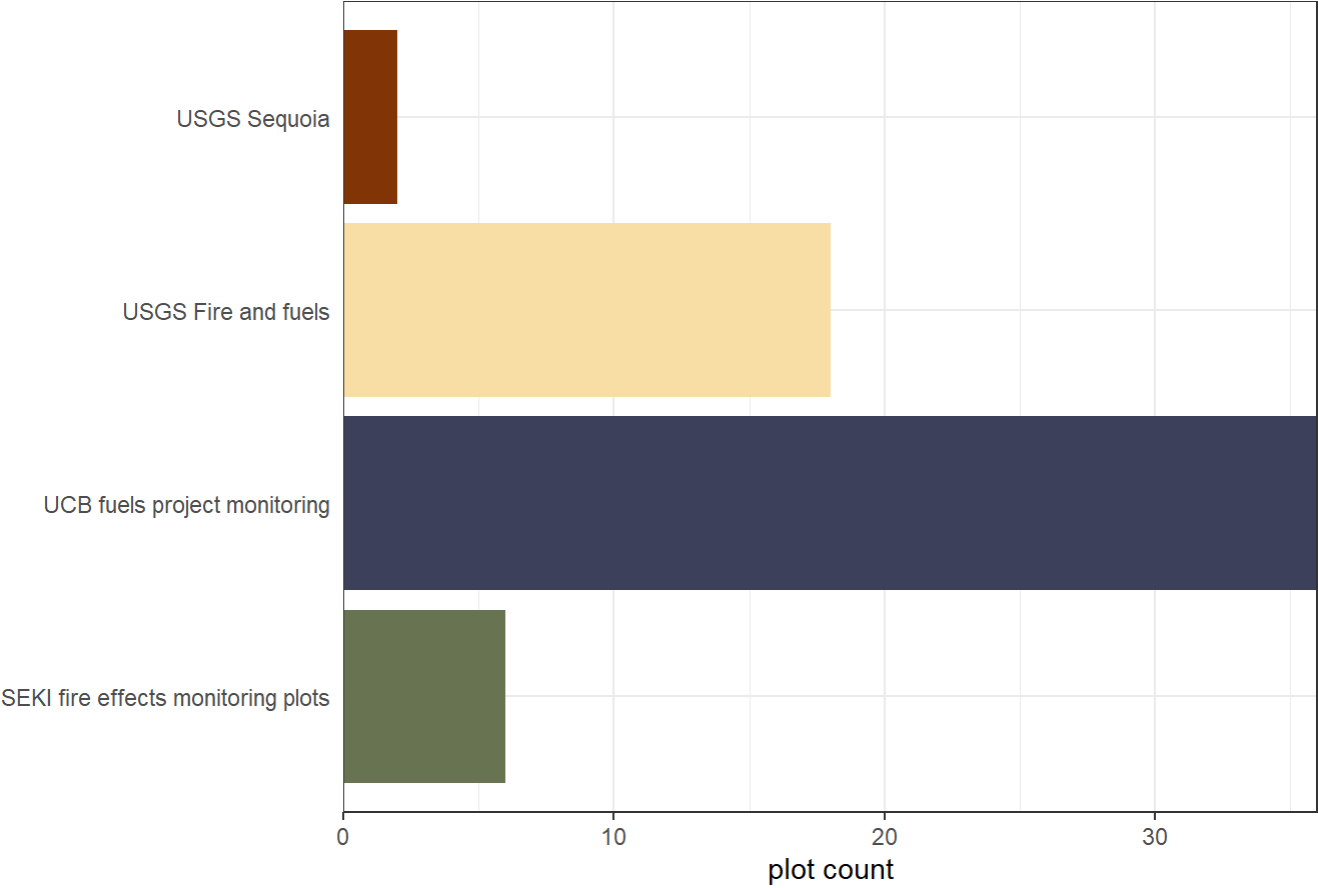
Slope distribution in grove and amongst plots in Suwanee grove



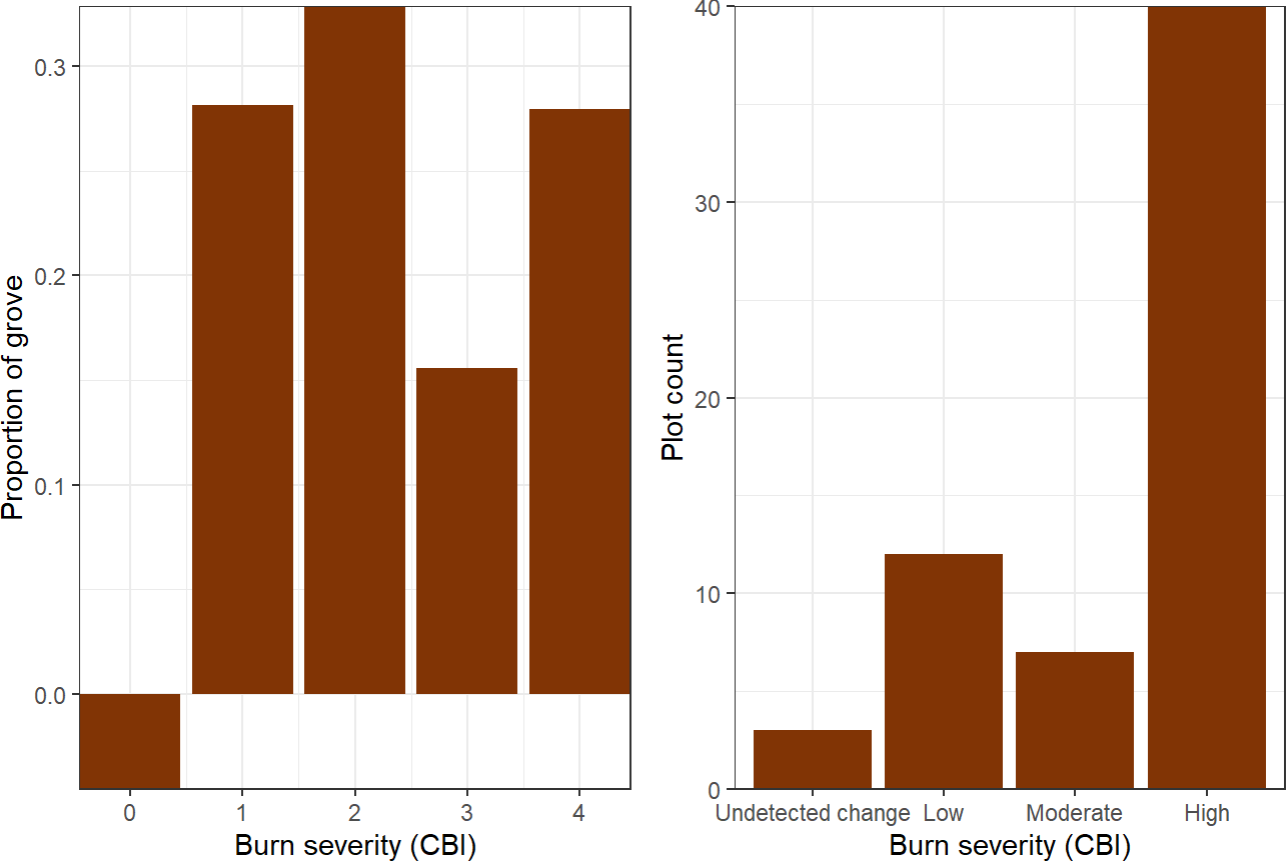
Aspect distribution in grove and amongst plots in Suwanee grove



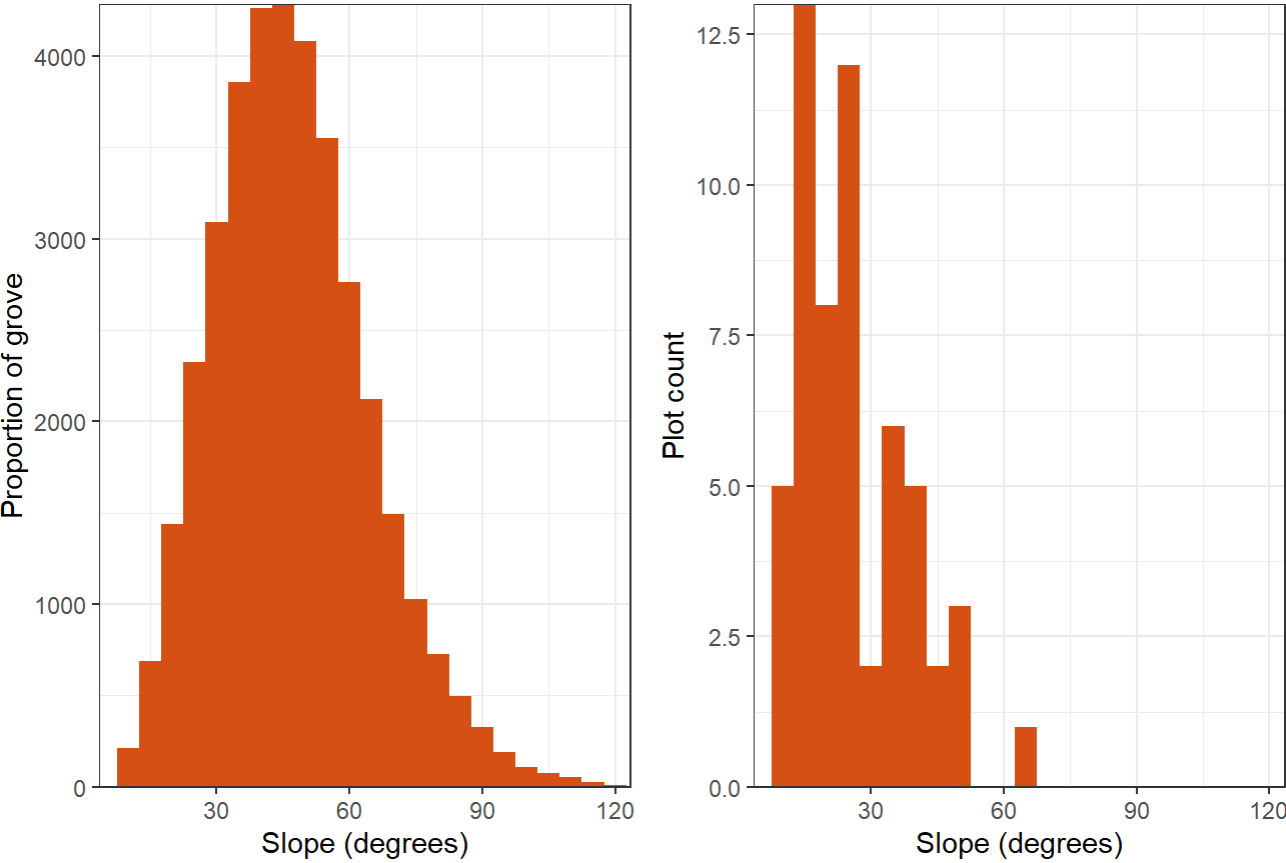
Plot count and type in Redwood Mountain grove



Fire severity distribution in grove and amongst plots in Redwood Mountain grove

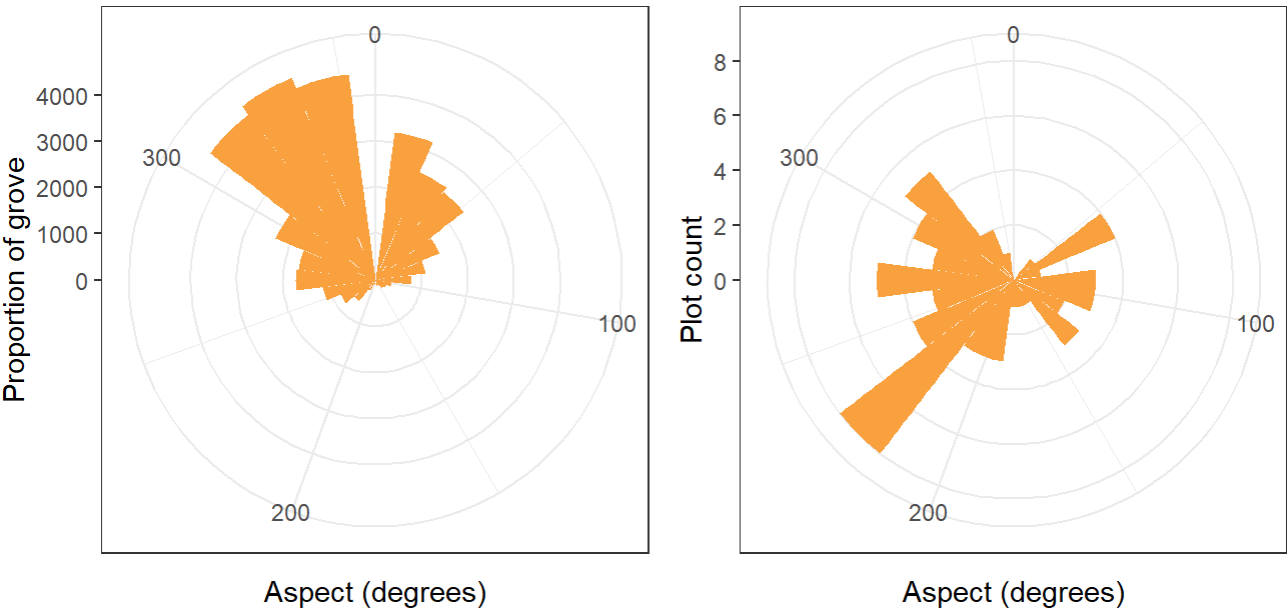


Slope distribution in grove and amongst plots in Redwood Mountain grove

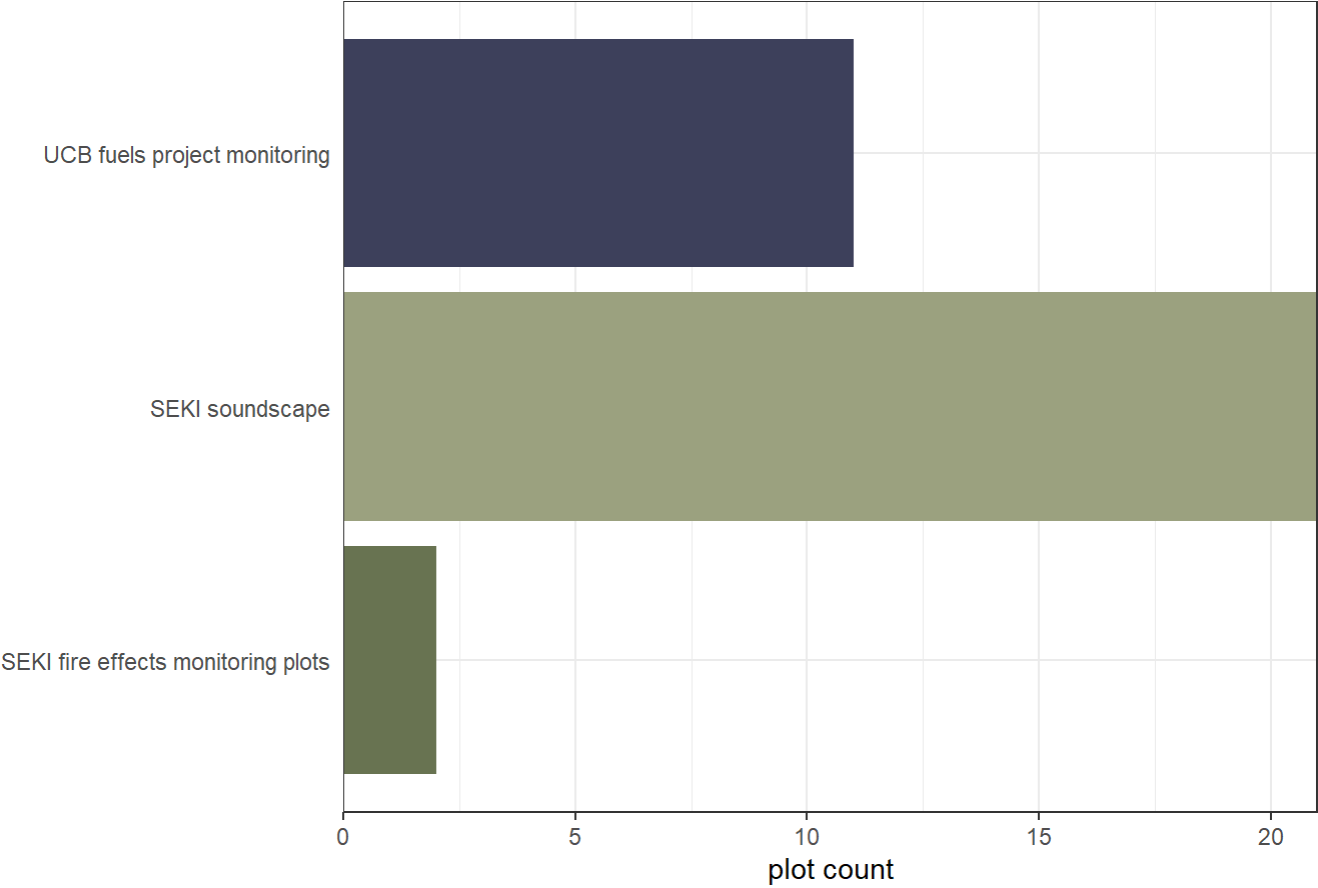




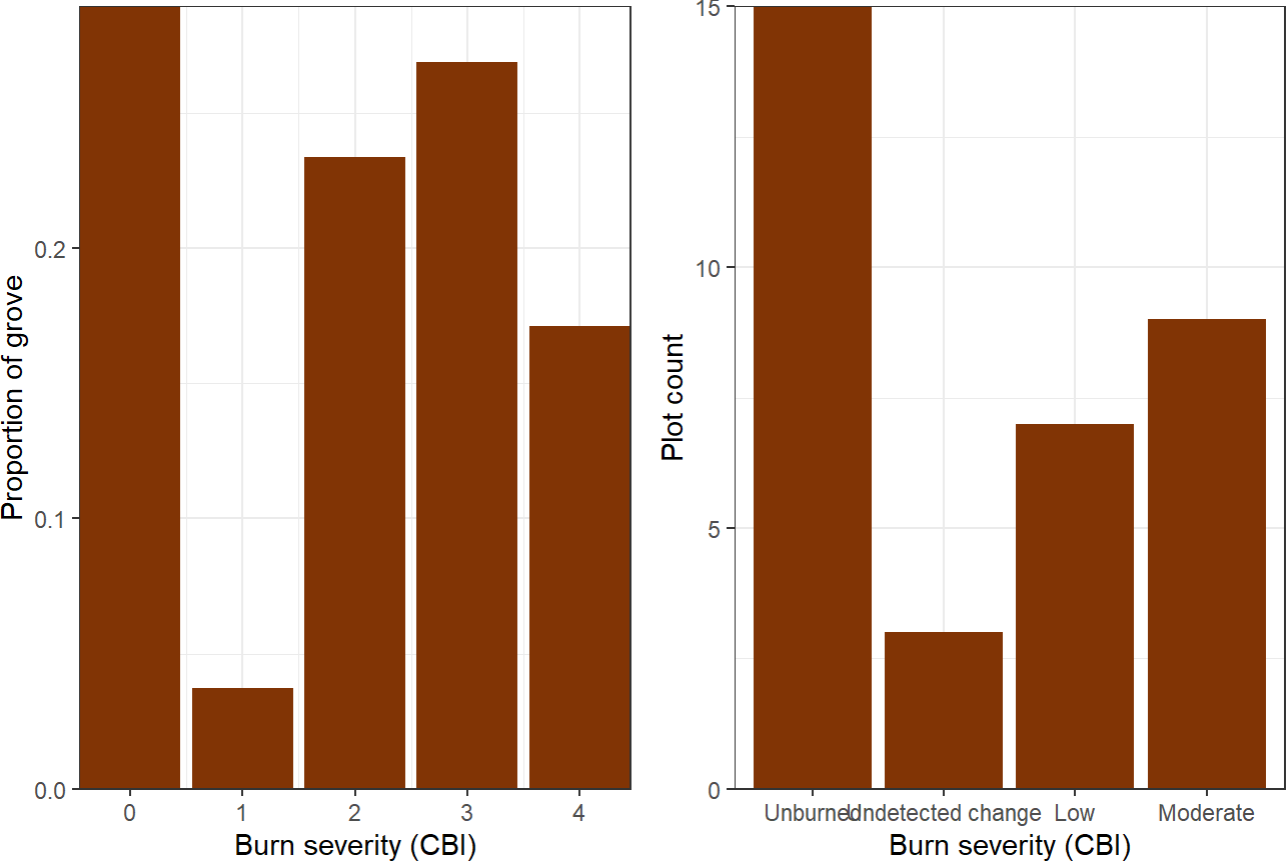
Aspect distribution in grove and amongst plots in Redwood Mountain grove



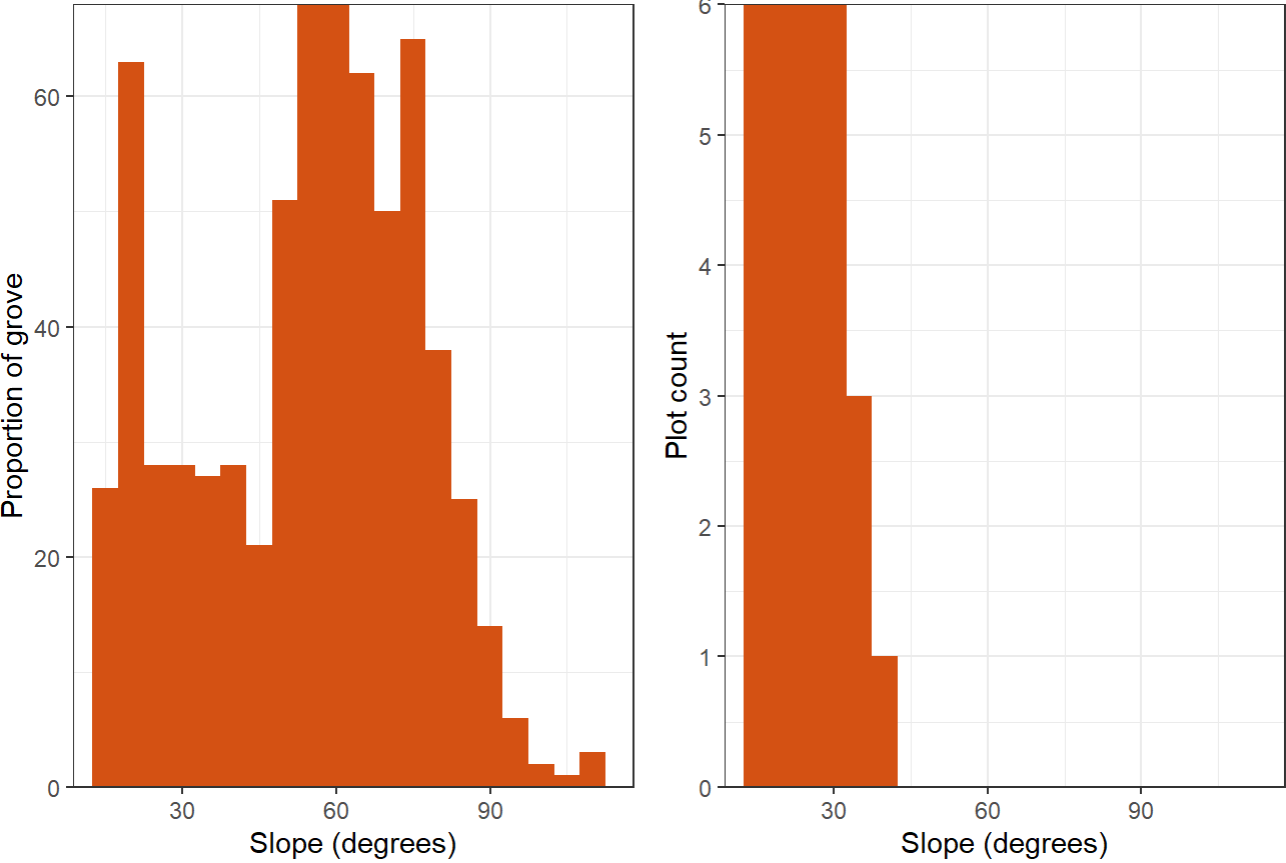
Plot count and type in General Grant grove



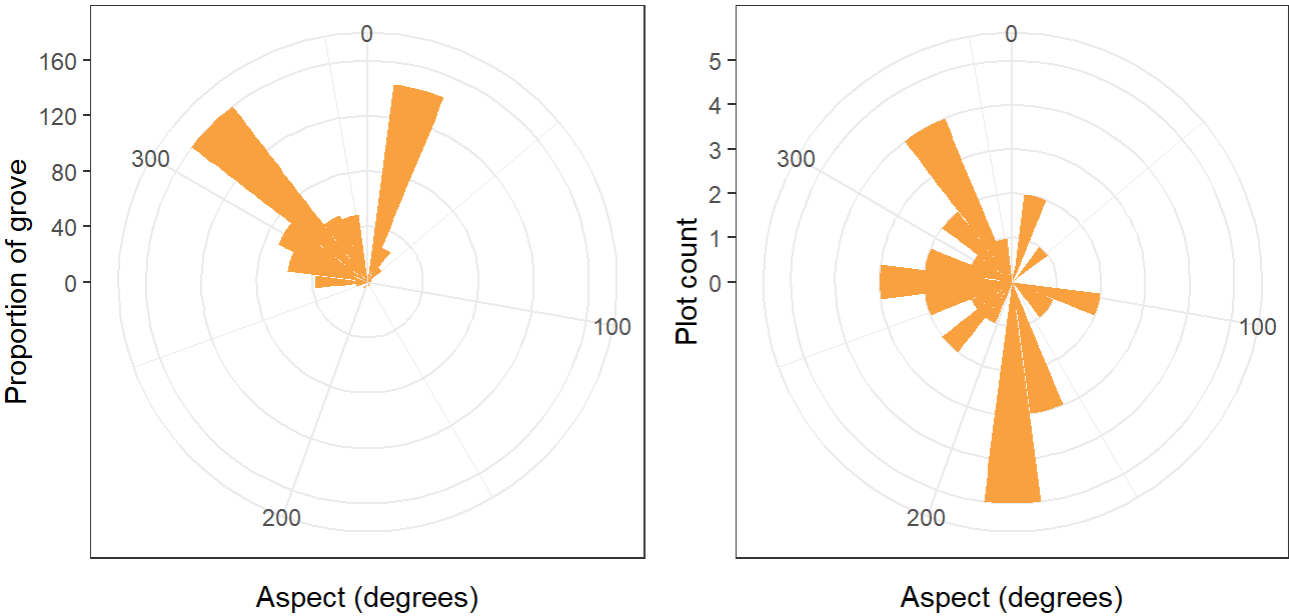
Fire severity distribution in grove and amongst plots in General Grant grove



Slope distribution in grove and amongst plots in General Grant grove



Aspect distribution in grove and amongst plots in General Grant grove



## Sampling decisions for the workgroup

1. What factors are important to represent/stratify? *Our initial thought is that aspect and severity/disturbance history will be the most important variable and that it is worth considering topographic position*
2. How do we want to determine sampling intensity and stratification within a grove?
3. How much we can utilize inference to characterize the fuels structure of a grove? That is to say: to describe the needs of a given grove, how much of the data needs to come from direct plot observations in that grove versus plot observations from plots with similar characteristics in other groves? What counts as similar and what kind of ground truthing would be most feasible and useful?