**Field Sampling Methods for CCE 2024**

**Site Measurements:**

Latitude

Longitude

Elevation

Slope

Aspect

Moisture

Site naming: start at 1 and proceed in order of establishment. We are giving old sites new numbers! We need to record the old site number in the site notes. And change the old site numbers to the new numbers in the LC dataset.

Locate random location – orient 30m transect S to N or cross slope and record orientation. Homogenous area.

Each site will consist of a 30 m x 2 m belt transect with three distinct 10 m x 2 m plots. The 30 m transect is divided into three 10 m intervals (0-10 m, 10-20 m, 20-30 m) which are labeled as plot A, B, and C. Each plot will have a total of two quadrats located at 2.5 m and 7.5 m.

At each plot, a suite of environmental characteristics will be determined. We will record latitude, longitude, and elevation with a GPS receiver, and slope and aspect with a clinometer and compass. In the field, each plot will be assigned a soil drainage class on a six point scale, ranging from xeric to sub-hygric, based on topography‐controlled drainage and adjusted for soil texture and presence of permafrost (Johnstone *et al.* 2008; Walker *et al.* 2018b). Put picture of Jill’s moisture scale on iPad to reference.

Pre-fire vegetation – just notes on density/species – ONLY want BS dominated sites.

Notes

Site photos – permanent! White board with dry erase marker: site, placement, direction, date. Take one photo at start, one photo at end. And 4 photos in middle in each cardinal direction.

Permanently mark plot with large wooden stakes! One at the beginning of each PLOT and one at the very end. Four per site.

DNBR severity class – so that we are getting an equal distribution of severity classes across the fire scar.

CBI??? Composite burn index

**CCE Soils:**

At each quadrat, measure residual SOL depth and Thaw depth. Record what SOL hits. If the thaw probe doesn’t hit, enter 101 cm and record the thaw hit as >100cm.

At the time of plot establishment: collect one intact soil monolith (5 cm x 10 cm x variable depth) of the entire depth of the residual SOL and collect a 10 cm depth mineral soil core at the 2.5 m quadrat. Label with site number and plot! Unique ID = CCE1A, CCE1B, CCE1C

To estimate burn depth, measure the distance from the highest adventitious root to the top of the residual SOL on one to three adventitious roots (AR height1 and AR height2) on each tree closest to the quadrats (two trees per plot – one at 2.5, one at 7.5). And measure the SOL depth (AR SOL depth) directly beside the tree where you record ARs.

**CCE Plant cover and seedlings and shrubs:**

At each quadrat, record the percent cover of understory vegetation and ground cover classes.

Ground cover needs to add to 100

Plant cover can add to whatever. Anything below 1.37 cm is included.

Count species-specific regenerating seedlings and shrubs and measure three representative basal areas for each seedling and shrub species. If NO seedlings are present in quadrats in plots but you see them at the site – put another quadrat down at a random location until you record one seedling. You need to record the area sampled so that we can get at density.

Photo of quadrat taken directly above.

**CCE Understory Species Present:**

Additional species list per SITE. Things found but not in quadrats.

**CCE Tree Disks - Stand age:**

At the time of site establishment, collect one basal tree disk from the closest mature representative tree to the plot center to estimate stand age. Three disks per site. Collect as close to the root collar as possible. Record height and diameter. Unique ID: Haystack 1A.

**CCE Pre-fire tree Inventory and Combustion:**

At the time of site establishment, in each 2 x 10 m belt transects, measure the diameter at breast height (DBH; 1.37 m from the base) for all trees ≥ 1.37 m in height and the basal diameter of all trees < 1.37 m tall that were killed by fire. Must be originally rooted in 2m belt transect.

Record standing (y/n). Snag pre-fire (y/n).

For each tree, assess combustion by ranking cones, foliage, fine branches, coarse branches, and stems a 0, 25, 50, 75, or 100%. Usually, stems are 0% for trees but have a value for pre-fire snags. Pre-fire snags can be NA for the other categories.

Count – use this only if you have a big group of trees that are all the same. So that you only have to record things once. Then you would multiply by the count in data processing.

**CCE Shrub combustion:**

At the time of site establishment, measure all shrubs' species and basal diameter in 1x 10 m transect. For each shrub, rank combustion of foliage, fine branches, coarse branches, and stems a 0, 25, 50, 75, or 100%. Use the COUNT column.

**CCE CWD combustion:**

Coarse woody debris (CWD) is measured in each plot. The diameter of any piece of wood that is ≥ 2 cm and < 45° angle from the ground was measured that intersected the transect line. Where it intersects, measure the diameter, record the species, the percent combustion (0%, 25%, 50%, 75%), and hardness classification (hard, crumbly, or soft).

**CCE Brown’s Transect:**

A Brown’s transect was measured for each plot for fine woody debris (FWD) and CWD (<45 angle).

Counts of each:

* 1. meter: 1 hour fuels (<1/4 inch)
  2. meter: 10 hour fules (1/4 to 1 inch)

0-5 meter: 100 hour fuels (1 inch to 3 inch)

0-10 meter: 1000 hour fuels (>3 inch)

Figure 1. Diagram of transect line for each site

**Packing list:**

* Shovel (x2)
* Bread knife (x2)
* Pruning shears (x2)
* Thaw probe
* Tinfoil (x3)
* Duct tape (x5)
* Notebook (x3)
* Write-in-the-rain paper (1 packet)
* Pencil (x10)
* Cutting board (x2)
* Plastic bags (x240)
* Ethanol wipes (x3)
* GPS (x1)
* iPads (x2)
* Laptop
* Plug-ins
* Battery packs
* Batteries for GPS
* 30m Transects x2
* 1m quadrat x 6 (2 spare pieces)
* Tree calipers
* Seedlings calipers x3
* Clinometer
* Compass x2
* Saw x2 + replacement blades
* Sharpies x20
* Paper bags x20
* Meter stick x1
* Plant book
* DBH tape
* Clicky clack (x3)
* Coolers (x6)
* Access to freezer
* Bear spray (x4)
* First aid kit x2
* List of emergency contact info
* Satellite phone
* Water bottles
* Toilet paper
* Mineral soil core
* Go – no go x2
* White board and dry erase marker
* Tree corer
* Straws?