

Pre-Sampling Vegetation Characterization: Experiments 1 and 2

All study sites need to be sampled prior to experimental manipulation to characterize the pre-treatment vegetation. This is important for understanding differences both within and between sites to improve the analysis and interpretation of experimental results.

Sampling Design

The basic sample plot is composed of three parallel line transects, each 50m long (Fig. 1). A total of 4 plots (*i.e.* 4 sets of transects) will be placed in areas that are representative of the area that will be used for the experiments. Measurements will occur in the fall prior to any herbicide or other plot treatments.

The line-point intercept method will be used for measuring the presence and cover of all species along the transects. Biomass for each species will be measured from 5 nested quadrats that are spaced along each 50m transects. These quadrats will be 25cm by 25cm nested within 50cm by 50cm (Fig. 1). The full quadrat will normally be used for the perennial herbaceous species. When annual species such as cheatgrass are particularly abundant, the 25cm by 25cm subplot will be used.

Biomass Measurement

Each quadrat will be clipped by species and individually bagged for the determination of the pre-treatment biomass. Bags will be labeled with all identifying information. The plot size clipped for biomass determination also should be written on the sample bag.

Line-Point Intercept

Line-point intercept is a rapid, accurate method for quantifying ground cover including vegetation, litter, rocks and biotic crusts. These measurements are related to wind and water erosion, water infiltration and the ability of the site to resist and recover from degradation. For a detailed discussion of this and other methods for measuring plant cover and/or composition, see Elzinga et al. 2001.

Materials

- 50-m measuring tape
- 2 steel pins for anchoring tape
- One pointer - a straight piece of wire or rod, such as a long pin flag, at least 75cm (2.5 feet) long and less than 2.5 mm (1/10 inch) in diameter
- Clipboard, Line-Point Intercept Data Form(s) and pencils

Standard Methods (rule set)

1. Pull out the tape and anchor each end with steel stake.

Rules

1.1 Line should be taut.

1.2 Line should be as close to the ground as possible (thread under shrubs using a steel pin as a needle).

2. Begin at the "0" end of the line.

3. Move to the first point on the line (0.5 m) and work from left to right. Always stand on the side of the line opposite that used for the biomass harvests. Sampling points are at 1 m increments.

4. Drop a pin flag to the ground from a standard height (30 cm) next to the tape.

Rules

- 4.1 The pin should be vertical.
- 4.2 The pin should be dropped from the same height each time. A low drop height minimizes “bounces” off of vegetation, but increases the possibility for bias.
- 4.3 Do not guide the pin all the way to the ground. It is more important for the pin to fall freely to the ground than to fall precisely on the mark.

5. Once the pin flag is flush with the ground, record every plant species it intercepts.

Rules

5.1 Record the species of the first stem or leaf intercepted in the “Top Canopy” column using its 4-6 letter code. The letter code is based on the first two letters of the genus and species, but may use numbers or other letters so that each species has a unique code; use letter codes for the **currently-accepted** species name from the Plants Database (<http://plants.usda.gov>); if you have questions about which synonym to use, also consult the Integrated Taxonomic Information System (ITIS – <http://www.itis.usda.gov/index.html>). A data form and a list of some common Great Basin species from the Plant Database are attached. Plant lists for individual states can be downloaded from http://plants.usda.gov/cgi_bin/topics.cgi?earl=dl_state.html.

5.2 If no leaf or stem is intercepted, record “NONE” in the “Top Canopy” unless it hits a plant base. All plant base intercepts are also considered canopy.

5.3 Record all additional species intercepted by the pin.

5.4 Record herbaceous litter as “L” if present. Litter is defined as dead stems and leaves that are part of a layer that comes in contact with the ground. Record “W” for woody litter that is greater than 5 mm (or ¼ inch) in diameter and in direct contact with soil. Some examples of properly recorded data are shown in Fig. 2.

5.5 Record each canopy species only once, even if it is intercepted several times.

5.6 If you can identify the genus, but not the species, use the genus letter code from the Plants Database. For many genera, the letter code is the first 5 letters of the genus name, but some genera have other letters or numbers to differentiate them from other genera.

5.7 If you cannot identify the genus, use the following codes:

- AF = Annual forb
- PF = Perennial forb
- AG = Annual grass
- PG = Perennial grass
- SH = Shrub
- TR = Tree

5.8 Canopy can be live or dead, but only record each species once. Make sure to record all species intercepted.

6. Enter a species code (for a plant base) or one of the following in the “Soil Surface” column:

- R = Rock fragment (> 5mm or ¼ inch in diameter)
- BR = Bedrock
- EL = Embedded Litter
- M = Moss
- LC = Lichen Crust on soil (lichen on rock is recorded as “R”)
- S = Soil that is unprotected by any of the above

Rules

6.1 For unidentified plant bases, use the codes listed under 5.7.

6.2 Record embedded litter as “EL,” where there is no clear boundary between litter and soil or where the litter is not removed during typical storms (occurring annually).

6.3 Additional categories may be added, such as CYN = dark cyanobacterial crust.

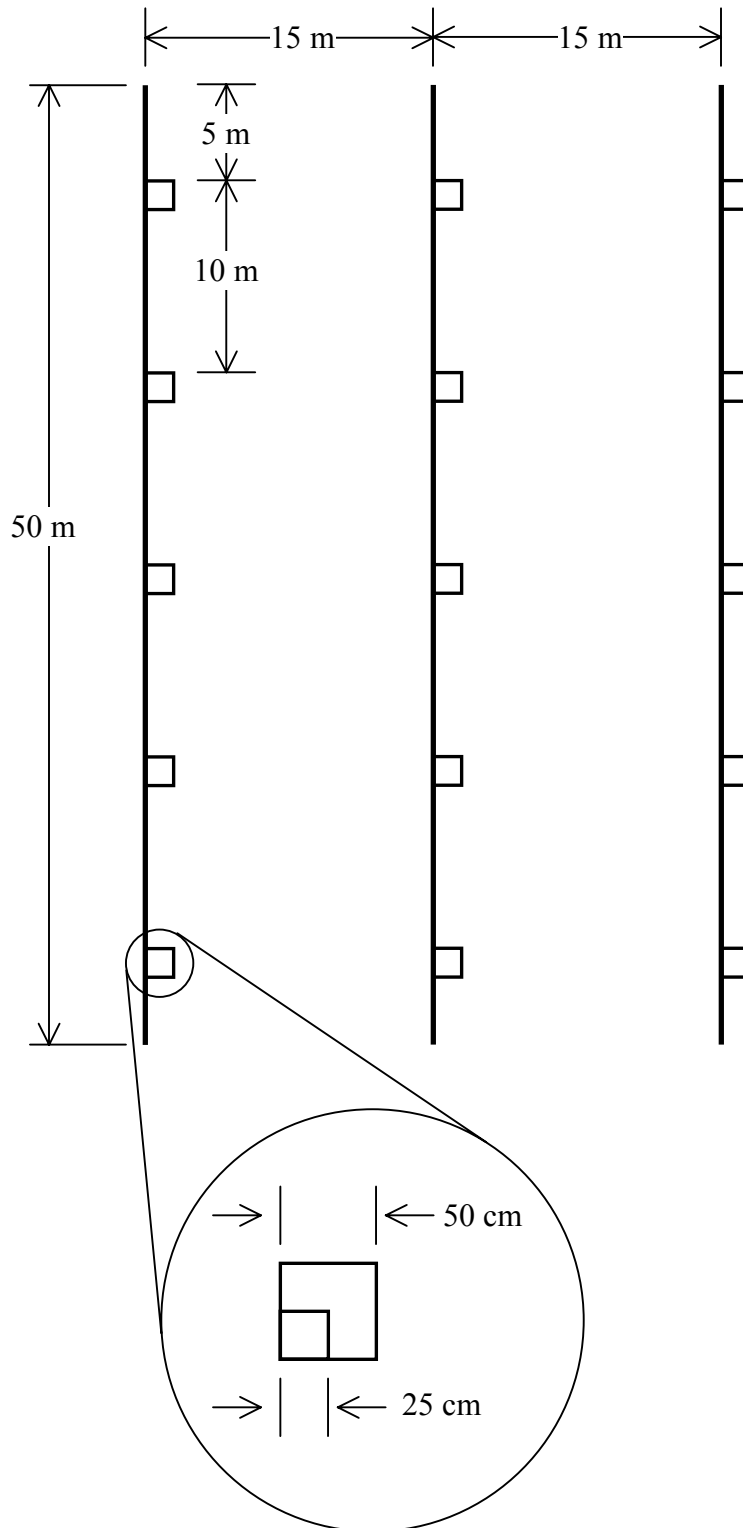
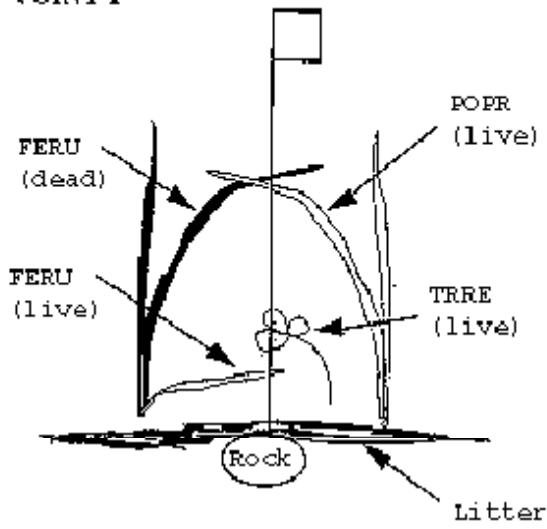
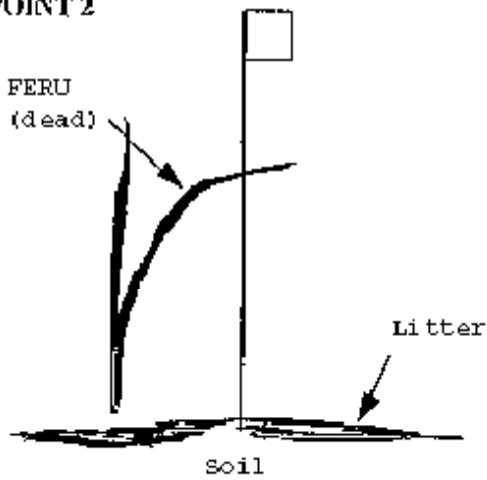


Figure 1. One sample plot = 3 parallel 50-m transects that are 15 m apart with 5 nested quadrats. Nested quadrats start at 5 m from beginning of tape and are spaced at 10-m increments. Each nested quadrat consists of a 25 x 25 cm plot nested within a 50 x 50 cm plot.

POINT 1



POINT 2



Point	Top Canopy	Lower Canopy Layers			Soil Surface
		Code1	Code2	Code3	
1	FERU	POPR	TRRE	LM	R
2	FERU	LM			S
3					

Figure 2. Two examples of line-point intercept observations (top diagrams) and properly recorded data (lower table).