

Idaho Monitoring Methods and Protocols for Sage-grouse Initiative

Sagebrush Canopy Cover by Species (ID-CPA-017)

- Continuous line intercept – 100 ft. tape intercanopy gaps of 2 inches or more (5 cm) are not considered canopy

Continuous line intercept is one of the most common techniques used to estimate shrub canopy cover. This technique involves measuring the amount of the live sagebrush canopy intersected by an imaginary vertical plane that is bisected lengthwise by the tape. Care should be taken to exclude large spaces between branches or foliage so that only live shrub cover intersecting the line is counted.

Materials

- Measuring tape (at least 100 ft)
- Two steel pins for anchoring tape
- One pointer—a straight piece of wire or rod, such as a long pin flag, at least 2.5 feet long.
- Clipboard, Continuous Line Intercept Data Form and pencil(s), or tablet computer

Standard methods (rule set)

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

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 or PVC pipe as a needle).

2. Begin at the “0” end of the line. Always stand on the south side of the tape.

3. Work from left to right.

Rules

- 3.1 Look straight down on the line. Use a meter stick or steel pin or other stiff stick to project the line vertically to the ground.
- 3.2 Assume that there is a wall at each end of the tape. Do not consider gaps or vegetation that occur off the end of the tape.

4. Canopy intercept. Record the beginning and end of each sagebrush plant canopy by species or sub-species.

Rules

- 4.1 Identify sagebrush to species and/or sub-species.
- 4.2 Canopy occurs any time the tape edge intercepts live or dead sagebrush foliar or branches based on a vertical projection from canopy to ground.
- 4.3 Exclude gaps in the sagebrush canopy greater than 2 inches (5 cm)
- 4.4 Include sagebrush leaves and stems as canopy whether live or dead.

Plant Composition by Foliar Cover for Species/Life Form (ID-CPA-016 100 point)

- Line point – 100ft tape 100 points

Line-point intercept is a rapid, accurate method for quantifying ground cover, including vegetation, litter, rocks and biotic crusts.

Materials

- Measuring tape (at least 100 ft)
- Two steel pins for anchoring tape
- One pointer—a straight piece of wire or rod, such as a long pin flag, at least 2.5 feet long and less than 1/10 inch in diameter
- Clipboard, Line-Point Intercept Data Form and pencil(s), or tablet computer

Standard methods (rule set)

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

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 or PVC pipe as a needle).

2. Begin at the “0” end of the line.

3. Move to the first point on the line and work from left to right. Always stand on the south side of the line.

Rules

- 3.1 Start at 1.0 ft.
- 3.2 Read transect at one foot increments (or whatever spacing gives 100 readings/transect).

4. Drop a pin flag to the ground 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 common name or the scientific code for the genus and species.
- 5.2 If no leaf or stem is intercepted, record “NONE” in the “Top canopy” column, unless it hits a plant base. All plant base intercepts also are 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 detached dead stems and leaves that are part of a layer that comes in contact with the ground. Record “W” for detached woody litter that is greater than 5 mm or 1/4 inch in diameter and in direct contact with soil.

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 and don't plan to identify the species, record “XX” for the species code (*Poa* species = POXX).

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

AF# = Annual forb (also includes biennials) (# = unique number for the plant)

PF# = Perennial forb

AG# = Annual grass

PG# = Perennial grass

SH# = Shrub

TR# = Tree

If necessary, collect a sample of the unknown off the transect for later identification.

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

6. Enter a species code or one of the following in the “Soil surface” column:

R = Rock (> 5 mm or 1/4 inch in diameter)

BR = Bedrock

LM = Embedded litter mat

M = Moss

LC = Lichen crust on soil (lichen on rock is recorded as “R”)

S = Soil that is visibly 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 mat as “LM” 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.

Plant Height (ID-CPA-19)

- Measure closest woody **and** tallest herbaceous plant (within 12" diameter circle) to every 3 foot mark along the 100 ft line and identify to species. (3 ft, 6 ft, 9 ft, ...99ft.).

Plant height measurements provide information on the height of the tallest living or dead shrub and herbaceous plants (including seed heads) closest to the designated transect marks.

Materials.

- Tape measure (at least 100 ft long)
- Two steel pins for anchoring tape
- Measuring devise (tape measure, yard stick, etc.)
- Clipboard, plant height form and pencil(s) or tablet computer

Standard methods (rule set)

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

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 or PVC pipe as a needle).

2. Begin at the "0" end of the line. Always stand on the same side of the tape.

3. Work from left to right.

Rules

- 3.1 At each designated mark, determine the tallest living or dead shrub **and** herbaceous plant to the transect mark.
- 3.2 Record the plant species.
- 3.3 Record the total height of the plant.

Do not stretch the plant while making the measurement.

4. Record plant height determinations based on the following plant height categories.

Plant Height	Record to:
0' to 2 feet:	Nearest 0.5 inch.
2' 1" to 5.0 ' feet	Nearest inch
5' 1" to 15' feet	Nearest foot
> 15' 1" feet	Nearest 5 feet.

For shrubs and trees that are taller than the pole and canopy extends across the vertical projection of the pole, estimate the height of the tree or shrub.

Canopy Gaps (ID-CPA-018)

- Line intercept – 100 ft tape.

Gap intercept measurements provide information about the proportion of the line covered by large gaps between plants.

Materials.

- Tape measure (at least 100 ft long)
- Two steel pins for anchoring tape
- Meter stick, steel pin or other stiff stick
- Clipboard, Gap Intercept data forms and pencil(s) or tablet computer

Standard methods (rule set)

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

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 or PVC pipe as a needle).

2. Begin at the “0” end of the line. Always stand on the same side of the tape.

3. Work from left to right.

Rules

- 3.1 Look straight down on the line. Use a meter stick or steel pin or other stiff stick to project the line vertically to the ground.
- 3.2 Assume that there is a wall at each end of the tape. Do not consider gaps or vegetation that occur off the end of the tape.

4. Canopy gap intercept. Record the beginning and end of each gap between plant canopies ≥ 1 foot (20 cm).

Rules

- 4.1 Canopy occurs any time 50% of any 0.1 foot (3 cm) segment of tape edge intercepts live or dead plant canopy based on a vertical projection from canopy to ground.
- 4.2 The minimum gap size can be increased or decreased as appropriate for the site. Be sure to record the minimum gap size on the data form.
- 4.3 A plant canopy can stop a gap whether live or dead.