

Habitat Monitoring Protocol

Line Intercept Method

Canopy Cover & Plant Composition

TECHNIQUE

The line intercept method quickly and accurately determines canopy (foliar) cover by species, and plant composition based on the percent canopy cover.

This method can easily be altered: to determine:

- To determine canopy cover of groups of plants (forb/grass/shrub), where no species ID is required,
- To determine live versus dead shrub canopy cover (ex. pre-post treatment),
- To determine the percentage of gaps in canopy cover.

ADVANTAGE / LIMITATION

This methods is suited where the boundaries of plants are relatively easy to determine; such as semi-arid bunchgrass-shrub communities. It is especially effective where cover is relatively low.

MATERIALS

- Tape reel (100ft/30m). If measuring in feet, delineate in tenths.
- Two steel pins/stakes, for anchoring the measuring tape to the ground
- Pointer at least 2.5 feet long (a long pin flag)
- Clipboard, Data Sheet and pencil(s), or tablet computer
- One foot rebar (2 per transect line), hammer, spray paint (if establishing permanent transect lines)

ESTABLISH STUDY SITES

Identify and prioritize key areas to monitor (study sites); generally these are critical habitat areas where the data will be useful to assess existing conditions and to show changes with time or management technique. Careful consideration and good professional judgment must be used in selecting study sites to ensure the validity of any conclusions reached. Additionally, since study sites are subjectively selected, no valid statistical projections to an entire management area are possible.

- Each monitoring area should be established within one, fairly homogenous, plant community.

ESTABLISH TRANSECT LINES

The transect line length is generally 50 feet (15 meters), or 100 feet (30 meters) in length. It is recommended to GPS the transect line start and stop points. If permanent markers are placed, the end points will also be marked in the field (e.g. one foot rebar post).

- “Baseline Technique” is the preferred layout for randomly placing the transect lines in the field.
- A 50ft/15m line is sufficient when ground cover is estimated at >5%. A 100ft/30m line should be used when ground cover is estimated at 0.5 - 3%.
- There should be several transects created at each study site to reduce the statistical error.
 - As a general rule, use at least twenty (20) 50 ft/15m transect lines for every 100 acres.

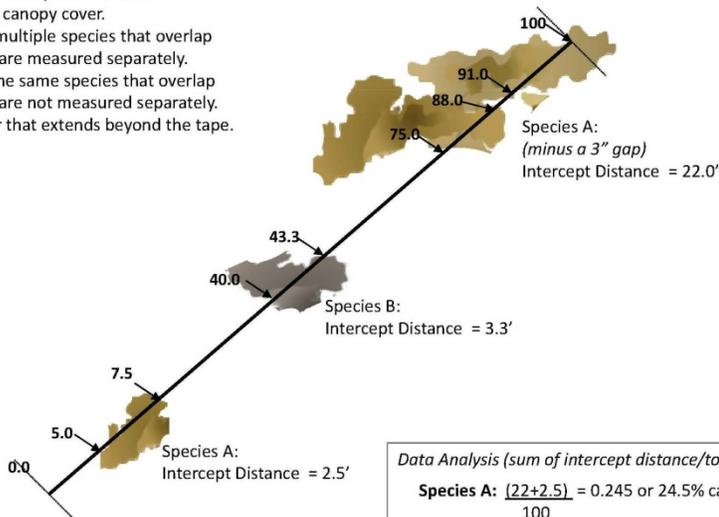
FIELD PROCEDURE

- I. Anchor the 100 foot/30 meter tape with a steel pin at the transect start point, and use a compass to walk the tape in the specified transect direction to the 100 foot/30 meter mark.
 - The line should be taut, do not allow vegetation to deflect the alignment of the tape.
 - The line should be as close to the ground as possible.
 - Some alterations in height may be needed depending on the data being gathered (e.g. overhead cover measures cover above the wildlife species body height).
- II. Document on the Line Intercept Data Form; the transect number and pertinent information.
- III. Begin at the end of the tape and work down the transect line. Stay on one side of the line, and look straight down at the tape.
- IV. Measure the horizontal linear length of canopy cover, by species, which intercepts the line. Record each measurement on the data sheet as the “Intercept Distance (ID)”. See Diagram 1 for an example.
 - Exclude gaps in the canopy greater than two inches (2 inches/5cm).
 - Include leaves and stems as canopy.
 - determine prior to monitoring, if the method will include both live and/or dead cover.
 - Canopies of multiple species that overlapped one another are measured separately. You may have to move overstory plants to see what canopy cover of different species is underneath.
 - Canopies of the same species that overlap one another are not measured separately (ignore the overlap).
 - Ignore cover that extends beyond the end of the tape.
 - For improved accuracy, read only the intercepts along one edge of the tape.

Diagram 1 – Line Intercept (Example)

Rules:

- exclude gaps > 2”.
- determine prior: if you will include live and/or dead canopy cover.
- canopies of multiple species that overlap one another are measured separately.
- canopies of the same species that overlap one another are not measured separately.
- exclude cover that extends beyond the tape.



Data Analysis (sum of intercept distance/total distance):

Species A: $\frac{22+2.5}{100} = 0.245$ or 24.5% canopy cover

Species B: $\frac{3.3}{100} = 0.033$ or 3.3% canopy cover

