

**Sampling
Strategies
techniques:**

The Point Intercept (PO) method is designed to sample within plot variation and quantify changes in plant species cover and height, and/or ground cover over time. This method uses transects located within the macroplot. First, a baseline is established from which to orient the transects then transects are placed randomly along the baseline.

Characteristics,

Such as transect length, number of transects, and number of points per transect, are recorded about the general sample design. A sampling pole or sampling

pins are systematically lowered along each transect and “hits” are tallied when contact is made with a plant species or ground cover class. Percent cover is calculated as the number of which for each plant species or ground cover class divided by the total number of points per transect. Height is also recorded for each plant species along the transect.

This method is primarily used when managers want to monitor changes in plant species cover and height or ground cover and is best suited for sampling ground cover and grasses, forbs, and shrubs less than 3 feet (1 m) in height.

The Point Intercept method works well for fine textured herbaceous communities, fine leaved plant species, and species with open canopies (e.g. pastures, dense grasslands and wet meadows), which can be more difficult to estimate with the line intercept (LI) method. It provides a more objective estimate of cover than the ocular estimates used in the CF sampling method. It can be difficult to detect rare plants with the PO method unless many points are used for sampling. Point intercept sampling requires many points to sample rare species (e.g. 200

points to sample at percent cover). Quadrats sample more area and have a greater chance of detecting rare species. If rare plant species are of interest the CF or RS methods are preferred since it is more effective to sample rare species using quadrats or marking individual plants than with points or lines. We suggest you use the PO method if you are primarily interested in monitoring changes in ground cover. The PO method may be used in conjunction with the CF method to sample ground cover by using the CF sampling.

The Point Intercept method is considered one of

the most objective ways to sample cover (Bonham, 1989). The observer only needs to decide whether a point intercepts a plant species or the ground. No cover estimates are required. Points offer quick and efficient data collection and can be used to estimate cover values with minimal bias and error.

However, errors can be caused by plants moving in the wind or sampling poles lowered incorrectly. The points themselves have dimensions and can be considered very small quadrats. In theory, if you sampled an infinite number of points in an area, you could

measure the exact cover for each plant species. Points are either the end of the sampling pole or the intersection of cross-hairs in a sampling frame. Cover or ground cover is estimated using individual points or collections of points. Collections of points are sampled either with sampling pins, grouped into a pin frame (typically 10 pins) or cross-hairs grouped into a rectangular sighting frame. When using pin frames the sampling pole is replaced with a pin. Pins are generally smaller in diameter than a sampling pole so are less prone to sampling error.

Point Sampling Techniques

Single points

Each sample point is defined by a sampling pole guided vertically to the ground. We recommend using a sturdy 0.25 in. (0.635 cm) diameter sampling pole when sampling with the FIREMON PO method. Smaller diameter poles (e.g. 0.125 in. (.3175 cm)) may be used for more precise measurements and less observer decisions. However, thin poles are more flexible, require more finesse to place in a straight line, and are easily bent in the field. A fiberglass tent pole, wooden dowel or aluminum rod could all be used as a

sampling pole. It should be longer than the vegetation that will be sampled is tall and long enough that field crews can sample without leaning over (40 in., 100 cm), sharpened on one end with a loop or bend on the other.

The recommended PO sampling design follows the Recommended FIREMON Sampling

Strategy and is listed below:

Macroplot Size: 0.1 acre, 66ft x 66ft. (400 square meters, 20 x 20 m)

Number of Transects:

Number of Points per Transect: 66 per 66 ft. transect or 80 per 20 m transect,

vertically oriented.

The number of transects sampled should be adjusted according to the appropriate methods in the “How To” section of the FIREMON manual. The number of points per transect should be adjusted based on plant species size and spacing.

Line Transect Method:

The line transect method has much in common with the strip transect method, but allow detection probability to decrease with distance from a survey line, and use the detection function to estimate densities. One still needs to observe all individuals “at” the

line, or alternatively, to estimate the proportion one misses at the line for a correction.

Assumptions for line transects are (Buckland et al. 2001):

A large number of transects are randomly allocated in the study area independently of the distribution of the survey population.

All individuals on the line are detected with certainty. Animal movement is slow compared to observer movement. Distances are measured without error.