

A LOOP METHOD FOR MEASURING GROUND-COVER CHARACTERISTICS ON PERMANENT PLOTS

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A method for making loop measurements on sample plots of various sizes and shapes has been developed at the Starkey Experimental Forest and Range in northeastern Oregon. This adaptation of the loop transect measures respective percentages of area covered by rock, litter, bare soil, and live plants and supplements vegetation data obtained by other sampling methods. Loop measurements on sample plots can be compared with loop records made on the conventional 100-foot line transect. Tests indicate that the method offers possibilities as a research tool and is

a practical device for use in extensive inventories.

Equipment and Procedure

The method originally was designed for use on small circular plots on the Starkey. Equipment includes a hardwood board 2 inches wide by $\frac{3}{8}$ inch thick and 3 to 4 inches longer than the diameter of the plot, a metal loop $\frac{3}{4}$ inch in diameter attached to a heavy gauge wire shank, and two chaining pins. The ends of the hardwood board are tapered to fit the loop in the chaining pins. Notches are cut at equal intervals along one edge of the board to fit the wire shank of the loop. The number of observations needed per plot determines the number of notches in the board.

In use, the board is oriented over the plot center and parallel with the ground. It is supported at each end by chaining pins (Fig. 1). Data on the various ground-cover characteristics are obtained by directing the loop to the ground at each notch and recording what it encloses (Fig. 2). The loop is placed perpendicular to the ground surface.

Half or more of the loop occu-

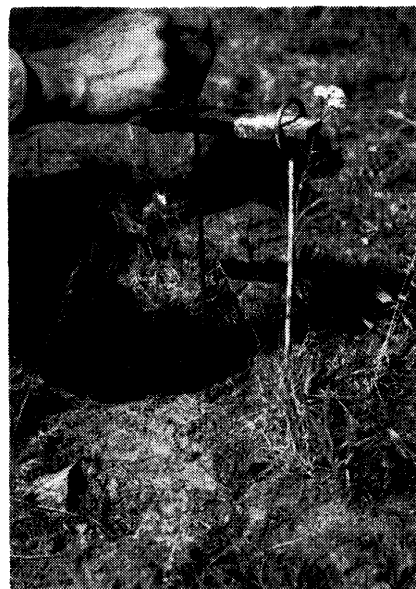


FIGURE 2. The loop in position for observing and recording ground-cover characteristics.

ried by rock, litter, or bare ground denotes a hit on that particular characteristic. A hit of live perennial vegetation is recorded if a perennial plant is rooted in the loop. Only one recording is made for each loop observation. The number of hits for each characteristic is expressed as a percentage of the total number of observations made. A small area around the perimeter of the plot and the plot center stake should be excluded from observation to reduce the effects of trampling and the plot center stake. Average time for 2 men to set up the equipment and observe and record information from 4 sets of observations along the board was found to be 20 minutes.

This quantitative method was initially designed to measure changes in various ground-cover characteristics on permanent plots over a period of years. It provides an index upon which to base changes in general ground-cover characteristics mentioned. Subsequent measurements of the same points on the same plots are possible if trends in range condition are to be evaluated.



FIGURE 1. Orientation of the board over the plot prior to making observations.

place while the investigator takes a close look. The brake lends considerable support to the pin, thus reducing side movements as the point is pushed through the vegetation. In summary the brakes greatly facilitate the mechanics of sampling and thereby improve the yield of accurate data.

A ruler is located along-side each pin and between the horizontal members of the frame. We have used two types. One is made of oak with pieces of a discarded 100 foot tape fastened to the wood with screws. The wooden pieces are held in place with small screws through the frame. The other type is made from $\frac{3}{8}$ inch x $\frac{1}{8}$ inch aluminum on which the length scale is hand made. The ends of the aluminum bars are bent to a right angle which allows the pieces to be fastened to the frame with $\frac{1}{16}$ inch by $\frac{1}{2}$ inch bolts. The aluminum pieces are the most satisfactory because they are more solidly fastened than the wood and do not have the sharp edges of a steel tape. The scale shown in Figure 1 is in inches and tenths while that shown in Figure 2 is tenths and hundredths of a foot. The usual inch scale may be used but either of the

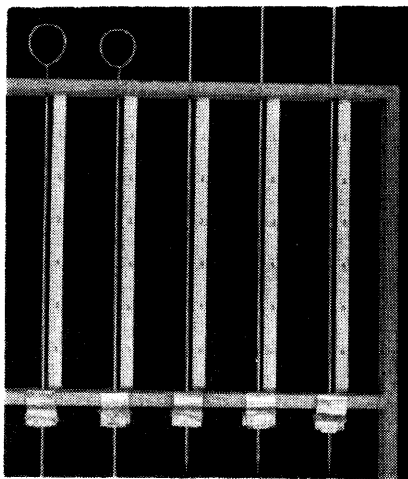


FIGURE 2. Photograph of the point-frame showing the rulers and the tapering, needle-pointed pins. The rulers permit measurement of height of the hits. Both the rulers and the brakes lend stability to the pin movement by reducing side action.

tenth scales is more manageable for recording in the field and for calculations.

The rulers serve two purposes. One is to measure the height of the hit above the soil surface. A discussion of this concept of height together with some representative data from the California annual type were presented earlier (Heady, 1957). The second advantage of the rulers is that they guide the fingers as

the pins are pushed into the vegetation. Thereby, horizontal movement of the point is held to a minimum.

Every investigator in vegetational sampling has problems with equipment. These modifications of the point frame have made possible rapid and easy sampling of foliage cover, ground cover, and height of plant materials in the short, thick, cover of the California annual type. Others may find the modifications useful wherever the point system of sampling is employed.

LITERATURE CITED

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Summer Meeting Scheduled!

The Pacific Northwest Section has invited the American Society of Range Management to its Summer Field Meeting at Kamloops, British Columbia, July 11-12, 1958. Society members and friends should make their plans now to attend this meeting. The summer meeting of the Board of Directors of the Society will be held at Kamloops on July 10.