MODIFICATIONS OF THE POINT FRAME

HAROLD F. HEADY AND LYNN RADER

Associate Professor, and Graduate Student, School of Forestry, University of California, Berkeley, California

Since Levy (1933) gave his complete description of the point method of sampling herbaceous vegetation, there have been many studies on the method and comparisons of the results obtained with those from other methods. This paper is concerned with the design of the apparatus rather than the appropriateness of the method for a particular objective or the analysis of point data. If the reader is interested in those phases, he is referred to recent papers by Goodall (1952), Whitman and Siggeirsson (1954), Kemp and Kemp (1956), and Heady (1957).

The point frame shown in Figures 1 and 2 evolved through several modifications after many hours of sampling over a period of five years. The frame is made from one piece of channel iron ¾ inch by ⅜ inch by ⅛ inch and 14 feet long and weighs approximately 8¾ pounds. Aluminum channel will reduce the weight. The two "A" frames which form the legs are made separately to facilitate storage and transportation and are fastened to the uprights with bolts and wing-nuts. A second set of longer legs is useful for sampling tall vegetation.

The uprights and pins are shown in a vertical position in Figure 1; however, they may be used at any angle to the soil surface by removing the lower bolt. Holes in the legs allow two positions on a permanent basis or tension with the upper wing-nuts and lock washers will hold the uprights at other desired angles. All joints in the frame are brazed except those shown with the four bolts. Iron frames should be painted to prevent rusting and aluminum to prevent sun glare and rubbing-off of the metal during handling.

The pins are made from stock of carbon-tested drill rod which is available in 36-inch lengths. We use pins of 3/32-inch diameter that have been sharpened to a needle point with a bevel that is at least ½ inch long. Otherwise, the shank of the pin will touch and move a nearly vertical plant part before the point will make contact. The ring at the top of the pin is simply a handle. The pins are easily bent so considerable care is required with them. However, we prefer this size to larger diameter pins because the larger the diameter the more difficult to obtain hits by the pin point before the pin disturbs the plants. A map tube makes a convenient carrying case for the pins.

The brake assembly around the pin at the lower crossbar holds the pin in any desired position. The metal holder is cut from a number 10 can and is 1¼ by 3½ inches. The edges are folded around small oak blocks. The brake shoes are soft leather which are fastened to the wooden blocks with waterproof glue. A rubber band around the entire brake provides the necessary tension on the pin. A thin coat of oil on the pins about twice daily maintains a smooth brake action and at the same time prevents rust.

The brake has many advantages. It holds the pin from falling out of the frame when the apparatus is moved between plots or from falling through the frame and damaging the sharp points. The pins are not removed between plot locations. If a hit is questionable or if the species needs close scrutiny for identification, the pin will remain in

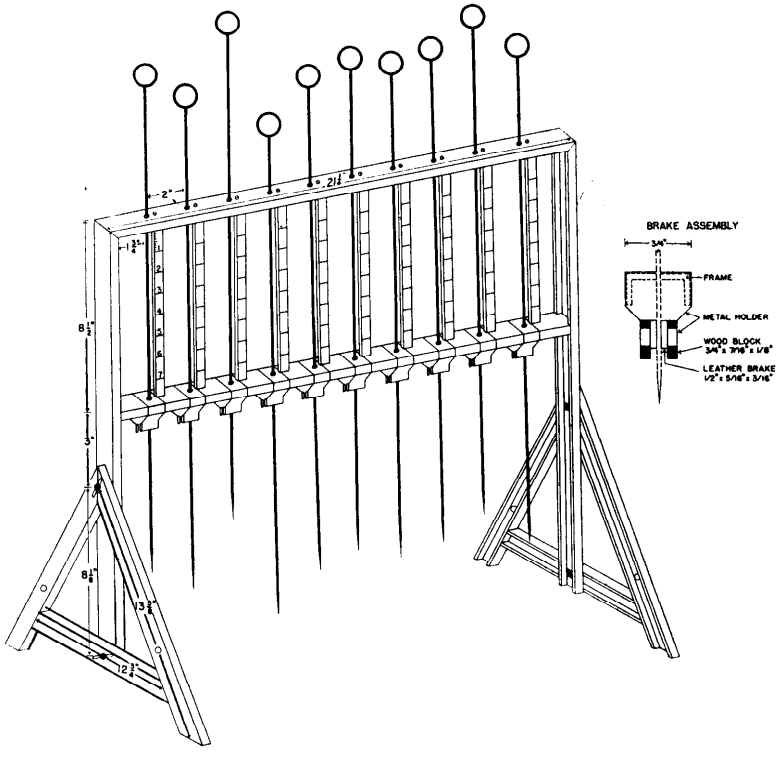

FIGURE 1. Diagram of the point-frame with details of the brake assembly. The brake holds the pin at any height and yet allows smooth action when the pin is lowered through the vegetation.

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 ⅜ inch x ⅛ 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 1/16 inch by ½ 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 tenth scales is more manageable for recording in the field and for calculations.

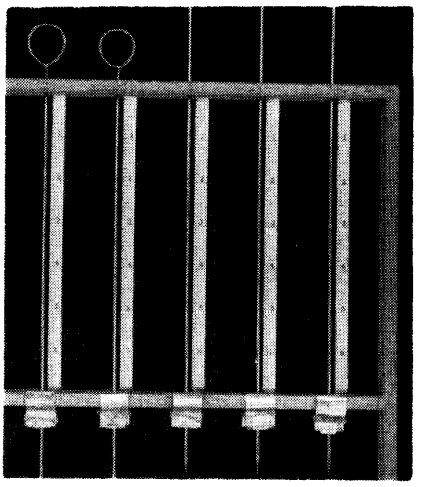

FIGURE 2. Photograph of the point-frame showing the rulers and the tapering, needle-pointed pins. The rulers permit measurement of height of the hits. Both the rulers and the brakes lend stability to the pin movement by reducing side action.

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

GOODALL, D. W. 1952. Some considerations in the use of point quadrats for the analysis of vegetation. Aust. Jour. Sci., Res. Bull. 5. 41 pp.

HEADY, H. F. 1957. The measurement and value of plant height in the study of herbaceous vegetation. Ecology 38: 313-320.

KEMP, C. D. AND A. W. KEMP. 1956. The analysis of point quadrat data. Aust. Jour. Bot. 4: 168-174.

LEVY, E. B. 1933. Technique employed in grassland research in New Zealand. Imp. Bur. Plant Genet. Herb. Plants Bull. 11: 6-16.

WHITMAN, W. C. AND E. I. SIGGEIRSSON. 1954. Comparison of line interception and point contact methods in the analysis of mixed grass range vegetation. Ecology 35: 431-436.

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.