NEW EQUIPMENT FOR THE 3-STEP METHOD

The 3-step method of estimating trend in range condition described by Parker (1951) utilizes a modified line-point transect (in step one) in which "micro"-plot observations along the transects are made by means of a ¾-inch diameter loop mounted on a stiff wire handle. Placing and stretching the steel tape used to define the permanent transect

are greatly facilitated by portable equipment which includes a pair of tape holders or clamps capable of being attached to two portable stakes. This is especially true in shrub or tall-grass types where the tape must be held above the soil surface; and except where wind is a factor, transects are more accurately defined if the tape is suspended above the soil surface, regardless of vegetal type. Neither the loop nor the clamps and stakes are available from commercial supply sources. And while Pickford and Stewart (1935), as well as other workers have described portable tape holders, a description of the equipment developed at Miles City, Montana seems warranted, as it meets the requirements of the point transect and can be made up at minimum expense in any well equipped machine shop (Fig. 1).

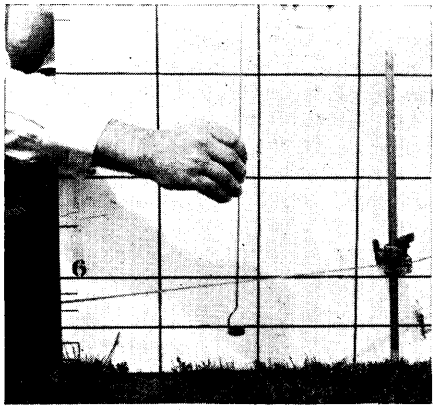

FIGURE 1. Stake with foot-brace and tape-holding clamp and loop with off-set handle.

The tape-holding clamp shown is made from an ordinary iron pipe "T", size ⅜ x ⅜ x ¼ inch, with the threads in the side (¼-inch) opening converted to a ½-inch standard thread (Fig. 2). A 1¼-inch bolt ½-inch in diameter is inserted in this opening. A piece of ⅞-inch soft bar steel, 1¼ inches in length, with a slot ⅝-inch wide, deep cut in one end to receive the tape, and a ¼-inch hole bored from one side to the slot, is welded to the "T" opposite the ¼-inch opening. A 1-inch bolt ¼-inch

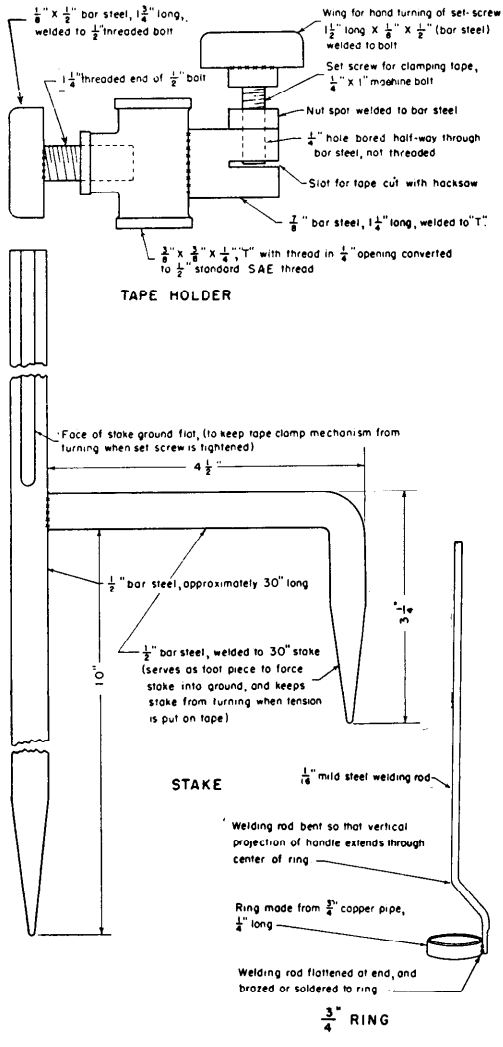

FIGURE 2. Specifications for the improved stake with foot-brace, tape-holding clamp, and loop with off-set handle.

in diameter, with nut affixed, is inserted in this hole, and the nut welded to the bar steel. Wings, made from ⅛- x ½-inch soft bar steel 1½ or 1¾ inches in length are welded to the heads of the bolts to

permit tightening without use of a wrench.

The suggested stake is of ½-inch steel rod, 28 inches in length and sharpened at one end to enter the soil. A footpiece of the same material is welded to the stake 10 inches from the point, extended laterally 4½ inches, then turned at right angles to parallel the stake in the direction of its point for 3¼ inches. The distal end of the footpiece is sharpened. The stake is ground flat on one side above the footpiece, to better engage the set-screw of the tape-holding clamp and to prevent it from turning when tension is put on the tape. The footpiece facilitates setting the stake in the soil and prevents it from turning while in use.

The improved loop has an off-set handle, made from a piece of 1/16-inch soft steel welding rod that is slightly flattened at one end. The loop is made from a ¼-inch section of ¾-inch copper pipe. The flattened end of the handle is brazed or soldered to the outside edge of the loop, and then the handle is bent near the loop in such a manner that a linear extension would pass through the center of the loop. This results in the observation of the same area below each notch in the tape no matter how the handle is turned in a plumb position, a distinct advantage compared to a loop mounted on a straight rod. The loop also serves as a satisfactory plumb-bob. However, readings from established transects taken with this loop will be about ⅜-inch off center from those taken with a straight-handled loop. This points out the need of using one type of loop in all observations. The off-set handle cannot be used effectively where the transect tape rests tightly against the soil surface.

In actual use, the portable stakes are set in the ground in line with, but distal to, a pair of metal stakes which mark the location of a permanent transect. The notched tape is stretched and adjusted between the portable stakes in such a manner that the 0.0 and 99.5-foot marks on the tape contact designated marks on the two permanent transect stakes. The wire-handled loop is lowered from each notch on the tape and observations recorded according to the standards in use.

Factory notched tapes may be obtained from certain manufacturers. However, very satisfactory notches can be made in any ¼- or ⅜-inch metal tape simply by carefully touching each point where a notch is desired to the edge of a power grinder. Compilation of data is facilitated if 100 observations per transect are obtained. Therefore, a 100-foot tape is desirable, but a 50-foot tape, with notches at 6-inch intervals, can be used satisfactorily

Literature Cited

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A NOTE ON HALOGETON

Since halogeton (*Halogeton glomeratus*) is a poisonous plant invader from the territory of the Soviet Union, it may be interesting to know what Russian botanists have to say about it. We have extensively adopted Soviet grass species in range reseeding, and so we may expect

to find their noxious plants thriving on our western range.

An adequate selection of Russian botanical literature is not readily available to the writer, but in the *Flora of the USSR* the genus *Halogeton* and its species are described and geographical area and ecology noted (Komarov 1936). As is usual in taxonomic works, autecology is inadequately treated.

The following, taken from the *Flora of the USSR*, may be regarded as a supplement to Dayton's recent historical account of halogeton (Dayton 1951). It corrects Dayton's account in a few respects.

It is assumed here that the biochemistry of all *Halogeton* species is similar in respect to toxicology. The poisonous principle of *Halogeton*, oxalic acid, is elaborated in many members of the family Chenopodiaceae to which *Halogeton* belongs; for example greasewood (*Sarcobatus vermiculatus*), spinach and other related plants. We already know *Halogeton glomeratus* and greasewood are poisonous plants; we assume here as a working hypothesis that the other closely related species of *Halogeton* may be poisonous also.

Four annual species comprise the genus *Halogeton*. Three have vertically borne seeds; *H. arachnoideus* Moq. (Section Micropeplis, synonym *Micropeplis arachnoidea* Bge.) has horizontally borne seeds, 5 stamens, and leaves without a terminal bristle. This latter plant is whitish, particularly when young, from its floccose pubescence. It ranges from the vicinity of Lake Balkash east and southeast through Sinkiang to Mongolia and Tibet, growing on stony or saline steppes, solonchaks, and alluvial desert deposits.

Of the three other species, all are in the section Euhalogeton and have bristle-tipped leaves, stamens 2, and seeds borne vertically. *H. sativus* or barilla is very similar to *H. glomeratus* but grows in Spain and Algeria; the other two species are Asian. *Halogeton glomeratus* (MB) C. A. Meyer, "our species," is distributed naturally from the north shore of the Caspian Sea east through the upper Irtysh River system, in the deserts and in the foothills of the mountains eastward from the Caspian Sea to the Pamirs, and into Sinkiang and Mongolia. Its soil requirements are much like those of the floccose halogeton. The last species, *H. tibeticus* Bge., is a slender plant similar to floccose halogeton—but greenish, not white-wooly. It occurs naturally from the Pamirs eastward into Tibet on "stony slopes." The type specimens of the first two Asian species are in Leningrad, of the Tibetan *Halogeton* in London.

The Russians give the common names indicated; for *H. glomeratus* "congested halogeton." There are evidently no vernacular names for any of the plants of the genus except *H. sativus* (barilla)—which is not yet found in America. Perhaps the term "Gotdamp weed" (Dayton 1951:380) may become a common name. Until then there is evidently no need to manufacture a so-called "common name." The word "common" would thereby lose its significance, and our language would have gained a term of doubtful necessity while losing one of proved value. Our adopted halogeton has a distinctive, widely used, and acceptable name, namely halogeton. If other halogetons invade the western range, they can presumably be readily distinguished from congested halogeton.

The Russian flora mentions no poisonous properties of any of the halogetons, but does note that *H. sativus* (barilla) is eaten as greens. Is it possible that in their native area of occurrence the halogetons are competitively confined to soils of such exchangeable base status that

their oxalic acid is tied up as insoluble calcium oxalate?

Since we know very little about how an invading plant invades, including how fast, could the American Society of Range Management act as a clearing house for new records of *Halogeton*? The object would be to prepare a map showing the year in which *Halogeton* first occurred in a given area. Thus its invasion progress may be accurately traced. Prof. A. H. Holmgren at the Intermountain Herbarium in Logan, Utah is willing to receive, correlate, and record such notices. They should consist of an accurate place description including altitude (preferably section, township, and range or location on some specified, generally available map, as a U.S.G.S. topographic sheet), when the plant was first noticed, extent of the stand, and at least a fragment of the plant for positive identification. Herbarium specimens are preferable. A note on associated plants, if any, would be a valuable ecological addition.

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ON KNOWLEDGE

No man ever gets to be as smart as he thinks he is at 18.—*Judge Lawrence J. Golon.*

They know enough who know how to learn.—*Henry Adams.*

The highest happiness of man as a thinking being is to have probed what is knowable and quietly to revere what is unknowable.—*Wolfgang Goethe.*

No one is exempt from talking nonsense; the misfortune is to do it solemnly—*Michel de Montaigne.*

We know accurately only when we know little; with knowledge doubt increases.—*Wolfgang Goethe.*

From contemplation one may become wise, but knowledge comes only from study.—*A. Edwart Newton.*