Improved Needle Point Frames for Exact Line Transects

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Description of the Apparatus

An improved needle point frame for exact line transects in dense herbaceous vegetation was developed (Fig. 1). The apparatus consists of a rigid duralumin bar (B) of about 2.40 m long, with rectangular section (10 cm × 1.8 cm) bounded, at both ends, by a tightening nut system (S). After pushing into the soil two support-stakes (PS), the bar is fixed horizontally at the desired height, by the tightening nut system and with the help of a nivel, in such a way that the point of the needle (A), at its highest position, should be just above the "roof" of the vegetation. The upper part of the bar (B) is a ball-race and shows 80 small alveoles (a) spaced 2.5 cm center to center. The diameter of these alveoles corresponds to the diameter of a small ball linked to a sliding system (SC) surrounding the bar. This sliding system includes mainly two holes (0_1 and 0_2); which command the vertical position of a needle-holder (PA), a handle (b), a ball (u) held by a flexible rod (f) and a rubber-covered metallic cylinder (CM). This produces a sliding friction between the system (SC) and the bar, whose corresponding part is covered with a strip of emery-cloth. This hole allows the rapid, easy and regular movement of the needle.

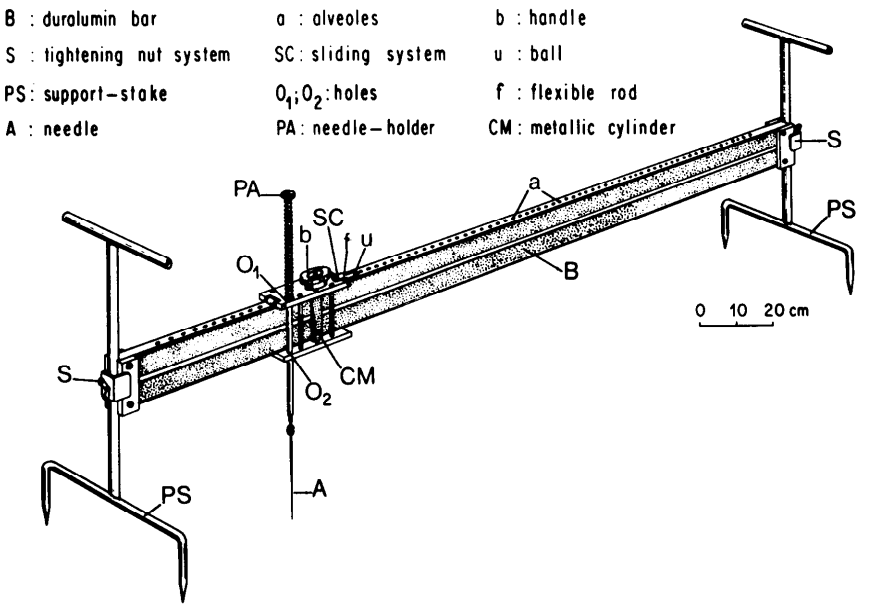

FIG. 1. Needle point frame for exact line transects.

The needle holder (PA) (Fig. 2) comprises:

1) A metallic handle (m) 2 cm in diameter; this is screwed on to a metallic rod T, 8 mm in diameter and about 50 cm long with inside screw-cutting at its ends.

2) A spiral spring (R), 30 cm long, surrounding the rod and whose extremities press on two discs (r), allowing the needle to come back to its initial position after observing hits of vegetation along a vertical line, up and down at a given "point."

3) A piece (P) with outside screw-cutting at both ends, the upper for receiving the lower part of rod (T), the lower for receiving the upper part of a sheath (G), 1 mm in diameter and about 12 cm long. A very thin needle (A) with a little cylinder (c) at the upper end, is put in the sheath (G) and locked. The needle is about 0.5 mm in diameter and 16 cm long; it may be twisted easily but it can also be changed rapidly and readily.

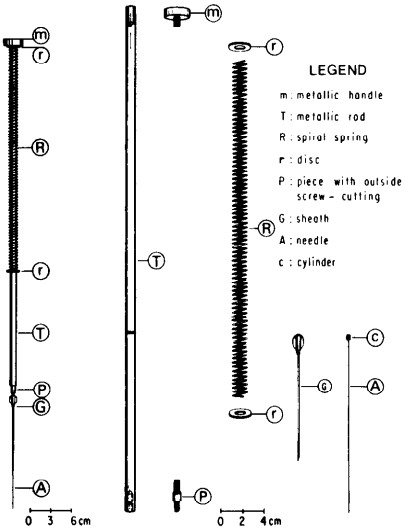

FIG. 2. Needle holder : details of construction.

Methods of Use

At every point, the needle is slowly pushed down through the vegetation to the ground. The repeated hits of the sharp needle point at any plant part are recorded. Hits are registered on special forms. The needle is then moved to the next position.

The apparatus described allows great accuracy and repeatability of measurement (Poissonet et al., 1969). However, careful observation and therefore trained operators are its limitations. It is cumbersome and must be handled

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with care. It cannot be used when wind moves the vegetation. The detailed observations are time-consuming. Therefore, it may not be used as a survey instrument but is very useful as an exact reference method for assessment of other more rapid survey methods.

Literature Cited

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