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NOTA

TWO SIMPLE METHODS FOR RECORDING POINTS WHEN USING PHOTOGRAPHY AND POINT SAMPLING TECHNIQUES

Camilo B. García

ABSTRACT

A short review on photography and point sampling techniques as sampling tools for hard bottom communities is given. Two methods for recording points are introduced

RESUMEN

Se presenta una revisión breve de las técnicas de fotografía y muestreo por puntos como medios de muestreo de comunidades de fondos duros. Dos métodos de registro de puntos son introducidos.

INTRODUCTION

Photography and point sampling techniques have become standard methods in quantitative hard bottom ecologial work (Lundälv, 1971; Bohnsack, 1979; Castric-Fey, 1984; Christie *et al.*, 1985; Littler and Littler, 1985). The parameter of interest is usually percent cover a an expression of the use of the resource which obviously all sessile epibenthic organisms share and for which they eventually compete, namely, space area for settlement and growing. Photographic techniques include, apart from the ordinary photography, seterophotography for providing the impression of depth (Lundälv, 1971; Christie *et al.*, 1985; Svane and Gröndahl, 1988) and the use of infrared film for assessing the status of health of primary producers (Littler and Littler, 1985). The photographs, in the form of transparencies (slides), are viewed through a stereocomparator or two aligned stereomicroscopes, in the case of stereophotography (Lundälv; 1971; Christie *et al.*, 1985; Lundälv and Christie, 1986; Svane, 1988). Simple slides are viewed through a single stereomicroscope (Bohnsack, 1979), or are projected onto a screen (Sebens, 1986; Logan, 1988; Vance, 1988). An array of points regularly or randomly positioned, normally in

the form of a transparent sheet with the points on it, is superimposed onto the picture. Items under the points are recorded, and the proportion of points for each item is expressed as the item's percent cover (Castric-Fey, 1984; Christie *et al.*, 1985; Vance, 1988). There are, however, a number of difficulties in using both stereomicroscope and projector for point recording, specially when the community under study displays high diversity, i.e. numerous different items on the slide. In the case of stereomicroscopy the size of the working image, upon which one has to position and count a great number of points (normally no less than 100, the points having to be as fine as posible), is very small (35 mm slides). Furthermore, with greater magnifications the general view gets lost. In the case a the projetor is used, the operator's own shadow is always a disturbing factor. I present here two easily implementd variants to the methods of point recording on simple photographic slides both of which provide larger working images, the first one eliminates shadows, and the second one in addition automates the procedure. The slides taken from asbestos plates during a colonization experiment off the caribbean coast of Colombia served as base for developing the methods.

METHOD 1

For this method one needs a projector, a translucent portable screen of 1 m^2 and a dark room. Lines are drawn in a checked pattern on a transparent screen which is then attached to the projector screen. The intersections of the lines represent the points. Either all intersections are recorded or an adequate number of random points may be selected. The slide is then projected from behind on the screen. The operator, sitting in front of the screen, records the points asigning to the different items.

METHOD 2

This method is more sophisticated including use of a computer (see Rands, 1983, for a similar approach), corresponding software, a digitizing table, an electronic pencil or a mouse, and a dark room. A projector, mounted on a bearing device, is positioned so that the slides are projected vertically. Under the projector is the digitizing table upon which a sheet with a checked pattern on it has been laid. The points are again represented by the intersections. A BASIC program, written by the author for this purpose, functions as follows. After initializing the procedure with operator name, sample name and/or number, number of points in the x-y coordinates (if one is working with regularly positioned points), or the total number of points representing 100% (if one is working with randomly positioned points), counting is carried out by digitizing each ocurrence of the selected item under each point with the mouse or electronic pencil. At the end of the counting procedure the percent cover of the particular item under investigation is printed out. The program provides the options of counting a new item on the same slide. Working with a new slide, or exitting the program. The procedure is shown as a flow diagram in Fig. 1.

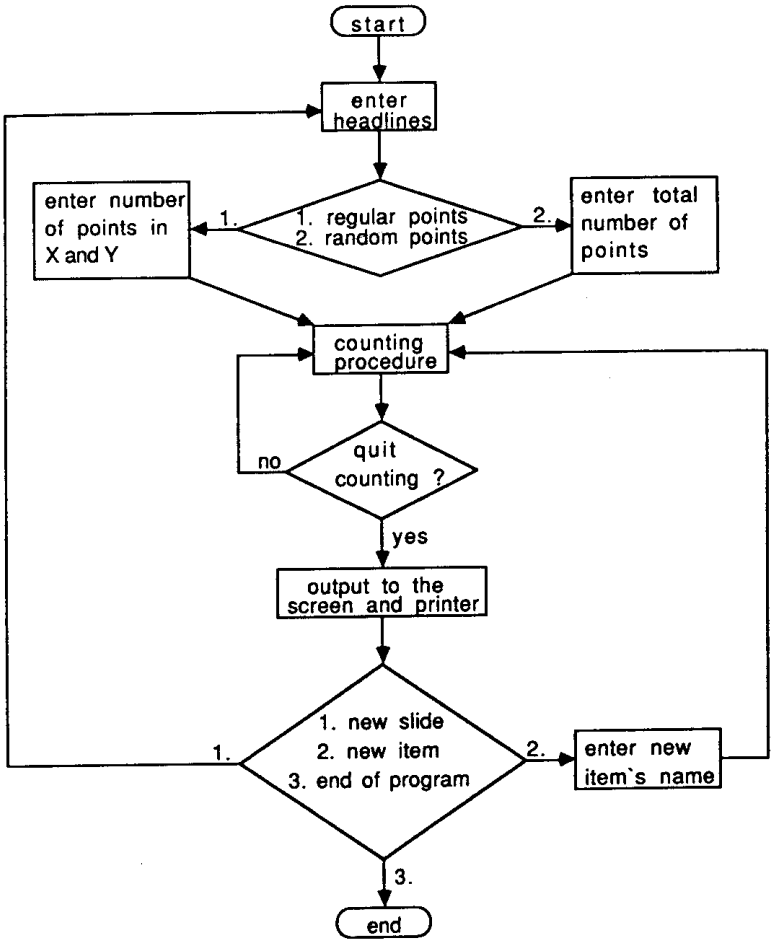

Figura 1. Flow diagram of program Cover. bas

DISCUSSION

A problem of the alternative methods proposed here, is that one is working the dark, which could mean additional stress. However, with an equilibrated administration of time this should not become a hindrance. The second method is clearly superior in that the data produced ar automatically recorded. Further levels of sophistication in the software are posible, for instance, the creations of data files that may be read by statistical programs.

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Author's adress (dirección del autor):

Alfred Wegener Institut für Polar und Meeresforschung, ColumbusstraBe, Postfach 12 01 61, D-2850 Bremerhaven, Federal Republic of Germany.