A Technique for Determining Relative Abundance and Distribution of Aquatic Plants

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In the summer of 1958 I made a survey of 42 reservoirs in southwestern Manitoba and southeastern Saskatchewan, Canada. The purpose was to study succession in the larger aquatic plants and its relation to waterfowl populations. Due to limited time at each area, a technique for rapidly obtaining data on the distribution and approximate numbers of aquatic plants was developed.

The technique consists of pacing along the shoreline and, at specific intervals, stopping and recording all vascular aquatics visible in the water at right-angles to the shoreline. The interval used for a shoreline up to 1,000 feet long was five paces (170 inches in my case); and ten paces (340 inches) for longer distances. The uniformity of vegetation determined the number of observations made, except in areas where it was possible to walk around the entire reservoir.

This system was suggested by Siegler (1941, Jour. Wdl. Mgt., 5: 423-426) who assessed the degree of availability of certain waterfowl foods at a variety of water bodies. He recommended pacing the shoreline and recording the presence of a particular plant each time it was observed in the water at right-angles to the shoreline. Siegler's system differs from the present one in that he was not concerned with all of the larger aquatics at an area; his observations were made only at one-pace intervals; and he considered only two plants per circuit.

Interpretation of the data obtained by this technique gives: (1) the percent of water area visible from the shoreline occupied by specific plants, or by an absence of plants; (2) a presence rating for a particular plant in respect to other plants; (3) the distribution of vegetation if separate data is taken on shoreline and surrounding physiography; (4) an availability rating for waterfowl food, nesting and cover habitat; and (5) the length of shoreline of a certain area. The data can also be used as a basis for studying change by repeating the observations at a later date. If this is to be done, definite starting points should be established, phenological dates should be noted, and water levels should be taken. The latter information is necessary as high or low water levels may alter the vegetational composition.

Drawbacks to the method are: (1) wave action and turbidity cause varying degrees of visibility; (2) the inaccessability of certain plants may prevent their identification; and (3) within a species, single specimens and groups are given equal ratings at each point.