A SUGGESTED COUNTING FRAME FOR INTERTIDAL POPULATION STUDIES

By

RALPH W. DEXTER

Kent State University

Many investigators have made population studies on the intertidal region, particularly to determine the zonation of marine life in correlation with tidal levels. These workers for the most part have adopted the commonly used square meter or square foot quadrat, or fraction of same, so successfully employed in the study of terrestrial populations. In some cases, such as extensive, gently sloping beaches and flats this method has been very satisfactory. On steeply sloping shores, however, and on rocky ledges, large boulders, etc. the angle of a quadrat is so great that a square meter quadrat would often overlap several natural levels of distribution. Such a quadrat at an angle of 40° has a vertical range of 65 centimeters (7¾ inches for square foot quadrat). At 60° it has a vertical range of 86.5 centimeters (10⅜ inches for square foot quadrat), and even at 20°, a range of 32.5 centimeters (4¼ inches for square foot quadrat).

On many shores, especially those with a small range in tide, these vertical distances would cut through two or more critical levels so that the quadrat count is not a true sample for any zone, and indeed zones could easily be entirely obscured by such sampling.

Where time or conditions do not permit a complete transect to be made, and random samples are taken at different levels, the writer suggests oblong counting frames to include either one-fourth of a square meter or one square foot of surface, but constructed to be 20 centimeters by 125 centimeters in one case and 6 inches by 24 inches in the other. Such counting frames applied to sloping shores, ledges and rocks would give a better sample of any particular level, having as they do, a longer horizontal stretch to increase the chances of including widely scattered forms such as certain snails or hydroids, and would include more organisms of a common level, at the same time excluding higher and lower levels. These oblong quadrats would be wide enough to accommodate a narrow shovel or clam fork for digging into sediments. Where it is desirable to sample a greater area or dig up a greater volume of sediment, the counting frame can be applied several times in a series along the same grade to keep the sample within

the same tidal level. In this way a larger sample can be taken inside a particular zone.

The writer, having used the conventional square forms of various sizes for a number of years, has come to the conclusion that an oblong counting frame would give a more accurate sample of a particular level and a more adaptable instrument for zonation studies, especially on shores having a number of sharp vertical limits. It is the plan of the writer to use such a frame at the earliest opportunity, but he hopes that in the meantime others might make use of it.