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SOME OBSERVATIONS ON THE NUMBER AND SIZE OF SAMPLES NECESSARY TO MAKE AN ADEQUATE SAMPLING OF A PRAIRIE BIOTIC COMMUNITY**

(Abstract)

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The validity of the size and number of samples to be used in the making of statistical analysis of a population is an item which must be ascertained before accurate samplings can be made in any community. Samplings of the biota of a prairie community of central Oklahoma were made during the summer of 1934 with an insect net for the small invertebrates (insects and spiders), and quadrats for the vegetation.

In the animal study, two sweep-net series of 25, 50, 75, 100, 200, and 300 sweeps each showed that for the most abundant species (those occurring in the largest numbers in the majority of samples), the deviation of the individual collection from the mean set by all of the collections was 10 per cent of that of the total population from a similar mean. In the first series the abundant group of species comprised 91 per cent of the total population, in the second series, 62 per cent.

The number of individuals obtained with an increased number of sweeps functioned as a sigmoid curve, the ends of which were scewed by errors of sampling: the very small samples suffered from the relatively high mechanical error of handling, and the very large samples by the fatigue of the operator and the increased bulkiness and weight of the sample in the bag of the net. The number of species obtained by an increased number of sweepings increased as the asymptotic curve, regardless of the actual number of species present; the critical point in this curve fell between the 50 and 75 sweep samples in the community used.

Samplings of the plant population by means of quadrats of constant size (one meter) showed that the progressive deviation from the mean with reference to both number of individuals and clumps and to the area covered by the clump forming species reached a low asymptotic plane at 50 samples; 72 sample quadrats were taken in the plant study.

* For data obtained in this portion of the study, see "Forest edge birds and exposures of their habitats," to appear in Wilson Bulletin.

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