

## Hibernal Notes on Cattle Dung Microseres<sup>1</sup>

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Hibernal notes were made on cattle dung microseres, in an overgrazed pasture in Cleveland County near Norman, Oklahoma from December, 1952 to March, 1953. The purpose of the study was to investigate the effects of relative humidity, precipitation and temperature on the succession of internal arthropod populations in cattle droppings during the hibernal season.

Four distinct microseral stages were recognized. These microseral stages were based on the following factors: (1) The color of the dung; (2) the decay and disintegration of the dung; (3) the varying distinct associations of arthropods inhabiting the dung which are usually specific for certain stages. These microseral stages are of a temporary nature, indicating a true succession of motile organisms which are not only controlled by seasonal environmental factors but also by their natural history and physiology.

There is fluctuation of the abundance of organisms which appears to be due to changing external environmental conditions. During the hibernal season only a few species of arthropods were encountered. Due to the hibernation of certain adult arthropods, large numbers of a single species were often more abundant than non-hibernating forms in the later microseral stages. Succession is slower during the hibernal season, and the greatest number of arthropods was encountered in the later more desiccated microseral stages.

In general, as the temperature increased, the number of arthropods increased. On warm, sunny days during the winter months, certain non-hibernating and some hibernating organisms become more active and possibly ascend from the soil. During periods when the temperature decreased to near freezing or stayed within the vicinity of freezing for any considerable length of time, there was usually a noticeable decrease in the arthropod population.

The data indicated that there was a negative correlation between humidity and temperature and that any apparent effect on arthropod populations might be assigned to either factor. However, the effect of atmospheric humidity on the microhabitat studied would chiefly concern the rate of drying, without immediately affecting conditions in the interior. In this sense the effect of low humidity and high temperature might be expected to accelerate the rate of succession.

Precipitation appears to play an important regulatory role in these microseres. During the periods of relatively high precipitation, the number of arthropods increased.

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