Jackson Hole Research Station Annual Report

Volume 1955 *Report on the Activities of the Jackson Hole Biological Research Station - Summer 1955*

Article 11

1955

A Comparison of Ant Communities at Increasing Altitudes

Gerald Scherba
Chico State College

A Comparison of Ant Communities at Increasing Altitudes

Dr. Gerald Scherba
Chico State College
Chico, California
Project Number 80

Objectives: The overall goal of this study is a comparison of the structure and composition of the ant communities at different altitudes in Western Wyoming. In doing this we hope to establish some of the basic characteristics of ant communities in general, and to arrive at a picture of the ant fauna of the Jackson Hole region. This kind of a study should lead to an increased understanding of animal communities and of biotic communities in montane regions.

Methods: Operationally this investigation has been partitioned into three phases:

1. Ecological reconnaissance--in which the ant fauna of distinct plant communities has been intensively collected, and observations made on nesting habits, relative abundance and behavior. Particular attention has been given to the relationships between ant species, and to the reciprocal influences of the ant community on the plants and other animals.

2. Statistical comparisons--testing the significance of observed differences in relative species frequency, density, nesting preferences, distribution patterns and associations in a series of selected communities.

3. Community integration and dynamics--where laboratory observations are made on relationships between ant species in order to check field observations. In the field the relationship between activity pattern and the microclimate is compared for different species within the community.

Results: At the present writing phase 1 has been completed. The ant fauna of over 40 plant communities has been investigated. These can be grouped as follows:

1. 6500-7000 feet
   Big Sagebrush Community
   Aspen Forest
   Lodgepole Pine Forest

2. 8500-9000 feet
   Big Sagebrush Community
   Aspen Forest
   various Conifer Forests

3. 10,000-11,000 feet
   Whitebark Pine Forest
   Wind Timber Zone
   Tundra

In each case several stations were selected, being as careful as possible to choose areas that were ungrazed and untimbered and in a mature condition, or in the same stage of succession. Numerous observations

concerning the relationships within the several communities have been made, and a considerable quantity of preserved material has been collected for determination during the coming year. When these observations are connected with the taxonomic data a cohesive picture of the ant community at each area should begin to emerge.

In addition, preliminary observations have begun on the succession of ant communities in lodgepole pine forests in which datable fires have occurred extending from 1 to 25 years ago. The effect of cattle grazing on the sagebrush ant fauna has also been investigated in a preliminary way by using island communities in Jackson Lake and a series of mammal exclosures established by the Forest Service in the Hoback River region.

(Grant from the New York Zoological Society.)