

-14-

to the same nematode species but found under widely different environmental conditions or in or near the roots of widely divergent plant species will be examined carefully for morphological and anatomical variation.

From the examination under the stereoscopic microscope of nematodes recovered from the different samples it was evident that individuals from at least 12 genera were present. Substantial numbers of nematodes were obtained from a few of the samples.

Supported by New York Zoological Society.

Life History of Microtus richardsoni macropus  
Norman C. Negus  
Tulane University  
Project Number 87

A short time during September was spent in collecting additional reproductive and pelage data for the life history study of Microtus richardsoni macropus. Also live specimens were collected and sent to Dr. Robert Matthey, University de Lausanne, Lausanne, Switzerland for his use in behavior and chromosome studies.

Ecology of Ants in Jackson Hole, Wyoming  
Gerald and Coral Scherba  
Chico State College, California  
Project Number 80

The investigation of ant ecology in the Jackson Hole, Wyoming area has been concerned with three problems: the altitudinal distribution of ant species; the analysis of a Big Sagebrush ant population; and a description of a unique ant population on Moose Island, in the Snake River.

1. During 1957 about 200 specimens were collected from canyons in the Grand Teton Mountains at different elevations above 9,000 feet. This brings the total number of specimens to about 1300, which when determined will provide information on the distribution of ants at increasing altitudes in western Wyoming.

2. On the Big Sagebrush ant population, two suggestions arose from the 1956 data. One, that lack of available nesting sites may be an important factor limiting population density and two, that the foraging activity of different species may occur at different times during the day, and hence, competition between the fifteen coexisting species would be reduced.



-15-

To test the first of these hypotheses we selected a sample plot composed of twenty quadrats, each twelve meters square, and determined the number and species of ant nests in each quadrat. Ten quadrats were randomly selected and twenty-four asphalt shingles were then laid down in each quadrat, to furnish artificial nesting sites. These quadrats should be examined about the middle of August, 1958, in order to determine the effect of increased nest sites on the ant population.

Foraging activity was determined by setting out a series of twenty-five ant feeding stations consisting of vials of sugar water located at the soil surface, six inches above and at the sagebrush top. Each station was located next to an active nest and the number and species of foragers present at each level at each feeding station was checked every two hours, for a period of twenty-eight hours. In addition light intensity, temperature of air and soil at various height and depths, and relative humidity were measured.

Briefly, results showed that eight species of ants foraged at feeding stations between 6:00 a.m. and 10:00 p.m. with three distinct feeding patterns emerging, such that different species had a maximum number of foragers active at different times, depending on which of the three feeding patterns were followed. Temperature, rather than light (suggested by work of others) appears to be the most important factor regulating foraging activity.

3. On Moose Island, a one mile by one half mile man-made island in the ox-bow of the Snake River, there is a population of 770 mound-building ants which, after a detailed carefully mapped total census has been found to consist of six species. Each nest is marked by a numbered stake.

<u>SPECIES</u>	<u>NUMBER</u>	<u>PERCENT</u>
1. <u>Formica opaciventris</u>	429	55.7
2. <u>Formica fusca</u>	259	33.6
3. <u>Formica altipetens</u>	65	8.4
4. <u>Formica obscuripes</u>	8	1.1
5. <u>Formica wheeler's</u> and <u>Formica fusca</u>	7	.9
6. <u>Polyergus rufescens breviceps</u> with <u>Formica fusca</u>	2	.3
	<u>770</u>	<u>100.0</u>

The location on the island with respect to forest or clearing is distinctive for each species. It was found possible to distinguish activity levels representing ontogenetic stages in the history of a mound nest, and these have been recorded.

Formica opaciventris the most abundant mound-builder on the island is a species with a life history that is typical for a member of the exsecta group of Formica. It differs from the other closely



-16-

related species, however, in that at the mating flight queens fly but a short distance, often inches, and return to the parental nest soon after mating with males from other nests. As such, the species shows an extreme type of behavior, which probably functions to reduce mortality of fertilized queens by protecting them in this fashion.

Supported by the American Academy of Arts and Sciences.

An Evaluation of Certain Exclosures  
Dixie R. Smith  
University of Wyoming  
Project Number 89

Field work on this project was completed in September, 1957. Frequency and abundance data have been collected for species found within the following relict areas or adjacent grazed areas:

1. Upper Slide Lake Exclosure
2. Goosewing Study Plots
3. Miller Butte Exclosure
4. National Elk Refuge Exclosure
5. Gilcrease Unit Exclosure
6. Camp Creek Unit Exclosure
7. Bryan Flat Exclosure

These data will be analyzed to obtain the following objectives:

1. Species response to grazing.
2. Degree of departure from climax due to grazing.
3. Pertinent intraspecific relationships and the effects of grazing thereon.
4. Type of distribution (random, overdispersed, or underdispersed) and the effect of grazing thereon.

A detailed report of this project is in the process of being written and will be submitted to the Graduate School as a Ph.D. thesis. One copy will be supplied to the Director of the Biological Research Station.

Supported by grant from Wyoming Natural Resource Board to the Wyoming Agricultural Experiment Station.