Cortisone injection experiments were repeated using larger doses of the drug. Last year 1.5 mg per day for 3 days were used with little result. This year 16 mg per day were used. Results were as follows:

1965	20 squirrels	cortisone	4,638	amebas/ml	cecal	fluid
1965	20 "	saline	3,405	"	"	"	"
1966	5 "	Cortisone	20,755	"	"	"	"

Only 5 animals were used this year because the supply of cortisone was exhausted and no more could be obtained whenneeded.

ACTH was injected into 10 animals using a dose of 0.05 ml of the commercial product each day for three days. The average ameba count was 10,077.

Average adrenal weights were as follows:

20 field controls	25 mg
20 stressed and caged controls	30 mg
5 cortisone-injected animals	17 mg
10 ACTH-injected animals	19 mg

The difference between the adrenal weights of field animals and caged squirrels was slight. The low weight of those in cortisone-injected animals was expected because the adrenals were "bypassed". In the ACTH-injected squirrels there probably was insufficient time for the adrenals to enlarge.

The results supported the conclusions reached last year and showed that variation in body weight and cecal weights were not significant.

Assisted by Jeanne H. Williams, Student Conservation Program.

Biotic Succession in Lodegpole Pine Forests of Fire Origin in Yellowstone National Park

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Project Number 133

Six areas selected in 1965 were intensively studied in an attempt to determine the pattern of succession in the development and establishment of lodgepole pine (Pinus contorta latifolia Engelm.) forests. The six forests are from 5 to 260 or 280 years old.

Hygrothermograph, maximum-minimum temperature, and rainfall records were collected from June 11 to August 26. Atmometers were in the field from July 26 to August 26. Data on soil temperatures were collected on two areas during June, July, and August, and on four areas during part of July and through August.

Forty-five soil samples were collected, making a total of 60 samples (10 from each area). Chemical analysis is almost completed on these samples.

Each area was snap-trapped (120 traps for 3 nights) in late June and again in late August. A total of 4,220 trap nights yielded 235 rodents. Eight species were collected. A tentative summary of rodent trapping data is presented in Table 1.

Table 1. Rodent data from six lodgepole pine forests of varying ages.

	1960	1954	1942	1910	90 Yr.	Oldest (260 +)
No. Species Collected	4	6	7	3	3	3
No. Animals Collected	42	45	31	48	15	54
Wt. of all Animals (grams)	993.4	1476.8	927.5	964.4	322.3	1348.6

Birds were censused in mid June. Two areas were censused once and four areas twice. Twenty-six species of birds were observed in these census periods (Table 2). The character of the vegetation made it difficult to estimate the number of breeding pairs of birds in the three oldest stands.

Table 2. Distribution of 26 species of birds in six lodgepole pine forests of varying ages.

	1960	1954[1]	1942	1910	90 Yr.	Oldest (260 +)
No. Breeding Species	13	12	11	6	10	9
No. Breeding Pairs	38	30	30	4+	5+	6+

[1]The transect for 1954 was 800 yards long. All others were 1,200 yards long.

Sixty, 50 sweep samples of insects, and sixty, one-square foot soil samples from which arthropods were extracted, were collected. These samples are yet to be analyzed.

Per cent canopy coverage of plant species was measured in the six study areas using 50 plot transects in an attempt to obtain data on species differences. Voucher specimens were collected for all plants in the study areas. Trees were sampled using the random pairs method. Increment borings, for aging the trees, were collected from approximately 200 trees.

Sixty samples of soil were collected for Dr. Martha Christensen, Department of Botany, University of Wyoming. Fungi will be isolated and identified from these samples.

Collections and observations will be continued during the summer of 1967. The study will be written up in detail during the winter of 1967-68.

Supported by New York Zoological Society and Yellowstone National Park.