

NR Bibkey #648574

Marr # 282

2 copies in
Janke's office in
bottom drawer -
dark file cabinet
in folder labeled
1977-1979 Reports to
NPS

FALL PROGRESS REPORT
OF THE
RESEARCH PROJECT
ENTITLED
THE FLORA AND VEGETATION ECOLOGY
OF ISLE ROYALE NATIONAL PARK

SUBMITTED FALL, 1979

BY

ROBERT A. JANKE

CHIEF INVESTIGATOR

GENERAL OBJECTIVES AND LOGISTICS

This report will describe our research activities during the summer field season of 1979. These activities were primarily associated with the collection of data in the field. Data collection centered primarily about three studies which constitute most of this year's (1979-80) portion of our vegetation ecology study. These are: (1) The rock shore plant communities on the exposed shores of Lake Superior, (2) Post-fire succession in recent burns and (3) The effect of seed source availability on reproduction of balsam fir and white spruce.

I traveled to Isle Royale via the motor vessel Ranger III on May 29 and spent about 3 weeks engaged in such activities as visiting previously established study areas, establishing new study areas for the summers' research, planning the summers activities, collecting and identifying plants which occur in these study areas, and assisting the Isle Royale N.P.S. staff in conducting their annual training program for seasonal employees. On June 19, graduate student Joyce Longwith and undergraduate field assistant Michael McCardle (both hired on project funds), undergraduate Roana Holcomb (hired under the Federal Work-Study Program) and two undergraduate volunteers arrived on Isle Royale via Ranger III. Our base camp was then established in the Rock Harbor Research Campground. After several days of briefing my staff on the objectives and methods of this year's research and familiarizing them with Isle Royale flora, the field work began. Field operations ceased on August 25 when we all returned to the mainland via Ranger III.

PROCEDURES

Rock shore communities. This study was to be started this year and completed in May 1981. We visited many exposed rocky shores throughout the

park in order to determine the range of variation within this community type. At each location plants were listed and careful notes were taken of the micro-habitat in which each was found. Unknowns were collected and taken back to the base camp for identification. In general the ground work was layed for an intensive program of quantitative sampling in the summer of 1980.

Recent burns. Two recent burns were studied, one at Card Point, the other at McGinty's Cove. Card Point burned in 1976 while the McGinty's Cove area burned in 1975. Both fires were permitted to run their course under the "let burn" policy of Isle Royale National Park for fires of natural origin. Study plots for measuring trees, tree seedling establishment, and other invading vegetation were set up and sampled in 1977. These were resampled in 1978 and again this past summer. Details of the sampling methods used are described in our annual report of June, 1978.

Fir and spruce reproduction versus seed source. In our previous studies in a large area burned in 1936 we noticed a sparsity of balsam fir reproduction, even though a continuous canopy of birch had been established. To a lesser extent this was true of white spruce. In another large and much older burn we noticed that even after about 75 years of post-fire succession, fir and spruce trees or their seedlings were very scant. In some places near the periphery of these burns, however, we had noticed at least a moderate amount of fir and spruce reproduction. We therefore hypothesized that because of the extent of these burns, much of the area was too far removed from a seed source (which would be at least as far away as the burn boundary) to receive any significant quantity of seeds of these two species. We tested this hypothesis by checking for the existence of a density gradient of trees or seedlings of these species along lines within the burns and directed away from the burn boundary. We first looked for segments of burns periphery where ample seed source was available

at the burn edge. We found 4 such segments. For each of these locations we set up series of transects from the burn boundary directed toward the interior of the burn and 20 meters apart. Along each transect spruce and fir trees were sampled in 10 meters radius circular plots spaced 20 meters apart with centers on the transect line. Seedlings (stems less than 1 meter high) were counted in 2 meter wide strips straddling the transect line and 5 meters long. A distance of 5 meters along the transect intervened between each of these sampling strips. Saplings (stems from 1 meter high to 5 cm in diameter) were sampled in similarly located strips except that the strip width was 4 meters. Sampling was continued along each transect until it became obvious that all densities were essentially zero for several successive plots.

Miscellaneous activities. We continued with our vascular plant inventory project throughout the summer by remaining on the lookout the new plant species, noting the location of rare species and taking notes on habitat preferences and relative abundance of all species. We also took notes on the effects of beaver and moose activity wherever we traveled. Tallies of tree species felled by beaver were taken in the vicinity of several active beaver lodges. At least 35 kodachrome 35 mm slides were taken of subjects of ecological interest pertaining to our study.

Post-field season activities. Since the end of the field season we have identified all unknown plants collected and begun the processing of the data collected. Data processing will continue throughout the winter months with the help of student assistants hired by project funds. A final report summarizing the results of this years activities will be submitted in May, 1980.