FIRE HISTORY IN THE BIGHORN CANYON NATIONAL RECREATION AREA

Dennis H. Knight
Yegang Wu
Department of Botany
University of Wyoming
Laramie

Work during May included finishing the summarization of data collected in 1988 and preparing for the second field season. Field work for 1989 started on June 4, with graduate student Yegang Wu working in the Bighorn Canyon National Recreation Area (BCNRA) until August 7. Terry Peters provided additional field assistants to work with Yegang on the average of about one day each week from mid-June to early August, a contribution that greatly facilitated data collection. Accomplishments during the summer can be summarized as follows:

1. A total of 460 trees were cored for age determination. The ages are required for determining forest stand age, fire history, and the rate of fuel development.

2. A search was conducted for fire scars, with scars being sawed as wedges from 28 trees. These fire scars provide some of the most accurate information on fire history.

3. A total of 110 fuel samples were collected periodically during the summer for moisture determinations, thereby obtaining data required for the fire behavior model.

4. Twenty-one grazing exclosures in the grasslands and shrublands were sampled to determine the effect of grazing on fuel accumulation.

5. Data collection was completed on the remaining 55 grid units of the study area, thereby completing the required sampling for vegetation types, fuel loading, and topography for the entire area.

6. Ninety mountain mahogany and juniper shrubs were cut and weighed in order to determine the relationship between stem basal diameter and the weight of different fuel classes on the shrub (1-hour, 10-hour,

100-hour, and live and dead twigs).

7. Contact were made with the Custer National Forest, Red Lodge, Montana, to inquire about the availability of data on fire history, fuel loadings, and the effect of spruce budworms.

Unless unexpected problems develop, we now believe that the field work for this study is completed.

Data Analysis

Since mid-August, data analysis has proceeded as follows:

1. All 460 tree cores have been counted for age determination.

2. Estimated stand ages have been mapped using the grid system established at the beginning of the study.

3. Fire scars are being analyzed, with completion expected in the next few weeks.

4. Relevant literature on the spread of fire through landscapes is being reviewed.

Schedule for Completing Study

Our approximate schedule for the remainder of the study is as follows:

November 1, 1989	Finish calculating and mapping fuel loadings
December 1, 1989	Complete runs of fire behavior models
January 15, 1990	Complete application of forest development models
March 15, 1990	Submit draft annual report
May 15, 1990	Complete first draft of report (dissertation)
June 15, 1990	Complete second draft

August 15, 1990	Complete report, defend dissertation, and meet with BCNRA staff for closing session