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DWARF MISTLETOE AERIAL SURVEYING METHOD: RESULTS OF PRELIMINARY
TRIALS IN THE ATHABASCA FOREST, ALBERTA, MARCH 1972.

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DWARF MISTLETOE AERIAL SURVEYING METHOD: RESULTS OF PRELIMINARY
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by

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INTRODUCTION

Aerial and ground surveys of jack pine stands were carried out Northeast of Fort McMurray on March 22nd and 23rd. The purpose of the survey was to test techniques to be used in future surveys of dwarf mistletoe in northeastern Alberta as proposed by the Alberta Forest Service. The area chosen for the test was along the Lake Athabasca winter road from the middle of township 97 to the Firebag River. Ground checks were made at intervals along the road for about 10 miles. The Alberta Forest Service supplied a Dornier Aircraft, the pilot Rene Baudais and the navigator, Dale Huberdeau. The Canadian Forestry Services were represented by J.K. Robins, J.P. Susut and G.J. Smith who functioned as observers.

METHODS

Aerial survey aids consisted of a 4 channel event recorder running at a speed of 1 inch per minute. Channels 1 and 2 were controlled by the left hand observer and 3 and 4 by the right hand observer. The navigator had control of all 4 channels. Observers and navigator had intercom which was connected to a tape recorder. Power was taken from the aircraft supply.

(See Figure 1).

Equipment was checked out before take-off and again before the start of the flight line. The navigator recorded the start and finish of the flight line and a number of check points in between, numbered the points on the event recorder and on his map and called them into the tape recorder. The observers recorded the presence of dwarf mistletoe infected trees in immediate and adjacent stands on their sides of the flight line and made verbal comments on the tape recorder. A portion of the equipment designed to imprint a coded beep on the tape recorder for each event failed to function. The flight line was flown and recorded both ways, at a speed of about 80 miles per hour and at heights above ground of 200 to 600 feet.

Following the aerial survey, a ground check was made along the southern portion of the flight line. The purpose of this examination was to ascertain the status of dwarf mistletoe in stands that appeared clean from the air and to determine the spread of the organism from old mistletoe infected stands into younger stands. Six locations representative of typed age classes were closely examined and increment borings taken for aging purposes.

On return to headquarters, information from the event recorder and tape recorder was transferred to a one mile to one inch scale forest type map (See Figure 2).

DISCUSSION

The equipment and methods proved satisfactory despite some minor problems and the necessarily short training period for the crew. Ground

checks gave good indications that an adequate survey of dwarf mistletoe conditions can be obtained using these techniques. There is space in the Dornier Aircraft for a third observer; with the provision of additional event recorder channels other observations could be recorded.

The intensity of the proposed survey would be influenced by the distance at which infections can be satisfactorily detected and the spacing of flight lines. The present feeling is that reliable accuracy is obtained up to 3/4 of a mile on each side of the flight line giving 100 per cent coverage with the proposed 1½ mile spacing. The presence of snow as a background for aerial observations is helpful but is not considered a prerequisite for a satisfactory survey; mistletoe brooms close to the flight line could be detected without a background of snow, while those farther away are usually backgrounded by trees.

The results recorded here need to be interpreted according to the specific needs of the management agencies. This survey method describes incidence and distribution of dwarf mistletoe infection. Assessment of impact on infected stands will require more precise information on growth, age of stand, age of infection and rate of spread.

RECOMMENDATIONS

- 1) A ground survey should be conducted along the flight line in September when staff and equipment will be available. It is estimated that 40 man-days would be required. The object of that survey is to relate aerial observations to ground condition, establish height-age-diameter

relationships, compare the rate of spread of mistletoe to that observed on lodgepole pine and record other pertinent data. If feasible, a member of the A.F.S., who is familiar with the area should be involved.

- 2) An aerial survey of the proposed area northwest of Fort MacKay should be surveyed as soon as snow cover has been established with flight lines at 1 1/2 mile intervals. The A.F.S. should supply a navigator who is familiar with the area, preferably Dale Huberdeau. Flying time should be budgeted at a ground speed of 80 miles per hour with a two hour allowance for pre-survey training and trials.
- 3) Recording equipment should be modified in light of experience gained during the preliminary trial and thoroughly tested. Schematic circuit diagrams and operating instructions should be prepared in case of breakdown in the field. Provisions should be made for additional event channels.
- 4) Close liaison between the Alberta Forest Service and the Canadian Forestry Service is required to ensure that objectives are realistic and are met with a minimum expenditure of time and funds.

J.K. Robins

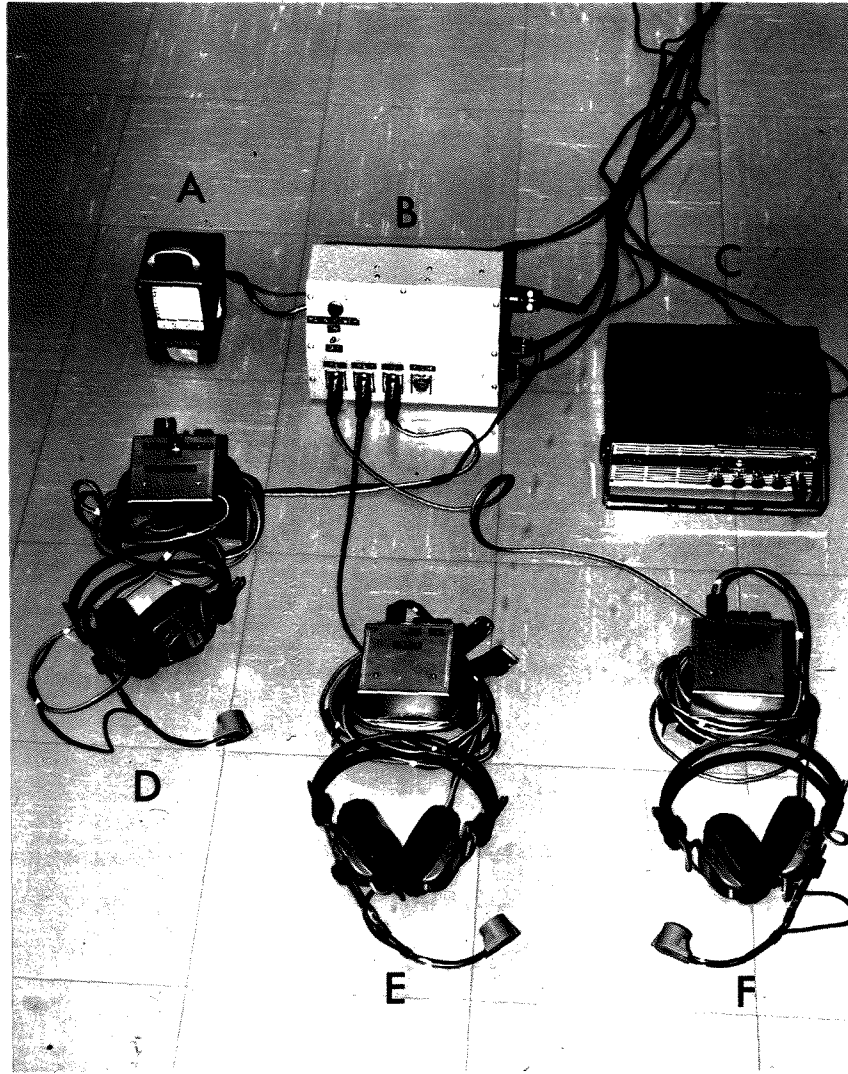


Figure I. Equipment used on aerial survey

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|-------------------|--------------------------|
| A. Event recorder | D. Navigator control box |
| B. Junction box | E. Observer control box |
| C. Tape recorder | F. Observer control box |

