

FIRE EFFECTS MONITORING
SONGBIRD SURVEYS
Bryce Canyon National Park
1991

INTRODUCTION

Park staff at Bryce Canyon National Park are working toward re-establishing fire as a natural process in the environment. During the field seasons in 1989, 1990, and 1991, songbird data were collected in 4 selected prescribed burn study areas.

Preburn data were collected to represent existing conditions in all study areas. These data will be compared with data collected following burning to evaluate fire effects. To date, One study area has been partially burned (Residence Area), and postburn data have been collected to represent conditions one season after the burn.

Our objectives were to determine bird species presence and relative abundance, and determine trends related to prescribed burning. Existing data provide some good information, however, several problems became apparent as data collection proceeded. The program should be refined as necessary in future years.

STUDY AREAS AND METHODS

Bird surveys were conducted in 4 prescribed burn study areas: 1) Residence Area, 2) Corral Meadow, 3) Paria North, and 4) Paria South (figure 1). These study areas are described in the Fire Effects Monitoring Vegetation/Fuel Load report. One or two transects were used in each study area. Plot locations are provided in Appendix A.

Because of time constraints and the limited size of each study area, no control transects have been established. Preburn data collected in areas prior to burning may provide suitable control data on a temporary basis (i.e. use Paria North data as control information for Residence Area plots until Paria North is burned). Preburn data need to be evaluated on a case by case basis to determine whether conditions in different study areas are representative of each other.

Plot Set-Up

Each transect consists of five to ten plots. A starting point location was randomly selected at one end of each transect. This point was marked with a rebar stake. A series of random numbers between 0 and 180 was computer generated to be used to locate plots in each transect. The first random number was used as the

compass bearing from the starting point to the center of the first plot. The center of the first plot was located 50 meters from the starting point. The remainder of the random numbers represented the direction from the center of each plot to the center of the next consecutive plot. If a plot fell outside the area being surveyed, an alternate random was selected. Plots were spaced 200 meters apart. This distance allowed for as many plots as possible within an area, while minimizing the chance of any individual bird being detected in two adjacent plots.

Each plot center point was marked with a rebar stake (extending 6-8 inches out of the ground) that was painted bright orange with fire resistant paint. All rebar stakes were labelled with brass tags identifying the transect name, plot number, and directions to the next plot.

Survey Procedures

The procedure for conducting the surveys follows a slightly modified version of the fixed radius point count method described by Hutto et al. (1986). The point count method was selected because it is relatively simple. We found that having a stationary observer allowed observers to concentrate on collecting data, while methods involving walking a line transect made data collection difficult. A one minute equilibration period was allowed before beginning surveys at each plot, following Reynolds et al. (1980).

Surveys were conducted from mid-May to mid-June. Survey work began late in 1989, and continued until July; bird activity decreased noticeably after late June. Each transect was surveyed at least three times each season. Detailed instructions for conducting surveys are provided in Appendix B.

Three kinds of data were recorded using the point count method:

- 1) The number of individuals of each species detected within a circular plot of a fixed radius.
- 2) The abundance (one or more) of individuals of each species detected beyond the fixed radius, but still within the habitat of interest
- 3) Presence of other species detected while walking between count points. This contributed to the completeness of our species list for each site.

In 1989 and 1990, a single fixed width of 25 meters was used for each plot. In 1991, data were collected simultaneously for plots of both 25 meters and 40 meters.

RESULTS

Surveys conducted in 1989-1991 produced relatively low numbers of birds within the fixed radius plot. In 1991, data were collected from a larger plot (40 m radius), as well as the original plot (25 m radius), in an attempt to increase the total number of birds detected inside each plot. More birds were detected in the larger plot, however numbers remained relatively low. Increasing plot size further resulted in difficulty in accurately assessing numbers of individuals.

All data have been entered into databases in dBase III. Analyses are still needed. Analyses should indicate whether adequate data exist to determine trends in bird abundance. Methods should be refined as necessary to provide adequate data for future analyses.

REFERENCES

- Hutto, R.L., S. M. Pletschet, and P. Hendricks. 1986. A fixed-radius point count method for non-breeding and breeding season use. *Auk* 103:593-602.
- Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A variable circular-plot method for estimating bird numbers. *Condor* 82:309-313.

