INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1997	**Park:** Shenandoah NP
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No co-investigators

Permit#:
SHEN1997AULA

Park-assigned Study Id. #:
unknown

Project Title:
Bird Monitoring: Monitoring Avian Productivity And Survivorship (Maps) In Shenandoah National Park (N-150)

Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 1998
Study Start Date: Jan 01, 1997	**Study End Date** Jan 01, 1997

Study Status:
Completed

Activity Type:
Inventory

Subject/Discipline:
Birds / Ornithology

Objectives:

The major objective is to monitor the primary demographic parameters of landbirds in Shenandoah National Park. Specific objectives are: (1) to establish and operate six MAPS stations in Shenandoah National Park for at least ten consecutive years that will provide: (a) annual indices of adult population size and post-fledging productivity of the breeding landbirds of the park from data on the numbers and proportions of young and adult birds captured; and (b) estimates of adult survivorship and recruitment into the adult population for these species from mark-recapture data on the adult birds captured; (2) to examine long-term trends in population size, productivity, and survivorship among Shenandoah's landbirds and attempt to infer proximate demographic causes for observed population changes; (3) to incorporate these data from Shenandoah into the continent-wide MAPS Program; and (4) to evaluate the usefulness of the MAPS Program as one component of Shenandoah National Park's and the National Park Service's long-term ecological monitoring efforts.

Findings and Status:

We completed the sixth year of the MAPS Program in Shenandoah National Park and the fifth consecutive year at the six MAPS stations as revised in 1993. Bird-banding was conducted at each station during one day in each of seven consecutive 10-day periods between May 31 and August 8. A total of 3907.0 net hours was accumulated at the six stations during the 1997 season, lower than in previous years because MAPS operations during periods 11 and 12 (August 9-28) were discontinued. The reduction of the length of the MAPS season also affected the total number of captures: 1251 in 1997. As in previous years, indices of total adult population size tended to be higher at higher-elevation stations dominated by red oak habitat and lower at lower-elevation stations dominated by chestnut oak habitat. Changes from 1996 in indices of adult population size were negative at four of the six stations as well as for all stations overall, but proved not to be significant. Veery, Worm-eating Warbler, and Hooded Warbler demonstrated significant declines from 1996; Red-eyed Vireo, however, showed a significant increase, being captured at rates much higher than in previous years. While the only significant changes in productivity from 1996 were negative (Wood Thrush and Gray Catbird), productivity levels in 1997 overall suggested a partial recovery from the dramatic low recorded in 1996. Thus, while adult population size remained stable, landbird productivity appeared to have regained some of the ground it lost in 1996.; We evaluated the effect of dropping the final two periods of the MAPS season on adult survival estimates for 11 species with sufficient data from 1993 to 1996. In general, deleting data from those periods had little effect on survival estimates. Using either the non-transient or transient model, only those species with the lowest numbers of individuals captured (Chestnut-sided Warbler and Worm-eating Warbler) or the greatest proportional loss in the number of returns (Ovenbird and Gray Catbird) showed any differences in model estimates when data

from periods 11 and 12 were excluded; but even those were minor.; Including data from the 1997 season allowed us to estimate adult survival rates for 13 species using a transient model, two more than in 1996. However, for two species, Black-and-White Warbler and Indigo Bunting, the data were insufficient to provide a realistic estimate of the proportion of residents in the population. For two other species, the estimates seem skewed by an exceptionally low sample size (Carolina Chickadee) or a substantial increase in the adult population size in 1997 (Red-eyed Vireo). For the remaining nine species, survival estimates averaged 0.530, ranging from a low of 0.372 for Wood Thrush to 0.673 for Chestnut-sided Warbler. The added year of data dramatically improved the precision of the estimates produced by the model, despite the exclusion of data from periods 11 and 12. Time-dependence in the proportion of residents was detected for Chestnut-sided Warbler.; We calculated five-year trends in adult population size for 17 target species. Significant or near-significant positive trends were detected for American Redstart, Canada Warbler, and Eastern Towhee, while Indigo Bunting and Dark-eyed Junco showed significant negative trends. ; Results from the first six years of the MAPS Program at Shenandoah National Park suggest that meaningful indices and estimates of primary demographic parameters can be obtained now for at least 11 target species and for as many as 17 in the future; these will be useful for guiding management decisions in the Park. We conclude that the MAPS protocol is very well-suited to provide one component of Shenandoah's long-term ecological monitoring effort and recommend continuation of MAPS indefinitely into the future.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?

No

Funding provided this reporting year by NPS:	**Funding provided this reporting year by other sources:**
18990	0

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college

Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**
n/a	0