Data from a Constant-effort Mist Net Station

Richard N. Roberts
7212 Fiddler Bay Lane
Chincoteague, VA 23336

David Muir
2679 Dunbar Woods Road
Marcellus, NY 13108

INTRODUCTION

A MAPS (Monitoring Avian Productivity and Survivorship) banding station was operated for seven breeding seasons on the shore of Lake Ontario in Fair Haven State Park, Cayuga County, New York. The primary objective of this type of banding station is to provide long-term population and demographic information that can be utilized to 1) identify species requiring further research or management action, 2) help in identifying stages in life cycles at which changes in population dynamics are taking place, and 3) identify causes of population changes (DeSante et al. 1993).

Information produced by constant-effort mist net stations can assist in reaching these goals by providing data on the numbers and proportions of young and adult birds captured, annual regional estimates of adult population size, and estimates of adult survivorship and recruitment into the adult population from capture-recapture data on adult birds.

METHODS

The station consisted of three 9 m and six 12 m nylon mist nets positioned on a 20 m by 200 m strip of vegetated beach that separated a 1.5 ha swamp from Lake Ontario. Net lanes were cut through the vegetation and maintained each year by mowing. The swamp is located between two wooded drumlins: the western drumlin containing a beech-sugar maple upland forest and the eastern drumlin comprised of a red maple-red oak forest. The major shrub species in the net areas were red-osier dogwood, beach willow, wild grape, and box elder, while the ground cover was mostly white clover, dwarf gray willow, and knapweed with some goldenrod, purple loosestrife, common evening primrose, Queen Annes' lace, and hopclover. The dominant species in the swamp was buttonbush. Vegetation surrounding the net lanes did not change significantly during the years of operation because the poor soil conditions and severe lake shore weather events limit growth. The entire area of the banding station was approximately 0.5 ha.

The station was operated each year in accordance with the MAPS protocols issued by the Institute of Bird Populations (DeSante and Burton 1997). These protocols changed somewhat during the first two years of the station operation; but after that, the station was active from 06:00 to 12:00 once during each ten-day block from the last week of May until the end of August, for a total of nine blocks. The station was inactive between these banding days and during the remainder of the year. However, the area was casually visited by hikers and fishermen.

RESULTS

The station was operated for seven breeding seasons from May 1990 through August 1996 for a total of 2,554 net hours. Sixty-two species were banded, resulting in a total of 2,481 birds. Thus, the capture rate was 97 birds/100 net hours. Ten species comprised 77% of the total captured (Table 1). Recapture data on these ten species are listed in Table 2. (A recapture was defined as a bird encountered in a year after that in which it was banded. Some birds were caught several times each year, but each of these events was not recorded as a separate recapture.) The total number of recaptures was 124 (5.0% of the total banded).

Table 1. Summary of the most frequently banded birds.

Species	No. Banded	% of Total	% HY
Yellow Warbler	847	34.1	71.0
Common Yellowthroat	195	7.9	63.6
Gray Catbird	171	6.9	44.4
Red-eyed Vireo	170	6.8	36.5
Song Sparrow	132	5.3	58.3
American Goldfinch	108	4.4	0
Warbling Vireo	97	3.9	69.1
Swamp Sparrow	74	3.0	85.1
Eastern Phoebe	71	2.9	88.7
Baltimore Oriole	57	2.2	20.0

Table 2. Recapture summary of the most frequently captured species.

Species	Total No. Recap.	% Recap.	% Recap. Banded as HY
Yellow Warbler	40	4.7	42.5
Com. Yellowthroat	8	4.1	37.5
Gray Catbird	11	6.4	18.8
Red-eyed Vireo	30	17.6	3.3
Song Sparrow	10	7.6	10.0
Amer. Goldfinch	2	1.9	0
Warbling Vireo	3	3.1	0
Swamp Sparrow	0	0	0
Eastern Phoebe	0	0	0
Baltimore Oriole	1	1.7	0

Longevity - Seven Red-eyed Vireos *(Vireo olivaceous)* were recaptured during banding operations in two subsequent years—one during three subsequent years, and two during four subsequent years. Two of these Red-eyed Vireos were at least six years old, two were at least five years old, and one was at least four years old.

Five Yellow Warblers *(Dendroica petechia)* were recaptured during banding operations in two subsequent years, and three during three subsequent years. Two of these Yellow Warblers were at least five years old, four were at least four years old, and two were at least three years old.

Productivity, recruitment, and site fidelity - Five species of birds produced 80% of the total recaptures (Table 1) and 61% of all the birds banded. Of the three Nearctic-Neotropical migrant (Hayes 1995) species in those first five, the Yellow Warbler was by far the most abundant; however, the percent of the total banded as hatching year, the percent of birds recaptured, and the percent of recaptures banded as hatching year are comparable for both the Yellow Warbler and the Common Yellowthroat *(Geothypis trichas)*. Productivity, as reflected in the proportion of each species banded as hatching year, and recruitment, as represented by the proportion of each species recaptured that were originally banded as hatching year, are also comparable for these two warblers. The Red-eyed Vireo had a lower productivity than the two warblers, as evidenced by the percent of hatching year birds in the total (Table 1), and a lower recruitment into the adult population, as evidenced by the percent of recaptures that were banded as hatching year (Table 2). However, this species seems to exhibit a high breeding site fidelity, as is indicated by the highest recapture percent of any species encountered in this study.

DISCUSSION

Low productivity in the Red-eyed Vireo may have been related to parasitism by the Brown-headed Cowbird *(Molothrus ater)*, since the woodlots bordering the banding station were small, and the cowbird is known to concentrate its nest hunting activities along habitat edges (Terborgh 1989). However, no data on cowbird activity were collected during this study except the observation of their presence.

The Red-eyed Vireo is a preferred host of the Brown-headed Cowbird, but the Yellow Warbler is also parasitized frequently (Ehrlich et al. 1988). The Brown-headed Cowbird impact on the Yellow War-

bler may have been masked by the large numbers of Yellow Warblers nesting in swampy areas that were near the banding station. Such outlying areas have been shown to produce an abundance of young that effectively replenish the stocks of hatching-year Yellow Warblers in nearby areas (Askins et al. 1987).

CONCLUSIONS

Long-term, constant-effort mist net stations can produce meaningful information about the longevity and site fidelity of individuals of Nearctic-Neotropical species. Such stations also provide meaningful information about both productivity and recruitment. Collection of such data should produce a firm basis from which to measure and examine population changes and to identify species requiring special attention.

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