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FIXATION OF WINTERING PALM WARBLERS TO A SPECIFIC SITE

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Recoveries of banded birds, including various species of warblers, have shown a return in different years to the same localities on their wintering grounds (Loftin, *Bird-Banding* 48:253–258, 1977). Thus, these birds hold fixations for certain sites on their wintering grounds. This paper reports on a study of Palm Warblers (*Dendroica palmarum*) seeking information on the time in the lives of the birds of establishment of this fixation and on the extent to which the fixation involves a specific site as compared with nearby similar habitat. The study was conducted on Eleuthera Island in the Bahamas during the fall and winter of 1978–1979 and involved mist netting, marking birds, and releasing them both at their capture site and at two other sites on Eleuthera Island.

STUDY AREA AND METHODS

Three sites were chosen on Eleuthera Island, all containing populations of Palm Warblers. Site A was located about 0.5 km west of the runway of the Governors Harbor Airport; Site B was located about 22.5 km south of Site A; Site C was located 12.8 km south of Site A and 9.7 km north of Site B.

Mist nets were used for capture of the birds. Those birds captured during November and December were aged according to the degree of skull ossification, with those captured after the end of the year being aged merely as AHY. The birds were marked with both standard metal bands and colored plastic bands, after which they were released either at the site of capture or one of two other chosen sites. After their release the birds were watched until they disappeared from the release site. Frequent searches for the marked birds were later made at and around the capture and release sites, with a total of 96 h spent in these searches.

RESULTS AND DISCUSSION

A total of 111 Palm Warblers was captured, marked, and released (Table 1). Of the 111 birds, 34 were released at or near their capture site, and 77 were displaced. Thirty-four were captured and released at Site A, 23 were captured at Site A and released at Site B, and 54 were captured at Site B and released at Site C.

Of the 34 birds both captured and released at Site A, only 11 (32.4%) were later found; of the 23 captured at Site A and released at Site B, 9 (37.5%) were later found at Site A; of the 54 captured at Site B and released at Site C, 14 (25.9%) were later found at Site B. Thus, the birds were found later at the sites where they were initially captured at roughly the same rate whether they were released at the capture sites or at sites 22.5 and 9.7 km from these sites.

Of the 23 birds captured at Site A and released at Site B, 14 were

TABLE 1.

Number of Palm Warblers marked, released, and later seen.[1]

	No. marked	No. marked birds seen at least once	Percent
Not displaced	34	11	32.4
Displaced 26 November–16 December	14	4	28.6
Displaced 16 January–30 April	63	23	36.5
Totals and average percent	111	38	32.5

[1] Birds marked and released were later found only at or near their capture sites.

captured and released during November and December. Of this 14, four (28.6%) returned to Site A. Three of these were HY and one was an AHY bird. The three HY birds were marked and released on 28 November, 1 December, and 2 December, respectively. It is suggested by these records that fixation to a specific site on the wintering grounds is already established in early December. In work with Northern Waterthrushes (*Seiurus noveboracensis*), Schwartz (*Proc. 13th Int. Ornithol. Congr.*, 481–484, 1963) found first-year birds failing to return to their capture sites when transplanted during the late fall, with only adults then returning. Schwartz hypothesized that fixation in Northern Waterthrushes to a specific site on their wintering grounds is made at about the time in the spring when the birds leave their wintering grounds. From their work with White-crowned and Golden-crowned sparrows (*Zonotrichia leucophrys* and *Z. atricapilla*) Ralph and Mewaldt (*Auk* 92: 698–705, 1975) suggested that this fixation is made in HY-SY crowned sparrows from late November into January. Although our sample is regrettably small, three of our birds showed fixation to a specific site on their wintering grounds to have been established in HY Palm Warblers by early December.

With only 32.4% found of 34 birds captured, marked, and released at Site A, a surprisingly small proportion of the birds remained available for continuing study. What happened to about two-thirds of the birds is unknown, but a difference compared with the other one-third of the birds in their attachment to a specific site on their wintering grounds is indicated. Marked birds known remaining in the study area were seen or mist netted repeatedly, one a total of nine times. A total of 96 contacts of marked birds were made.

Upon release at sites removed from capture sites, the Palm Warblers flew into nearby trees without interaction with other birds already present. The released birds remained in the trees pecking their bands or preening their feathers 10–15 min, whereupon they left the release sites and other birds earlier present there. The first flights of the transplanted birds from the release sites were in various directions and not only toward the direction from which they had been brought.

Except for birds seen briefly after their release, no marked birds were found later at release sites removed from capture sites. All marked birds later found were found only at or near their capture sites. However, return to the capture sites was slow, with the most rapid return trips recorded being made by two birds traveling the 22.5 km from Site B to Site A in seven days.

The birds returning from the sites in which they were transplanted to their original areas mostly returned to the exact sites where they were captured. It is thus indicated that fixation is on a very limited locality or part of the bird's environment.

The return of the transplanted birds to the sites of their initial captures, despite the seeming lack of interaction between these birds and those already at the release sites, suggested that the transplanted birds were not forced from their new sites but left as a result of their own choice. Thus, as it now operates, the motivation to return to a specific site can be seen as coming entirely from within the birds.

The early fixation of birds to a specific site on their wintering grounds suggested by our data arouses some interesting questions on the operation of migratory behavior. For example, why do these birds, year after year, return to the same site on their wintering grounds in the first place? Is the fixation on the general locality of the wintering grounds genetically transmitted from the parents to their offspring?

SUMMARY

Some Palm Warblers returned to their capture sites on their wintering grounds after being marked and released 22.5 and 9.7 km from these sites, with none of the transplanted birds later found at or near their release sites. Included among the birds returning to their capture sites were three HY birds released, respectively, on 28 November, 1 December, and 2 December, suggesting establishment of fixation to a specific site early in their time on their wintering grounds. This fixation appears to involve a very limited locality or part of the environment.

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