GENERAL NOTES

Aggression in winter resident and spring migrant White-throated Sparrows in Massachusetts.—During the winter of 1972-73 White-throated Sparrows (*Zonotrichia albicollis*) were banded with unique color combinations at the Manomet Bird Observatory (MBO) in Plymouth, Massachusetts, as a part of flocking studies of winter residents. By early March all but one or two of the 23-24 wintering birds were individually color-marked. Most of these had arrived on the MBO property as hatching-year birds in late October and early November 1972. On the night of 21-22 April 1973 large numbers of northbound migrants arrived on the MBO property because large numbers of unbanded White-throats were present at a feeder early on 22 April. These migrants weighed considerably less than the winter residents (Lloyd-Evans, pers. comm.). The purpose of this note is to describe the dominance relationships between the migrant and winter resident White-throated Sparrows visiting a feeding station between 22 and 27 April 1973.

Many intraspecific chases were recorded, and for each the resident status of the "chaser" and the "chased" was noted. Typical chases were characterized by one bird at or near the feeding area either being supplanted or overtly chased by another sparrow. Table 1 presents estimates for the numbers of migrants and winter residents present at the feeder on relevant dates and a summary of all chases. Clearly, on 22 April the winter resident White-throats were dominant over the newly arrived migrants as evident by their more frequent chasing (Chi-square Test, $P < 0.01$). After 22 April the pattern of dominance appeared to change, although in general, the winter residents still dominated the spring migrants, but not with statistically greater frequency ($P > 0.05$). Moreover, the migrants appeared to be chasing each other more frequently as compared to the frequency with which the winter residents were chasing each other or the migrants (Table 1). For example, on 22 April the spring migrants were "chasers" in 28% of the observed chases, but between 25 and 27 April they were "chasers" in 60% of the observed chases ($P < 0.01$). In terms of time, migrants were chasers only once every 26 minutes on 22 April, but every 7 minutes on 25-27 April. Also conspicuous on 22 April was the fact that spring migrants tended to leave the feeding area when a flock of winter residents arrived. This behavior was not noted on subsequent days.

TABLE 1. Numbers of winter resident (A) and migrant (B) White-throated Sparrows visiting a feeder, duration of observations, and percentages of intraspecific chases for group A and B birds.

	22 April	23-24 April	25-27 April
Number of birds observed			
Type A	14	8	10
Type B	30[1]	50[1]	30[1]
Minutes of observations	395	275	255
Per cent of chases			
A > A	21 (N = 11)	11 (N = 4)	7 (N = 4)
A > B	51 (N = 27)	37 (N = 13)	33 (N = 19)
B > B	28 (N = 15)	46 (N = 16)	48 (N = 28)
B > A	0	6 (N = 2)	12 (N = 7)
Total	100 (N = 53)	100 (N = 35)	100 (N = 58)

[1]Estimated number.

One factor, not included in the above tabulations, and which apparently influences dominance relationships, is the color of the head stripes of White-throated Sparrows in intraspecific chases. According to J. K. Lowther and J. B. Falls (*in* Bent 1968, *U. S. Natl. Mus. Bull.*, **237**, Part 3: 1364-1392) White-throated Sparrows of either sex are either tan or white morphs. My observations showed that head stripe morphs were quite variable, having colors of gray and brown, tan and brown, tan and black, or black and white. For my observations I classified

birds as either type X, Y or Z with X having clear white-and-black crown-stripes, Y having dull or dirty white central and apparently black lateral stripes, and Z having gray and brown or tan and brown stripes. Lowther and Falls reported different levels of aggression in different morphs of White-throated Sparrows in Ontario. At Manomet my observations also suggested that discrimination in aggression may correlate with color morphs. For example, X birds were "chasers" twice as frequently as they were chased ($P < 0.01$), Y were "chasers" as often as they were chased, and Z birds were "chasers" only one-half as often as they were chased ($P < 0.01$) (Table 2).

TABLE 2. Number of intraspecific chases involving different morphs of White-throated Sparrows and the frequency with which specific types were the "chasers" or the "chased."

	Morph Type		
	X[1]	Y[1]	Z[1]
No. of chases involving one or more	143[2]	139[2]	100[2]
Frequency of chases in which morph type was:			
the chaser	65 (N = 93)	46 (N = 64)	34 (N = 34)
the chased	35 (N = 50)	54 (N = 75)	66 (N = 66)

[1]See text for description.
[2]Chases involving two birds of the same morph type are counted twice.

My observations also suggest that morphs were either discriminating the morph type of birds that they chased, or that certain morphs may have avoided situations that elicited a chase from a bird they recognized as being dominant. In general, Z morphs rarely chased other White-throats. When they did, they did not appear to distinguish between X (12 chases), Y (11 chases), or Z morphs (11 chases). Y morphs rarely chased X morphs (12 chases) as compared to Y (26 chases) or Z (26 chases) morphs. X morphs appeared to be less discriminating than Y (26 chased X, 38 chased Y, and 29 chased Z).

The pattern of dominance as related to the type of morph in these observations is complicated by the apparent effect that residential status has upon dominance relationships. However, without exception, on 22 April, all winter residents, regardless of morph type, dominated the new spring migrants, including many Z morphs that dominated X and Y morphs. Beginning 23-24 April, and more so on 25-27 April, the dominance relationships appeared to correlate more to morph type then to residence status.

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Basis for pre-roost gatherings of Starlings and Brown-headed Cowbirds.—Based on observations of White Wagtails (*Motacilla alba*) and Pied Wagtails (*M.a. yarrelli*) Zahavi (*Ibis*, **113:** 106-109, 1971) suggested that pre-roost gatherings of these birds developed as an adaptation to avert predation, the birds disappearing into their roost after first advertising their presence and revealing to their roost associates the general location of the roosting site. The related facts appear to be more against Zahavi's proposal than for it. Because diurnal predators are not a hazard to the birds at night and because no nocturnal predators are active to observe the pre-roost gatherings, it is difficult to imagine how the pre-roost gatherings can function to direct attention of predators away from the roosting congregation. It is difficult to understand, too, why the same behavior that advertises the location of the roost and directs roost associates to the roost could not operate in the same way to aid potential predators. Furthermore, the loud vocalizations lasting more than an hour total in the evening and morning thor-