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Independent Fall Migration of First-year and Older Wood Warblers

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On Eleuthera Island in the Bahamas during the fall and winter of 1978-79, Stewart and Connor (1980) found Palm Warblers (*Dendroica palmarum*), even first-year birds, showing fixation to specific sites soon after arrival on their winter ground. The fixation of first-year birds to specific sites on their winter ground soon after arrival suggested the need for an inquiry as to whether the fixation might be inherited by the birds, guiding them to their winter ground in the first place. To determine whether hatching-year (HY) wood warblers of different species go independently to their winter ground or follow after-hatching-year (AHY) birds there, data were examined of birds mist-netted at Kiptopeke Beach in eastern Virginia when enroute from their breeding to their winter ground.

Study area and methods

Data used in this paper were collected by the Virginia Society of Ornithology at their mist-netting and bird-banding station near Kiptopeke, Virginia. The station was near the southeastern shore of Chesapeake Bay where the birds must fly over water in their further southward movement. Mist nets were operated from 28 August through 28 October 1978, 30 August through 26 October 1979, and 29 August through 26 October 1980, for a total of 61,521 net-hours.

Birds were aged by plumage characteristics when possible. Otherwise, aging was accomplished through examination of the degree of pneumatization of the skull with the aid of a Universal Easy-on Loupe purchased from Behr Manufacturing Company, West Bend, WI 53095.

Results and discussion

Data are presented in Table 1 for the 30 species of wood warblers captured at Kiptopeke Beach during the 3 years, 1978-1980. A total of 24,657 birds are involved, including 1935 (7.8%) AHY and 22,722 (92.2%) HY birds. The high proportion of HY over AHY birds suggests that the 2 age groups might travel independently from their breeding to their wintering ground.

HY birds traveling from their breeding to their winter ground can get help or guidance from AHY birds on the course only by their being led or by their following AHY birds. Samples of birds captured when enroute from their breeding to their winter ground must contain both age groups together in both time and space if HY are to follow AHY birds. Therefore an attempt was made to determine to what extent capture dates showed birds of the 2 age groups traveling together. Table 1 summarizes daily capture records of AHY and HY wood warblers of 30 species, showing numbers captured, numbers of days captures were made, and the numbers of days from first to last captures.

HY birds were captured in 9 of 30 species (30.0%), with no AHY birds captured any time during the 3 years. The 9 species include Worm-eating (*Helmitheros vermivorus*), Blue-winged (*Vermivora pinus*), Orange-crowned (*Vermivora celata*), Black-throated Green (*Dendroica virens*), Blackburnian (*Dendroica fusca*), Mourning (*Oporornis philadelphia*), Connecticut (*Oporornis agilis*), and Canada (*Wilsonia canadensis*) Warblers and Yellow-breasted Chat (*Icteria virens*).

An additional 7 species, including Tennessee (*Vermivora peregrina*), Yellow (*Dendroica petechia*), Cape May (*Dendroica tigrina*), Pine (*Dendroica pinus*), Prairie (*Dendroica discolor*), Palm (*Dendroica palarum*), and Hooded (*Wilsonia citrina*) Warblers, contained one AHY bird captured in each of 9 species-years. HY birds traveled through the area for periods too long to be associated with single AHY birds. For example, the migration of the 15 HY Tennessee Warblers captured in 1978 covered a period of 56 days. Likewise, the 21 HY birds captured in 1979 covered a period of 49 days. It is unrealistic to suppose that all of the HY Tennessee Warblers traveling through the Kiptopeke area over periods of 56 and 49 days could have been associated with the single respective AHY birds.

With larger numbers of some species captured and hence with more AHY birds in the samples, it becomes more difficult to determine whether the HY birds might be following AHY birds. However, examples are available showing HY and AHY birds traveling separately even when larger numbers are involved. For example, from 30 August through 15 October 1978, 140 HY Black-throated Blue Warblers (*Dendroica caerulescens*) were captured on 36 different days with no AHY birds of this species captured; from 26 September through 25 October 1978, 15 HY Blackpoll Warblers (*Dendroica striata*) were captured on 11 different days with no AHY birds of this species captured; from 29 September through 24 October 1978, 34 Ovenbirds (*Seiurus aurocapillus*) were

Table 1. Data on wood warbler captures at Kiptopeke Beach, VA

Species	1978						1979						1980					
	Number captured		Number of days captures made		Number of days first to last capture		Number captured		Number of days captures made		Number of days first to last capture		Number captured		Number of days captures made		Number of days first to last capture	
	AHY	HY	AHY	HY	AHY	HY	AHY	HY	AHY	HY	AHY	HY	AHY	HY	AHY	HY	AHY	HY
Black-and-white Warbler	6	181	5	34	22	50	19	248	8	29	23	47	6	272	6	37	34	57
Worm-eating Warbler							0	5	0	5	0	50						
Blue-winged Warbler	0	5	0	5	0	6							0	4	0	3	0	6
Tennessee Warbler	1	15	1	9	1	56	1	21	1	11	1	49	2	38	2	16	22	48
Orange-crowned Warbler	0	3	0	3	0	8	0	4	0	3	0	29	0	4	0	4	0	19
Nashville Warbler	0	9	0	8	0	56	0	27	0	16	0	53	1	20	1	16	1	47
Parula Warbler	2	44	2	20	5	57	3	64	3	23	15	49	4	50	4	25	14	41
Yellow Warbler	1	14	1	11	1	33	0	11	0	6	0	11	0	20	0	6	0	10
Magnolia Warbler	3	53	2	25	4	47	3	97	3	27	17	54	5	140	5	34	33	52
Cape May Warbler	1	20	1	13	1	46	4	57	4	20	24	52	5	33	4	16	37	48
Yellow-rumped Warbler	559	3479	16	29	46	34	492	5631	14	30	18	39	451	5342	21	27	30	55
Black-throated Green Warbler							0	9	0	6	0	15	0	5	0	3	0	24
Black-throated Blue Warbler	3	175	3	43	6	56	16	178	10	36	28	54	14	462	12	47	47	52
Blackburnian Warbler							0	5	0	5	0	33	0	12	0	8	0	26
Chestnut-sided Warbler													2	11	2	5	2	22
Bay-breasted Warbler	0	5	0	5	0	43	2	12	2	9	15	54	0	20	0	16	0	48
Blackpoll Warbler	2	18	2	14	2	52	3	75	3	24	17	43	2	63	2	23	3	51
Pine Warbler							0	8	0	6	0	53	1	12	1	4	1	47
Prairie Warbler	1	22	1	15	1	28	3	26	3	15	11	46	4	23	3	17	8	38
Palm Warbler	1	83	1	34	1	49	1	78	1	25	1	49	2	72	2	25	12	50
Ovenbird	10	143	5	37	17	56	3	157	3	39	18	50	3	236	2	42	22	56
Northern Waterthrush	12	54	8	25	20	50	5	89	2	28	17	55	5	70	5	24	14	38
Yellowthroat	28	289	17	41	47	61	51	334	18	45	49	58	27	515	16	48	47	57
Yellow-breasted Chat	0	21	0	14	0	45	0	14	0	12	0	59	0	21	0	16	0	49
Mourning Warbler	0	4	0	4	0	36												
Connecticut Warbler	0	7	0	6	0	41	0	15	0	13	0	30	0	4	0	4	0	24
Hooded Warbler							1	3	1	3	1	20	2	4	2	4	32	39
Wilson's Warbler	0	8	0	7	0	45	0	8	0	5	0	38	3	12	3	11	3	45
Canada Warbler	0	6	0	5	0	52												
American Redstart	36	1057	17	47	48	55	87	1077	18	44	35	56	37	1256	19	48	35	57

captured on 15 different days with no AHY birds of this species captured.

Further examples are available with capture dates clearly showing HY and AHY birds maintaining separation during parts of their migrations. During 1978, 22 HY and no AHY Black-and-white Warblers (*Mniotilta varia*) were captured during the period 28 August through 2 September, and 14 HY and no AHY birds of this species were captured during the period 25 September through 16 October. Early and late migrants among American Redstarts (*Setophaga ruticilla*) sometimes consisted of only HY birds. For example, during 1978, 91 HY and no AHY birds were captured during the period 28 through 31 August, and 47 HY and no AHY birds were captured during the period 27 September through 15 October.

Even with Yellow-rumped Warblers (*Dendroica coronata*), the species with the largest number of captures at the Kiptopeke station, some evidence was present of independent migration of HY and AHY birds. During 1978 no AHY and 35 HY birds were captured during the period 4-7 October. Similarly, no AHY and 163 HY birds were captured during the period 26-28 October. Only HY birds were captured during the period 20 September through 10 October 1979, when 35 Yellow-rumped Warblers were captured on 12 days. Also during 1979, no AHY and 419 HY Yellow-rumped Warblers were captured during the period 15-18 October.

Data from the Kiptopeke station clearly indicate that HY and AHY wood warblers travel independently from their breeding to their winter ground. However, after using similar data obtained at a station in New Jersey, Murray (1966) concluded: "There is no convincing evidence that immatures [HY birds] travel separately from adults [AHY birds] in any of the species [of wood warblers] studied. Therefore, there is the possibility that the direction taken by immatures on their first migration is influenced by the experienced adults and that the orientational cues used on subsequent migrations are learned during the first flight." Murray seemingly neglected the possibility of the HY and AHY birds traveling independently since they perform their migrations during the same weeks and months. Also, Murray reported capturing 50, 37, 59 HY birds, respectively, of Nashville (*Vermivora ruficapilla*), Mourning, and Wilson's (*Wilsonia pusilla*) Warblers without capturing any AHY birds of these species.

All available evidence indicates that HY and AHY wood

warblers migrate independently from their breeding to their wintering grounds. This conclusion leads to the further conclusion that wood warblers inherit a fixation to their winter grounds and a directional capability for getting there. This conclusion supports the proposal of Kramer (1961) that young birds inherit a "directional tendency."

The data presented by Stewart and Connor (1980) showed Palm Warblers with fixation on a specific site soon after arrival on their winter ground. The inherited fixation suggested by the data presented in this paper may guide the birds to the winter ground of the species, with the fixation on a specific site to come later.

Summary

Capture in eastern Virginia of 24,657 wood warblers of 30 species showed HY and AHY birds traveling independently from their breeding to their winter grounds. It is concluded that these birds inherit a fixation on their winter grounds, with fixation on specific sites by individual birds to come later.

Acknowledgment

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Volunteers need for raptor studies in Nevada

Bird-banders, hawkwatchers, and those who love the outdoors are needed on a North American raptor study this fall.

This project, in the Goshute Mountains of northeastern Nevada, is a banding study directed by Stephen Hoffman of the U.S. Fish and Wildlife Service and Dr. James Gessemen of Utah State University. Volunteers will divide their time between recording migration data and operating the banding station. Last year, more than 1000 hawks and eagles were banded, and 8,653 raptors were observed flying over the lookout.

The project is seeking paying volunteers through the nonprofit organization, EARTHWATCH, which recruits amateurs to help on research expeditions worldwide. Three teams of volunteers are needed to help the Goshute project this fall. The dates are: 25 Aug.- 6 Sept.; 8-20 Sept.; and 22 Sept.- 4 Oct. A tax-deductible contribution of $875 will cover field expenses (food, field equipment, etc.).

For information, write: Raptor Projects, *Earthwatch*, 10 Juniper Rd., Box 127N, Belmont, MA 02178, or call Brad Hurley, Coordinator, at 617-489-3030.

Raptor collisions with utility lines: A call for information

The U.S. Bureau of Land Management, Sacramento, California, in cooperation with the Pacific Gas and Electric Company, is assembling all available published and unpublished information concerning collisions of raptors with power lines and other utility lines. Actual case histories — no matter how circumstantial or fragmentary — are needed.

Please acknowledge that you have such information by writing to Dr. Richard R. (Butch) Olendorff, U.S. Bureau of Land Management, 2800 Cottage Way, Sacramento, CA 95825 U.S.A. (Phone [916] 484-4541). A form on which to record your information will then be sent by return mail.