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NEW JERSEY
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ZEISS/NJ AUDUBON SOCIETY'S MORNING FLIGHT PROJECT

RUSH HOUR AT DAWN

It's almost eerie how punctual birds can be. Along the earthen dike at Higbee Beach Wildlife Management Area, before the sun crests the horizon, the air is all or mostly devoid of migrating forms. But as soon as the sun peaks over the horizon the exodus begins. Through binoculars trained skyward, tiny sun-spun forms materialize high overhead. In tumbling waves, warblers, vireos, tanagers and orioles loft out of the trees and zip over, beside and below the line of waiting observers.



At best you'll have mere seconds to bring your binoculars to bear and pin a name to a fast moving form. Even the best get humbled at "The Dike" and first-timers are sometimes reduced to spectators.

Fifty years ago, the identification of fall warblers offering ideal and stationary views was considered challenging. But at the Higbee Dike, the challenges are greater. Here, the birds are identified in flight using an amalgam of clues--size, shape,

overall color or pattern, manner of flight and (hopefully) vocalizations.

It's the toughest challenge in birding. But anybody can play and everyone can marvel at the number and diversity of birds that constitute the famed "Morning Flight."

WHAT IS “MORNING FLIGHT”?

Morning Flight is the directed and often visible movement of migrant songbirds in the first few hours after sunrise. Most often, this movement occurs during southbound passage and involves species that typically migrate at night (e.g., warblers, sparrows, [Table 1](#)), although some diurnal migrants (e.g., Eastern Kingbird, Northern Flicker, [Table 1](#)) also engage in “morning flight.” During these events, birds generally move in directions opposite their intended goal (e.g., north in fall). Below are several proposed explanations for this unusual phenomenon.



Forced migration: Nocturnal migrants are forced to continue migrating during the day because they are caught over water or other areas of unsuitable habitat at the time they would be landing. Migrants could also be forced to continue migration if space or food resources in a given area are limited.

Redetermined migration: This behavior is most obvious in coastal areas and thought to result from birds being drifted off their primary migration course by prevailing winds. Flight direction at a given location may be strongly influenced by local geography and wind direction. Movement, usually by nocturnal migrants, is typically in a direction different from (sometimes opposite) the nocturnal flight path.

Onward migration: Migration by primarily nocturnal migrants that takes place through the night and into the day without stopping. Often this is the case in shorebirds and waterfowl, but is a less widespread phenomenon in songbirds. Flight direction is similar to the paths followed during nocturnal migration.

Resumed migration: After a period of rest, nocturnal migrants may resume migration. This movement is generally limited, mostly to the morning but sometimes can continue well into the day. Flight direction is similar to the paths followed during nocturnal migration.

THE DISCOVERY OF “MORNING FLIGHT”

In the mid-1970s observers in both Sweden and the U.S. began to document the phenomenon of “morning flight” mainly as it relates to redetermined migration. Observers suggested that these events involved the reorientation of birds drifted to coastal migration sites.

THE DISCOVERY OF “MORNING FLIGHT” IN CAPE MAY



In the mid-1980s, birders at Higbee Beach Wildlife Management Area (just north of Cape May Point on the Delaware Bay) noted the early morning movement of migrant songbirds in fall and this movement was generally south to north. This was counterintuitive to what might be expected.

Careful observation eventually revealed that on days when conditions were favorable for migration, birds could be seen leaving the last

remaining edges of habitat near the Cape May canal and streaming north; sometimes by the hundreds, thousands, and even tens-of-thousands.

THE “MORNING FLIGHT” PROJECT IN CAPE MAY



Obviously, a phenomenon of such magnitude invited study. NJAS conducted a two year study of “morning flight” in 1988-89 that resulted in a published manuscript ([Wiedner et al. 1992](#)) in the peer-reviewed ornithological journal, *The Auk*. The study documented the morning flight phenomenon in Cape May and examined several hypotheses proposed to explain morning flight.

Since 2003, New Jersey Audubon Society’s (NJAS) Cape May Bird Observatory, with support from [Zeiss Sports Optics](#), has conducted a daily count of the morning flight at Higbee Beach WMA. The count runs from 15 August to 31 October from atop the dredge spoil in the northwestern corner of the property, across from the Cape May-Lewes ferry terminal. To date, nearly one million individuals of 99 species have been recorded during the 2003-2005 field seasons. Two species, American Robin and Yellow-rumped Warbler make up nearly 80% of all individuals counted. [Table 1](#) shows 41 of the most frequently detected species.

POTENTIAL USES FOR THE MORNING FLIGHT DATA WE COLLECT

Currently the data are being used together with National Weather Service Doppler radar data and recordings of nocturnal flight calls to monitor bird migration in coastal New Jersey as part of our [Oases Along the Flyway](#) project. While the radar data can indicate the spatial and temporal patterns of songbird migration, it cannot tell us which species are involved in particular migration events. The morning flight and nocturnal flight call data help fill in some of these blanks. With additional years of “morning flight” data, we may be able to assess long term population trends of certain migrant passerines.

EXPANDING THE PROJECT

Currently, observers monitor “morning flight” at a single site in Cape May and this gives a snap-shot of how events unfold at that site. With multiple observers positioned at a number of strategic sites around the peninsula (and potentially farther north), a more complete picture of the phenomenon could be documented.

WHAT ARE THE CHALLENGES?

The accurate identification of passerines on the wing is a challenge to the observers taking part in the “Morning Flight” project. The identifications are made in two ways, by site (1) with high quality optics and (2) by [identifying flight call notes](#) identifying flight call notes. Sometimes the two methods are used individually; sometimes in conjunction with one another.



[See why Zeiss Optics excel when identifying passerines during “morning flight”](#)

Table 1. Birds most frequently observed during 2003-2005 field seasons.

Species	2,003	2,004	2,005
Ruby-throated Hummingbird	61	113	190
Yellow-bellied Sapsucker	89	84	240
Northern Flicker	4,495	1,634	5,904
Eastern Phoebe	23	17	84
Eastern Kingbird	2,031	1,812	3,295
Red-eyed Vireo	248	202	379
Red-breasted Nuthatch	36	764	455
Golden-crowned Kinglet	210	192	662
Ruby-crowned Kinglet	268	189	656
Blue-gray Gnatcatcher	378	153	392
American Robin	30,932	62,549	97,399
American Pipit	162	160	278
Cedar Waxwing	3,861	3,982	6,774
Tennessee Warbler	87	18	37
Nashville Warbler	79	131	65
Northern Parula	1,100	736	1,523
Yellow Warbler	157	285	328
Chestnut-sided Warbler	36	39	26
Magnolia Warbler	73	45	167
Cape May Warbler	305	158	207
Black-throated Blue Warbler	667	423	1,177
Yellow-rumped Warbler	267,059	64,755	210,764
Black-throated Green Warbler	162	250	179
Blackburnian Warbler	63	27	75
Pine Warbler	23	33	23
Prairie Warbler	17	30	39
Palm Warbler	5,210	1,985	5,167
Blackpoll Warbler	1,308	973	1,721
Black-and-white Warbler	192	239	468
American Redstart	1,755	3,011	3,482
Northern Waterthrush	674	378	681
Scarlet Tanager	135	80	151
Chipping Sparrow	111	368	3,050
Savannah Sparrow	98	178	386
Dark-eyed Junco	89	350	3,326
Indigo Bunting	371	233	223
Bobolink	3,747	8,099	2,230
Eastern Meadowlark	551	321	418
Baltimore Oriole	497	928	842
Purple Finch	771	974	645
Pine Siskin	10	56	23