



## Level 1: Historical Analysis of Migratory Birds in Dutchess County

### ❖ Background Information:

Many bird species that are found in the Hudson Valley are migratory, and spend part of the year in warmer areas of the country, or even in different parts of the world like South America. One way we can understand the environment around us is to study the timing of ecological phenomena, such as when flowers bloom or when birds leave or return from their migration. The study of these timing-related phenomena is called phenology. We provide data on the phenology of six migratory bird species in Dutchess County; the American Woodcock (*Scolopax minor*), the Baltimore Oriole (*Icterus galbula*), the Black-billed Cuckoo (*Coccyzus erythrophthalmus*), the Magnolia Warbler (*Setophaga magnolia*), the Ruby-throated Hummingbird (*Archilochus colubris*), and the Wood Thrush (*Hylocichla mustelina*). There are many other species of migratory birds that spend time in the Hudson Valley. This region is part of what's called the Eastern or Atlantic Flyway, which is like a highway in the air that many bird species use to get from their breeding grounds in the north to their winter habitats in warmer climates. Bird watching has been a popular pastime for over a century, so we have a long record of data on when and where we find different birds.



Flyways in North America.  
1) Pacific Flyway. 2) Central Flyway. 3) Mississippi Flyway. 4) Atlantic Flyway. Map from the National Wildlife Federation.

### ➤ **American Woodcock (*Scolopax minor*):** The American woodcock is a small brownish shorebird



with short legs and a long, straight bill. They have big heads and short appendages, which give them a round, almost comical appearance. They spend the majority of their time on the ground in fields and on the forest floor hunting for earthworms and other invertebrates. Their coloring serves as very good camouflage in the leaf litter. They also have a distinctive mating display that the males perform in the early spring, which is the best time to find them. While they are related to shorebirds, they live in forests rather than near water bodies. They migrate to New York forests from the Southeastern US.



- **Baltimore Oriole (*Icterus galbula*):** Baltimore orioles are medium-sized songbirds familiar for their



bright orange breast and black dorsal feathers. They are members of the blackbird family, and feed high in the trees on flying insects and fruits, so they are more likely to be seen than heard. They prefer habitats on the edges of forests and fields and are often found along rivers and streams. They have also adapted well to human dominated landscapes, and will frequently visit bird feeders in the cities and suburbs. The females create unique hanging nests woven together from slender fibers. Baltimore orioles migrate to New York from the Caribbean and Central America. Some winter as far south as northern South America.

- **Black-billed Cuckoo (*Coccyzus erythrophthalmus*):** The black-billed cuckoo is a slender brown and



grey bird that is similar in shape to jays, though it is not closely related to them. They prefer heavily forested areas, and are more often heard than seen because of their secretive behavior. Like other cuckoos, they are most well-known because they occasionally lay their eggs in other birds nests. This behavior is called brood parasitism. However, unlike true brood parasites like the brown-headed cowbird (*Molothrus ater*), most of the time cuckoos build nests of their own. They migrate to New York from western South America, some as far south as Bolivia.

- **Magnolia Warbler (*Setophaga magnolia*):** Magnolia warblers are small songbirds with yellow and



black striped chests and gray heads and backs. Like other warblers, they have narrow, pointed beaks, which are good for catching insects and spiders. They forage near the ground and are often easy to spot because of their bright yellow color. They prefer to nest in forested areas with a lot of evergreen trees. They aren't typically found in cleared fields, but otherwise cover a range of habitats outside of the breeding season. The male sings two distinct songs; one related to courtship and one likely related to territory defense. They migrate to New York from Central America and the Caribbean.



- **Ruby throated Hummingbird (*Archilochus colubris*):** this iconic hummingbird is known for its



iridescent colors, and it is the only hummingbird that is found in eastern North America. They are nectar feeders, like other hummingbird species, but they will also eat small insects out of spider webs. They are attracted to red and orange flowers more than other colors. They thrive in open woodlands, forest edges, and meadows. They have also adapted well to human environments such as backyards, gardens and city parks. They have very short legs, which prevent them from walking or hopping, but they can fly very fast and straight and hover in the air by beating their wings rapidly. They migrate to New York from Central America.

- **Wood Thrush (*Hylocichla mustelina*):** The wood thrush is a small brown and white bird known



for its distinctive flute-like song. This species nests primarily in tall shrubs, and both sexes help to provision offspring. Their brown and white coloration provides good camouflage for foraging for insects in the leaf litter. This, in combination with their somewhat reclusive behavior means they are more likely to be heard than seen. The population has been decreasing recently, possibly due to brood parasitism by brown headed cowbirds, or from a reduction of available calcium in their food due to acid rain in the Northeast. They migrate to New York from Central America.

#### ❖ **Dataset Timeframe:**

- Data is provided on the first arrival of these six species in Dutchess County from 1887 to 2008.

#### ❖ **Data Collection Methods:**

- The first sightings of these species were compiled by Vitale and Schlesinger (2011) from a number of sources, including bird clubs, museums, and more recently the citizen science program eBird.

#### ❖ **Dataset Variables:**

- **Year:** the year the bird was sighted.
- **First report (Julian date of arrival):** the day the first bird of that species was seen in that year. This is given in Julian days, which is the number of days since Jan 1 of that year. This converts the monthly calendar into a numeric calendar where arrival day can be easily quantified and compared.
- **Source:** the abbreviation for the source of the record for that sighting. These are named in detail on the **Sources** sheet, which can be accessed by the tab at the bottom of the excel file. On that sheet, there are the following columns:
  - **Abbreviation:** the abbreviation from the **Data** sheet.
  - **Sources key:** the full name of the source of the record.



### ❖ Information About Sites:

- These records come from various locations around Dutchess County, and represent the first time in each year that each species was seen or heard anywhere in the county.

### ❖ Source of Datasets:

- These data were published in Vitale, J., & Schlesinger, W. H. (2011). Historical analysis of the spring arrival of migratory birds to Dutchess County, New York: A 123-Year record. *Northeastern Naturalist*, 18(3), 335-346.
- If you have specific questions about this research that you would like to ask the scientists, please email [caryeducation@caryinstitute.org](mailto:caryeducation@caryinstitute.org) and we will be happy to contact the scientists on your behalf.

### ❖ Inquiry Idea Starters

*Here are some sample questions you could ask using these data. These are just suggestions, and we hope you'll come up with many interesting questions of your own!*

- How has the arrival of the Baltimore Oriole changed between 1950 and 2000?
- What year was the earliest sighting of the American Woodcock, and how often in the dataset was it seen on that day?
- What is the average date of arrival for the Ruby-throated Hummingbird?

### ❖ Additional Resources

- The Cornell Lab of Ornithology provides a lot of additional information on these bird species, as well as many others: <https://www.allaboutbirds.org/guide/search/>
- People participating in eBird, a birdwatching citizen science project run by the Cornell Lab of Ornithology, record sightings of birds in North America <https://ebird.org/science/status-and-trends>
- The National Phenology Network page has information on bird migrations and other phenomena that they are tracking. You can learn more and get involved here: <https://www.usanpn.org/>
- Search the large collection of Hudson River lessons (including one on Phenology) that are available through the Hudson River Ecology section of the Cary Institute "Teaching Materials" page: <http://www.caryinstitute.org/educators/teaching-materials/hudson-river-ecology>

### ❖ References:

- All bird information and photos come from the Cornell Lab of Ornithology All About Birds pages: <https://www.allaboutbirds.org/guide/search.aspx>
- Vitale, J., & Schlesinger, W. H. (2011). Historical analysis of the spring arrival of migratory birds to Dutchess County, New York: A 123-Year record. *Northeastern Naturalist*, 18(3), 335-346.



Woodcock with chicks.  
Photo from:  
<https://photofeathers.wordpress.com/tag/american-woodcock/>