# AMERICAN WOODCOCK (*SCOLOPAX MINOR*) MIGRATION ECOLOGY IN EASTERN NORTH AMERICA

## Year 3 Report of the Eastern Woodcock Migration Research Cooperative


Compiled by: Alexander Fish, Erik Blomberg, and Amber Roth

Department of Wildlife, Fisheries, and Conservation Biology, The University of Maine

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The Eastern Woodcock Migration Research Cooperative is a collaborative group partnered to understand the phenology, biology, and migratory ecology of American woodcock in eastern North America. This project would not have been possible without the support from multiple state, federal, international, non-profit agencies, and universities. *This document contains draft information that has not yet been subject to peer review. As such any results or information reported herein should be cited as unpublished data, and we anticipate interpretation may change as additional years of data are collected.*

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EXECUTIVE SUMMARY

Declining populations of migrant animals worldwide has prompted a renewed interested in understanding migration ecology. Migrating birds are particularly vulnerable as habitat loss, anthropogenic structures, and novel predators are widely believed to contribute to population declines. The American Woodcock (*Scolopax minor*) is a migratory forest bird that has experienced population declines of 1.1 percent per year for the past five decades. Migration remains a period of limited information for woodcock, so, we initiated the Eastern Woodcock Migration Research Cooperative in 2017 to describe migration phenology, stopover ecology, and determine survival during migration of woodcock in the Eastern Management Region. From October 2017 – March 2020, we deployed 304 GPS transmitters on woodcock captured in 12 states and 3 Canadian provinces throughout eastern North America. We collected data from 279 migration attempts, and obtained at least one full migration path from 212 birds. Mean migration distance between capture locations and residency site (wintering or breeding area) was 1,458 km in fall, and 1,471 km in spring, and mean single night flight distance was 257 km in fall and 188 km in spring. For fall migration, the mean initiation and termination dates were 7 November and 5 December in 2018, and 11 November and 30 November in 2019. On average it took woodcock 25 days in 2018 and 18.7 days in 2019 to complete fall migration, using an average of 4.4, and 3.9 stopover sites respectively. During spring migration, the mean initiation and termination dates were 10 March and 7 April in 2019, and 6 March and 5 April in 2020. On average, it took 29.3 days in 2019 and 29.4 days in 2020 to complete spring migration, with woodcock using 4.8 and 5.7 stopover sites respectively. In general, spring migration was longer in duration and woodcock stopped over at sites for a greater length of time than during fall migration. We observed woodcock captured and marked in the Eastern Management Region

migrating into the Central Management Region; 35% and 29% of fall migrating woodcock in 2018 and 2019, and 20% and 5% of spring migrating woodcock in 2019 and 2020, terminated their migration in the Central Management Region. We will continue marking birds during fall and winter 2020/21, and our future objectives center around understanding factors contributing to variation in migration phenology, the threats faced by woodcock during migration, habitat use and distribution during migratory stopover, and further evaluating connectivity among the eastern and central woodcock management regions.

## INTRODUCTION

Across temperate regions of North America, animals must contend with seasonally influenced thermal extremes, changing food abundance, and stochastic weather events. Some species cope with these dynamic conditions by traveling between seasonally suitable habitats in predictive cyclical movements termed migrations (Dingle 2014). Migratory ecology remains an understudied portion of the annual lifecycle for many species (Faaborg et al. 2010). Migrating individuals must continually locate suitable areas, termed stopover locations, to rest and rebuild energy reserves needed to continue migration (Rodewald and Brittingham 2004, Taylor et al. 2011). At the same time, animals must also contend with hazards such as anthropogenic structures (e.g., mobile communication towers, buildings, wind turbines; Loss et al. 2014, Graff et al. 2016, Zimmerling and Francis 2016) and unpredictable weather (Newton 2007). For some species mortality peaks during migration (Sillett and Holmes 2002, Klassen et al. 2014), and navigating this risky period may contribute to the observed declines of migratory species and possibly limit population viability (Frick et al. 2017).

The American Woodcock (*Scolopax minor*; woodcock hereafter) is a migratory forest bird that has experienced long-term declines of 1.1% per year over the past 50 years (Seamans

and Rau 2018). Woodcock are distributed throughout eastern North America; primarily breeding in the northern United States and southern Canada, and overwintering in the southern United States. The species is managed as two discrete populations associated with the Central and the Eastern Management Regions, which loosely correspond with the portions of woodcock range that occur west and east of the Appalachian Mountains, respectively (Figure 1). Woodcock migrate south between October-December and north between January-April. Previous studies (e.g. Krementz et al. 1994, Butler 2003, Myatt and Krementz 2007, Meunier et al. 2008) were principally derived from observations of local changes in woodcock abundance (e.g. arrival of spring migrants), band returns, or radio-tracking studies at breeding, wintering, and stopover sites. While this information is useful, it is inherently limited in scope and cannot be applied broadly across the species' range. This migratory knowledge gap prompted The Association of Fish and Wildlife Agencies to identify migratory ecology as one of the woodcock's greatest research needs (Case and Associates 2010).

Tracking woodcock throughout migration represents numerous challenges, as individuals must be continually relocated over vast distances, almost always spanning numerous states and often two countries (Myatt and Krementz 2007, Klassen et al. 2014). Recent advances in transmitter tracking technologies allow for woodcock to be tracked using satellite transmitters (Moore 2016, Moore et al. 2019). Satellite transmitters can now simultaneously collect global positioning system (GPS) location data and remotely transmit locations to a central database via satellite or cellular networks. Between 2014 and 2016, Moore et al. (2019) used satellite transmitters to track migrating woodcock in the Central Management Region, but were unable to track more than a few woodcock that migrated into the eastern half of the range. To that end, we created the Eastern Woodcock Migration Research Cooperative with the goal of describing the

migratory phenology and survival of the woodcock in the eastern extent of its range. Our specific objectives are to 1) describe departure and arrival phenology for migrating woodcock, 2) describe stopover ecology including distance between stopover sites, number of stopover events, and location of stopover events, 3) evaluate migratory connectivity for woodcock, including movements between the Central and Eastern Management Regions via migration, and 4) quantify the survival of migrating woodcock. This report documents results obtained during the project's first three years of data collection, and will focus on what we have learned so far with respect to objectives 1, 2, and 3, with future work to focus on objective 4.

## METHODS

### *Study Area*

The Eastern Woodcock Migration Research Cooperative study area is primarily comprised of the Eastern Woodcock Management Region, the spatial unit at which the United States Fish and Wildlife Service and Environment and Climate Change Canada manage woodcock populations (Figure 1). We completed a pilot field season during 2017-2018 (Fish et al. 2018) that was focused on marking birds in Maine, and initiated our first full-scale field season in Fall 2018 (Fish et al. 2019). For this report we will include data from all years of the project, 2017-2020. During the fall (September-October) we focused capture efforts in ME, NY, PA, RI, VA and WV, as well as Nova Scotia, Ontario, and Quebec. During winter (December-February) we focused captures in AL, FL, GA, MD, NC, NJ, SC, and VA. We generally relied on knowledge of local biologists to identify areas suitable for woodcock capture within states and provinces, and we deployed transmitters on a wide variety of land ownership types, including state, federal, non-governmental organization, and private. As woodcock departed for spring and fall migration, they left capture locations and migrated either north or south,

respectively, traversing multiple states and provinces throughout the eastern United States and Canada. We anticipated a subset of woodcock would leave the Eastern Management Region and enter the Central Management Region during both spring and fall migration (Moore 2016; Figure 1).

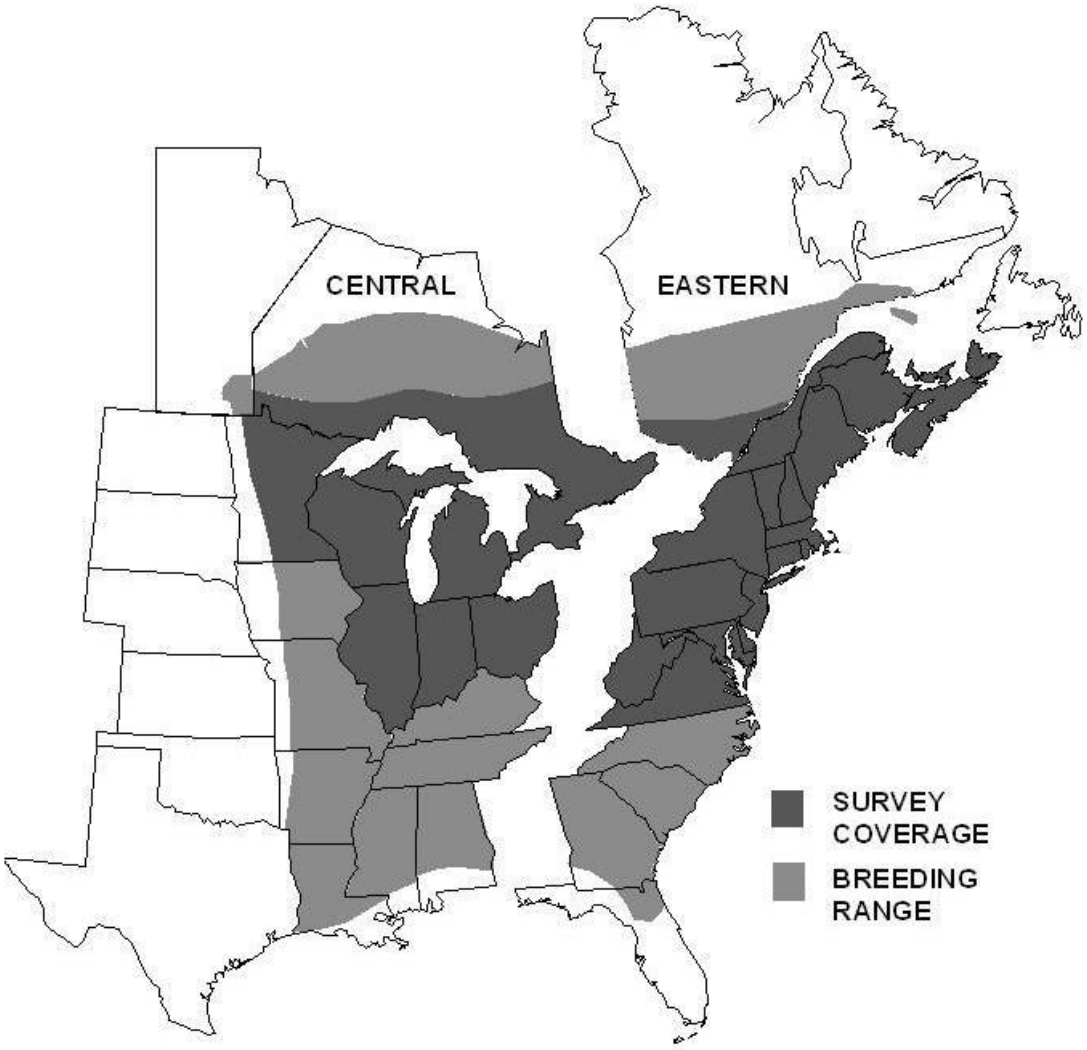


Figure 1 – American Woodcock Central and Eastern Management Regions, with distribution of breeding season survey coverage (figure from Seamans and Rau 2018).

*Capture Methods*

Woodcock were captured using mist nets during crepuscular flights (Sheldon 1960) and by spot-lighting roosting birds (Rienffenberger and Kletzly 1967, McAuley et al. 1993). We set mist net arrays near roosting fields, travel corridors, and forested wetlands to capture birds as they left diurnal use areas and flew to night roosts. Additionally, we used spotlights and thermal imaging scopes to locate woodcock roosting in fallow or agricultural fields and captured them using handheld nets. Once captured, we aged woodcock to two ages classes (adult [after hatch year or after second year; > 1 year old] or young [hatch year or second year; < 1 year old]), using wing plumage characteristics, and sexed (male or female), using a combination of wing plumage and bill length (Mendell and Aldous 1943, Martin 1964). Woodcock were fitted with a Lotek PinPoint 75, 120, or 150 ARGOS-compatible satellite transmitter, attached with a leg-loop style harness (Moore 2016). The GPS collected locations at pre-programmed dates and times, and transmitted data to a central database using the ARGOS satellite system. We stopped receiving locations when birds either dropped their transmitter or the bird died, thereby causing the transmitter to rest on the ground and attenuate the signal, or if the transmitter's battery died or the transmitter otherwise failed. We are working on methods to differentiate tags loss/failure from mortality in order to estimate survival from the GPS location data, but those methods are still under development.

Transmitters were manually programmed using LOTEK PinPoint Host software (LOTEK Wireless Inc., Newmarket, Ontario, CA), which allowed us to specify the exact date and time locations were collected. Transmitters had limited battery life and were expected to collect a maximum of 75, 100, and 125 locations for the PinPoint 75, 120, and 150 tags, respectively, before losing power. We created three location collection schedules; frequent (one location per day), infrequent (one location every few days), and hybrid (combinations of frequent and

infrequent periods) to maximize the amount of data we collected for each woodcock. Hybrid schedules contained a frequent collection period (~30 days) during the peak of migration, and infrequent collection periods before and after the frequent period. Frequent and infrequent schedules were used on both sexes during both fall and spring migration, with hybrid schedules used during spring migration as the potential migration periods exceeded the expected number of GPS locations possible under a frequent schedule. Frequent schedules are useful to evaluate fine scale movement and provide the finest resolution (i.e., 1-day) to document stopover (resting periods during migration) ecology. Infrequent schedules allow for woodcock to be tracked for longer periods of time, thus possibly providing data on both spring and fall migration for an individual bird. Infrequent schedules also increased the probability of receiving future data transmissions when individuals used stopover sites with poor satellite signal and failed to upload locations (e.g., mountainous areas with a steep slope). We randomly assigned a transmitter schedule to each captured woodcock, while attempting to control for equal sex and age ratios between programming treatments and capture locations. Location data were transmitted to a remote database using the ARGOS satellite system after every third GPS location was collected. We manually downloaded woodcock locations every 1 to 5 days, and used Movebank (Movebank Project, accessed 6 June 2019) to store all location data.

*Preliminary Data Summary*

In program R, we used the unique date and time signature for each location to determine when woodcock initiated and terminated migration, and to determine how many stopover locations were used, the number of days they spent at each stopover site, and the minimum number of total days spent migrating (duration; days between migration initiation and termination). We conducted this separately for both spring and fall migration, with some small

differences (described below) to accommodate the unique nature of each migratory direction. Migration initiation was determined by using the first known day a bird traveled greater than 16 kilometers from its pre-migratory capture location, or wintering range for birds marked prior to fall migration and followed north during the following spring. Termination was assumed when birds became stationary for more than 7 days in the wintering range following fall migration, or when a woodcock became stationary for greater than 20 days following spring migration. We used a greater number of days for termination of spring migration because woodcock have been documented breeding throughout eastern North America, and cold spring weather may cause extended stopover events that may mimic breeding residency. Therefore, in the spring we wanted to increase our certainty that we were correctly identifying the termination of migration, rather than a prolonged stopover event. However, some transmitters did not collect locations for a full 20-day period post-migration to trigger the transition to a termination state. This was likely due to a combination of transmitter battery failure, ranging movement(s) on the breeding grounds, or continued migratory movements into late May resulting in <20 days occurring between the termination of migration and data processing for this report. It is also possible that woodcock established relatively short-term residency to breed, and then made additional long-distance post-breeding movements, which creates some ambiguity in the distinction between breeding and migration. For example, if a female initiated a nest, failed during early incubation, and then continued to migrate northward. For individual woodcock that flew between breeding and wintering areas in a single flight, the date of first identified migratory movement and termination date were the same. For these birds we classified duration of migration, number of stopover sites, and numbers of days spent at each stopover sites as 'NA' in Appendix A.

We censored woodcock marked in New Jersey during December from our assessment of fall migration initiation, and a subset of birds captured in Virginia from our assessment of spring initiation, as these birds were likely marked during stopover having already initiated migration. We calculated the number of days individuals spent at each stopover location by subtracting the of first known departure date from the first known arrival date at the site, and we used a minimum distance of 16 km to delineate migration to a subsequent stopover from local movement at a single stopover. We additionally determined the cumulative distance migrated by summing the distance from pre-migration locations to each stopover site. When birds transmitted data for a full migration, we calculated the total distance migrated between pre- and post-migration locations. In each case, the total distance represented the sum of individual migratory paths (straight line [Euclidean] distance between stopover locations) recorded for each individual bird. We also recorded the state or province where woodcock established post-migration residency.

Because not all transmitters provided daily locations for every bird, it is possible that we over-estimated stopover duration and the total duration of migration. However, we were as likely to over-estimate the date of arrival as we were to under-estimate the date of departure, so this limitation should result in random noise with respect to estimates of migration timing, rather than bias per se. It is also certain that we missed some stopover locations completely, which introduced a positive bias into the mean and maximum distances we observed between recorded stopovers, and thus over-estimated the distance woodcock traveled during a single migratory flight. Thus, our estimates of these values for the total dataset should be viewed conservatively, and we provide information on mean and maximum flight distances for birds known to make a flight during a single night (i.e., 1 day between departure and arrival dates) as a secondary

assessment of flight distances. Finally, we qualitatively evaluated connectivity between breeding and wintering areas, and migratory movements between the Eastern and Central Management Regions, by visually inspecting maps of all woodcock migration paths.

## PRELIMINARY RESULTS AND DISCUSSION

*Tag deployment:* We have captured and attached satellite transmitters to 304 woodcock since fall 2017: 6 woodcock in October 2017, 60 woodcock from September to October 2018, 55 woodcock from December 2018 to March 2019, 93 woodcock from September to October 2019, and 90 woodcock from November 2019 to March 2020. Of the 304 woodcock marked with GPS tags, 69 woodcock were adult males, 84 were young males, 72 were adult females, and 79 were young females (Table 1). Captures occurred in Alabama (n = 7), Georgia (n = 12), Maine (n = 13), Maryland (n = 19), New Jersey (n = 30), New York (n = 39), North Carolina (n = 21), Nova Scotia (n = 7), Ontario (n = 5), Pennsylvania (n = 24), Quebec (n = 15), Rhode Island (n = 30), South Carolina (n = 17), Virginia (n = 61), and West Virginia (n = 4; Table 1).

*Migration phenology:* Six woodcock in fall 2017, 52 in fall 2018, and 79 in fall 2019, initiated migration, and 3 woodcock in fall 2017, 38 in fall 2018, and 74 in fall 2019, completed migration (Table 2). Fifty-five woodcock in spring 2019, and 87 in spring 2020 initiated migration, and 42 in spring 2019, and 55 in spring 2020 completed migration (Table 2). As mentioned above, the proportion of woodcock 'completing' spring migration was an under-estimate of the true number because of uncertainties surrounding spring termination dates. Sixty-seven woodcock lacked complete migration tracks because of signal loss before establishing post-migration residency, likely due to a combination of mortality, dropped

transmitters, or transmitter malfunction. We were unable to determine exact cause of signal loss for most transmitters. However, five woodcock were harvest by hunters; in 2018, one bird was harvested in Rhode Island and one in New Jersey, and in 2019 three birds were harvested in Pennsylvania (2) and in New York (1). In all cases woodcock were harvested near the capture site prior to initiating migration, and transmitters stopped transmitting post-harvest and were returned to local cooperators. In combination with recaptures of previously-marked birds (4) we have recovered 9 woodcock after marking, and so far all have retained their GPS tags.

The woodcock mean migration initiation for both spring and fall was similar between years. In fall 2018 mean migration initiation was 7 November and in fall 2019 it was 11 November. Similarly, in spring 2019 mean migration initiation was 10 March and in spring 2020 it was 6 March. In general, the range of dates in which migration was initiated was within 1 to 2 weeks between years (Table 3). The mean date of migration termination was also similar between years, with mean fall migration terminating on 5 December in 2018 and 30 November 2019. Mean termination of spring migration was 7 April in 2019 and 5 April 2020; as mentioned above, these likely reflect under-estimates due to the relatively ambiguous nature of the end of spring migration. Similar mean timing between years may indicate relative consistency in migration timing as a whole, but we also observed substantial variation in timing among individuals. Future analyses will focus on evaluating how age, sex, condition, and other environmental factors influence migratory movements.

The average number of days each bird spent at a stopover location throughout migration ranged from 1.5 to 15 for fall migrants (mean = 5.4 days) in fall 2018, 0 to 21 (mean = 4.3) in fall 2019, 2 to 36.5 for spring 2019 (mean = 7.4), and 0 to 34 (mean = 5.6) for spring 2020 migration (Appendix A). Here, values of 0 represent birds that did not use a stopover. The

number of stopover locations used by individual woodcock ranged from 0 to 10 (mean = 4.4) during fall 2018, 0 to 13 (mean = 3.9) during fall 2019, 1 to 11 (mean = 4.8) during spring 2019, and 0 to 16 (mean = 5.7) during spring 2020. The total duration of migration for individual birds was highly variable, ranging from 4 to 72 days (mean = 25) in fall 2018, 1 to 67 days (mean = 18.7) in fall 2019, 2 to 73 days (mean = 29.3) in spring 2019, and 1 to 66 days (mean = 29.4) in spring 2020. Spring duration of migration estimates are likely underestimated, as not all woodcock established a 20-day residency prior to transmitter failure and therefor did not transition to a migration termination state.

*Migration length:* The distances woodcock traveled between recorded stopover sites was highly variable, ranging from 16 to 1,379 km; however, because of multi-day gaps in location data for some tags, this maximum distance almost certainly includes missed stopover locations and does not reflect maximum flight distance. For flights of known distance (i.e., starting and ending points obtained 1 day apart), the maximum single flight distance we recorded was 797 km, and the mean flight distance was 257 km in the fall and 188 km in the spring. The majority of birds traveled distances less than 400 km between successive stopovers; approximately 73.6% of fall and 82.3% of spring point-to-point distances were less than 400 km (Table 4). Most stopover sites separated by longer distances likely occurred when multiple days of uncertainty existed on either the arrival or departure date at the stopover site. Generally, birds exhibited more short-distance (<100 km) movements during spring migration, while long-distance migratory flights (≥ 100 km) were more common during fall migration, although both were highly variable (Table 4). Total distance traveled during migration was also variable, ranging from 19 to 3,237 km for fall migrants (mean = 1,458 km) and 118 to 3,361 km (mean = 1,471

km) for spring migrants. In Appendix A we provide a bird-by-bird summary of all metrics mentioned above.

The longest migration track (3,361 km) we documented was a woodcock marked in central Alabama during winter that migrated to west-central Manitoba for the breeding period (Figure 37). This distance migrated includes recursive movement southward from Manitoba into Minnesota, presumably in response to a spring cold front depositing extensive snow cover. The shortest migratory distance (19 km) observed was a woodcock that spent the summer in Rhode Island and over-wintered along the coast in Rhode Island. In fall 2019, four woodcock attempted to overwinter in Rhode Island and 2 woodcock attempted to overwinter in both northwest and northeast Pennsylvania, however transmitter battery failure prevented us from monitoring past January for most of these birds. Hence the fate and mid-winter movements of these woodcock are unknown. With additional data and more formal analysis, we plan to explore mechanisms for variation in migration behaviors in the future.

*Migratory connectivity:* Maps of woodcock migration paths for fall and spring in aggregate, as well as for individual states/provinces, are provided in Figures 3 through 47. Based on the 83 individuals with complete migration paths during fall 2018 and spring 2019, we found that 35% of fall-migrating woodcock and 20% of spring migrating woodcock crossed management region boundaries during migration. Using 129 complete tracks collected for fall 2019 and spring 2020, we observed 29% of fall but only 5% of spring eastern marked woodcock migrating into the Central Management Region. Of 5 woodcock marked in the Central Management Region (Alabama; fig 37) with complete migration tracks, no birds terminated migration in the Eastern Management Region, but one transmitter failed in southern West Virginia. The proportion of fall migrating woodcock to crossover was similar between years, but there was considerably more

variation during spring migration. For example, during spring 2019 (Fig. 22), we observed 4 of 9 woodcock marked in southeastern South Carolina migrating into the Central Management Region, but in 2020, all South Carolina marked woodcock terminated migration in the Eastern Management Region (Fig. 46). While cross-regional movements by woodcock have been previously documented (e.g. Moore et al. 2019), the information we collected during the spring 2019 migration documenting movements from eastern wintering areas to the central breeding range was relatively unprecedented, and illustrates at least some population connectivity between wintering areas in the mid-Atlantic and southeastern U.S. and breeding areas in the western Great Lakes. However, variation among years suggests this pattern may not be repeatable, and further years of data collection will be necessary to arrive at general conclusions with respect to connectivity among the management regions.

## FUTURE DIRECTIONS

We anticipate that as the project continues to grow and additional tags are deployed throughout the eastern United States and Canada, we will refine the information presented in this report, increase our ability to estimate migration variables, and further test mechanisms for migratory patterns. We have been incredibly impressed with the data collected so far, and are continually working to adopt robust methods to more formally analyze woodcock movement data, interpret the results, and translate our findings into conclusions that are relevant to woodcock management. Specifically, we plan to develop a more formal approach to classify migration corridors and to identify regionally-important stopover areas using spatial analyses, and to more systematically differentiate migratory behaviors using animal movement models. We are currently working on development of the later to distinguish migration flights, stopovers, and local movements during breeding and wintering, based on the underlying distribution of data

rather than an arbitrary rule set. This will enable us to better classify woodcock movements, describe aspects of woodcock migration in greater detail, and provide a more rigorous framework for dealing with information gaps and missing data. More broadly, the movement models will help us to better understand the dynamics of short-distant migration and investigate how environmental and biological covariates influence these dynamics. We have identified a number of the uncertainties in this report, such as the ambiguous nature of the 'termination' of spring migration, which we view as opportunities to developed a more nuanced understanding of the migratory process as we continue to explore novel aspects of woodcock ecology.

Our project has continued to gather support from an ever-growing network of partners. We are unsure how the COVID-19 pandemic will affect transmitter deployment efforts in fall 2020 and winter 2021, but we remain optimistic. We are currently planning to add sites in Vermont and New Brunswick for fall 2020. We anticipate having a similar effort as in the past across the southeastern US during winter 2021, and are looking forward to capturing woodcock in Florida. A subset of cooperators have met their current commitments and are unlikely to continue transmitter deployments unless additional funding in secured. We thank our partners for their involvement thus far, and we are already looking forward to fall 2020.

PROJECT PARTNERS

Alabama Department of Conservation and Natural Resources
American Woodcock Society
Association des Savaginiers du Saguenay-Lac-St-Jean
Canaan Valley National Wildlife Refuge
Club des Becassiers du Quebec
Conte National Wildlife Refuge
Environment and Climate Change Canada
Florida Fish and Wildlife Conservation Commission
Friends of the 500th
Friends of Missisquoi National Wildlife Refuge
Georgia Department of Natural Resources
Maine Department of Inland Fisheries and Wildlife
Maryland Department of Natural Resources
Missisquoi National Wildlife Refuge
Moosehorn National Wildlife Refuge
Nature Conservancy
New Jersey Department of Environmental Protection
New York Department of Environmental Conservation
North Carolina Wildlife Resources Commission
Old Hemlock Foundation
Pennsylvania Game Commission
Rhode Island Dept. of Environmental Management
Ruffed Grouse Society
State University of New York - Cobleskill
South Carolina Department of Natural Resources
United States Fish and Wildlife Service
USFWS Webless Migratory Game Bird Program
USGS - Patuxent Wildlife Research Center
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University of Rhode Island
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## PROJECT WEBSITE

Check out www.woodcockmigration.org for weekly updates during migration and for more information on the Eastern Woodcock Migration Research Cooperative.

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TABLES AND FIGURES

Table 1. Capture summary for American woodcock marked with GPS transmitters as part of the Eastern Woodcock Migratory Research Cooperative.

| | | Male | | Female | | GPS |
|---|---|---|---|---|---|---|
| | | **Young** | **Adult** | **Young** | **Adult** | **TOTALS** |
| Alabama | 2020 | 1 | 2 | 2 | 2 | 7 |
| Georgia | 2020 | 3 | 3 | 1 | 5 | 12 |
| Maine | *2017* | 4 | | | 2 | 6 |
| Maine | *2018* | 1 | 1 | 3 | 2 | 7 |
| Maryland | *2019* | | 3 | 5 | 2 | 10 |
| Maryland | *2020* | 1 | 3 | 4 | 1 | 9 |
| New Jersey | *2018* | 7 | | 8 | | 15 |
| New Jersey | *2019* | 7 | | 8 | | 15 |
| New York | *2018* | 4 | 1 | 1 | 3 | 9 |
| New York | *2019* | 4 | 6 | 11 | 9 | 30 |
| North Carolina | *2019* | 2 | 2 | | 2 | 6 |
| North Carolina | *2020* | 7 | 1 | 4 | 3 | 15 |
| Nova Scotia | *2019* | 3 | | 4 | | 7 |
| Ontario | *2018* | | 1 | | 1 | 2 |
| Ontario | *2019* | 1 | | 1 | 1 | 3 |
| Pennsylvania | *2018* | 2 | 4 | 2 | 4 | 12 |
| Pennsylvania | *2019* | 3 | 1 | 1 | 7 | 12 |
| Quebec | *2018* | 2 | | 2 | 1 | 5 |
| Quebec | *2019* | 5 | | 2 | 3 | 10 |
| Rhode Island | *2018* | | 12 | | 3 | 15 |
| Rhode Island | *2019* | | 12 | | 3 | 15 |
| South Carolina | *2019* | 2 | 1 | 4 | 2 | 9 |
| South Carolina | *2020* | 2 | 3 | 2 | 1 | 8 |
| Virginia | *2018* | | 6 | 3 | 1 | 10 |
| Virginia | *2019* | 15 | 5 | 10 | 12 | 42 |
| Virginia | *2020* | 6 | 1 | | 2 | 9 |
| West Virginia | *2019* | 2 | 1 | 1 | | 4 |
| **TOTAL** | | **84** | **69** | **79** | **72** | **304** |

Table 2. Total net migration distance for GPS-marked woodcock during fall and spring migratory periods that completed one full migration. We only included woodcock marked prior to migration, and censored woodcock marked in New Jersey during fall migration and some woodcock marked in Virginia during spring migration because we assumed these were captured after the onset of migration. New Jersey-captured woodcock were included in spring migration assessments.

| | **Total Migration** | | **Percent of Total** | | **Sum Percent** | |
|---|---|---|---|---|---|---|
| **Bin[a]** | **Fall[b]** | **Spring[c]** | **Fall** | **Spring** | **Fall** | **Spring** |
| 0-200 | 3 | 1 | 2.61% | 1.03% | 2.61% | 1.03% |
| 200-400 | 1 | 1 | 0.87% | 1.03% | 3.48% | 2.06% |
| 400-600 | 5 | 4 | 4.35% | 4.12% | 7.83% | 6.19% |
| 600-800 | 8 | 8 | 6.96% | 8.25% | 14.78% | 14.43% |
| 800-1000 | 9 | 11 | 7.83% | 11.34% | 22.61% | 25.77% |
| 1000-1200 | 14 | 7 | 12.17% | 7.22% | 34.78% | 32.99% |
| 1200-1400 | 15 | 10 | 13.04% | 10.31% | 47.83% | 43.30% |
| 1400-1600 | 13 | 14 | 11.30% | 14.43% | 59.13% | 57.73% |
| 1600-1800 | 17 | 13 | 14.78% | 13.40% | 73.91% | 71.13% |
| 1800-2000 | 6 | 11 | 5.22% | 11.34% | 79.13% | 82.47% |
| 2000-2200 | 9 | 8 | 7.83% | 8.25% | 86.96% | 90.72% |
| 2200-2400 | 5 | 4 | 4.35% | 4.12% | 91.30% | 94.85% |
| 2400-2600 | 5 | 2 | 4.35% | 2.06% | 95.65% | 96.91% |
| 2600-2800 | 0 | 2 | 0.00% | 2.06% | 95.65% | 98.97% |
| 2800-3000 | 3 | 0 | 2.61% | 0.00% | 98.26% | 98.97% |
| 3000-3200 | 1 | 0 | 0.87% | 0.00% | 99.13% | 98.97% |
| 3200-3400 | 1 | 1 | 0.87% | 1.03% | 100.00% | 100.00% |
| 3400-3600 | 0 | 0 | 0.00% | 0.00% | 100.00% | 100.00% |
| **Total** | **115** | **97** | **100.00%** | **100.00%** | **-** | **-** |

[a]distances in kilometers

[b]1 October 2017 to 31 January 2018, 1 September 2018 to 31 January 2019, and 1 September 2019 to 31 December 2019

[c]1 February 2019 to 30 May 2019, and 1 February 2020 to 31 May 2020

Table 3. The range and mean dates of migratory initiation and termination for woodcock completed migration as part of the Eastern Woodcock Migratory Research Cooperative. Initiation was determined with a woodcock preformed a greater than 16 km movement and termination was calculated when an individual arrived on the wintering or breeding range and remained in the same are for 7 days during the fall and 20 days during spring.

| | n | Mean Mig. Initiation | First Mig. Initiation | Last Mig. Initiation | Mean Mig. Termination | First Mig. Termination | Last Mig. Termination |
|---|---|---|---|---|---|---|---|
| ***Fall*** | | | | | | | |
| ***2018*** | 38 | 11/7/2018 | 10/12/2018 | 1/1/2019 | 12/5/2018 | 10/28/2018 | 2/3/2019 |
| ***2019*** | 74 | 11/11/2019 | 10/12/2019 | 12/13/2019 | 11/30/2019 | 11/8/2019 | 1/15/2019 |
| ***Spring*** | | | | | | | |
| ***2019*** | 42 | 3/10/2019 | 1/26/2019 | 3/29/2019 | 4/7/2019 | 2/6/2019 | 5/15/2019 |
| ***2020*** | 55 | 3/6/2020 | 2/3/2020 | 5/4/2020 | 4/5/2020 | 2/11/2020 | 5/15/2020 |

Table 4. Distribution of all migratory movement [step] distances between successive pre-migration, stopover, and post-migration locations for spring and fall migrating woodcock. For some individuals, locations are greater than one day apart, resulting in some stopover locations not being recorded and step events likely overestimating single day migratory movements.

| | Step Events | | Percent of Total | | Sum Percent | |
|---|---|---|---|---|---|---|
| **Bin[a]** | **Fall[b]** | **Spring[c]** | **Fall** | **Spring** | **Fall** | **Spring** |
| 0-100 | 194 | 281 | 29.94% | 33.10% | 29.94% | 33.10% |
| 100-200 | 120 | 191 | 18.52% | 22.50% | 48.46% | 55.59% |
| 200-300 | 85 | 138 | 13.12% | 16.25% | 61.57% | 71.85% |
| 300-400 | 78 | 89 | 12.04% | 10.48% | 73.61% | 82.33% |
| 400-500 | 52 | 60 | 8.02% | 7.07% | 81.64% | 89.40% |
| 500-600 | 41 | 41 | 6.33% | 4.83% | 87.96% | 94.23% |
| 600-700 | 31 | 19 | 4.78% | 2.24% | 92.75% | 96.47% |
| 700-800 | 21 | 18 | 3.24% | 2.12% | 95.99% | 98.59% |
| 800-900 | 16 | 4 | 2.47% | 0.47% | 98.46% | 99.06% |
| 900-1000 | 4 | 4 | 0.62% | 0.47% | 99.07% | 99.53% |
| 1000-1100 | 1 | 1 | 0.15% | 0.12% | 99.23% | 99.65% |
| 1100-1200 | 3 | 3 | 0.46% | 0.35% | 99.69% | 100.00% |
| 1200-1300 | 1 | 0 | 0.15% | 0.00% | 99.85% | 100.00% |
| 1300-1400 | 1 | 0 | 0.15% | 0.00% | 100.00% | 100.00% |
| **Total** | **647** | **849** | **100.00%** | **100.00%** | - | - |

[a]distances in kilometers

[b]1 October 2017 to 31 January 2018, 1 September 2018 to 31 January 2019, and 1 September 2019 to 31 January 2020

[c]1 February 2019 to 30 May 2019, and 1 February 2020 to 31 May 2020

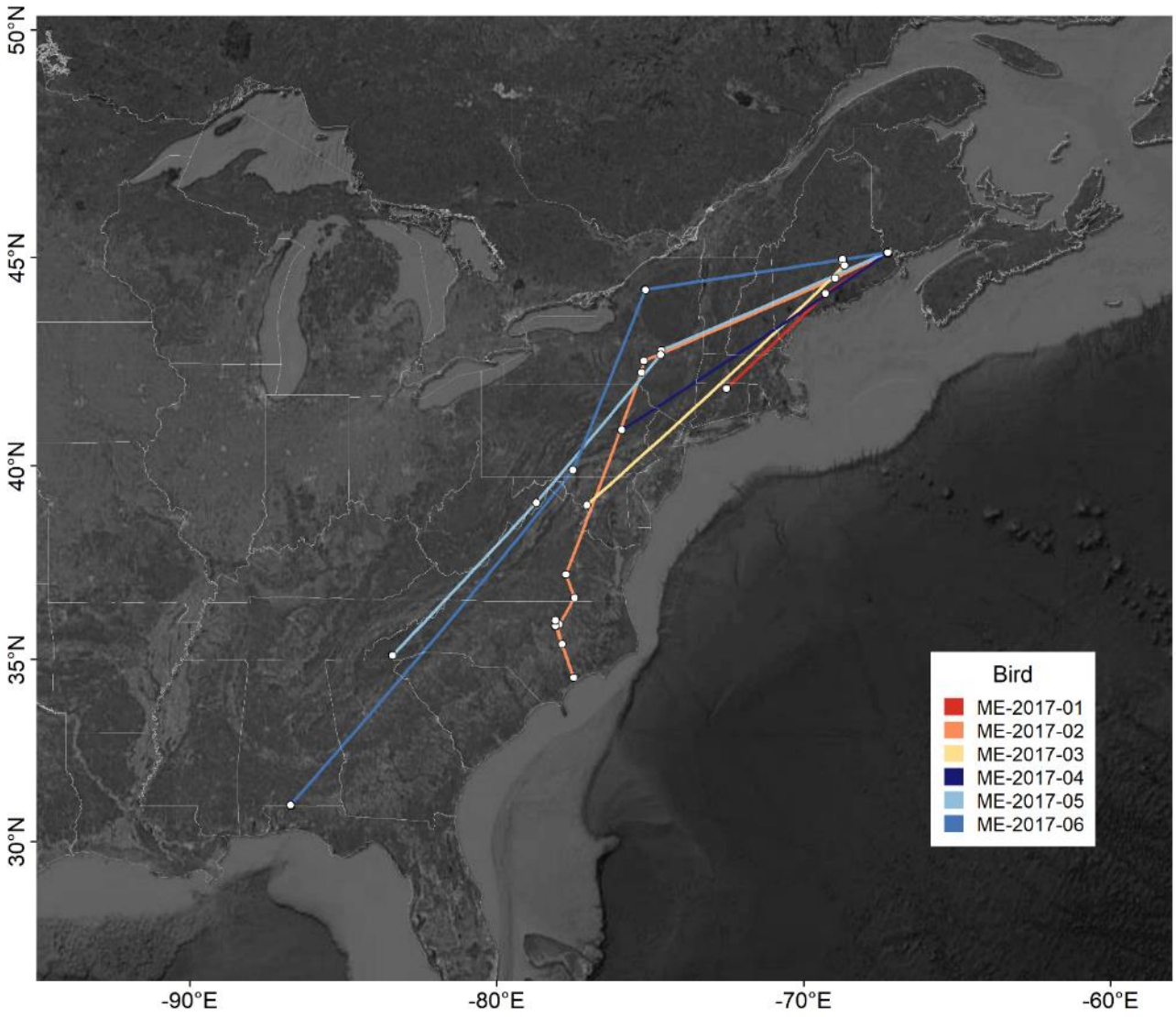


Figure 3. Fall 2017 migration routes for 6 American woodcock (*Scolopax minor*) marked with satellite transmitters in central and eastern Maine, October 2017.

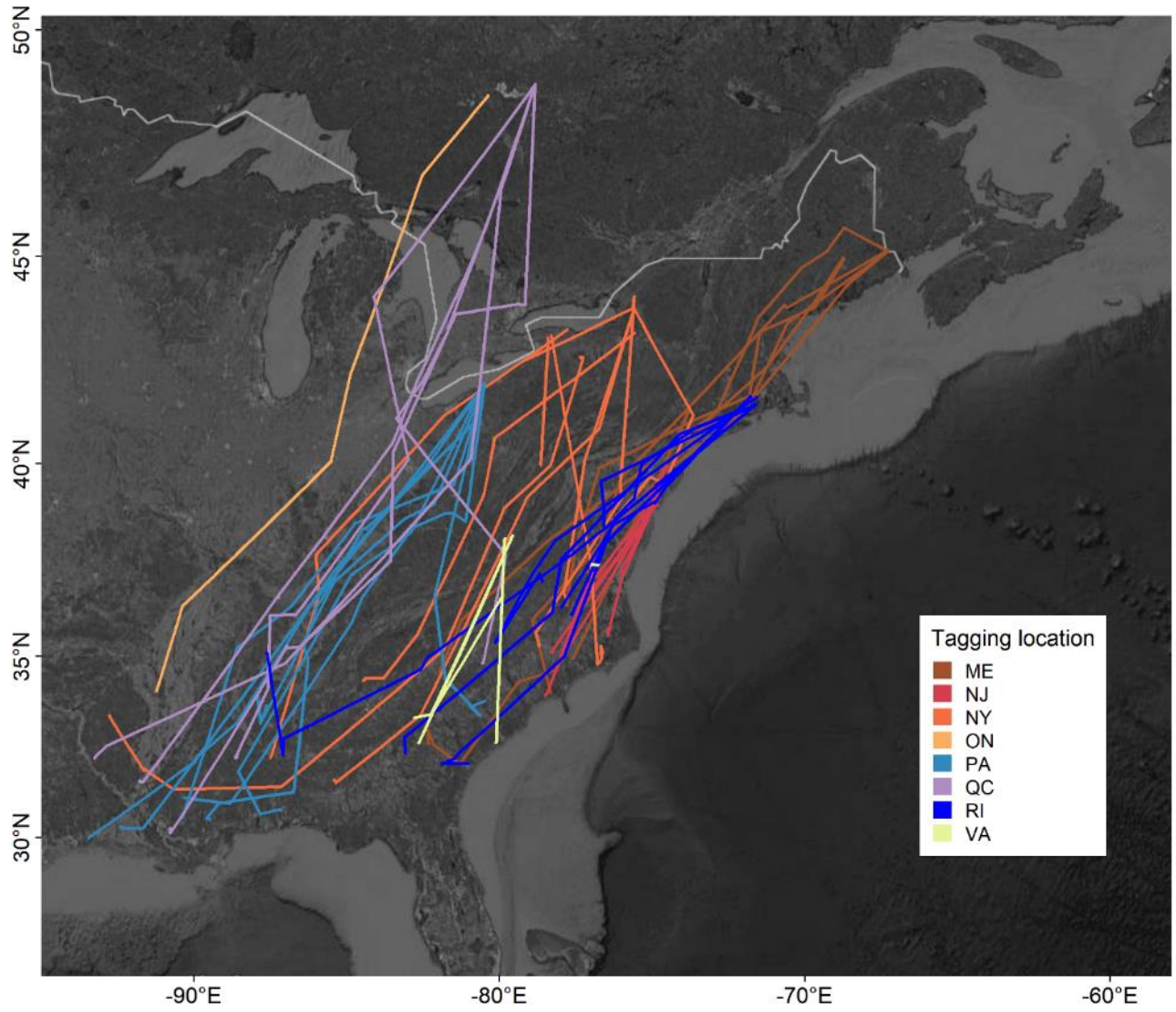


Figure 4. Fall 2018 migration routes for American woodcock (*Scolopax minor*) marked with satellite transmitters in Eastern North America, October 2018-December 2018. Generally, Woodcock marked further east were more likely to remain in the Eastern Management Region, and woodcock marked further west were more likely to migrate into the Central Management Region.

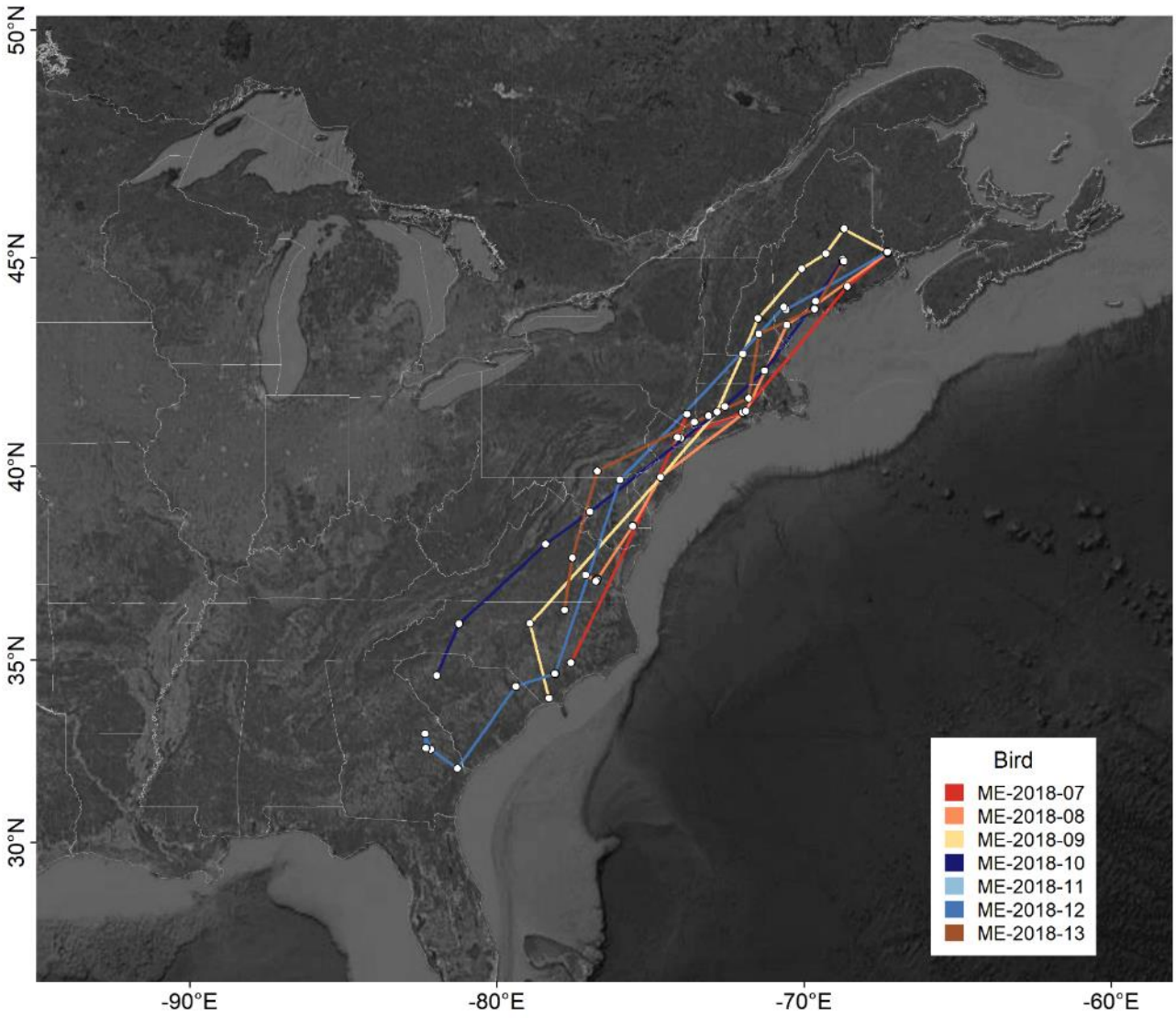


Figure 5. Fall 2018 migration routes of American Woodcock marked in Maine during October 2018.

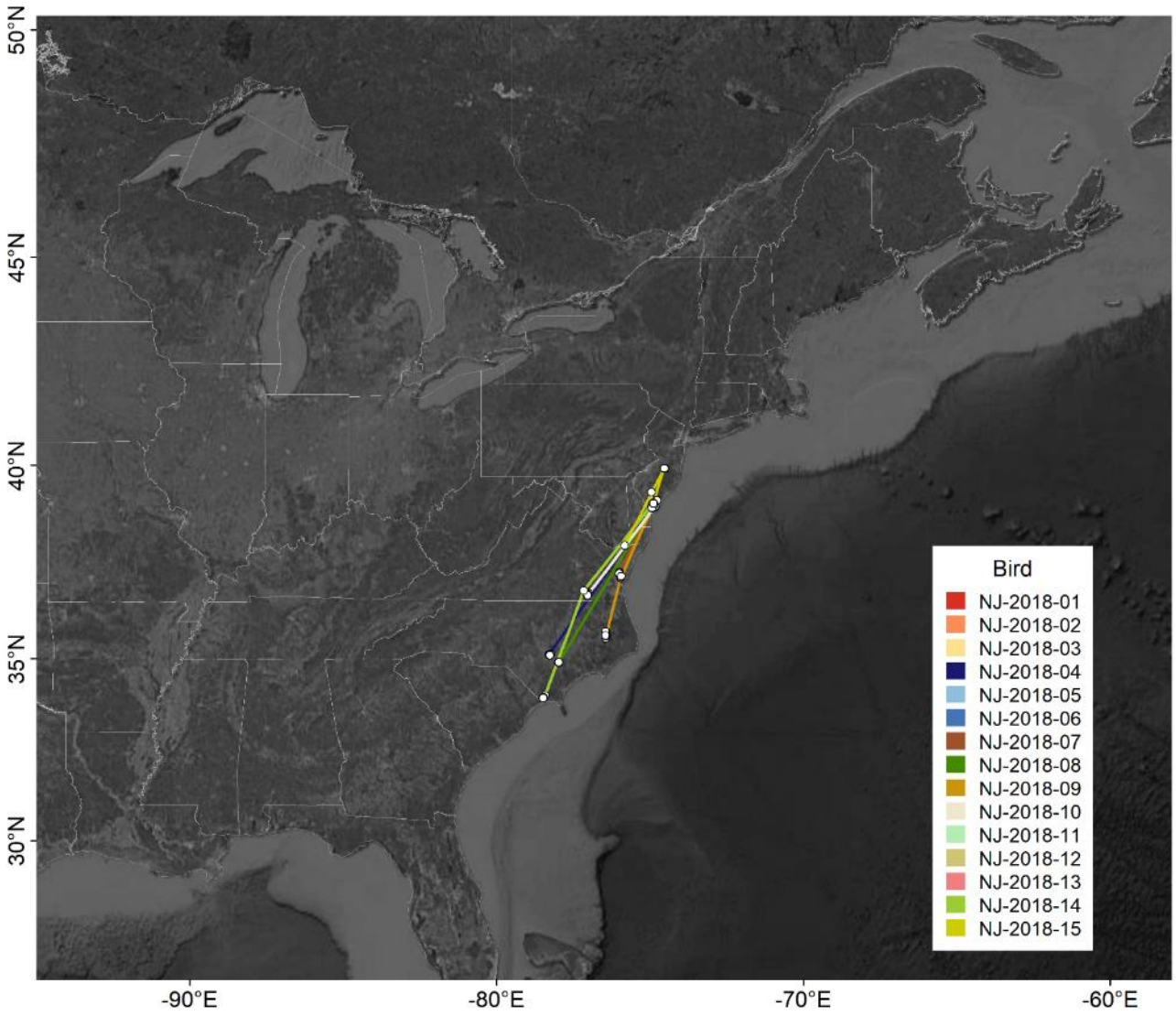


Figure 6. Fall 2018 migration routes of American Woodcock marked on Cape May in New Jersey during migration December 2018. A subset of the woodcock remained in New Jersey throughout the winter, but a second subset of woodcock continued migrating south before establishing winter residencies.

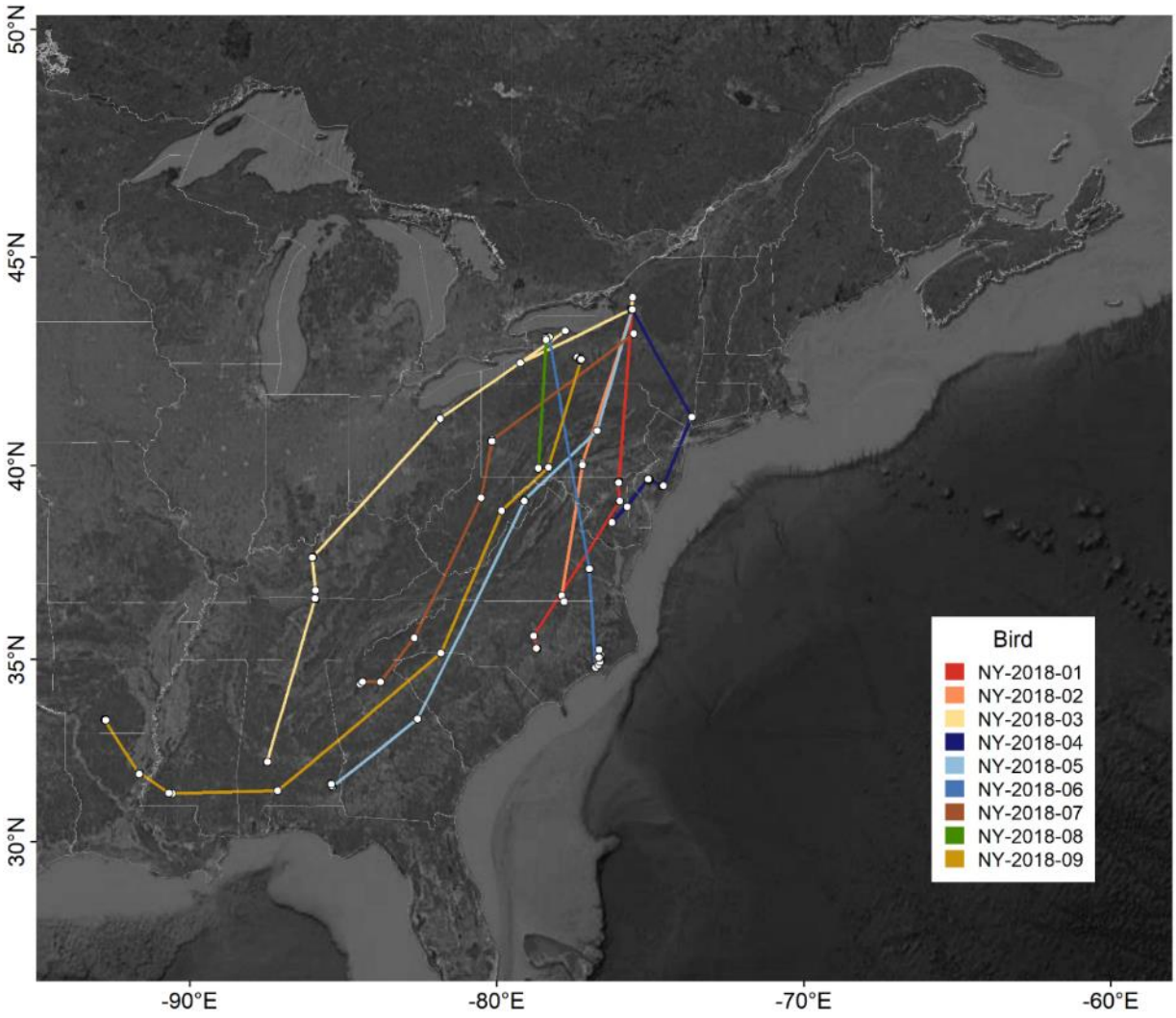


Figure 7. Fall 2018 migration routes of American Woodcock marked in New York during September - October 2018. New York likely represents a spatial partition in which woodcock can either migrate east or west of the Appalachian Mountains to the Atlantic Coast or to states boarding the Gulf of Mexico. However, there is high amount of variation, as noted by the highly variable migratory routes woodcock used.

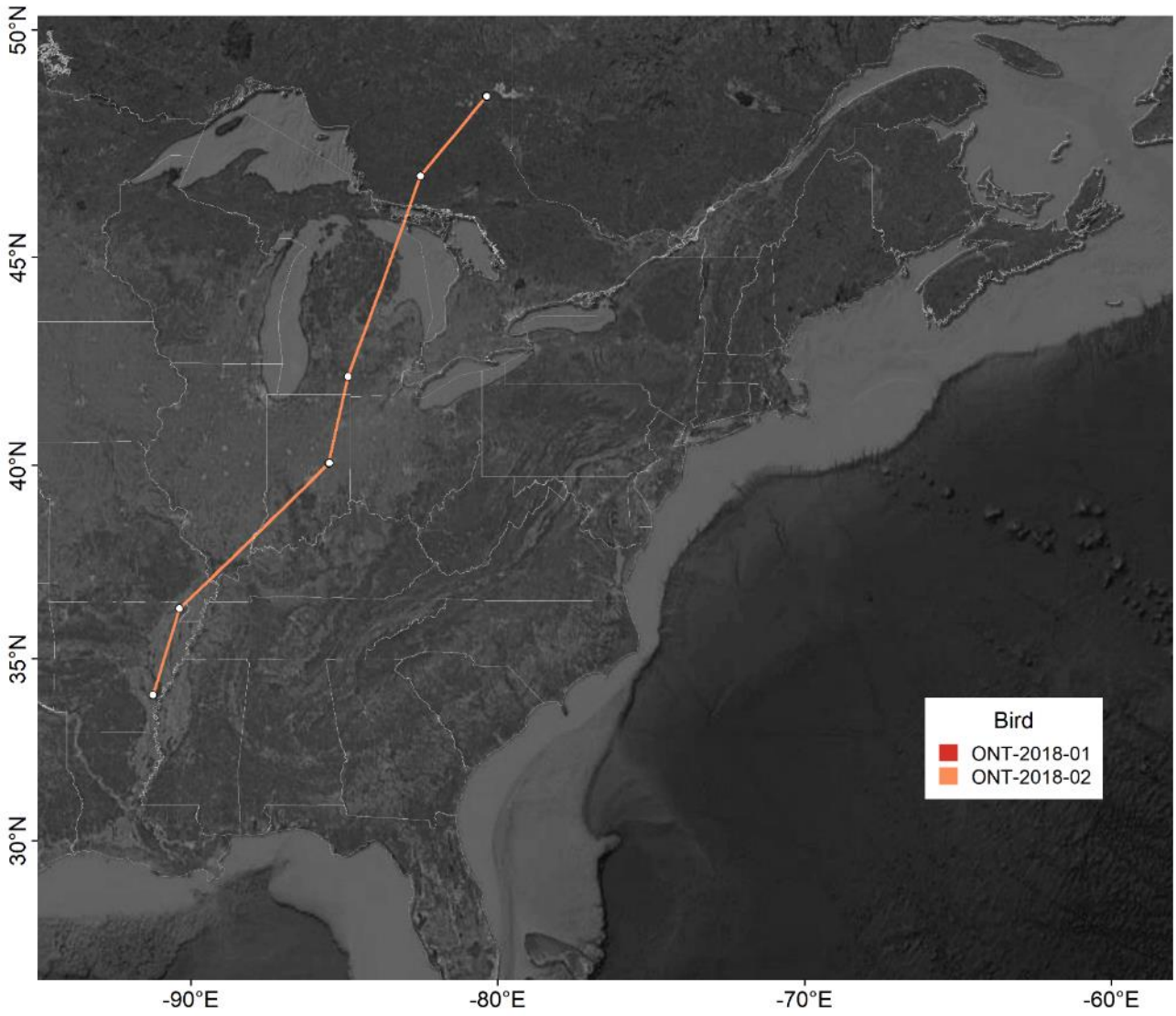


Figure 8. Fall 2018 migration route of American Woodcock marked in Ontario during September - October 2018. Only one of two woodcock marked in Ontario initiated migration and established a winter residency in southeastern Arkansas.

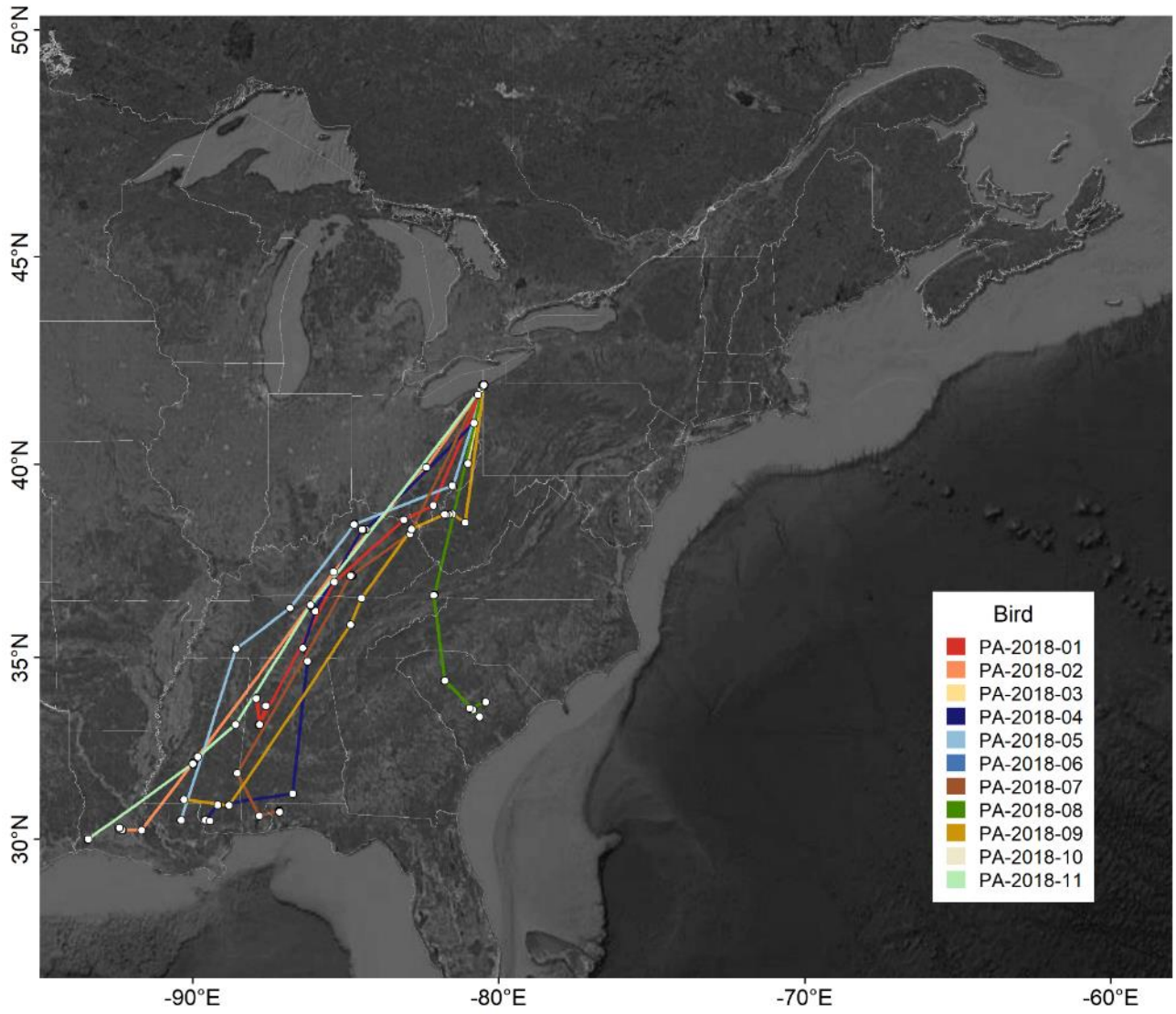


Figure 9. Fall 2018 migration routes of American Woodcock marked in Pennsylvania during September 2018. All but one woodcock migrated into the Central Management Region to establish winter residency, with the remaining bird migrating to South Carolina.

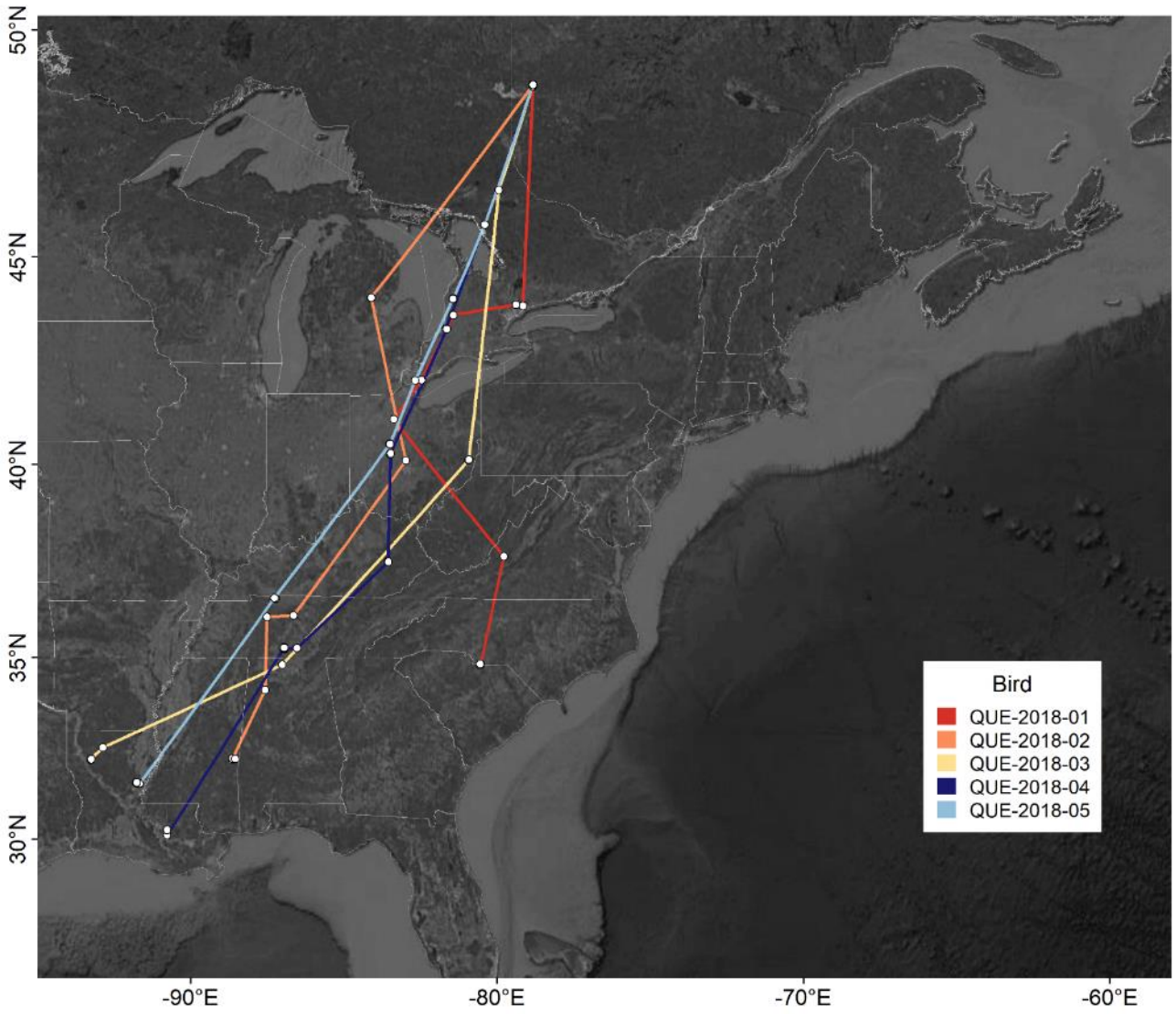


Figure 10. Fall 2018 migration routes of American Woodcock marked in Quebec during September 2018. Woodcock primarily funneled between the Great Lakes through Ontario, but one bird likely crossed Lake Huron. All but one woodcock migrated into the Central Management Region to establish winter residency.

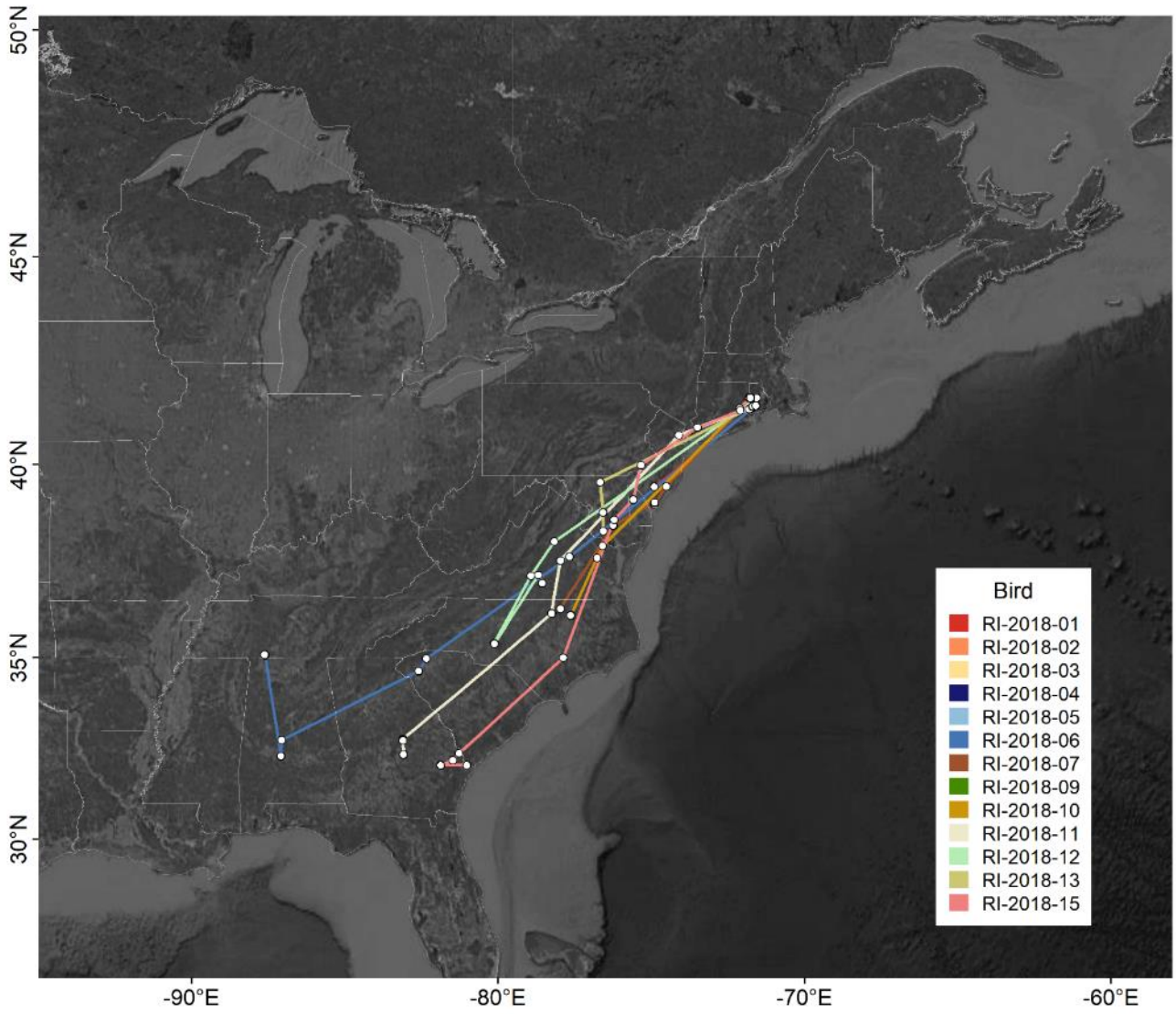


Figure 11. Fall 2018 migration routes of American Woodcock marked in Rhode Island during September to October 2018. The majority of woodcock remained in the Eastern Management Region, however one woodcock migrated into the Central Management Region.

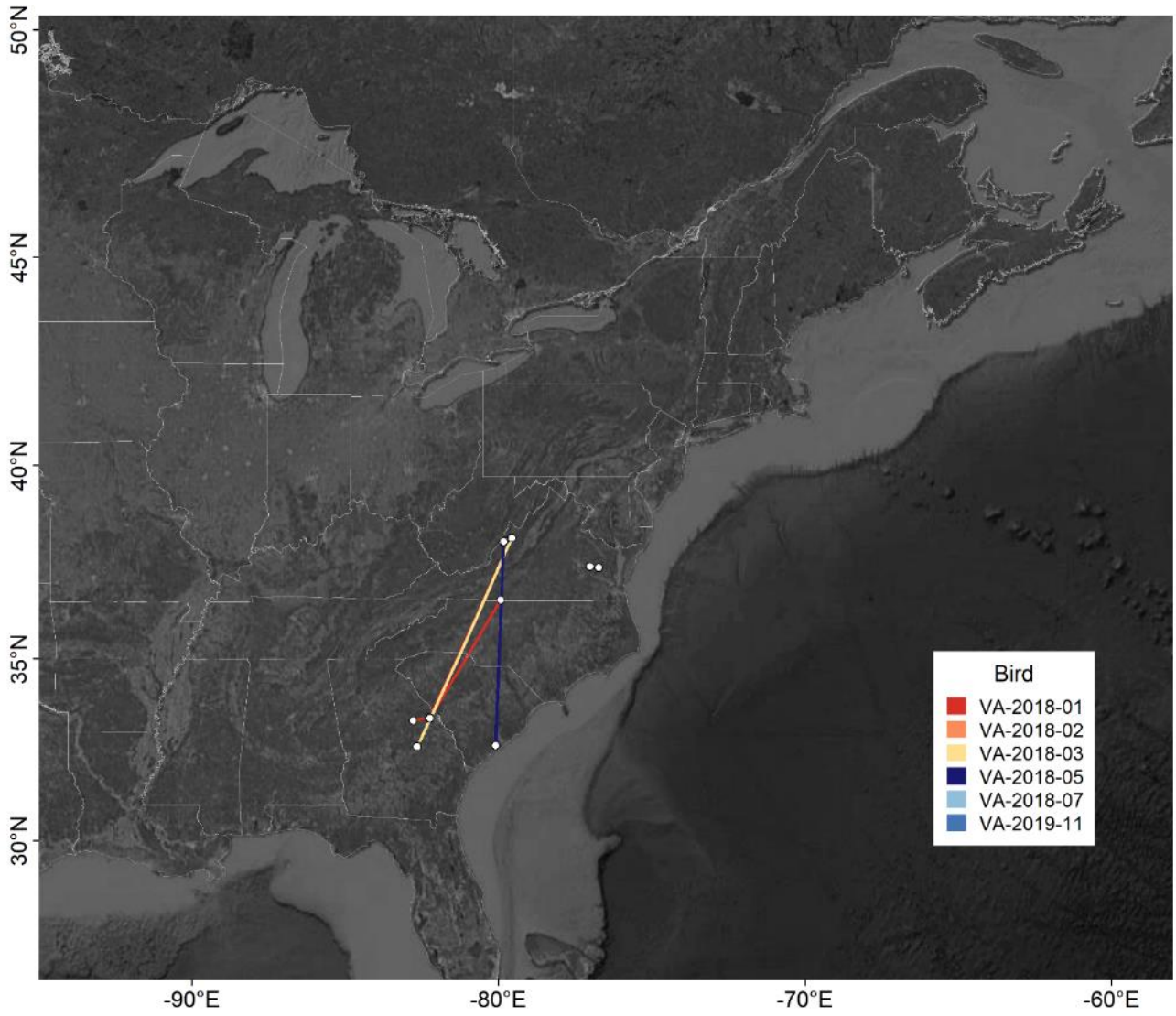


Figure 12. Fall 2018 migration routes of American Woodcock marked in Virginia during April - October 2018. Woodcock primarily completed migration in one long distance flight, then ranged around local area before settling into a winter residency.

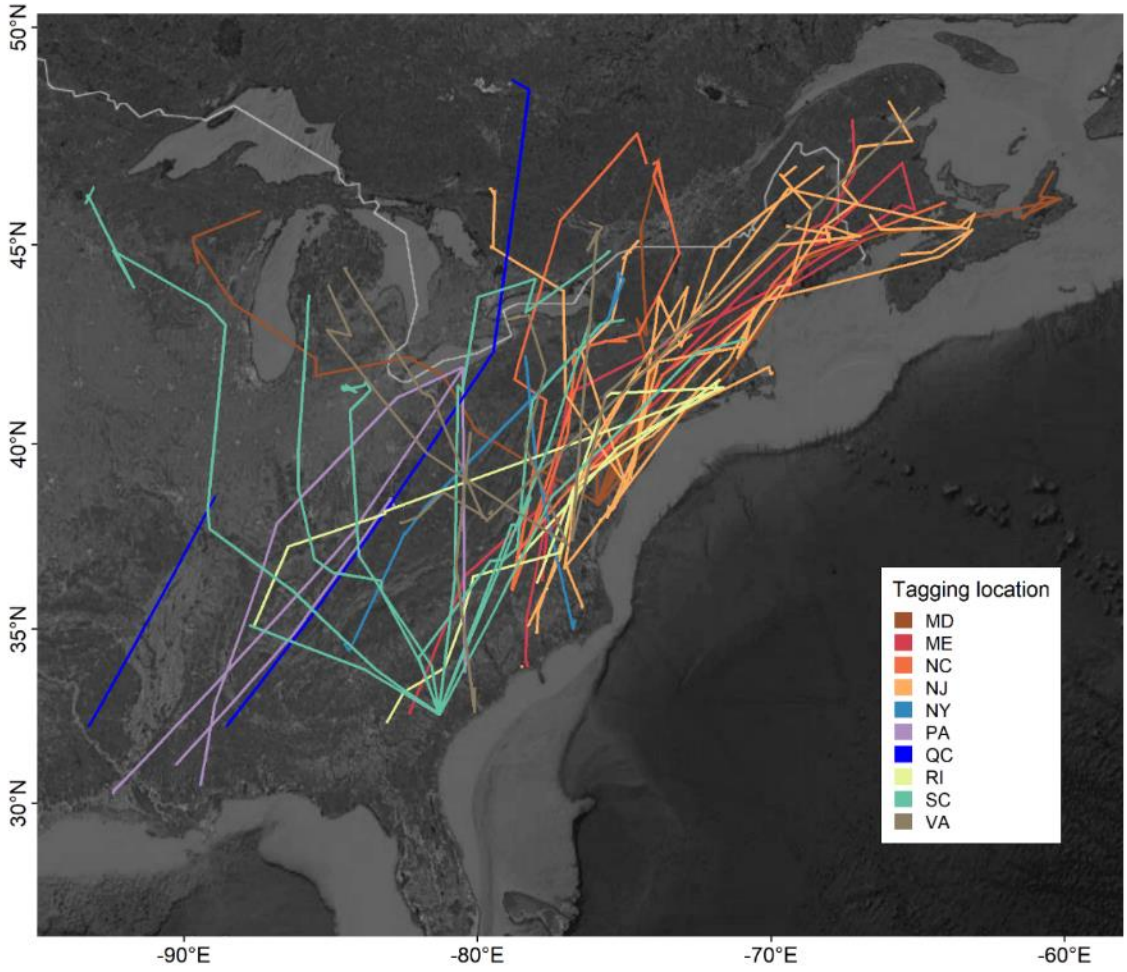


Figure 13. Spring 2019 migration routes for American woodcock marked with satellite transmitters in Eastern North America, October 2018-April 2019, and followed during spring migration. We observed 8 woodcock marked in the southeastern United States migrating northwest into the Central Management Region. A subset of woodcock marked fall 2018 continued to upload migratory locations for part or all of spring migration. Woodcock marked fall 2018 are identified by their initial capture location.

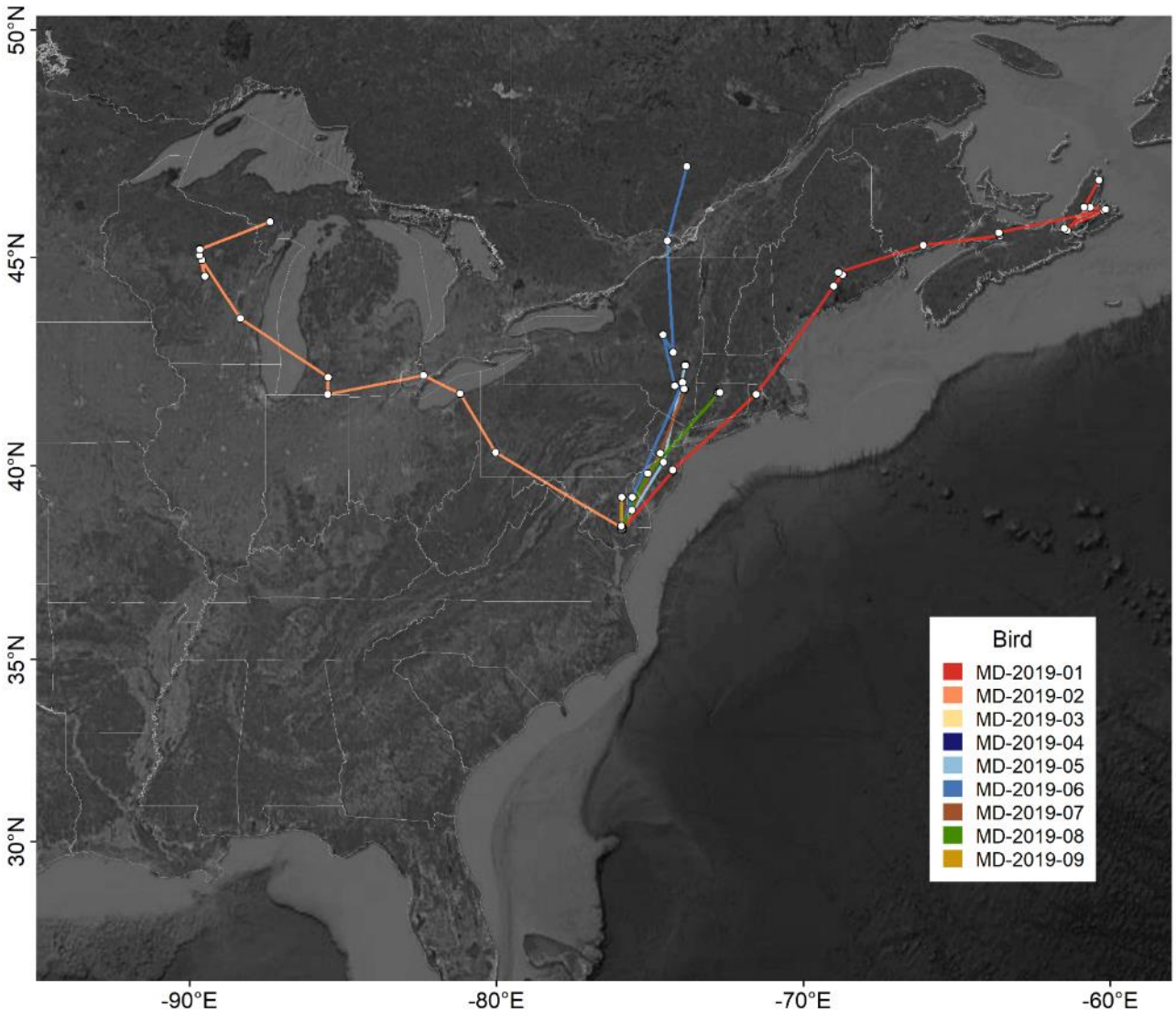


Figure 14. Spring 2019 migration routes of American Woodcock marked in Maryland during February 2019. The majority of woodcock remained in the Eastern management Region, however one woodcock migrated into the Upper Peninsula of Michigan.

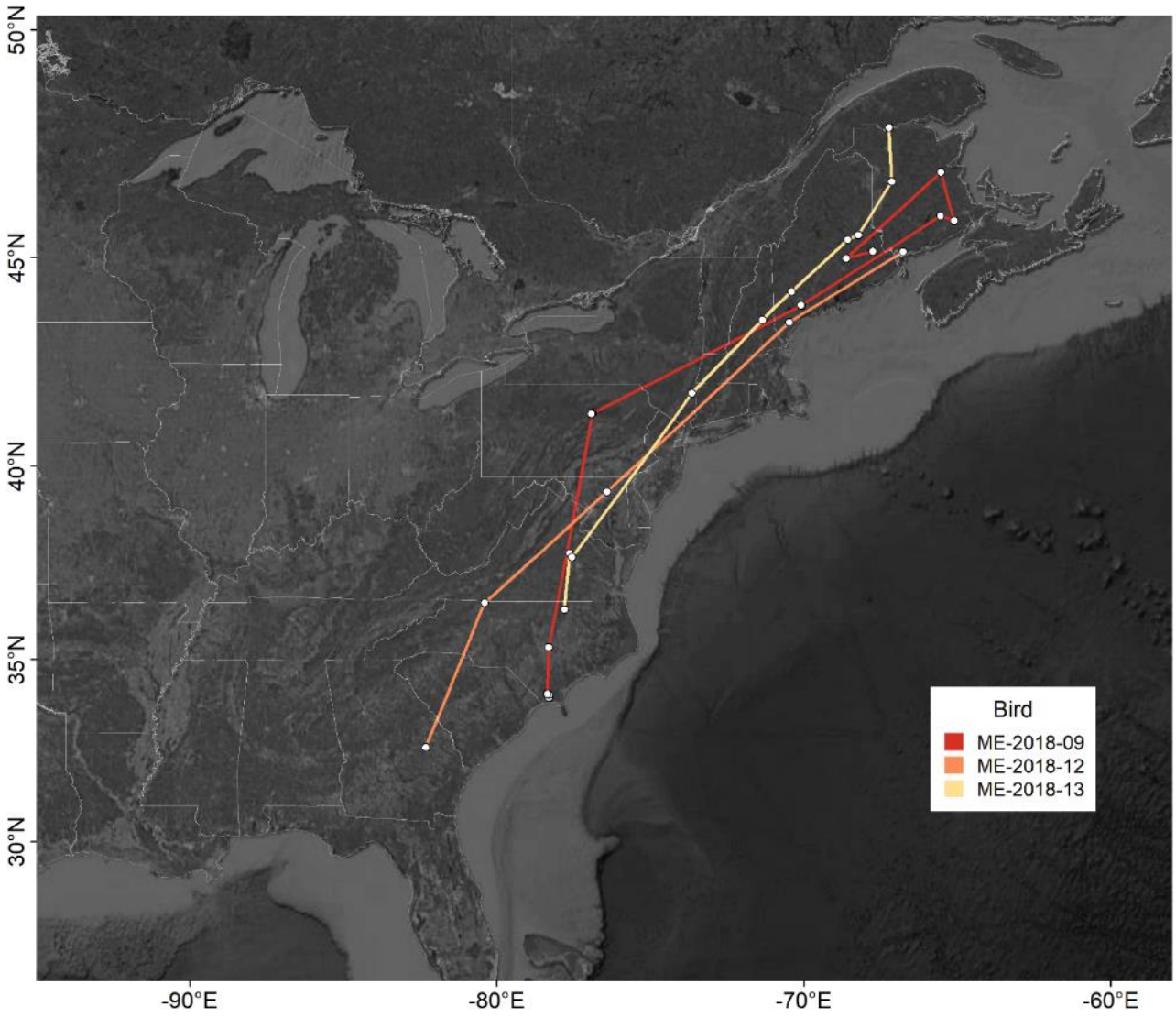


Figure 15. Spring 2019 migration routes of American Woodcock marked in Maine during October 2018. Three woodcock continued to transmit locations throughout spring migration and established breeding residency in northeastern New England and maritime Canada.

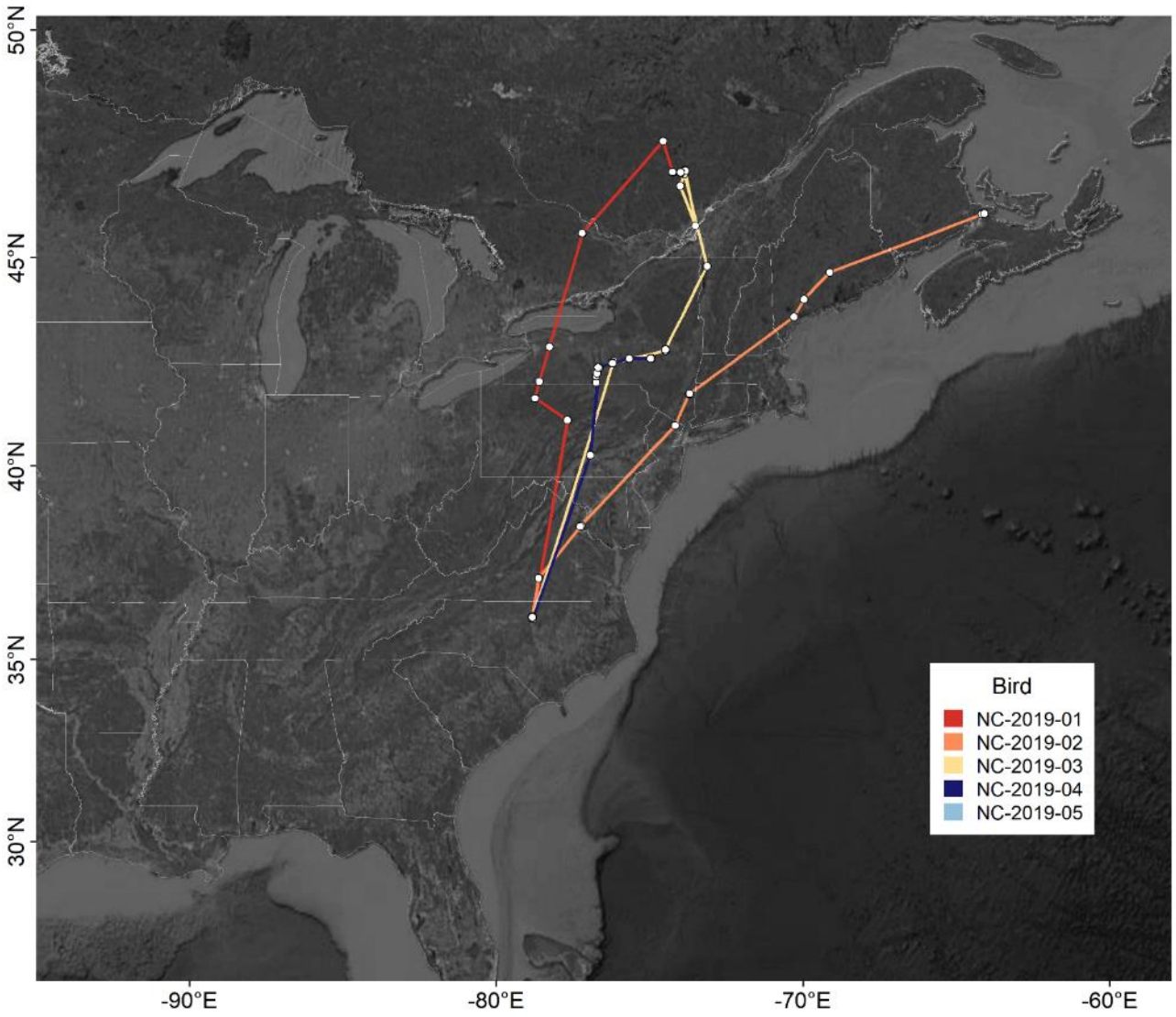


Figure 16. Spring 2019 migration routes of American Woodcock marked in North Carolina during February 2019. Four woodcock initiated migration and two of the woodcock established breeding residency 20 km apart in Quebec.

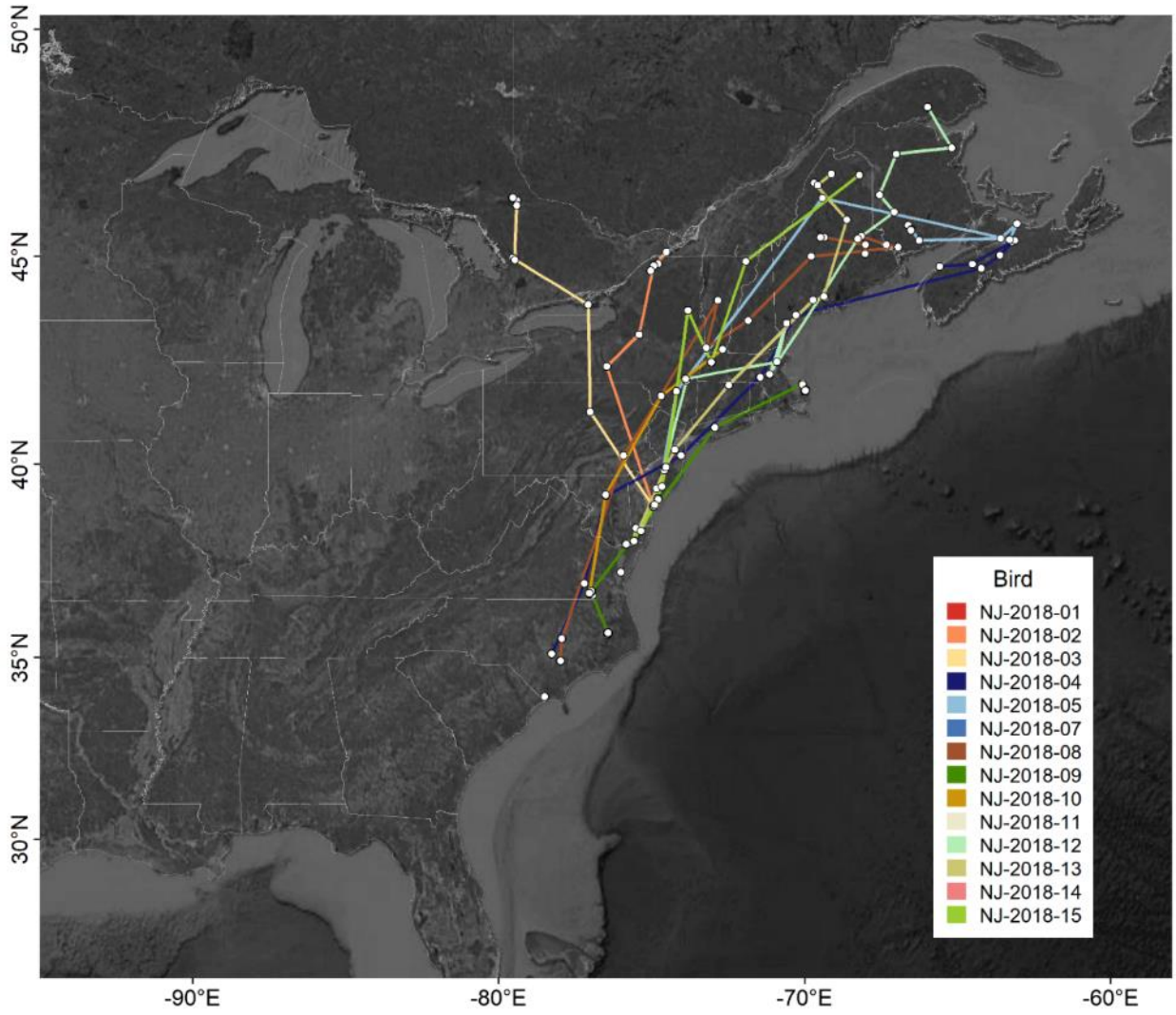


Figure 17. Spring 2019 migration routes of American Woodcock marked in New Jersey during December 2018. Woodcock marked in New Jersey primarily remained in the Eastern Management Region, but one woodcock migrated into the Central Management Region and established breeding residency in Ontario.

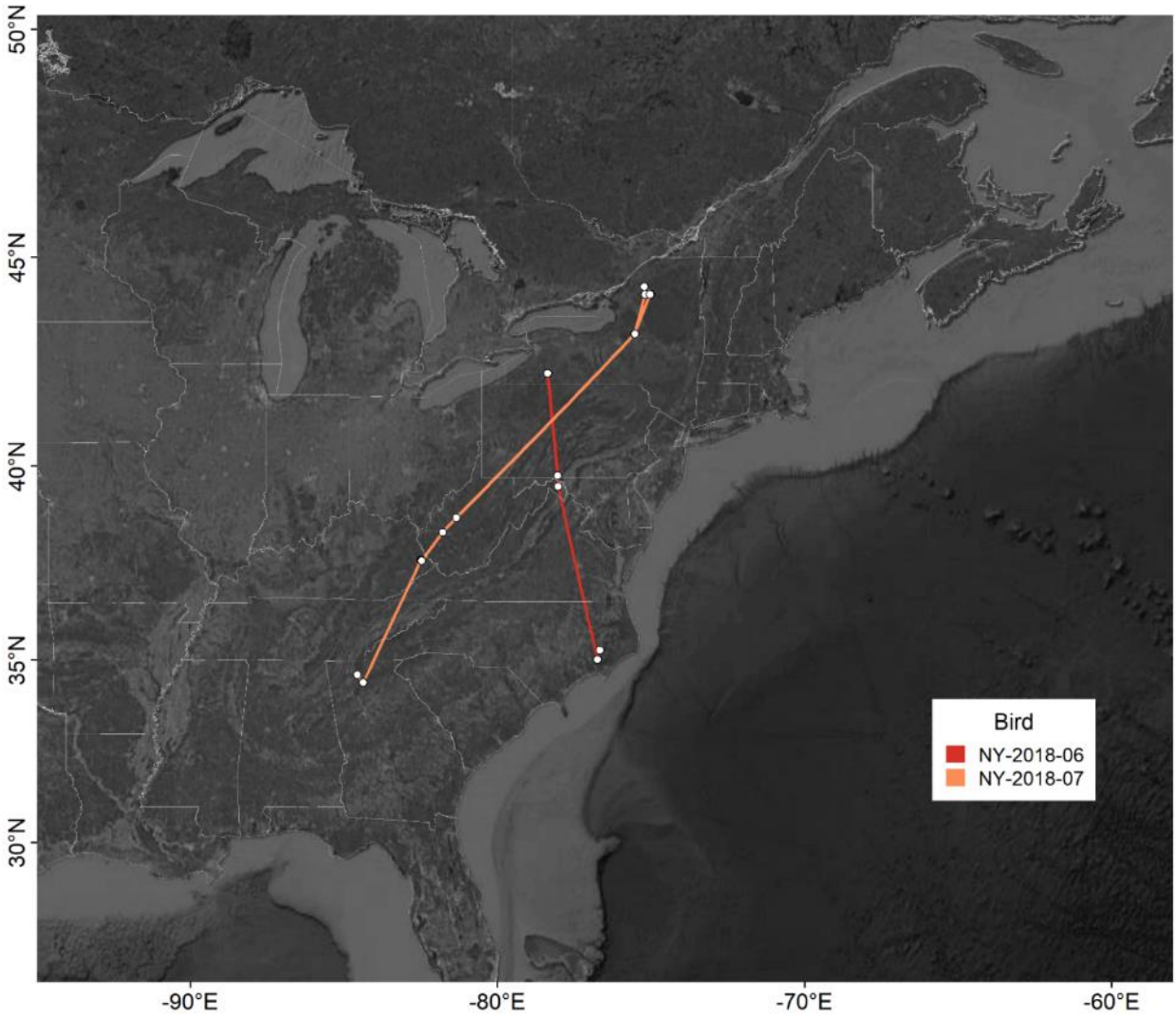


Figure 18. Spring 2019 migration routes of American Woodcock marked in New York during September - October 2018. One woodcock completed migration, whereas we stopped receiving locations from the other woodcock prior to establishing a breeding territory. NY-2018-07 actually stopped-over on the exact same locations it was captured last fall, before migrating into the Adirondack Mountains in New York.

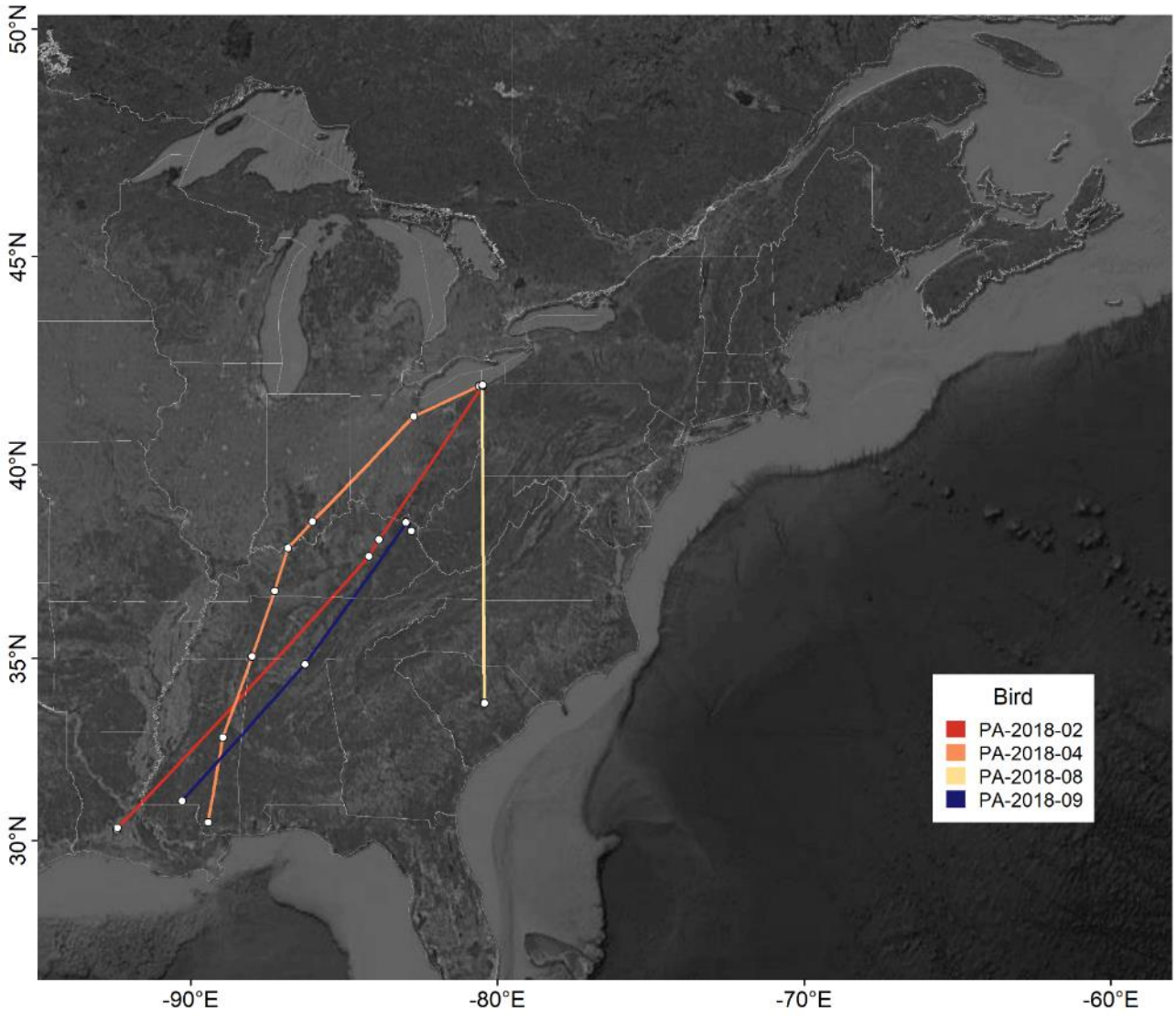


Figure 19. Spring 2019 migration routes of American Woodcock marked in Pennsylvania during September 2018. Three woodcock returned to the same capture location and the forth woodcock stopped transmitting data during spring migration.

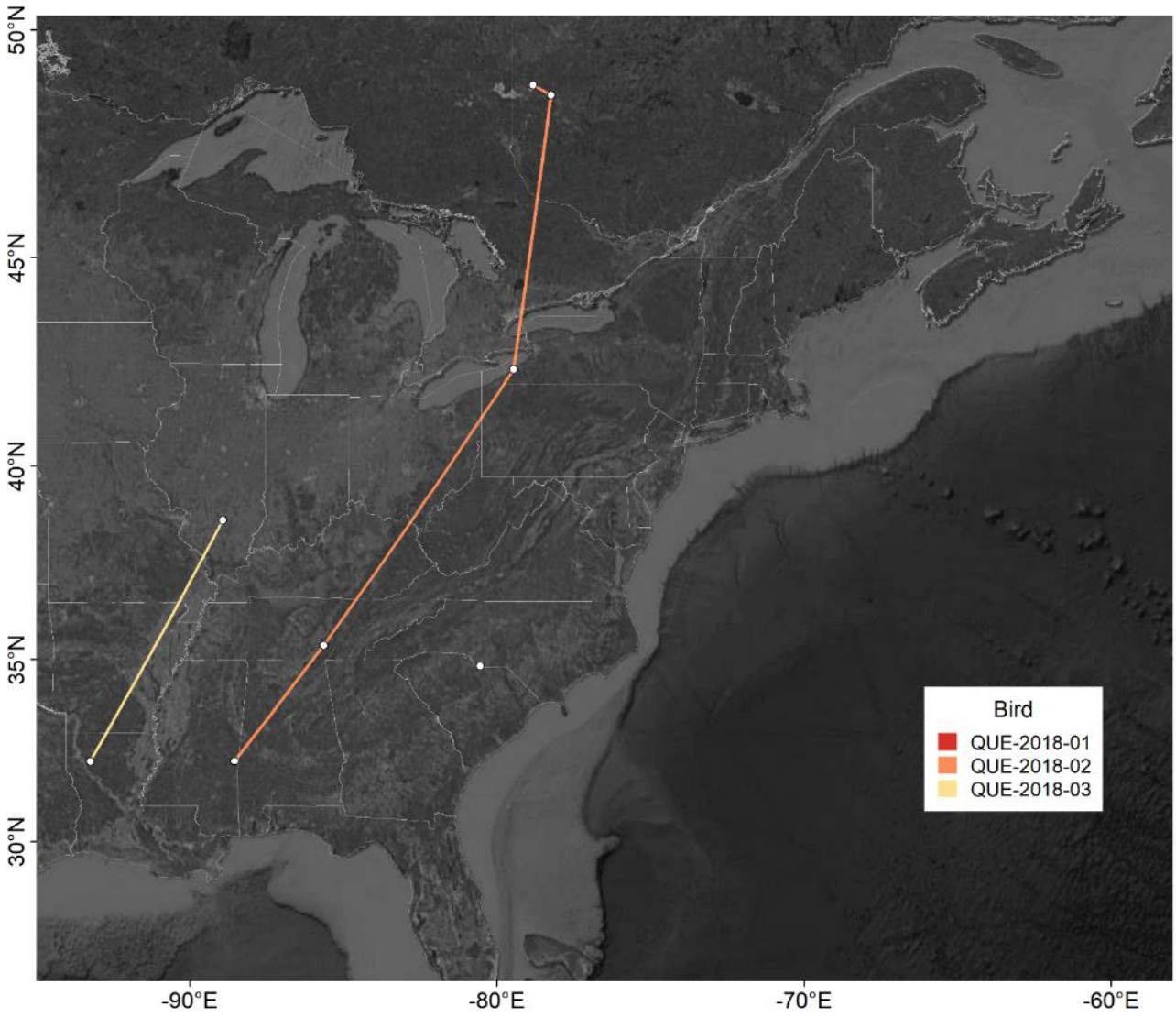


Figure 20. Spring 2019 migration routes of American Woodcock marked in Quebec during September 2018. We received one full migration, one partial migration, and one transmitter stopped transmitting data prior to migration. QUE-2018-02 set a project record for number of locations received from a single transmitter and returned to the same capture location from the previous fall.

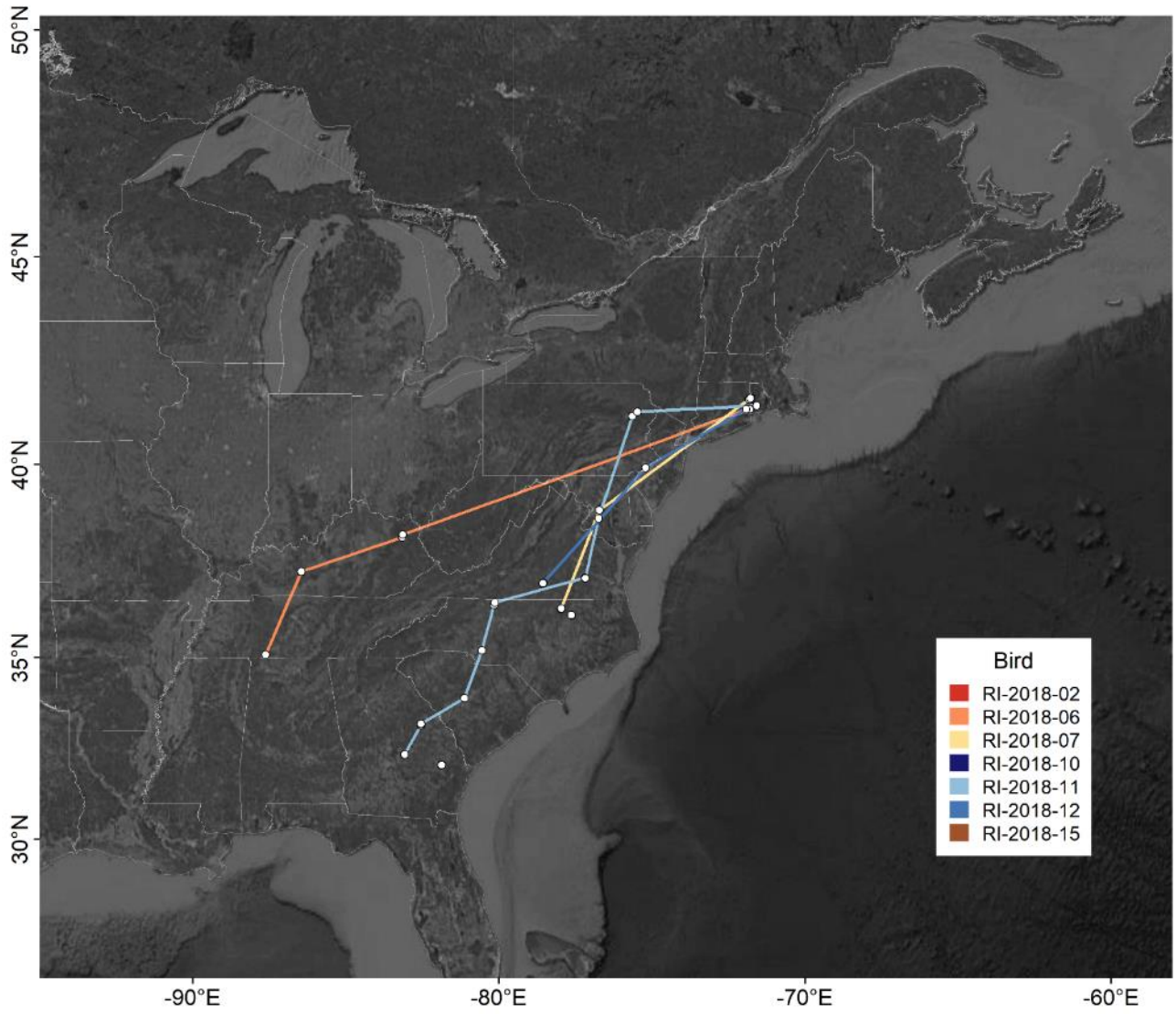


Figure 21. Spring 2019 migration routes of American Woodcock marked in Rhode Island during September - October 2018. One woodcock was recaptured during spring 2019 for a concurrent breeding season study.

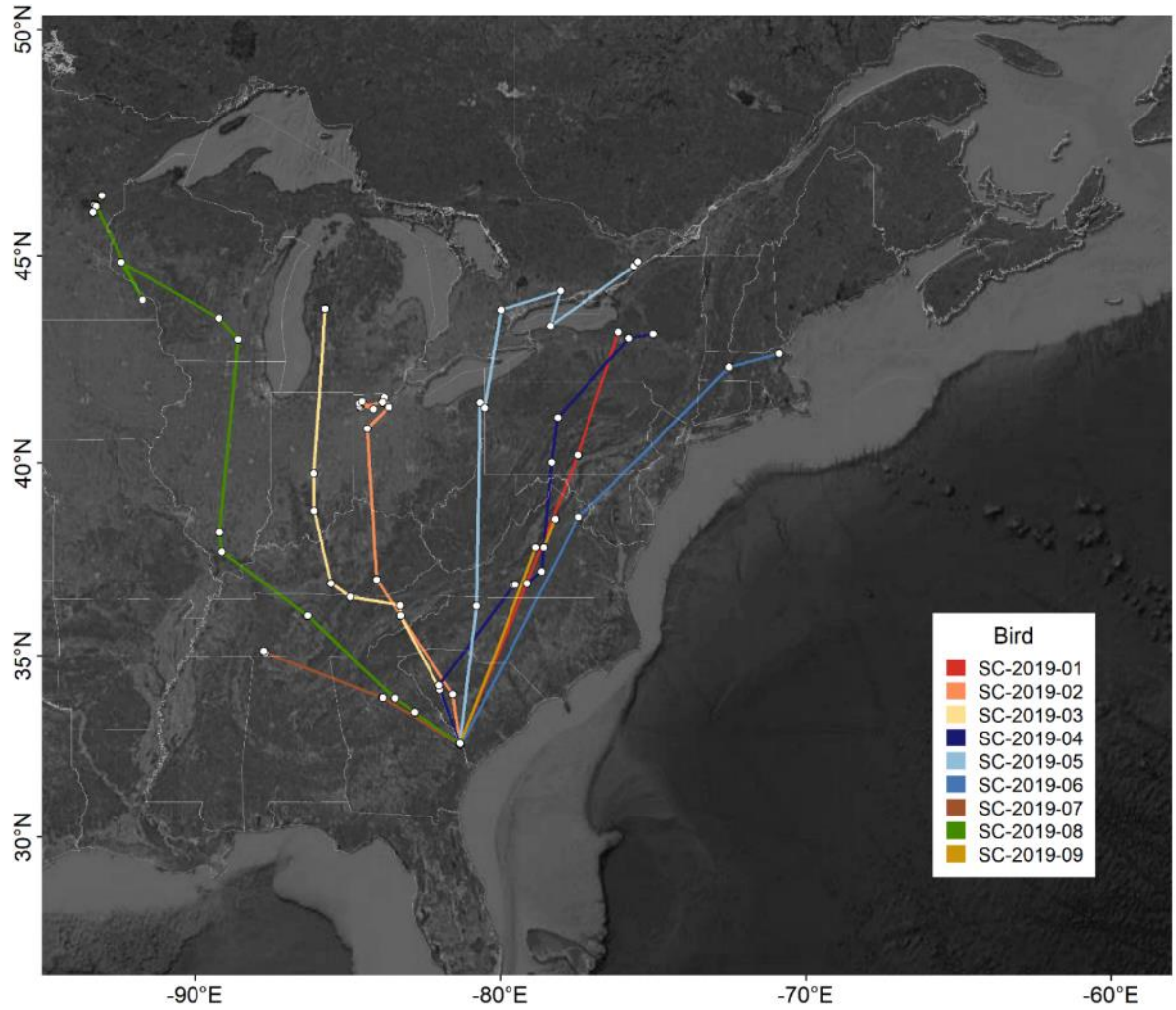


Figure 22. Spring 2019 migration routes of American Woodcock marked in South Carolina during February 2019. Approximately one-half of the woodcock marked in South Carolina during 2018 migrated into the Central Management Region to breed. This northwestern migration has been infrequently documented and as the Easter Woodcock Migration Research Cooperative continues to mark bird in the southeastern United States, we hope to quantify the proportion of woodcock that exhibit this migration path.

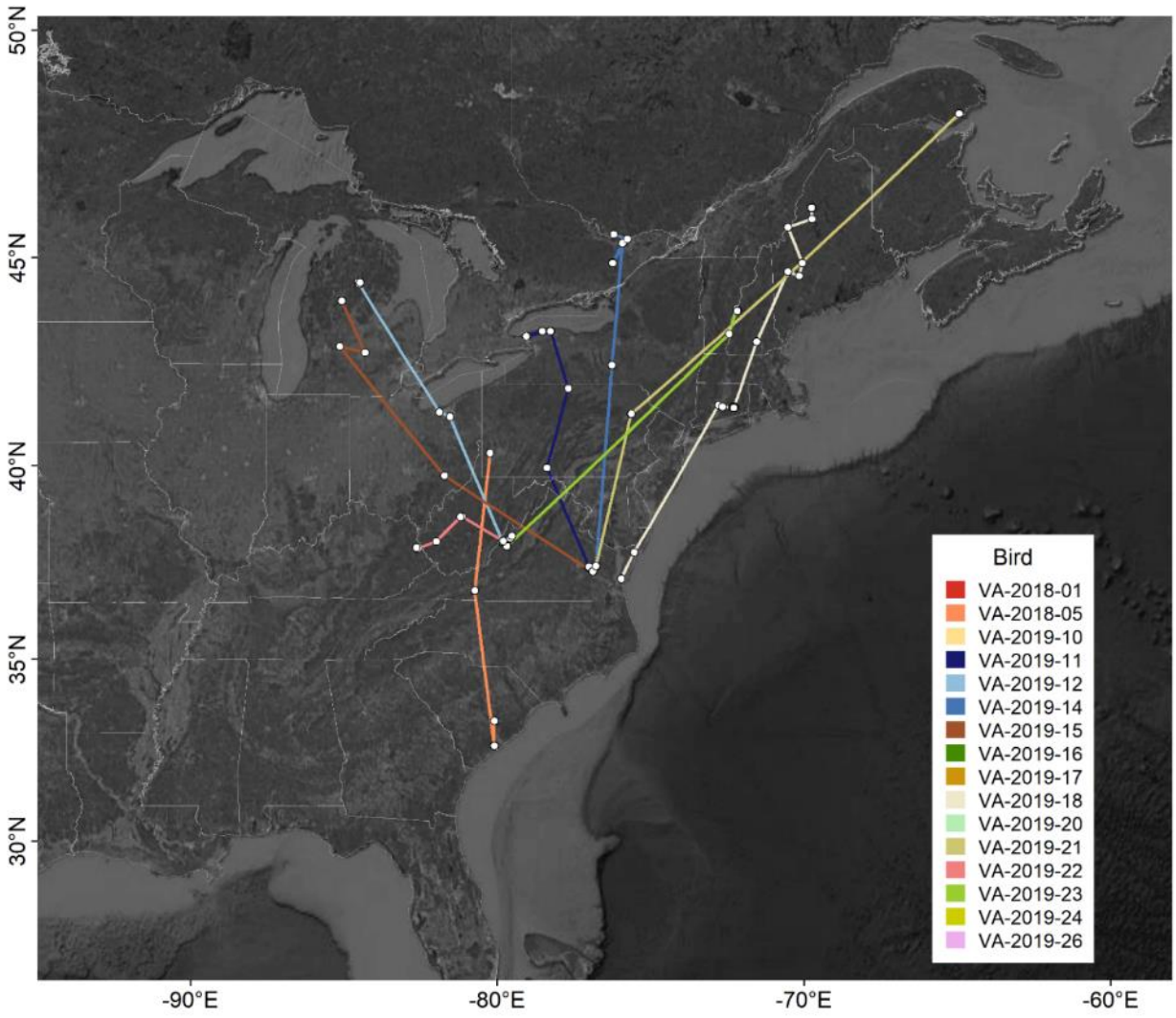


Figure 23. Spring 2019 Migration routes of American Woodcock marked in Virginia during September 2018 – April 2019. Woodcock were captured on wintering areas in eastern Virginia and during spring migration in western Virginia. A small number of woodcock marked during fall migration 2018 continued to transmit locations for part of spring migration. Both wintering and woodcock migrating through Virginia migrated into the Central Management Region.

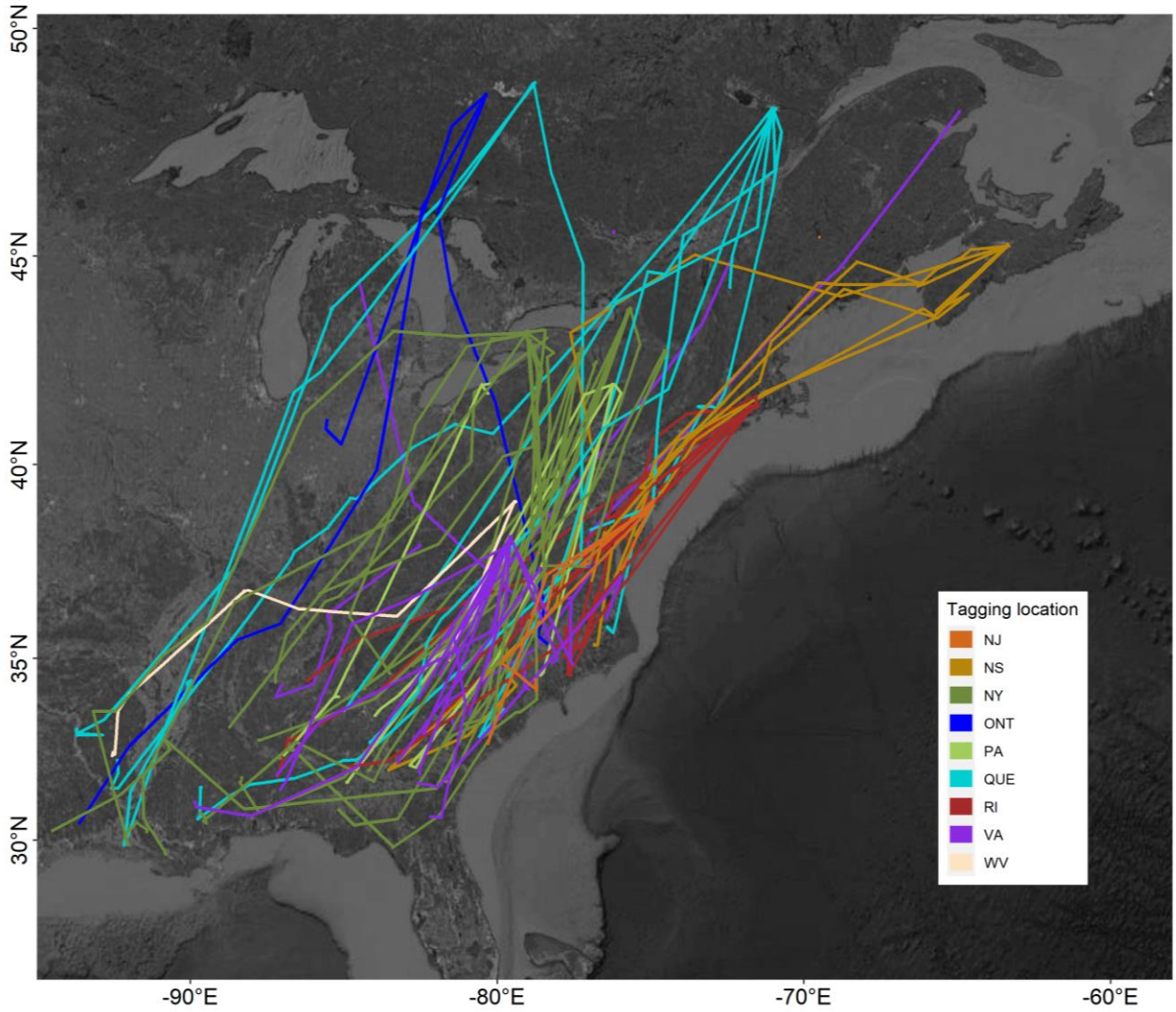


Figure 24. Fall 2019 migration routes for American woodcock (*Scolopax minor*) marked with satellite transmitters in Eastern North America, September 2019-December 2019. Generally, woodcock marked further east were more likely to remain in the Eastern Management Region, and woodcock marked further west were more likely to migrate into the Central Management Region. Four woodcock marked Spring 2019 in Virginia, provided fall migration data that began in Kentucky, Michigan, Quebec, and Vermont.

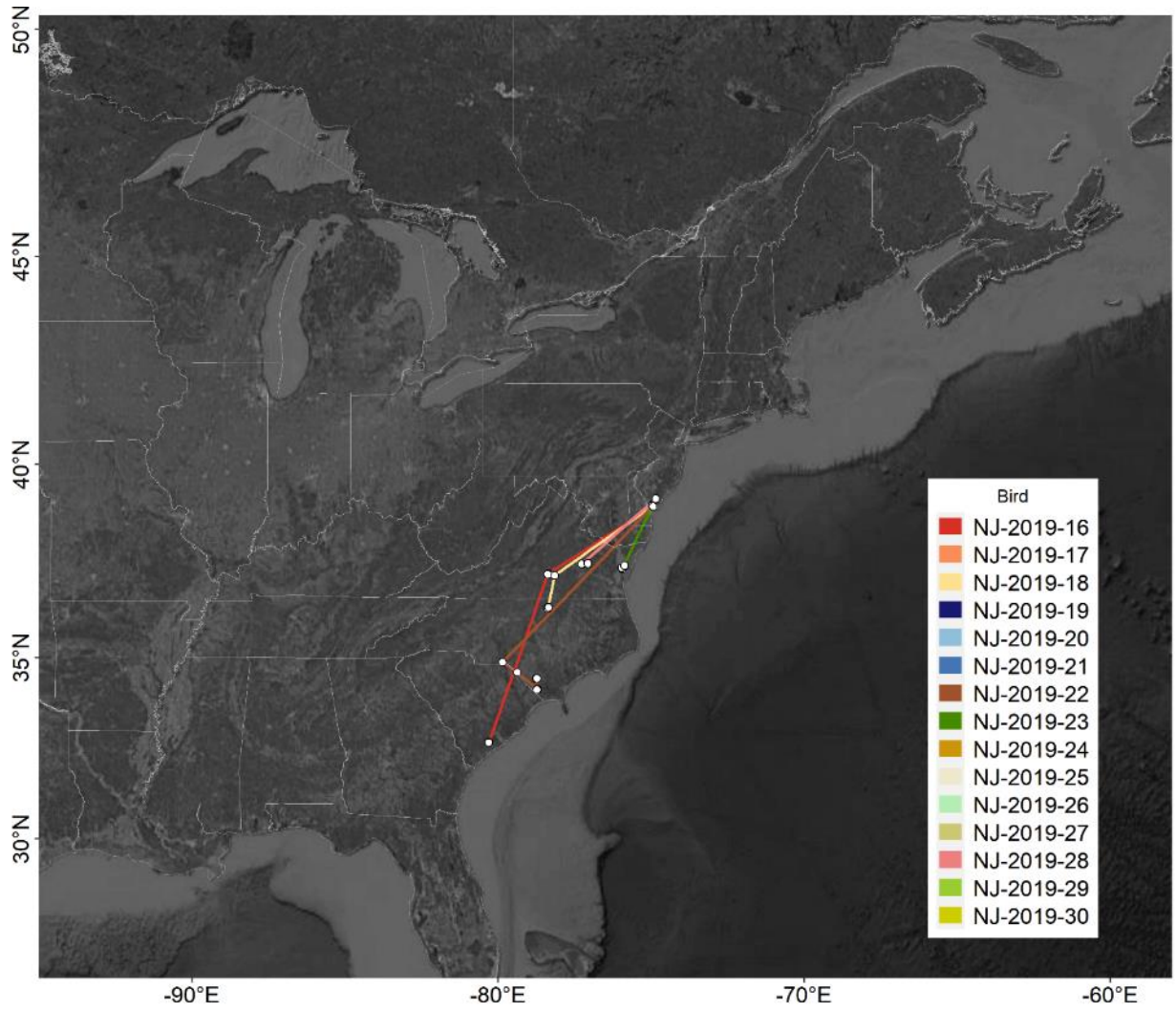


Figure 25. Fall 2019 migration routes of American Woodcock marked on Cape May in New Jersey during migration December 2019. Woodcock were marked during migration with most individuals remaining on Cape May throughout the winter, however a subset continued to migrate south post-capture.

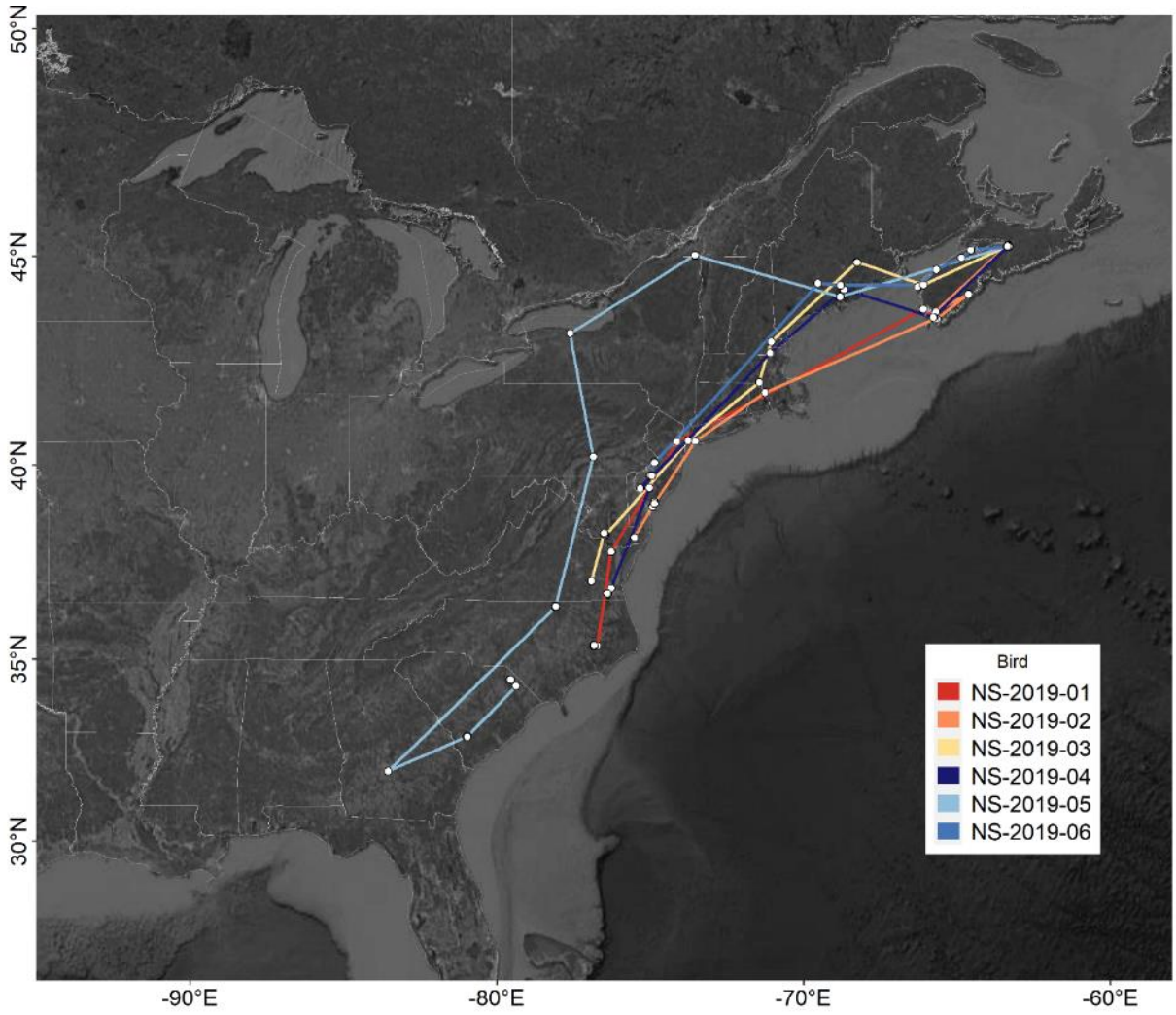


Figure 26. Fall 2019 migration routes of American Woodcock marked in Nova Scotia during October 2019. In general, woodcock migrated to the southern Nova Scotia, then either migrated across the Bay of Fundy into Maine and New Brunswick, or across the Gulf of Maine to Massachusetts and Long Island. To reach Massachusetts, woodcock would have performed an approximately 370 km over-water flight, at minimum.

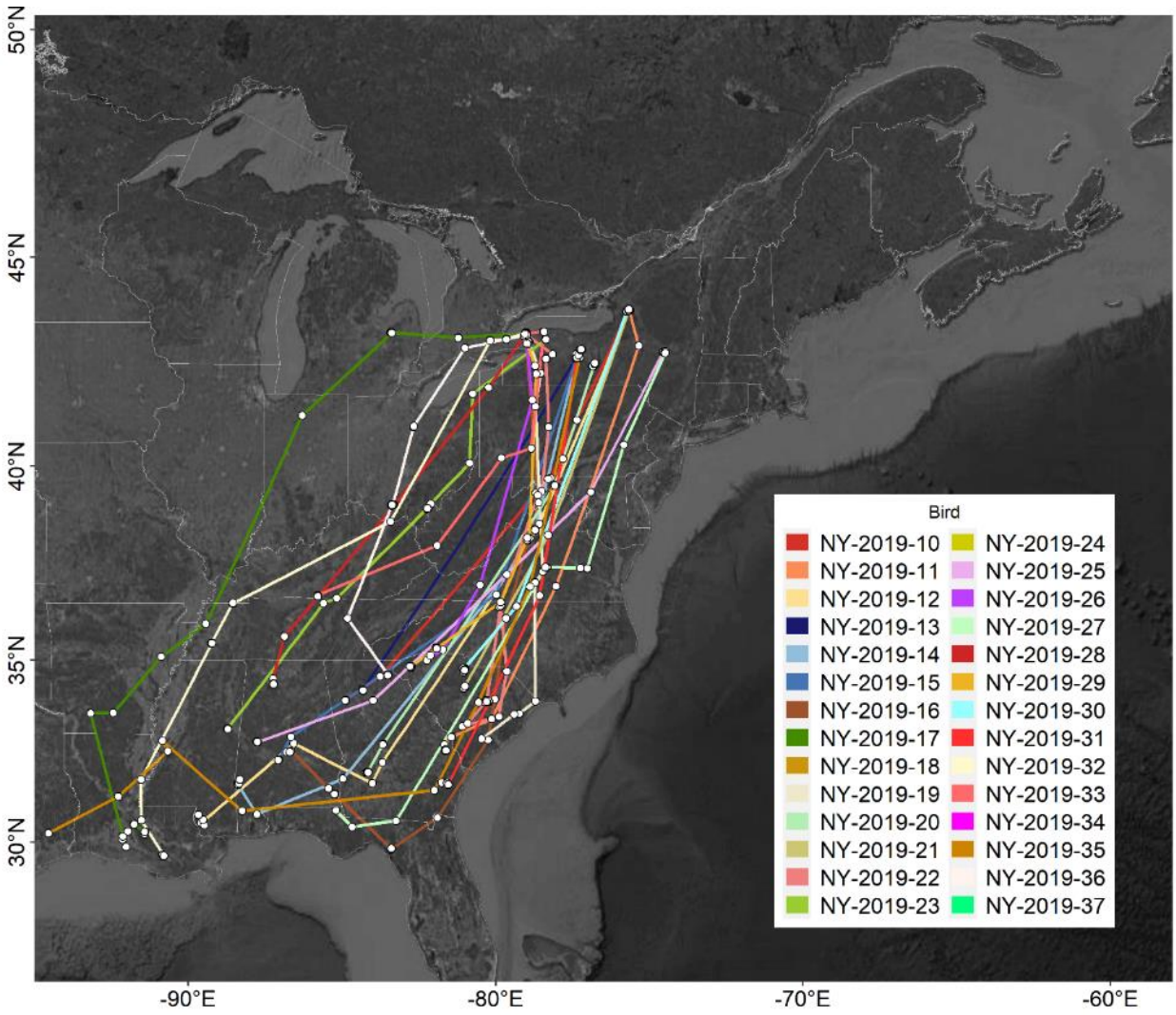


Figure 27. Fall 2019 migration routes of American Woodcock marked in New York during September to October 2019. Most woodcock remained in the Eastern Management Unit during migration, but many flew west once they arrived in the southeastern US. In general, woodcock marked in western New York were more likely to migrate into the Central Management Unit compared to those marked in central New York.

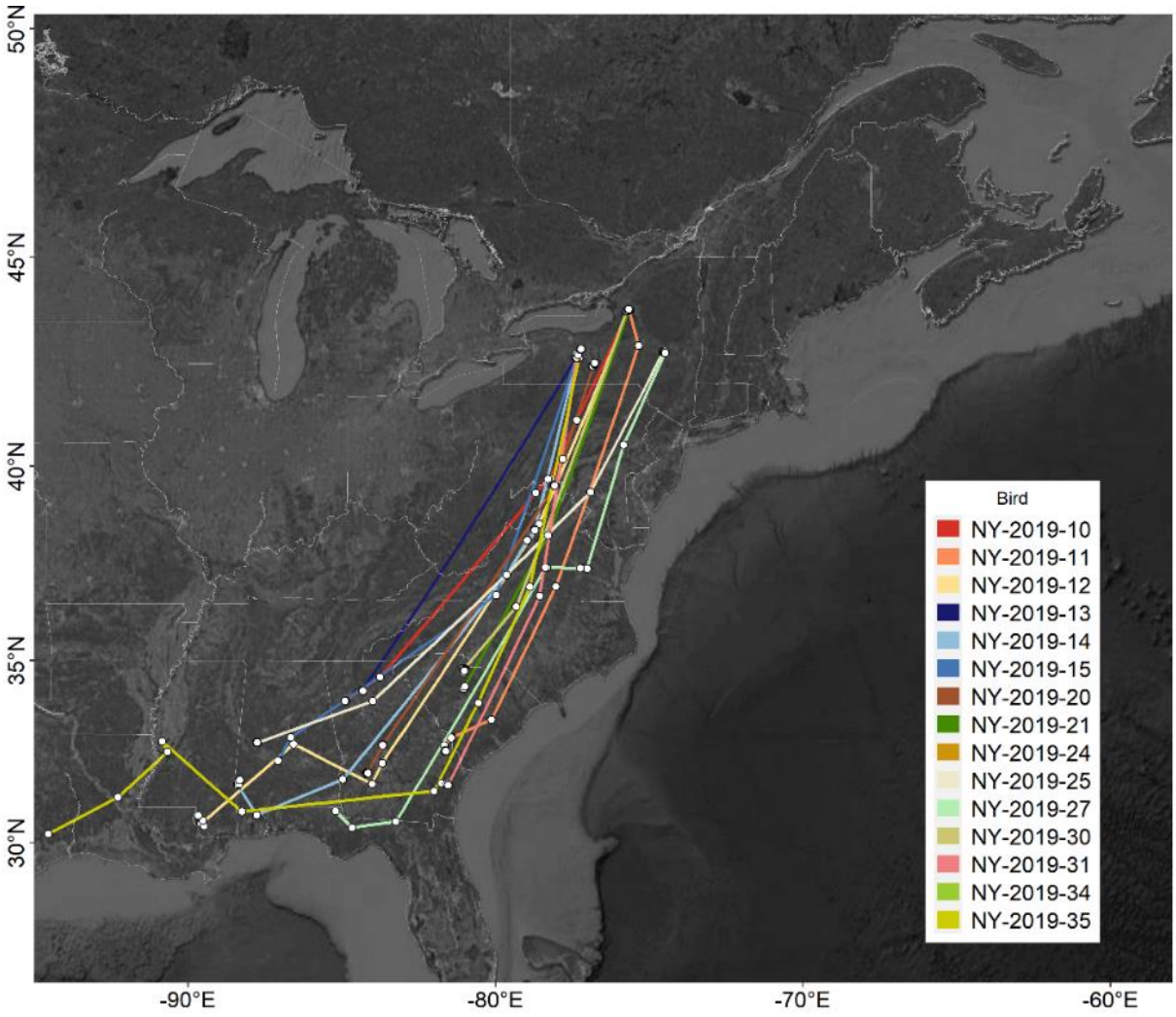


Figure 28. Fall 2019 migration routes of American Woodcock marked in central New York during September to October 2019. Woodcock marked in central New York migrated south in the Eastern Management Unit, with some woodcock migrating west once they reached the southeastern US. One woodcock flew west into eastern Texas to overwinter.

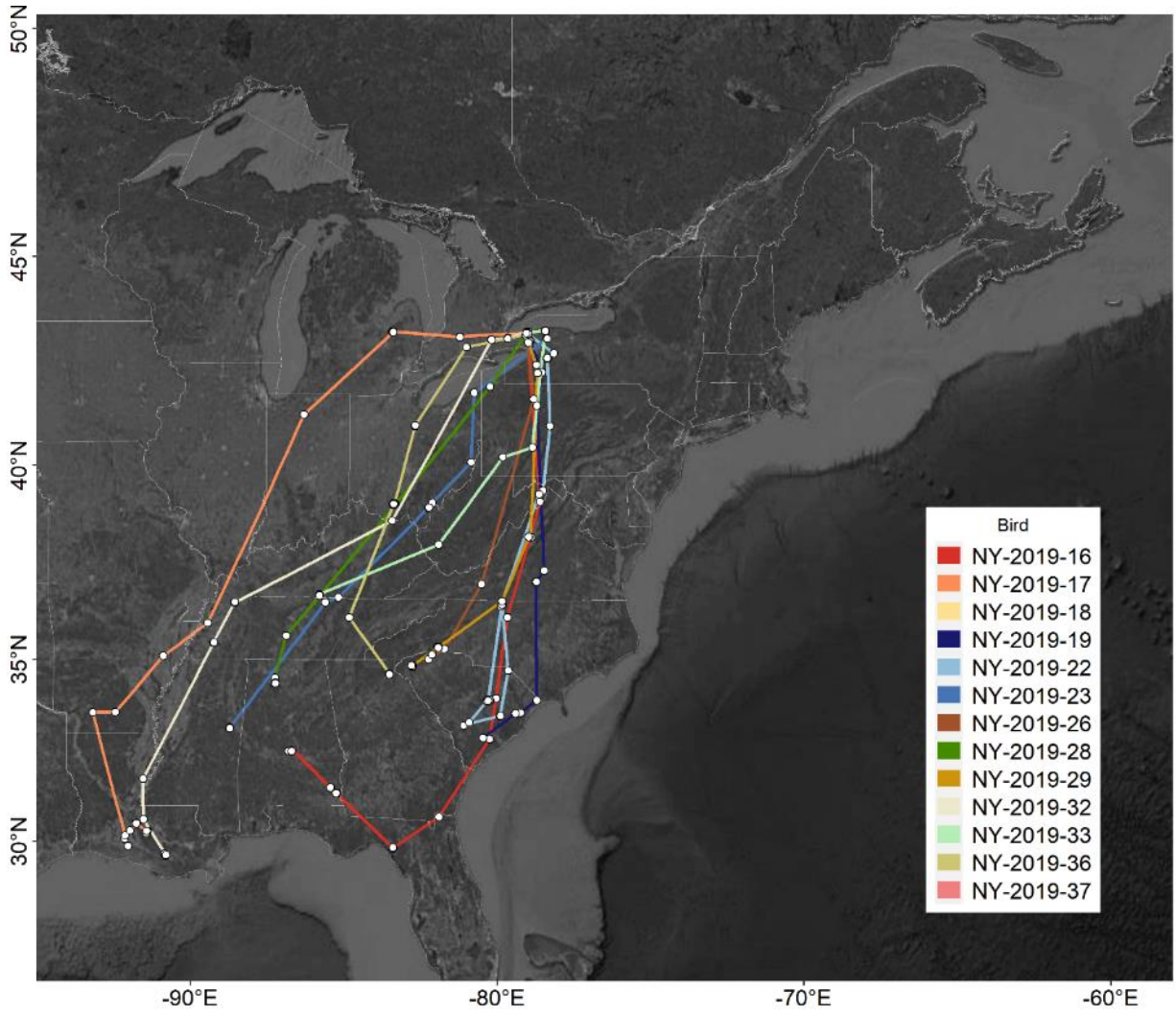


Figure 29. Fall 2019 migration routes of American Woodcock marked in western New York during September to October 2019. Approximately one-half of woodcock remained in the Eastern Management Unit and the other half migrated into the Central Management Unit. Interestingly, three woodcock migrated west into southern Ontario and Michigan, moving westward along the north shore of Lake Erie, prior to migrating south.

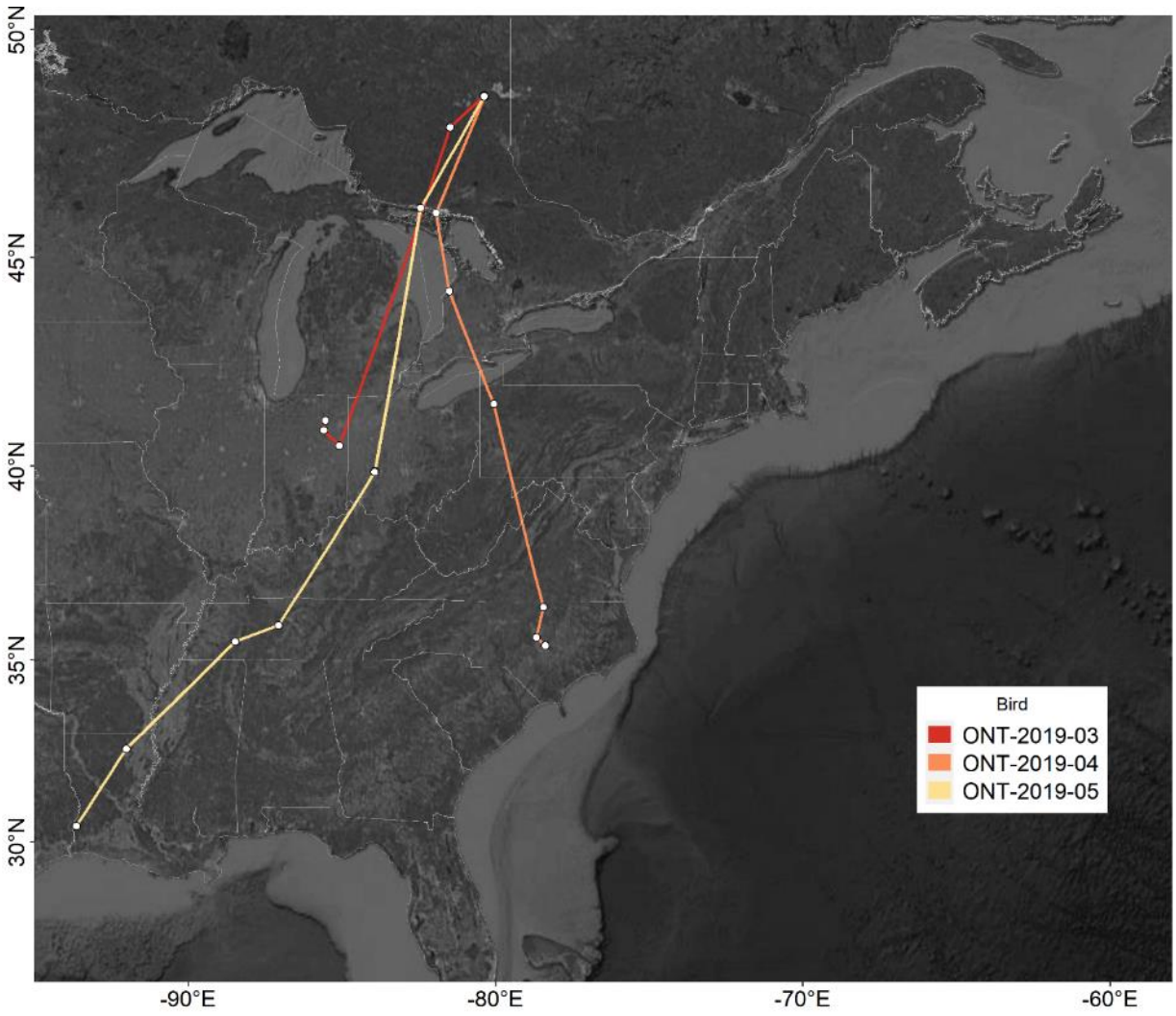


Figure 30. Fall 2019 migration routes of American Woodcock marked in Ontario during September 2019. Two of three woodcock successfully completed migration, with one overwintering in the Eastern Management Region and one in the Central Management Region.

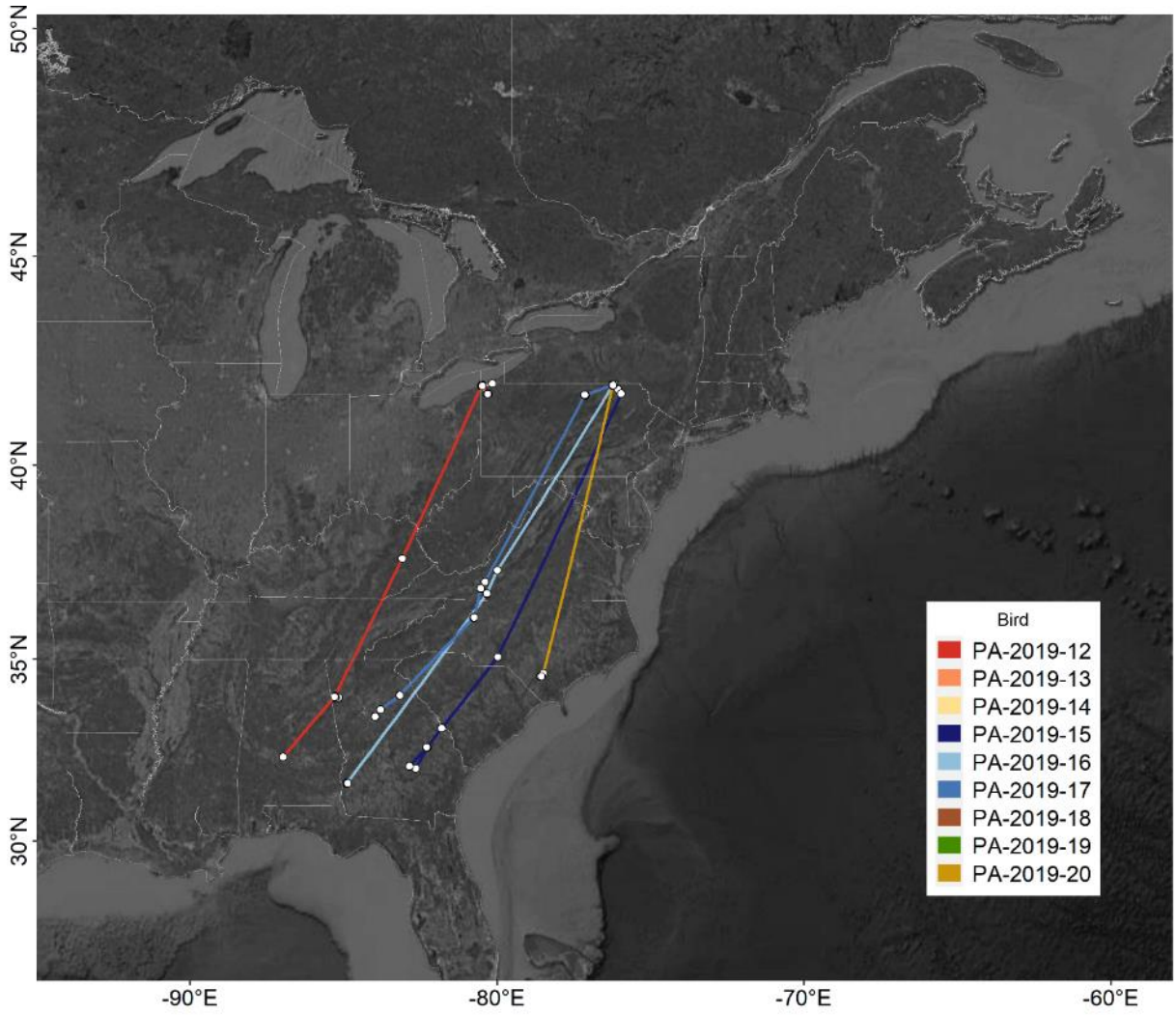


Figure 31. Fall 2019 migration routes of American Woodcock marked in Pennsylvania during September to October 2019. One woodcock remained in northwestern Pennsylvania until the battery died in January 2020. This woodcock likely attempted to overwinter in Pennsylvania, but it is unknown if it ever initiated migration.

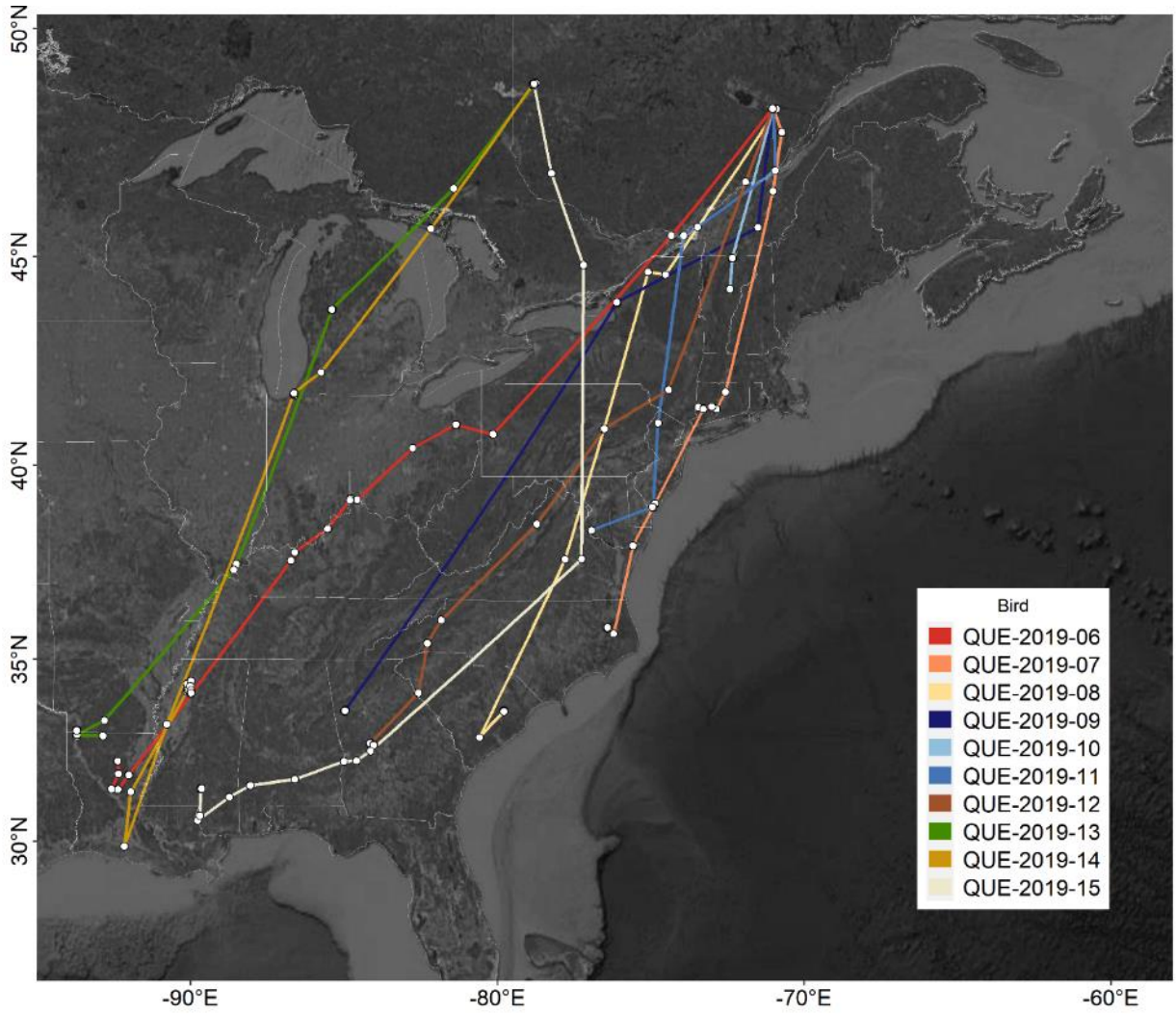


Figure 32. Fall 2019 migration routes of American Woodcock marked in Quebec during September 2019. In general, woodcock marked further west were more likely to migrate into the Central Management Region, but one woodcock from eastern Quebec overwintered in Louisiana.

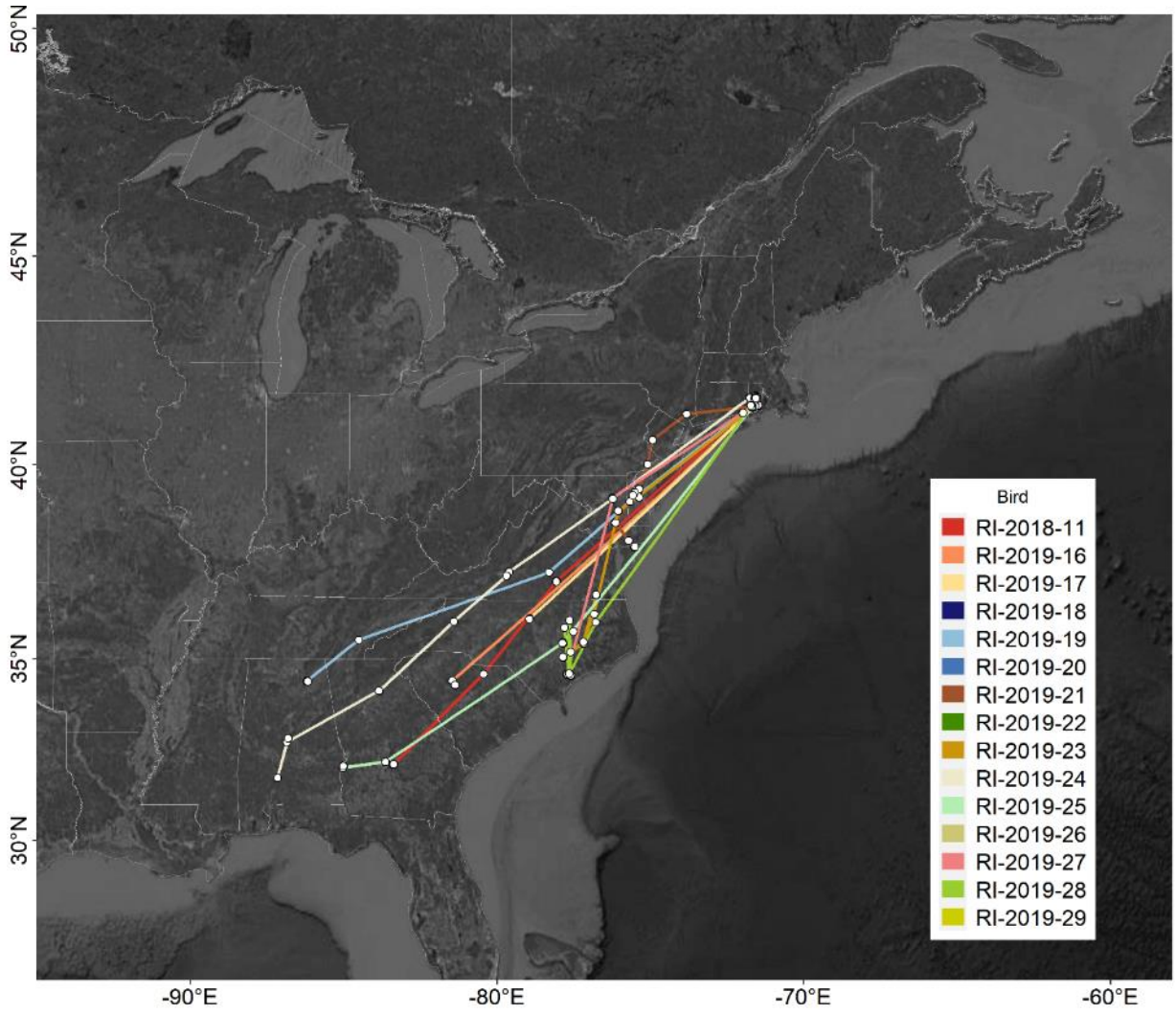


Figure 33. Fall 2019 migration routes of American Woodcock marked in Rhode Island during September to November 2019. Four woodcock remained in Rhode Island for the winter moving closer to the coast during cold weather events, whereas the remainder initiated migration.

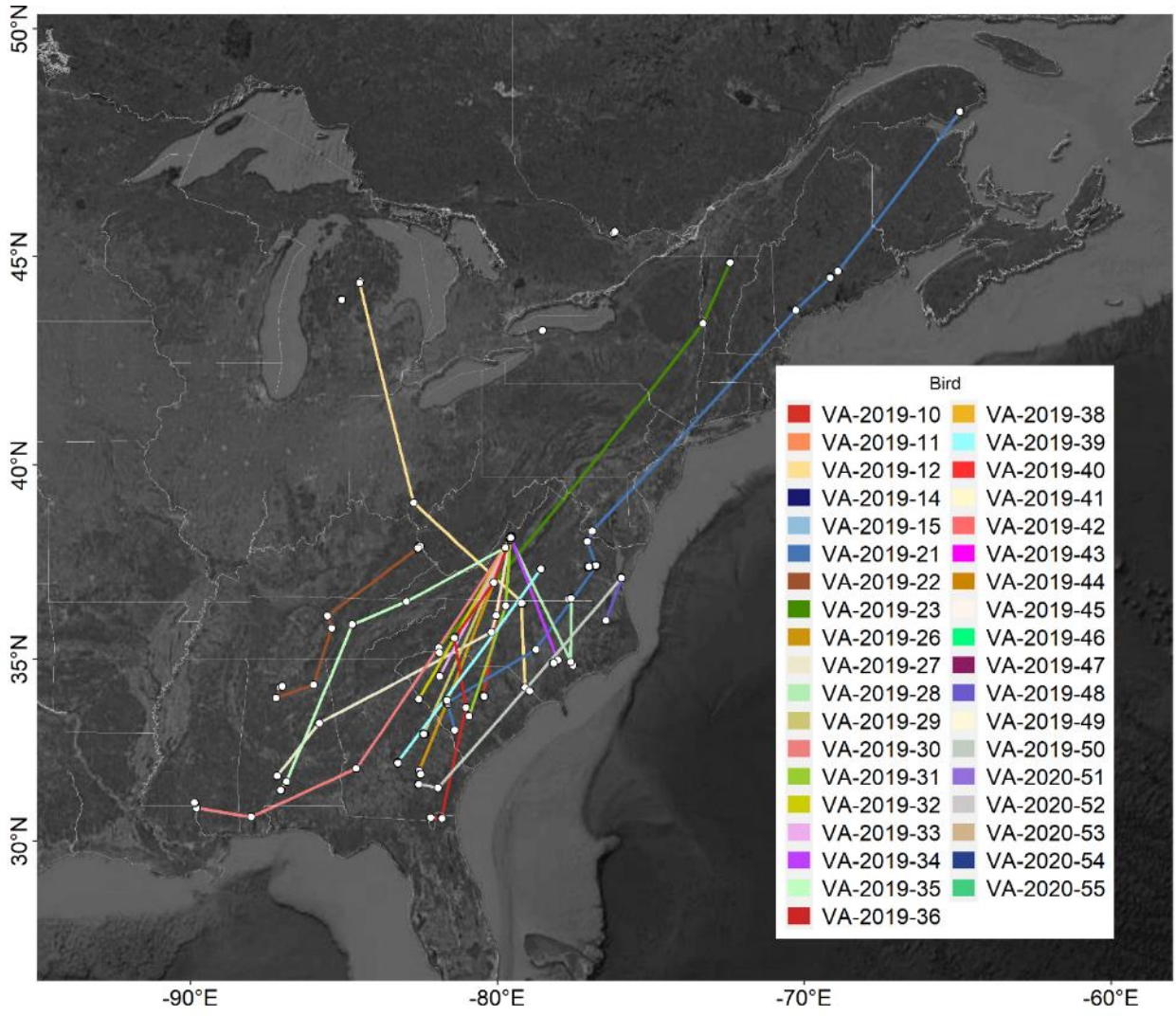


Figure 34. Fall 2019 migration routes of American Woodcock marked in Virginia during spring 2019 and October to December 2019. Woodcock marked spring 2019 initiated migration from Kentucky, Michigan, Quebec, and Vermont. Three spring 2019 marked woodcock stopped transmitting data prior to migration in Michigan, New York, and Quebec. All other woodcock were marked in western, central or eastern Virginia October to December 2019. Woodcock marked in central and eastern Virginia were likely migrants or overwintering birds, whereas woodcock marked in western Virginia were presumed to be residents.

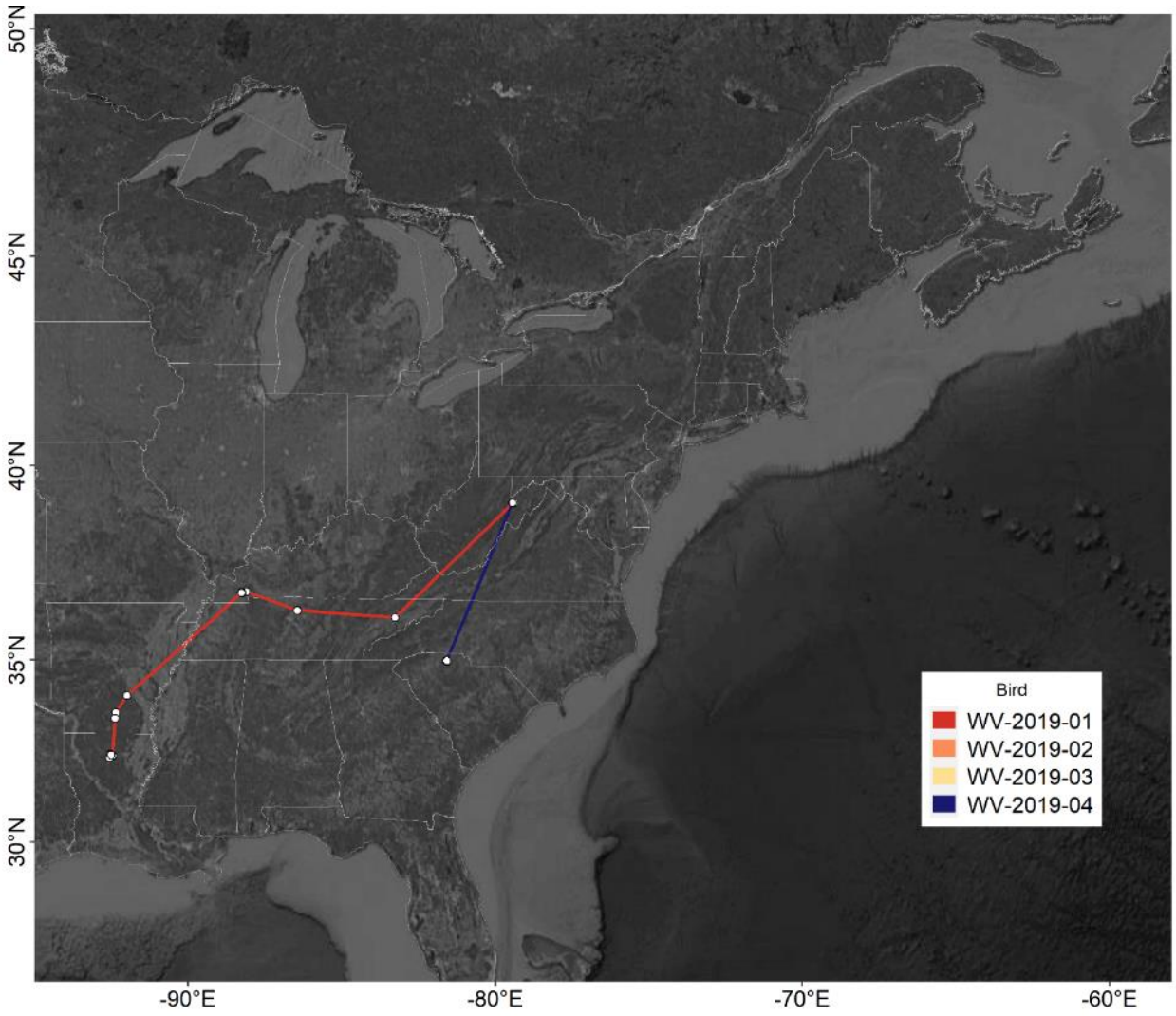


Figure 35. Fall 2019 migration routes of American Woodcock marked in West Virginia during October 2019. Two of four woodcock initiated migration with one wintering in South Carolina and the other in Louisiana.

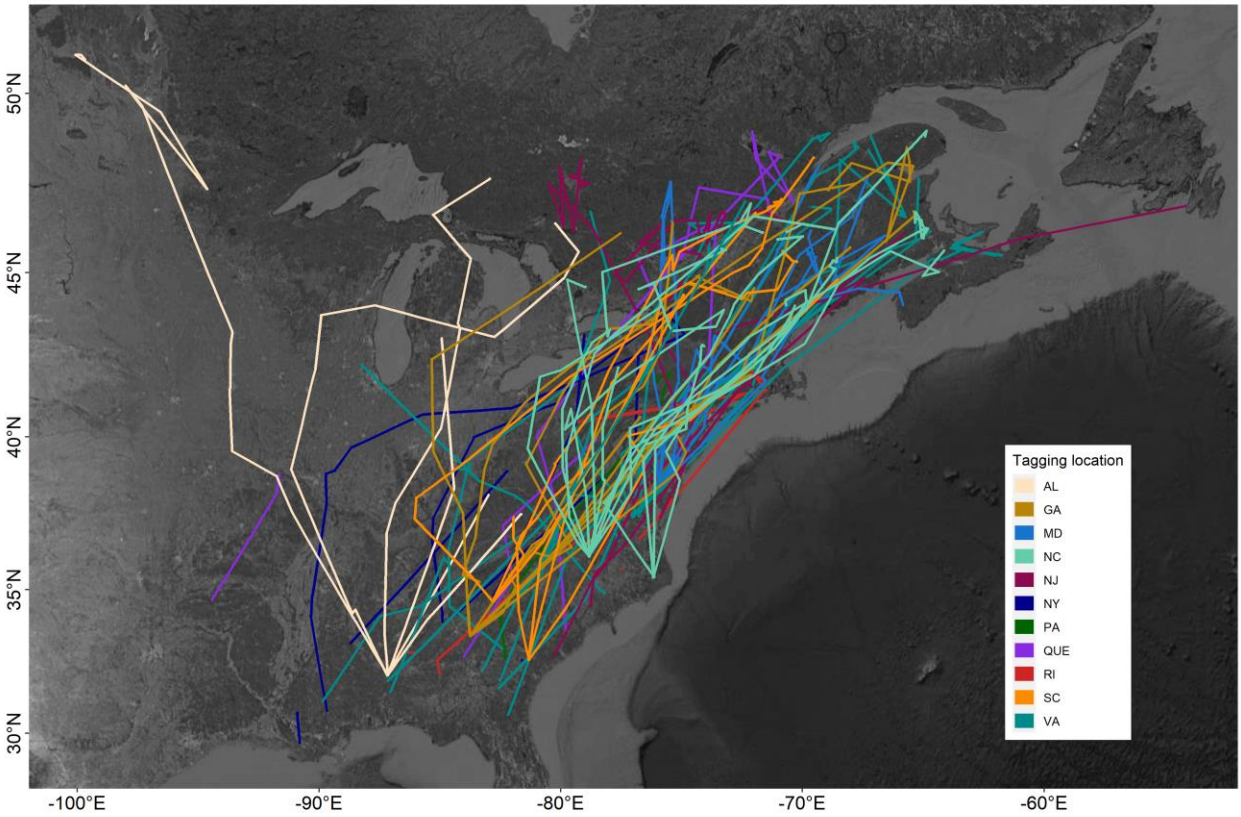


Figure 36. Spring 2020 migration routes for American woodcock (*Scolopax minor*) marked with satellite transmitters in Eastern North America, January to March 2020. A subset of transmitters from fall 2019 remained active and spring migration routes were either partially or fully documented. In general, fewer woodcock migrated west into the Central Management Region compared with spring 2019. Woodcock marked further west in Alabama were more likely to remain in the Central Management Region to breed.

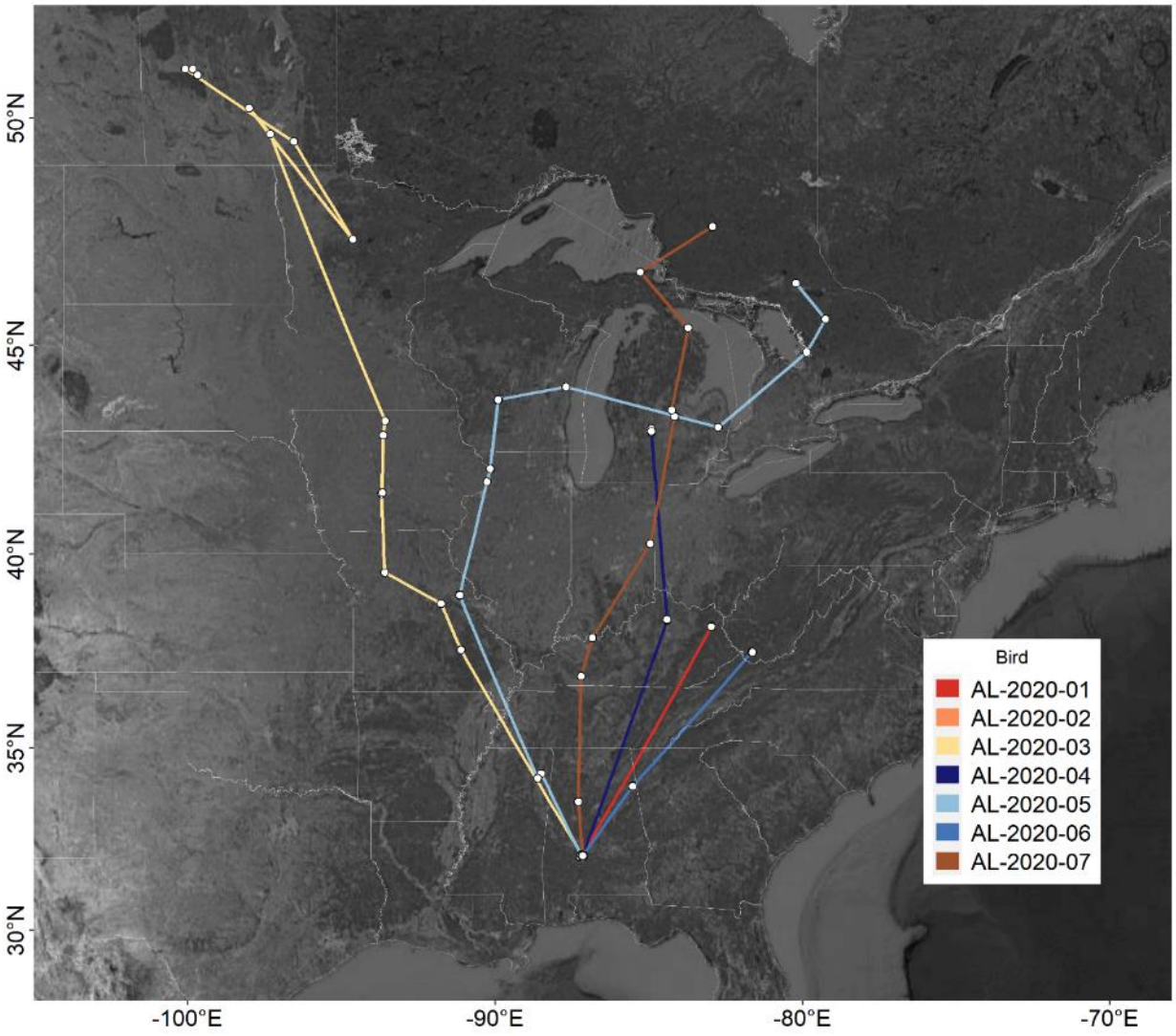


Figure 37. Spring 2020 migration routes of American Woodcock marked in Alabama February 2020. Two woodcock spend extended stopovers in Michigan and Wisconsin prior to terminating migration in Ontario. One woodcock migrated into the western Manitoba, almost to the western extent of the breeding range.

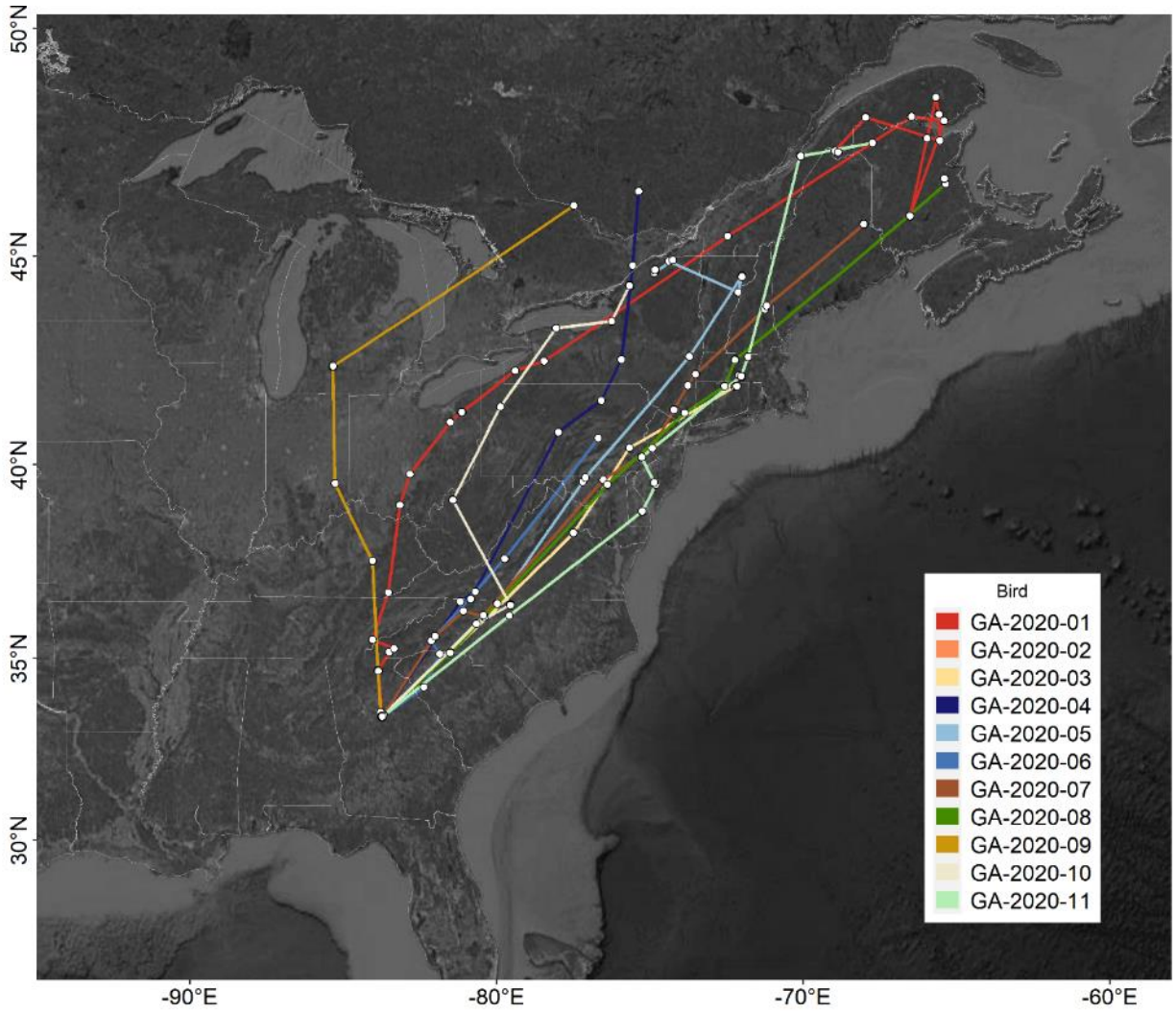


Figure 38. Spring 2020 migration routes of American Woodcock marked in Georgia, January to February 2020. All woodcock terminated migration in the Eastern Management Region, but one woodcock had an extended stopover for one month in southern Michigan prior to terminating migration in southern Quebec.

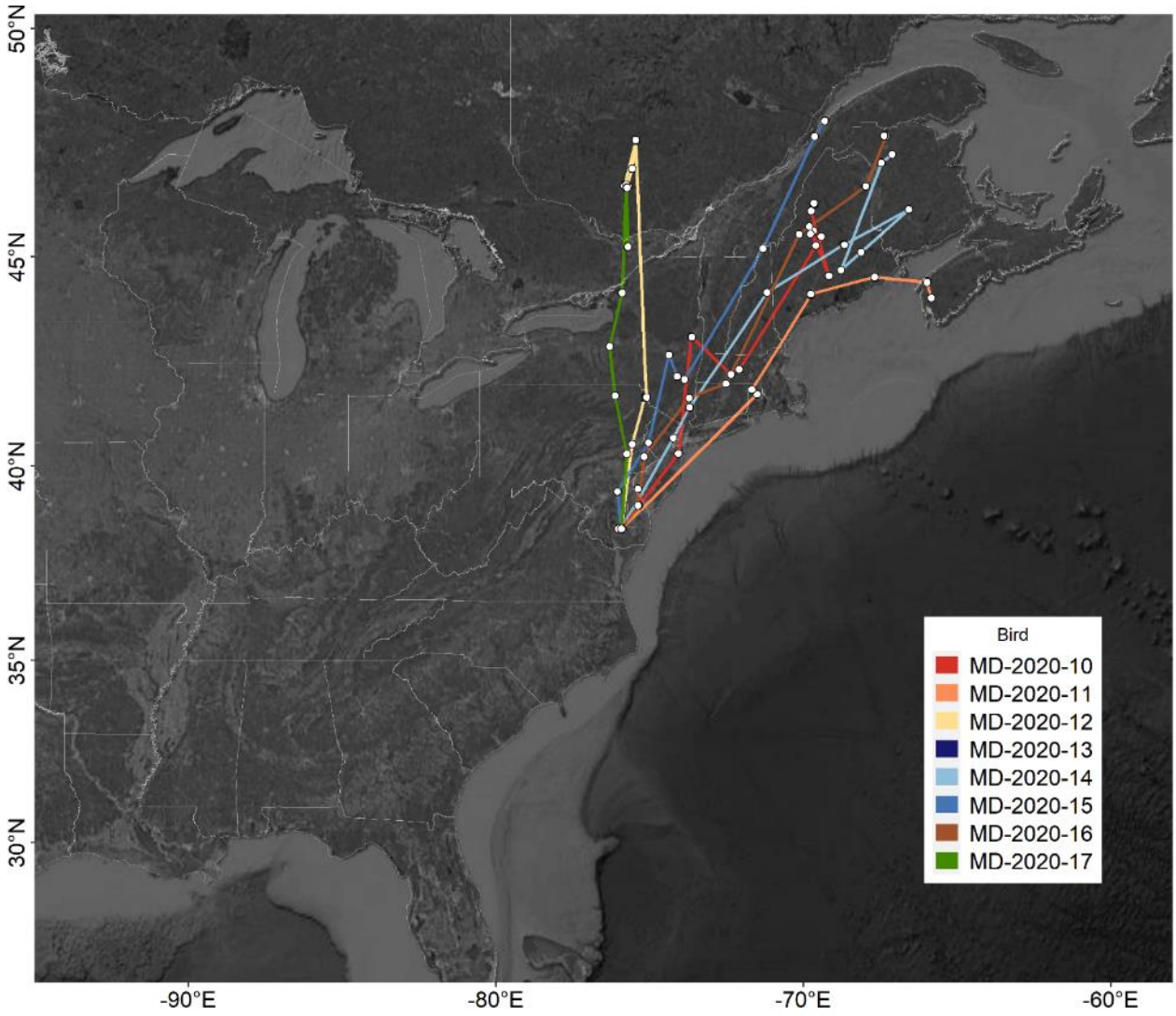


Figure 39. Spring 2020 migration routes of American Woodcock marked in Maryland 2020. All woodcock remained in the Eastern Management Region for migration.

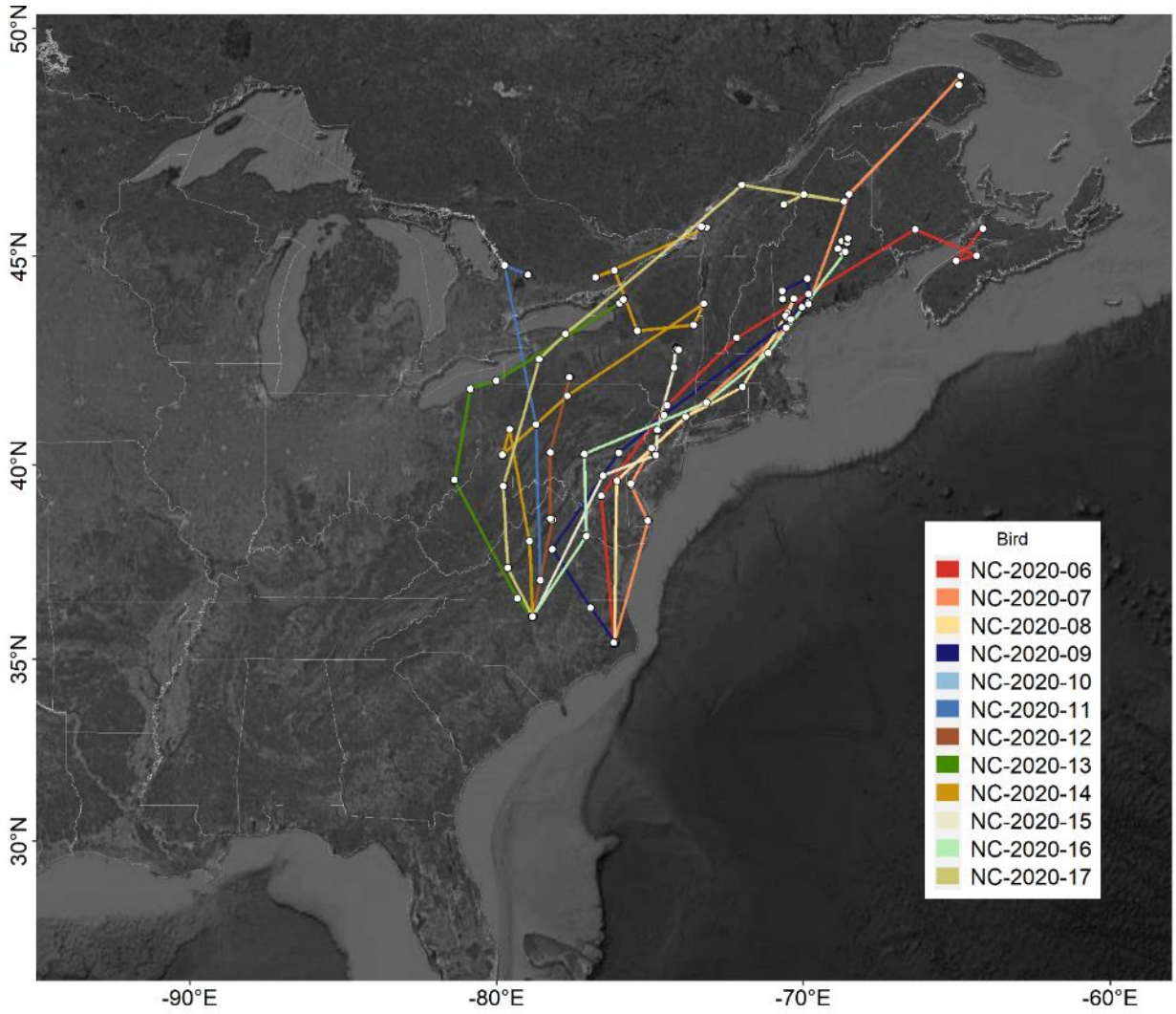


Figure 40. Spring 2020 migration routes of American Woodcock marked in North Carolina during February 2020. One woodcock migrated into the Central Management Region to breed, the rest stayed in the Eastern Management Region.

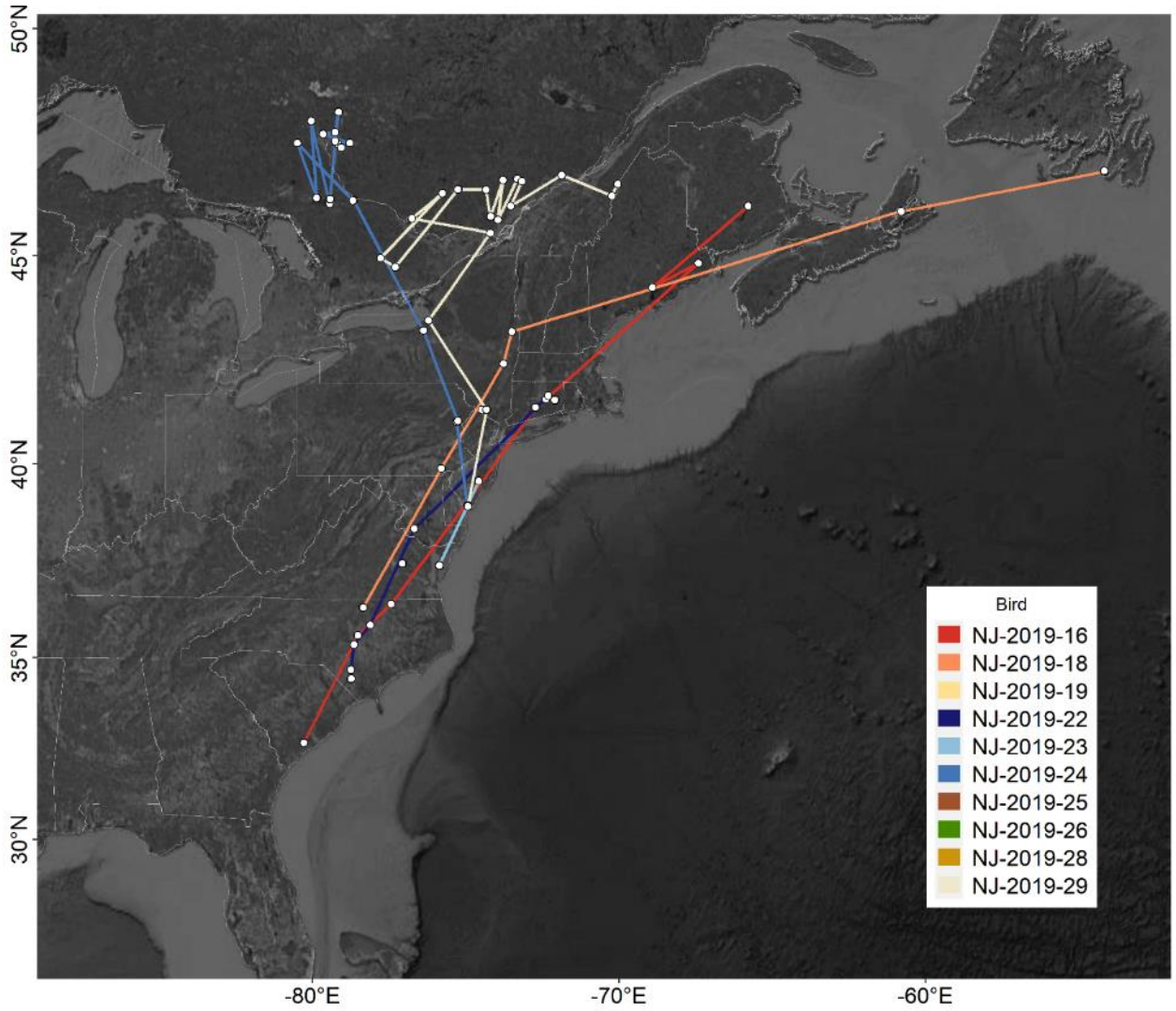


Figure 41. Spring 2020 migration routes of American Woodcock marked in New Jersey, December 2019. One woodcock migrated in to the Central Management Region (Ontario) while the rest remained in the Eastern Management Region. One male woodcock marked in New Jersey migrated to Newfoundland. This was a province first, and Newfoundland is the eastern extent of the woodcock breeding range.

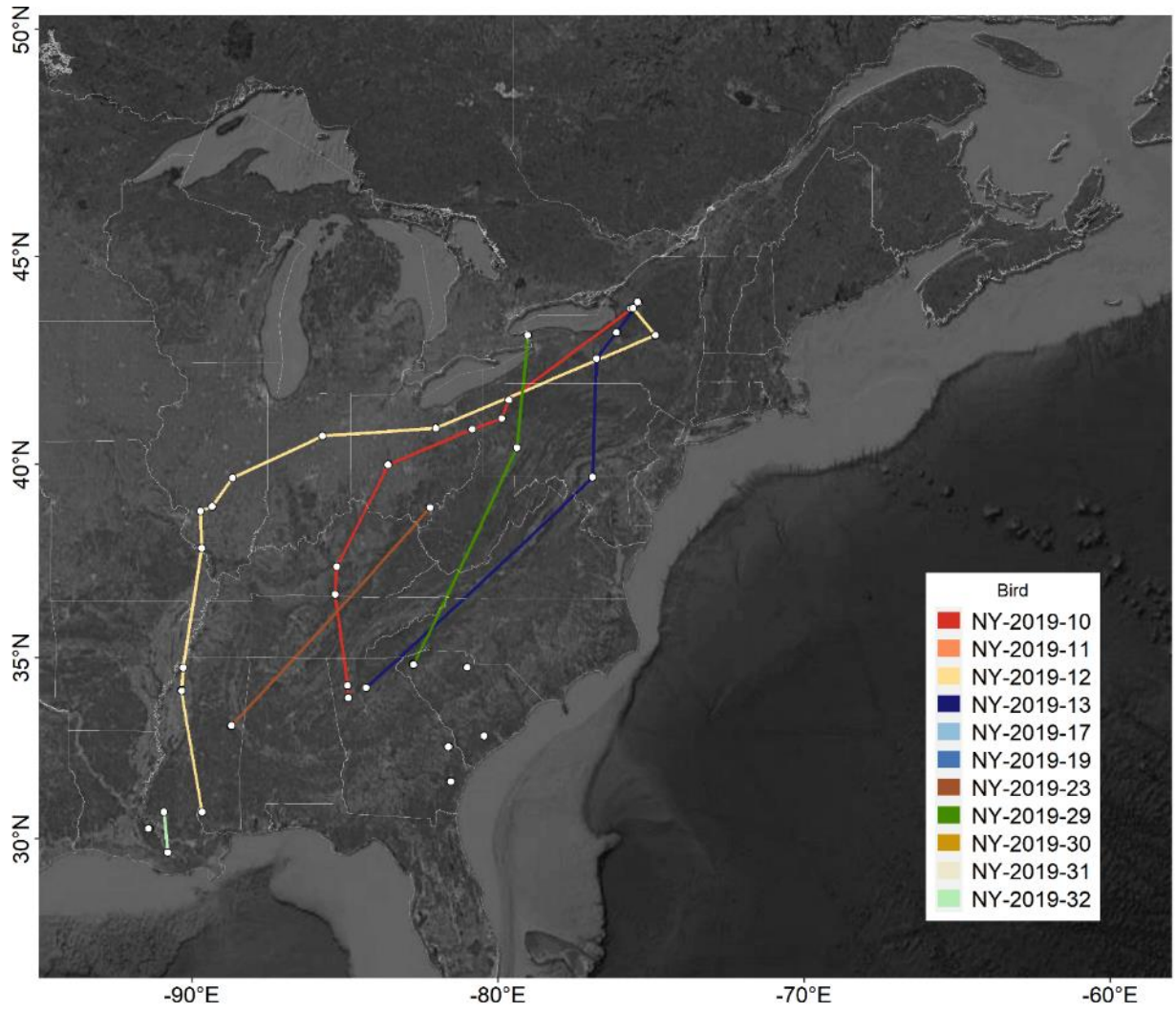


Figure 42. Spring 2020 migration routes of American Woodcock marked in New York fall of 2019. Four woodcock returned to the same area they were captured, and two woodcock transmitters likely died and only partial migrations were recorded. Five other transmitters uploaded locations throughout the winter, but stopped transmitting locations prior to initiating spring migration. Of interest is NY-2019-12, a young female, which made an extended spring migration through the Central Management Region including an ~3-week stopover in central Illinois, before returning to northern NY.

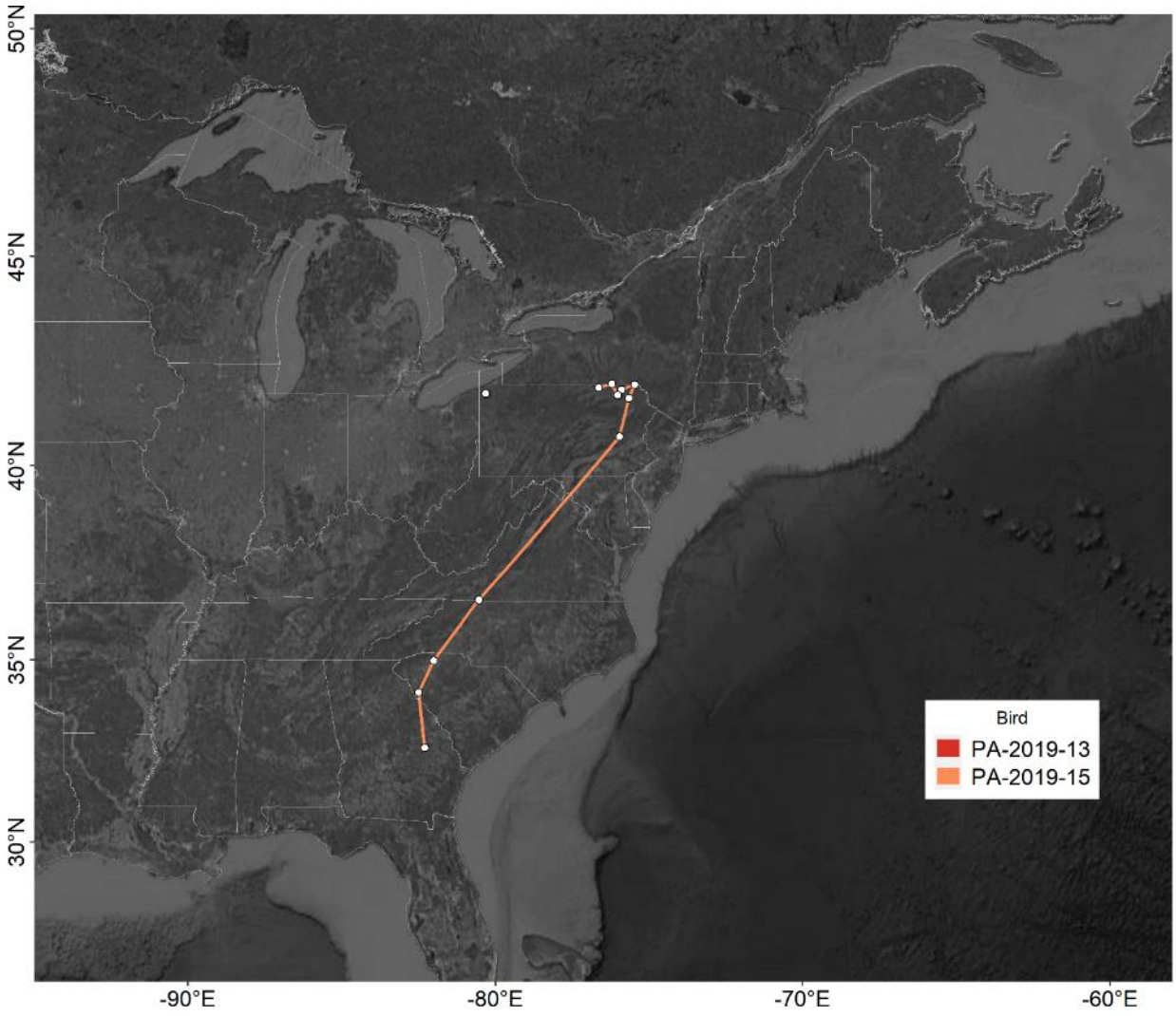


Figure 43. Spring 2020 migration routes of American Woodcock marked in Pennsylvania fall of 2019. One woodcock returned roughly to its capture locations, while the woodcock in western Pennsylvania never initiated migration and attempted to overwinter in northwestern Pennsylvania. The transmitter stopped transmitting so we are not certain if the individual remained for the winter or initiated migration post transmitter failure.

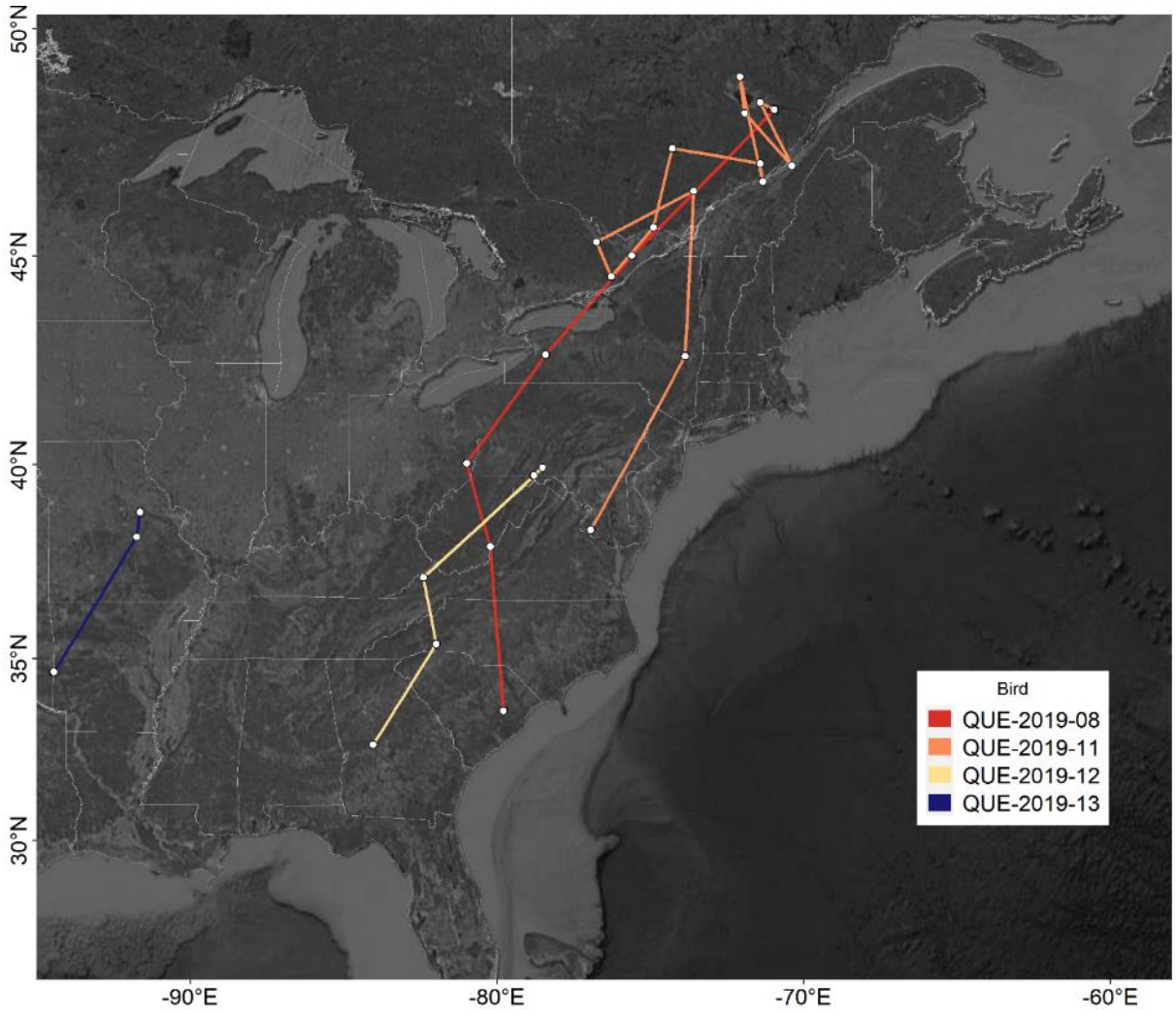


Figure 44. Spring 2020 migration routes of American Woodcock marked in Quebec fall of 2019. Two woodcock returned to their capture location presumably to breed, while the other two woodcocks' transmitter batteries likely stopped during migration and only partial routes were recovered.

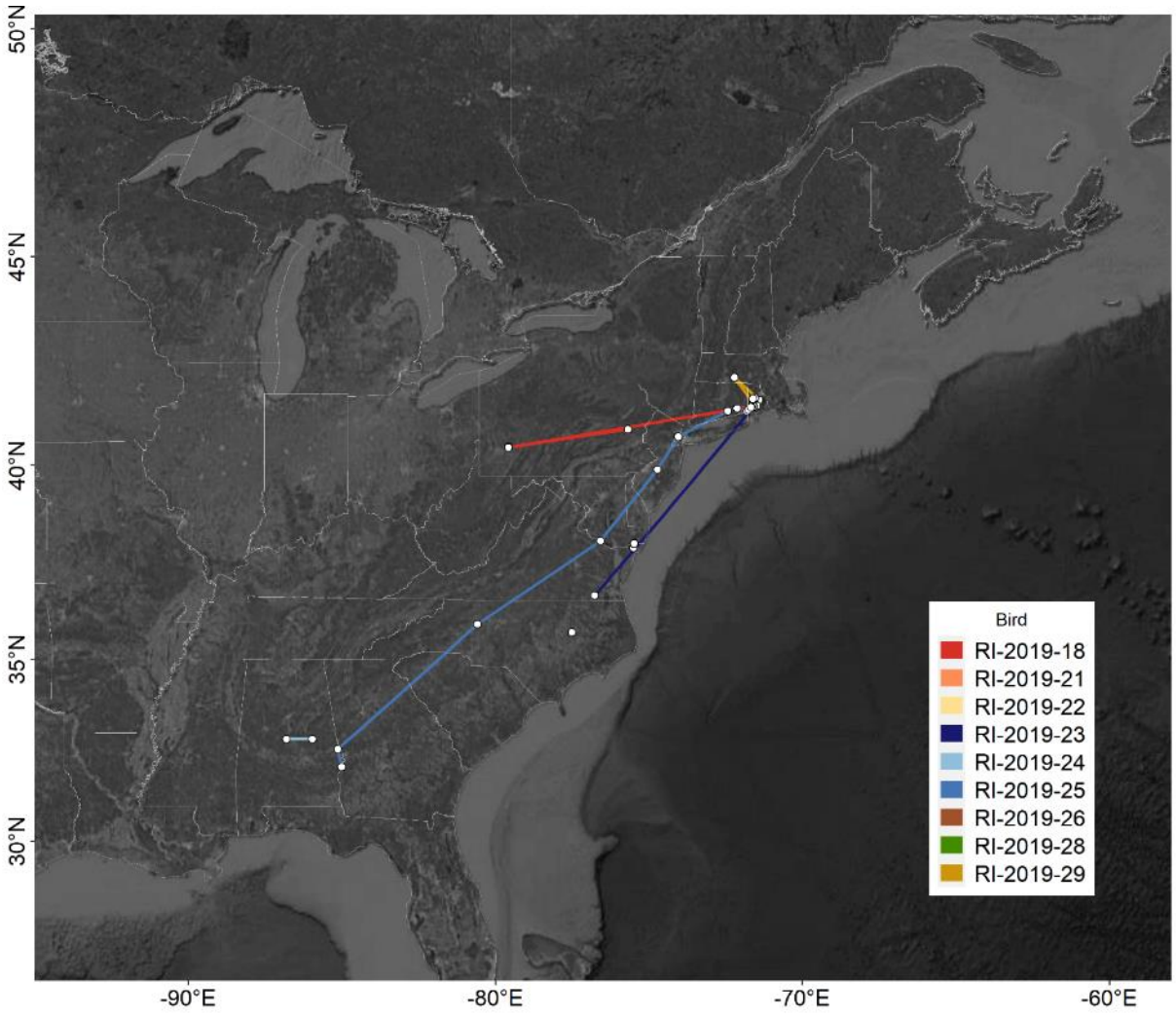


Figure 45. Spring 2020 migration routes of American Woodcock marked in Rhode Island fall of 2019. Two woodcock completed spring migration and return to the initial capture site. Two other woodcock stopped transmitting locations prior to completing or initiating spring migration, and one woodcock that was captured in Rhode Island during fall 2019, and overwintered in Rhode Island, migrated into southwestern Pennsylvania, presumably to breed.

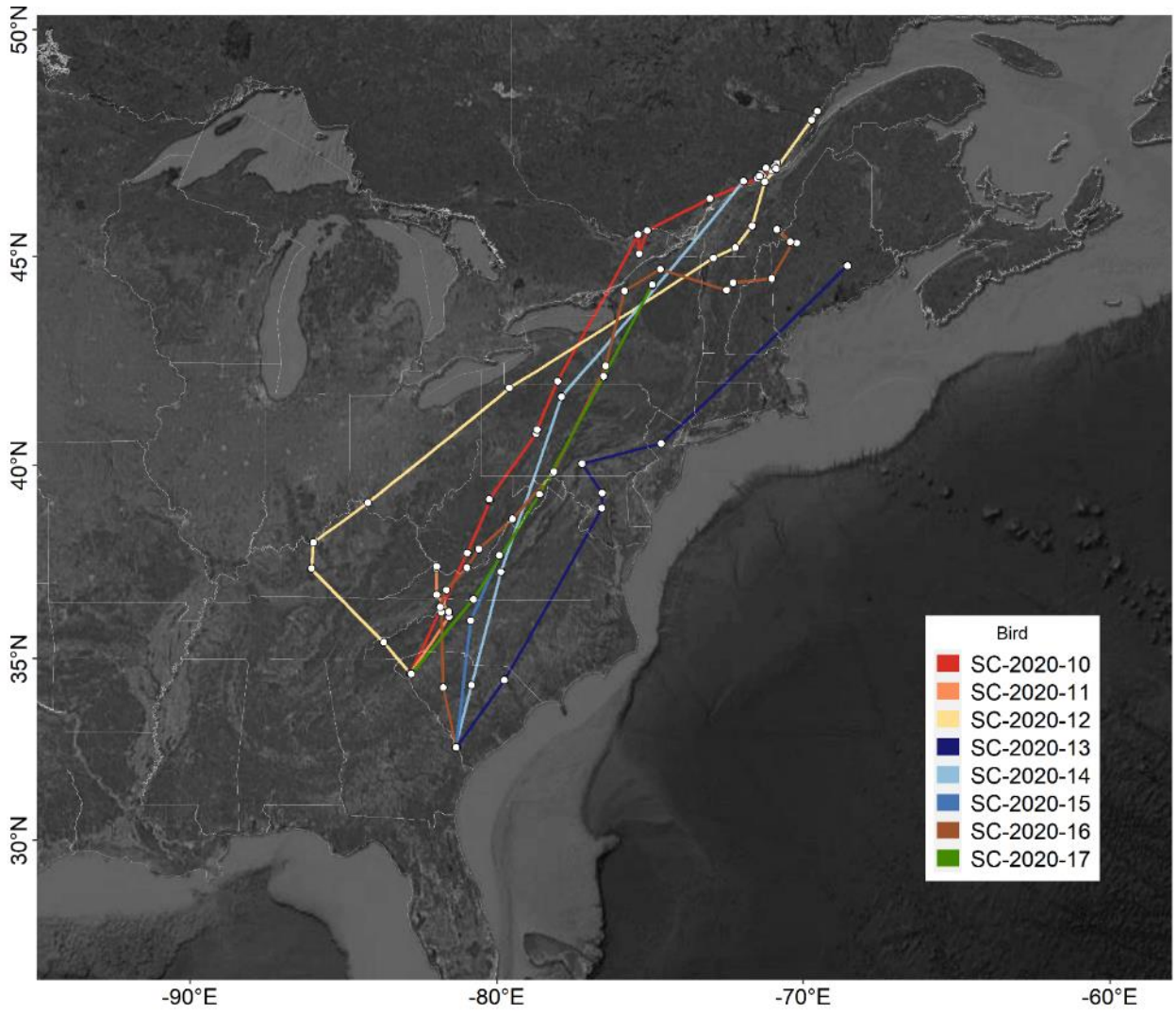


Figure 46. Spring 2020 migration routes of American Woodcock marked in South Carolina during February to March 2020. Most woodcock remained in the Eastern Management Region, although one migrated through the Central Management Region before returning to the Eastern Management Region.

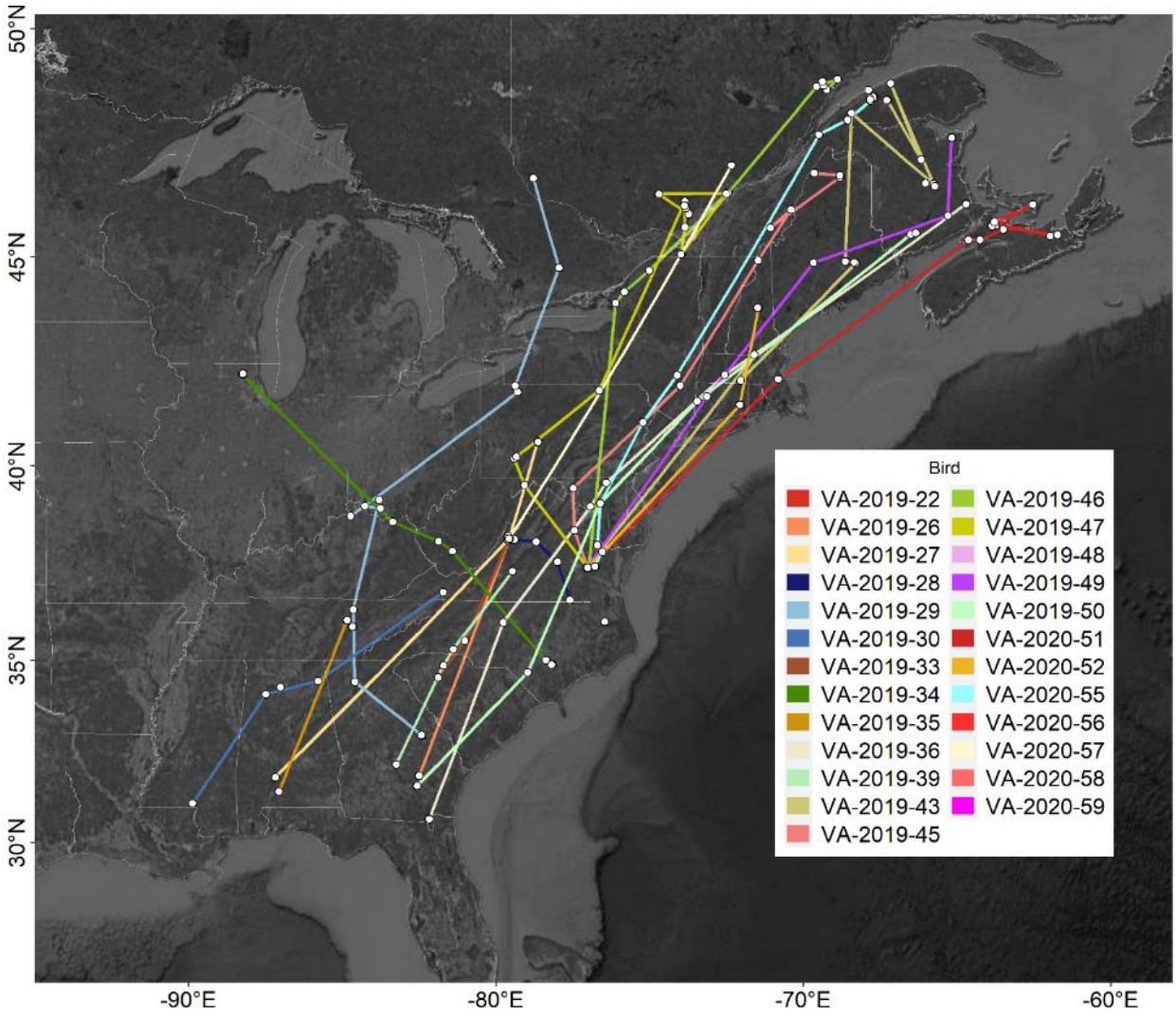


Figure 47. Spring 2020 migration routes of American Woodcock marked in Virginia during fall of 2019 and winter of 2020. Most woodcock remained in the Eastern Management Region, however some overwintered in the Central Management Region and one woodcock that was likely marked during the prior fall migration made their spring migration to northern Illinois, presumably to breed.

APPENDIX A. Summary of phenology and biological data collected from each woodcock marked with PinPoint GPS satellite-enabled transmitters between October 2017 and February 2020, as part of the Eastern Woodcock Migratory Research Cooperative woodcock migration study. Footnotes as follows: [a]male or female [b]adult or young [c]number of GPS locations collected for each bird [d]earliest date migration was initiated [e]latest date that migration was completed [f]minimum number of days between migration initiation and migration termination [g]number of stopover sites recorded during migration [h]average number of days spent at each stopover site [i]state or province of initial capture [j]state or province where either winter or breeding residency was established following migration [k]distance traveled in kilometers to last known location, for birds that established residency this reflects total migratory distance.

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fall 2017** | | | | | | | | | | | |
| *Maine* | | | | | | | | | | | |
| ME-2017-01 | M | Y | 39 | 11/27/2017 | NA | 3 | 2 | 1.5 | ME | NA | 553 |
| ME-2017-02 | F | A | 93 | 11/04/2017 | 11/11/2017 | 6 | 5 | 1.2 | ME | NC | 1829 |
| ME-2017-03 | F | A | 14 | 11/04/2017 | 11/09/2017 | 5 | 1 | 5 | ME | MD | 965 |
| ME-2017-04 | M | Y | 15 | 11/24/2017 | NA | 1 | 1 | NA | ME | NA | 846 |
| ME-2017-05 | M | Y | 27 | 11/05/2017 | NA | 7 | 3 | 3.5 | ME | NA | 1780 |
| ME-2017-06 | M | Y | 19 | 11/09/2017 | 12/09/2019 | 30 | 2 | 15 | ME | AL | 2446 |
| **Fall 2018** | | | | | | | | | | | |
| *Maine* | | | | | | | | | | | |
| ME-2018-07 | M | Y | 88 | 11/09/2018 | 12/11/2018 | 32 | 4 | 8 | ME | NC | 1601 |
| ME-2018-08 | M | A | 101 | 11/12/2018 | 11/27/2018 | 44 | 4 | 3.75 | ME | VA | 1290 |
| ME-2018-09 | F | Y | 73 | 11/10/2018 | 12/12/2018 | 32 | 7 | 4.6 | ME | NC | 1747 |
| ME-2018-10 | F | A | 58 | 10/24/2018 | 12/10/2018 | 47 | 6 | 7.8 | ME | SC | 1636 |
| ME-2018-11 | F | Y | 12 | NA | NA | NA | NA | NA | ME | NA | NA |
| ME-2018-12 | F | Y | 70 | 11/05/2018 | 11/24/2018 | 19 | 7 | 2.7 | ME | GA | 2151 |
| ME-2018-13 | F | A | 72 | 11/15/2018 | 11/28/2018 | 13 | 6 | 2.2 | ME | VA | 1347 |
| *New Jersey* | | | | | | | | | | | |
| NJ-2018-01 | M | Y | 22 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2018-02 | M | Y | 22 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2018-03 | M | Y | 23 | 01/17/2019 | 01/23/2019 | 6 | 1 | 6 | NJ | NJ | 87 |
| NJ-2018-04 | M | Y | 25 | 12/09/2018 | 12/09/2018 | NA | NA | NA | NJ | NC | 518 |
| NJ-2018-05 | M | Y | 22 | 12/07/2018 | 12/07/2018 | NA | NA | NA | NJ | NJ | 22 |
| NJ-2018-06 | M | Y | 16 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2018-07 | M | Y | 19 | 12/23/2018 | 12/23/2018 | NA | NA | NA | NJ | VA | 206 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *New Jersey* | | | | | | | | | | | |
| NJ-2018-08 | F | Y | 30 | 01/12/2019 | 01/12/2019 | NA | NA | NA | NJ | NC | 522 |
| NJ-2018-09 | F | Y | 26 | 12/25/2018 | 01/08/2019 | 15 | 2 | 7.5 | NJ | NC | 423 |
| NJ-2018-10 | F | Y | 28 | 01/02/2019 | 01/02/2019 | NA | NA | NA | NJ | VA | 313 |
| NJ-2018-11 | F | Y | 9 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2018-12 | F | Y | 28 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2018-13 | F | Y | 28 | 02/02/2019 | 02/03/2019 | 1 | 1 | 1 | NJ | MD | 115 |
| NJ-2018-14 | F | Y | 26 | 12/19/2018 | 12/23/2018 | 4 | 1 | 4 | NJ | NC | 650 |
| NJ-2018-15 | F | Y | 22 | 12/21/2018 | 01/14/2019 | 24 | 1 | 24 | NJ | MD | 348 |
| *New York* | | | | | | | | | | | |
| NY-2018-01 | F | Y | 93 | 11/11/2018 | 11/22/2018 | 11 | 3 | 3.7 | NY | NC | 1016 |
| NY-2018-02 | F | A | 24 | 10/31/2018 | 11/22/2018 | 22 | 2 | 11 | NY | NC | 825 |
| NY-2018-03 | M | Y | 45 | 10/12/2018 | 12/23/2018 | 72 | 8 | 9 | NY | AL | 2100 |
| NY-2018-04 | M | Y | 78 | 10/30/2018 | 11/24/2018 | 25 | 5 | 5 | NY | NJ | 897 |
| NY-2018-05 | M | Y | 68 | 11/04/2018 | 11/12/2018 | 8 | 3 | 2.7 | NY | AL | 1655 |
| NY-2018-06 | F | A | 70 | 10/24/2018 | 10/28/2018 | 4 | 2 | 2 | NY | NC | 1059 |
| NY-2018-07 | F | A | 71 | 11/15/2018 | 11/21/2018 | 6 | 4 | 1.5 | NY | GA | 1302 |
| NY-2018-08 | M | Y | 18 | 10/30/2018 | NA | 1 | 1 | NA | NY | NA | 348 |
| NY-2018-09 | M | A | 80 | 11/14/2018 | 11/29/2018 | 15 | 6 | 2.5 | NY | MS | 2210 |
| *Ontario* | | | | | | | | | | | |
| ONT-2018-01 | M | A | 3 | NA | NA | NA | NA | NA | ONT | NA | NA |
| ONT-2018-02 | F | A | 24 | 10/27/2018 | 11/10/2018 | 14 | 4 | 3.5 | ONT | AR | 1908 |
| *Pennsylvania* | | | | | | | | | | | |
| PA-2018-01 | M | Y | 78 | 11/14/2018 | 11/21/2018 | 7 | 3 | 2.3 | PA | AL | 1417 |
| PA-2018-02 | F | A | 76 | 11/12/2018 | 11/28/2018 | 16 | 3 | 5.3 | PA | LA | 1702 |
| PA-2018-03 | F | A | 22 | 11/14/2018 | NA | 2 | 1 | 2 | PA | NA | 221 |
| PA-2018-04 | F | Y | 67 | 11/03/2018 | 11/27/2018 | 24 | 7 | 3.4 | PA | MS | 1660 |
| PA-2018-05 | M | A | 60 | 10/28/2018 | 12/19/2018 | 52 | 4 | 13 | PA | LA | 1641 |
| PA-2018-06 | F | A | 10 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2018-07 | M | A | 90 | 10/21/2018 | 11/25/2018 | 35 | 5 | 7 | PA | FL | 1561 |
| PA-2018-08 | M | A | 37 | 10/25/2018 | 11/28/2018 | 34 | 5 | 6.8 | PA | SC | 1100 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Pennsylvania* | | | | | | | | | | | |
| PA-2018-09 | F | A | 62 | 10/21/2018 | 11/22/2018 | 32 | 6 | 5.3 | PA | MS | 1660 |
| PA-2018-10 | F | Y | 16 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2018-11 | M | A | 54 | 10/24/2018 | 11/08/2018 | 15 | 3 | 5 | PA | MS | 1791 |
| *Quebec* | | | | | | | | | | | |
| QUE-2018-01 | F | Y | 107 | 10/18/2018 | 11/09/2018 | 22 | 6 | 3.7 | QC | NC | 1877 |
| QUE-2018-02 | F | A | 41 | 10/25/2018 | 11/28/2018 | 34 | 5 | 6.8 | QC | MS | 2192 |
| QUE-2018-03 | M | Y | 45 | 10/17/2018 | 11/14/2018 | 28 | 4 | 7 | QC | LA | 2431 |
| QUE-2018-04 | F | Y | 67 | 10/18/2018 | 11/25/2018 | 34 | 5 | 6.8 | QC | LA | 2408 |
| QUE-2018-05 | M | Y | 92 | 10/19/2018 | 12/05/2018 | 47 | 5 | 9.4 | QC | LA | 2230 |
| *Rhode Island* | | | | | | | | | | | |
| RI-2018-01 | M | A | 30 | 11/09/2018 | 11/09/2018 | NA | NA | NA | RI | NJ | 360 |
| RI-2018-02 | F | A | 41 | 11/23/2018 | NA | NA | 1 | NA | RI | NA | 20 |
| RI-2018-03 | M | A | 3 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-04 | M | A | 5 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-05 | M | A | 5 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-06 | M | A | 51 | 12/05/2018 | 12/17/2018 | 50 | 5 | 10 | RI | AL | 2042 |
| RI-2018-07 | F | A | 64 | 11/23/2018 | 12/25/2018 | 32 | 3 | 10.7 | RI | NC | 815 |
| RI-2018-09 | M | A | 4 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-10 | M | A | 74 | 11/23/2018 | 11/27/2018 | 4 | 2 | 2 | RI | NC | 803 |
| RI-2018-11 | F | A | 81 | 11/12/2018 | 12/22/2018 | 40 | 4 | 10 | RI | GA | 1490 |
| RI-2018-12 | M | A | 54 | 12/05/2018 | 12/11/2018 | 6 | 2 | 3 | RI | NC | 1300 |
| RI-2018-13 | M | A | 32 | 12/05/2018 | NA | 18 | 3 | 6 | RI | NA | 610 |
| RI-2018-15 | M | A | 84 | 11/16/2018 | 12/10/2018 | 24 | 10 | 2.4 | RI | GA | 1614 |
| *Virginia* | | | | | | | | | | | |
| VA-2018-01 | M | A | 24 | 11/17/2018 | 11/27/2018 | 9 | 2 | 4.5 | VA | GA | 1088 |
| VA-2018-02 | M | A | 1 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2018-03 | M | A | 16 | 11/22/2018 | 11/22/2018 | NA | NA | NA | VA | GA | 673 |
| VA-2018-05 | F | A | 17 | 01/01/2019 | 01/01/2019 | NA | NA | NA | VA | SC | 601 |
| VA-2018-07 | F | Y | 9 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-11 | M | y | 7 | NA | NA | NA | NA | NA | VA | VA | NA |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Spring 2019*** | | | | | | | | | | | |
| *Maryland* | | | | | | | | | | | |
| MD-2019-01 | F | Y | 96 | 03/25/2019 | 04/25/2019 | 31 | 8 | 3.9 | MD | NS | 1978 |
| MD-2019-02 | F | Y | 87 | 03/14/2019 | 04/17/2019 | 34 | 8 | 4.25 | MD | WI | 1775 |
| MD-2019-03 | F | Y | 3 | NA | NA | NA | NA | NA | MD | NA | NA |
| MD-2019-04 | M | A | 17 | 03/01/2019 | NA | 2 | 1 | 2 | MD | NA | 59 |
| MD-2019-05 | M | A | 57 | 03/13/2019 | 03/15/2019 | 2 | 1 | 2 | MD | NY | 491 |
| MD-2019-06 | F | A | 50 | 03/14/2019 | 04/02/2019 | 19 | 7 | 2.7 | MD | NY | 1135 |
| MD-2019-07 | F | Y | 42 | 03/19/2019 | 03/21/2019 | 2 | 1 | 2 | MD | NA | 422 |
| MD-2019-08 | M | A | 48 | 02/25/2019 | 03/03/2019 | 6 | 1 | 6 | MD | CT | 467 |
| MD-2019-09 | F | A | 45 | 03/31/2019 | NA | 4 | 1 | 4 | MD | NA | 81 |
| *Maine* | | | | | | | | | | | |
| ME-2018-09 | F | Y | 50 | 03/14/2019 | 04/29/2019 | 46 | 5 | 9.2 | ME | NB | 2427 |
| ME-2018-12 | F | Y | 31 | 03/14/2019 | 04/11/2019 | 28 | 3 | 9.3 | ME | NB | 1962 |
| ME-2018-13 | F | A | 53 | 03/28/2019 | 05/02/2019 | 31 | 6 | 5.2 | ME | QUE | 1623 |
| *North Carolina* | | | | | | | | | | | |
| NC-2019-01 | M | Y | 51 | 03/15/2019 | 05/10/2019 | 57 | 6 | 9.5 | NC | QUE | 1506 |
| NC-2019-02 | M | Y | 57 | 02/27/2019 | 04/08/2019 | 40 | 7 | 5.7 | NC | NB | 1706 |
| NC-2019-03 | M | A | 60 | 03/15/2019 | 04/26/2019 | 42 | 6 | 7 | NC | QUE | 1657 |
| NC-2019-04 | F | A | 90 | 03/29/2019 | 04/14/2019 | 16 | 5 | 3.2 | NC | NY | 933 |
| NC-2019-05 | M | A | 9 | NA | NA | NA | NA | NA | NC | NA | NA |
| *New Jersey* | | | | | | | | | | | |
| NJ-2018-01 | M | Y | 2 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2018-02 | M | Y | 41 | 03/15/2019 | 03/21/2019 | 6 | 2 | 3 | NJ | NY | 821 |
| NJ-2018-03 | M | Y | 42 | 03/11/2019 | 04/26/2019 | 46 | 3 | 15.3 | NJ | ONT | 991 |
| NJ-2018-04 | M | Y | 47 | 02/25/2019 | 04/06/2019 | 40 | 7 | 5.7 | NJ | NS | 2040 |
| NJ-2018-05 | M | Y | 46 | 03/15/2019 | 04/14/2019 | 30 | 6 | 5 | NJ | NB | 1775 |
| NJ-2018-07 | M | Y | 20 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2018-08 | F | Y | 87 | 02/27/2019 | 04/23/2019 | 55 | 11 | 5 | NJ | ME | 2102 |
| NJ-2018-09 | F | Y | 87 | 02/27/2019 | 03/19/2019 | 16 | 2 | 8 | NJ | MA | 986 |
| NJ-2018-10 | F | Y | 60 | 03/14/2019 | NA | 35 | 3 | 17.5 | NJ | NA | 805 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *New Jersey* | | | | | | | | | | | |
| NJ-2018-11 | F | Y | 6 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2018-12 | F | Y | 86 | 03/15/2019 | 04/23/2019 | 39 | 9 | 4.3 | NJ | QUE | 1811 |
| NJ-2018-13 | F | Y | 72 | 02/03/2019 | NA | 79 | 9 | 9.9 | NJ | NA | 1270 |
| NJ-2018-14 | F | Y | 35 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2018-15 | F | Y | 70 | 02/20/2019 | NA | 87 | 7 | 14.5 | NJ | NA | 1471 |
| *New York* | | | | | | | | | | | |
| NY-2018-06 | F | A | 12 | 02/22/2019 | NA | 27 | 4 | 9 | NY | NA | 848 |
| NY-2018-07 | F | A | 40 | 03/12/2019 | 04/15/2019 | 33 | 6 | 5.5 | NY | NY | 1545 |
| *Pennsylvania* | | | | | | | | | | | |
| PA-2018-02 | F | A | 22 | 03/10/2019 | 03/02/2019 | 12 | 2 | 6 | PA | PA | 1681 |
| PA-2018-04 | F | Y | 43 | 02/22/2019 | 03/28/2019 | 33 | 6 | 5.5 | PA | PA | 1560 |
| PA-2018-08 | M | A | 15 | 03/17/2019 | 03/17/2019 | NA | NA | NA | PA | PA | 907 |
| PA-2018-09 | F | A | 14 | 02/16/2019 | NA | 14 | 3 | 7 | PA | NA | 1095 |
| *Quebec* | | | | | | | | | | | |
| QUE-2018-01 | F | Y | 7 | NA | NA | NA | NA | NA | QUE | NA | NA |
| QUE-2018-02 | F | A | 16 | 02/25/2019 | 05/06/2019 | 71 | 3 | 23.7 | QUE | QUE | 2131 |
| QUE-2018-03 | M | Y | 6 | 03/02/2019 | NA | 5 | 1 | NA | QUE | NA | 809 |
| *Rhode Island* | | | | | | | | | | | |
| RI-2018-02 | F | A | 11 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-06 | M | A | 17 | 02/03/2019 | 04/17/2019 | 73 | 2 | 36.5 | RI | RI | 1613 |
| RI-2018-07 | F | A | 43 | 03/26/2019 | 04/05/2019 | 10 | 1 | 10 | RI | RI | 827 |
| RI-2018-10 | M | A | 3 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2018-11 | F | A | 37 | 02/22/2019 | 04/11/2019 | 48 | 8 | 6 | RI | RI | 1637 |
| RI-2018-12 | M | A | 20 | 03/06/2019 | 03/20/2019 | 14 | 2 | 7 | RI | CT | 788 |
| RI-2018-15 | M | A | 9 | NA | NA | NA | NA | NA | RI | NA | NA |
| *South Carolina* | | | | | | | | | | | |
| SC-2019-01 | M | A | 24 | 03/15/2019 | NA | 5 | 2 | 5 | SC | NA | 1264 |
| SC-2019-02 | F | Y | 97 | 03/10/2019 | 03/22/2019 | 12 | 4 | 3 | SC | OH | 1239 |
| SC-2019-03 | F | A | 100 | 03/10/2019 | 04/02/2019 | 23 | 7 | 2.9 | SC | MI | 1444 |
| SC-2019-04 | F | A | 90 | 03/13/2019 | 04/13/2019 | 31 | 7 | 4.4 | SC | NY | 1436 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *South Carolina* | | | | | | | | | | | |
| SC-2019-05 | M | Y | 60 | 03/15/2019 | 04/08/2019 | 24 | 7 | 3.4 | SC | ONT | 1804 |
| SC-2019-06 | M | Y | 38 | 03/14/2019 | NA | 7 | 3 | 3.5 | SC | NA | 1486 |
| SC-2019-07 | F | Y | 27 | 02/27/2019 | NA | 9 | 2 | 9 | SC | NA | 656 |
| SC-2019-08 | F | Y | 96 | 03/09/2019 | 04/08/2019 | 22 | 8 | 2.8 | SC | MN | 2325 |
| SC-2019-09 | F | Y | 89 | 02/27/2019 | 03/11/2019 | 12 | 2 | 6 | SC | VA | 732 |
| *Virginia* | | | | | | | | | | | |
| VA-2018-01 | M | A | 6 | 01/26/2019 | 02/06/2019 | 11 | 1 | 11 | VA | VA | 592 |
| VA-2018-05 | F | A | 11 | 03/02/2019 | NA | 15 | 2 | 7.5 | VA | NA | 1007 |
| VA-2019-10 | M | A | 18 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-11 | M | Y | 56 | 04/06/2019 | 04/24/2019 | 30 | 4 | 7.5 | VA | ONT | 798 |
| VA-2019-12 | M | A | 22 | 04/18/2019 | 04/26/2019 | 8 | 2 | 4 | VA | MI | 814 |
| VA-2019-14 | M | Y | 50 | 03/21/2019 | 04/22/2019 | 32 | 4 | 8 | VA | QUE | 1043 |
| VA-2019-15 | M | Y | 55 | 03/13/2019 | 03/25/2019 | 12 | 3 | 4 | VA | MI | 1174 |
| VA-2019-16 | F | Y | 14 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-17 | F | A | 2 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-20 | M | A | 3 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-21 | M | A | 11 | 04/20/2019 | 05/15/2019 | 25 | 1 | 25 | VA | QUE | 1579 |
| VA-2019-22 | F | A | 44 | 04/11/2019 | 04/15/2019 | 4 | 2 | 2 | VA | KY | 290 |
| VA-2019-23 | F | A | 35 | 04/15/2019 | 04/24/2019 | 9 | 2 | 4.5 | VA | NH | 935 |
| VA-2019-24 | F | A | 157 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-26 | M | A | 18 | NA | NA | NA | NA | NA | VA | VA | NA |
| ***Fall 2020*** | | | | | | | | | | | |
| *New Jersey* | | | | | | | | | | | |
| NJ-2019-16 | M | Y | 25 | 12/13/2019 | 12/22/2019 | 9 | 1 | 9.0 | NJ | SC | 903 |
| NJ-2019-17 | M | Y | 18 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-18 | M | Y | 26 | 12/09/2019 | 12/13/2019 | 4 | 1 | 4.0 | NJ | NC | 455 |
| NJ-2019-19 | M | Y | 18 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-20 | M | Y | 3 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-21 | M | Y | 3 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-22 | M | Y | 24 | 12/09/2019 | 12/13/2019 | 4 | 3 | 1.3 | NJ | NC | 807 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *New Jersey* | | | | | | | | | | | |
| NJ-2019-23 | F | Y | 31 | 12/17/2019 | 12/25/2019 | 8 | 1 | 8.0 | NJ | VA | 229 |
| NJ-2019-24 | F | Y | 28 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-25 | F | Y | 31 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-26 | F | Y | 16 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-27 | F | Y | 6 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-28 | F | Y | 27 | 12/17/2019 | 12/22/2019 | 5 | 2 | 2.5 | NJ | VA | 332 |
| NJ-2019-29 | F | Y | 32 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| NJ-2019-30 | F | Y | 21 | NA | NA | NA | NA | NA | NJ | NJ | NA |
| *Nova Scotia* | | | | | | | | | | | |
| NS-2019-01 | M | Y | 102 | 11/09/2019 | 11/21/2019 | 12 | 4 | 3.0 | NS | NC | 1736 |
| NS-2019-02 | F | Y | 70 | 11/22/2019 | NA | 68 | 6 | 11.3 | NS | NA | 1577 |
| NS-2019-03 | F | Y | 26 | 10/27/2019 | NA | 46 | 6 | 7.7 | NS | NA | 1593 |
| NS-2019-04 | F | Y | 81 | 11/14/2019 | 12/23/2019 | 39 | 6 | 6.5 | NS | VA | 1656 |
| NS-2019-05 | M | Y | 31 | 11/02/2019 | 12/12/2019 | 40 | 8 | 5.0 | NS | SC | 3237 |
| NS-2019-06 | F | Y | 50 | 11/12/2019 | 12/27/2019 | 45 | 7 | 6.4 | NS | NJ | 1264 |
| New York | | | | | | | | | | | |
| NY-2019-10 | F | A | 88 | 11/08/2019 | 11/14/2019 | 6 | 4 | 1.5 | NY | GA | 1421 |
| NY-2019-11 | F | Y | 79 | 11/06/2019 | 11/13/2019 | 7 | 5 | 1.4 | NY | GA | 1445 |
| NY-2019-12 | F | Y | 73 | 11/08/2019 | 12/3/2019 | 25 | 6 | 4.2 | NY | MS | 2247 |
| NY-2019-13 | F | A | 42 | 11/14/2019 | 11/14/2019 | NA | NA | NA | NY | GA | 1129 |
| NY-2019-14 | M | Y | 83 | 11/13/2019 | 12/16/2019 | 33 | 5 | 6.6 | NY | MS | 1874 |
| NY-2019-15 | F | Y | 100 | 11/08/2019 | 11/10/2019 | 2 | 2 | 1.0 | NY | AL | 1557 |
| NY-2019-16 | M | Y | 102 | 11/12/2019 | 12/29/2019 | 47 | 8 | 5.9 | NY | AL | 2135 |
| NY-2019-17 | F | Y | 91 | 10/12/2019 | 12/18/2019 | 67 | 11 | 6.1 | NY | LA | 2378 |
| NY-2019-18 | M | A | 3 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-19 | F | Y | 73 | 11/02/2019 | 12/9/2019 | 37 | 6 | 6.2 | NY | SC | 1249 |
| NY-2019-20 | M | Y | 102 | 11/08/2019 | 11/18/2019 | 10 | 3 | 3.3 | NY | GA | 1471 |
| NY-2019-21 | M | A | 44 | 11/08/2019 | 11/9/2019 | 1 | 1 | 1.0 | NY | SC | 1178 |
| NY-2019-22 | M | A | 81 | 10/18/2019 | 12/1/2019 | 44 | 10 | 4.4 | NY | SC | 1739 |
| NY-2019-23 | F | A | 76 | 10/31/2019 | 12/5/2019 | 35 | 5 | 7.0 | NY | MS | 1493 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *New York* | | | | | | | | | | | |
| NY-2019-24 | F | A | 16 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-25 | M | A | 99 | 11/08/2019 | 11/12/2019 | 4 | 2 | 2.0 | NY | AL | 1725 |
| NY-2019-26 | F | A | 87 | 11/08/2019 | 11/17/2019 | 9 | 5 | 1.8 | NY | NC | 1030 |
| NY-2019-27 | F | Y | 69 | 11/02/2019 | 12/16/2019 | 44 | 6 | 7.3 | NY | FL | 1861 |
| NY-2019-28 | F | A | 27 | 11/10/2019 | 11/18/2019 | 8 | 2 | 4.0 | NY | AL | 1233 |
| NY-2019-29 | F | Y | 48 | 11/06/2019 | 11/30/2019 | 24 | 4 | 6.0 | NY | SC | 1157 |
| NY-2019-30 | M | Y | 94 | 11/08/2019 | 11/9/2019 | 1 | 1 | 1.0 | NY | SC | 1192 |
| NY-2019-31 | F | A | 93 | 11/08/2019 | 11/9/2019 | 1 | 3 | 0.3 | NY | GA | 1360 |
| NY-2019-32 | M | A | 103 | 10/27/2019 | 12/1/2019 | 35 | 7 | 5.0 | NY | LA | 2076 |
| NY-2019-33 | F | Y | 52 | 10/15/2019 | 11/11/2019 | 27 | 4 | 6.8 | NY | KY | 1134 |
| NY-2019-34 | F | A | 18 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-35 | F | Y | 81 | 11/08/2019 | 12/14/2019 | 36 | 8 | 4.5 | NY | TX | 2873 |
| NY-2019-36 | F | A | 78 | 11/14/2019 | 12/5/2019 | 21 | 4 | 5.3 | NY | GA | 1234 |
| NY-2019-37 | M | A | 7 | NA | NA | NA | NA | NA | NY | NA | NA |
| *Ontario* | | | | | | | | | | | |
| ONT-2019-03 | F | Y | 33 | 10/16/2019 | NA | 20 | 3 | 6.7 | ONT | | 1076 |
| ONT-2019-04 | M | Y | 36 | 10/19/2019 | 11/12/2019 | 24 | 5 | 4.8 | ONT | NC | 1561 |
| ONT-2019-05 | F | A | 111 | 10/17/2019 | 11/9/2019 | 23 | 5 | 4.6 | ONT | LA | 2426 |
| *Pennsylvania* | | | | | | | | | | | |
| PA-2019-12 | M | Y | 26 | 11/08/2019 | 12/20/2019 | 42 | 2 | 21.0 | PA | AL | 1257 |
| PA-2019-13 | M | Y | 98 | 12/12/2019 | 12/13/2019 | 1 | 1 | 1.0 | PA | PA | 55 |
| PA-2019-14 | F | Y | 24 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2019-15 | F | A | 72 | 11/13/2019 | 11/17/2019 | 4 | 5 | 0.8 | PA | GA | 1393 |
| PA-2019-16 | F | A | 47 | 11/09/2019 | 11/13/2019 | 4 | 2 | 2.0 | PA | GA | 1422 |
| PA-2019-17 | M | Y | 53 | 10/12/2019 | 12/3/2019 | 52 | 6 | 8.7 | PA | GA | 1210 |
| PA-2019-18 | F | A | 69 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2019-19 | F | A | 23 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2019-20 | F | A | 68 | 11/13/2019 | 11/15/2019 | 2 | 1 | 2.0 | PA | NC | 866 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Quebec* | | | | | | | | | | | |
| QUE-2019-06 | F | A | 84 | 10/20/2019 | 11/8/2019 | 19 | 13 | 1.5 | QUE | LA | 2813 |
| QUE-2019-07 | M | Y | 104 | 11/06/2019 | 12/9/2019 | 33 | 8 | 4.1 | QUE | NC | 1626 |
| QUE-2019-08 | M | Y | 54 | 10/27/2019 | 11/12/2019 | 16 | 4 | 4.0 | QUE | SC | 2083 |
| QUE-2019-09 | M | Y | 97 | 10/26/2019 | 11/14/2019 | 19 | 2 | 9.5 | QUE | GA | 2135 |
| QUE-2019-10 | F | A | 30 | 10/27/2019 | NA | 11 | 1 | 11.0 | QUE | NA | 477 |
| QUE-2019-11 | F | Y | 87 | 10/26/2019 | 11/14/2019 | 19 | 5 | 3.8 | QUE | MD | 1376 |
| QUE-2019-12 | F | A | 82 | 10/18/2019 | 11/29/2019 | 42 | 7 | 6.0 | QUE | GA | 2175 |
| QUE-2019-13 | M | Y | 55 | 10/17/2019 | 12/8/2019 | 52 | 7 | 7.4 | QUE | LA | 2413 |
| QUE-2019-14 | M | Y | 114 | 10/17/2019 | 11/11/2019 | 25 | 7 | 3.6 | QUE | MS | 3067 |
| QUE-2019-15 | F | Y | 106 | 11/01/2019 | 12/16/2019 | 45 | 10 | 4.5 | QUE | MS | 2882 |
| *Rhode Island* | | | | | | | | | | | |
| RI-2018-11 | F | A | 73 | 11/13/2019 | 12/10/2019 | 27 | 3 | 9.0 | RI | GA | 1497 |
| RI-2019-16 | M | A | 27 | 11/13/2019 | 11/18/2019 | 5 | 1 | 5.0 | RI | SC | 1184 |
| RI-2019-17 | M | A | 23 | 11/17/2019 | 11/19/2019 | 2 | 1 | 2.0 | RI | NC | 879 |
| RI-2019-18 | M | A | 31 | 12/13/2019 | 12/13/2019 | NA | NA | NA | RI | RI | 38 |
| RI-2019-19 | M | A | 45 | 12/01/2019 | 12/11/2019 | 10 | 3 | 3.3 | RI | AL | 1538 |
| RI-2019-20 | M | A | 15 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2019-21 | M | A | 91 | 12/02/2019 | 1/15/2020 | 44 | 8 | 5.5 | RI | VA | 729 |
| RI-2019-22 | M | A | 74 | NA | NA | NA | NA | NA | RI | RI | 19 |
| RI-2019-23 | M | A | 46 | 11/29/2019 | 12/7/2019 | 8 | 6 | 1.3 | RI | NC | 1187 |
| RI-2019-24 | M | A | 51 | 11/17/2019 | 12/15/2019 | 28 | 5 | 5.6 | RI | AL | 1923 |
| RI-2019-25 | F | A | 69 | 11/17/2019 | 12/2/2019 | 15 | 2 | 7.5 | RI | GA | 1660 |
| RI-2019-26 | M | A | 27 | NA | NA | NA | NA | NA | RI | RI | 38 |
| RI-2019-27 | F | A | 41 | 11/17/2019 | 12/1/2019 | 14 | 1 | 14.0 | RI | NC | 1007 |
| RI-2019-28 | M | A | 44 | 11/17/2019 | 11/21/2019 | 4 | 5 | 0.8 | RI | NC | 1425 |
| RI-2019-29 | M | A | 90 | 12/03/2019 | 12/3/2019 | NA | NA | NA | RI | RI | 87 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Virginia* | | | | | | | | | | | |
| VA-2019-10 | M | A | 39 | 11/29/2019 | 11/29/2019 | NA | NA | NA | VA | SC | 513 |
| VA-2019-12 | M | A | 35 | 10/17/2019 | 11/15/2019 | 29 | 3 | 9.7 | MI | SC | 1311 |
| VA-2019-21 | M | A | 38 | 10/12/2019 | 12/2/2019 | 51 | 9 | 5.7 | QUE | SC | 2396 |
| VA-2019-22 | F | A | 55 | 11/29/2019 | 12/11/2019 | 12 | 5 | 2.4 | KY | AL | 761 |
| VA-2019-23 | F | A | 22 | 11/07/2019 | 11/11/2019 | 4 | 1 | 4.0 | VT | SC | 1367 |
| VA-2019-26 | M | A | 42 | 11/10/2019 | 11/10/2019 | NA | NA | NA | VA | GA | 787 |
| VA-2019-27 | M | A | 30 | 12/04/2019 | 12/25/2019 | 21 | 3 | 7.0 | VA | AL | 1084 |
| VA-2019-28 | M | Y | 41 | 12/04/2019 | 12/10/2019 | 6 | 1 | 6.0 | VA | VA | 665 |
| VA-2019-29 | F | Y | 41 | 11/30/2019 | 11/30/2019 | NA | NA | NA | VA | GA | 671 |
| VA-2019-30 | M | Y | 35 | 11/30/2019 | 12/26/2019 | 26 | 3 | 8.7 | VA | MS | 1383 |
| VA-2019-31 | F | A | 21 | 11/28/2019 | NA | 4 | 1 | 4.0 | VA | NA | 549 |
| VA-2019-32 | M | Y | 31 | 12/12/2019 | 12/12/2019 | NA | NA | NA | VA | GA | 568 |
| VA-2019-33 | F | A | 34 | 11/18/2019 | 11/18/2019 | NA | NA | NA | VA | SC | 467 |
| VA-2019-34 | F | Y | 34 | 12/06/2019 | 12/8/2019 | 2 | 1 | 2.0 | VA | NC | 414 |
| VA-2019-35 | F | Y | 33 | 12/04/2019 | 12/20/2019 | 16 | 4 | 4.0 | VA | AL | 1093 |
| VA-2019-36 | F | A | 34 | 11/12/2019 | 12/8/2019 | 26 | 4 | 6.5 | VA | GA | 944 |
| VA-2019-38 | F | A | 12 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-39 | M | Y | 24 | 12/12/2019 | 12/12/2019 | NA | NA | NA | VA | GA | 733 |
| VA-2019-40 | F | Y | 2 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-41 | F | A | 2 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-42 | F | Y | 21 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-43 | M | A | 23 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-44 | F | A | 3 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-45 | F | Y | 17 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-46 | F | A | 22 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-47 | F | Y | 20 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-48 | F | Y | 15 | 12/18/2019 | NA | 4 | 1 | 4.0 | VA | NA | 142 |
| VA-2019-49 | F | A | 24 | NA | NA | NA | NA | NA | VA | VA | NA |
| VA-2019-50 | F | Y | 26 | 12/10/2019 | 12/13/2019 | 3 | 1 | 3.0 | VA | GA | 909 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *West Virginia* | | | | | | | | | | | |
| WV-2019-01 | F | Y | 75 | 11/13/2019 | 12/1/2019 | 18 | 6 | 3.0 | WV | LA | 1628 |
| WV-2019-02 | M | Y | 15 | NA | NA | NA | NA | NA | WV | NA | NA |
| WV-2019-03 | M | A | 5 | NA | NA | NA | NA | NA | WV | NA | NA |
| WV-2019-04 | M | Y | 52 | 11/21/2019 | 11/21/2019 | NA | NA | NA | WV | SC | 528 |
| ***Spring 2020*** | | | | | | | | | | | |
| *Alabama* | | | | | | | | | | | |
| AL-2020-01 | M | Y | 23 | 03/03/2020 | 3/03/2020 | NA | NA | NA | AL | KY | 783 |
| AL-2020-02 | F | Y | 30 | NA | NA | NA | NA | NA | AL | NA | NA |
| AL-2020-03 | F | A | 105 | 03/08/2020 | 5/04/2020 | 57 | 12 | 4.8 | AL | MAN | 3361 |
| AL-2020-04 | M | A | 68 | 03/01/2020 | 3/08/2020 | 7 | 1 | 7.0 | AL | MI | 1297 |
| AL-2020-05 | M | A | 60 | 02/10/2020 | 3/29/2020 | 48 | 10 | 4.8 | AL | ONT | 2553 |
| AL-2020-06 | F | A | 33 | 03/01/2020 | NA | 11 | 2 | 5.5 | AL | NA | 801 |
| AL-2020-07 | F | Y | 111 | 03/08/2020 | 5/02/2020 | 55 | 8 | 6.9 | AL | ONT | 1960 |
| *Georgia* | | | | | | | | | | | |
| GA-2020-01 | F | A | 109 | 02/13/2020 | NA | 104 | 21 | 5.0 | GA | NA | 3454 |
| GA-2020-02 | F | A | 10 | NA | NA | NA | NA | NA | GA | NA | NA |
| GA-2020-03 | F | A | 52 | 03/11/2020 | NA | 17 | 3 | 5.7 | GA | NA | 1416 |
| GA-2020-04 | F | A | 106 | 03/03/2020 | 5/07/2020 | 65 | 7 | 9.3 | GA | QUE | 1755 |
| GA-2020-05 | F | Y | 111 | 03/13/2020 | 4/04/2020 | 22 | 7 | 3.1 | GA | NY | 2092 |
| GA-2020-06 | F | A | 56 | 03/20/2020 | NA | 8 | 5 | 1.6 | GA | NA | 1077 |
| GA-2020-07 | M | A | 62 | 02/23/2020 | 3/22/2020 | 28 | 9 | 3.1 | GA | ME | 1996 |
| GA-2020-08 | M | A | 66 | 03/04/2020 | 4/06/2020 | 33 | 5 | 6.6 | GA | NB | 2184 |
| GA-2020-09 | M | Y | 42 | 02/27/2020 | 4/16/2020 | 49 | 3 | 16.3 | GA | QUE | 1782 |
| GA-2020-10 | M | Y | 61 | 02/07/2020 | 4/06/2020 | 59 | 6 | 9.8 | GA | NY | 1669 |
| GA-2020-11 | M | A | 48 | 02/13/2020 | NA | 65 | 8 | 8.1 | GA | NA | 2283 |
| *Maryland* | | | | | | | | | | | |
| MD-2020-10 | M | A | 55 | 03/18/2020 | 4/16/2020 | 29 | 10 | 2.9 | MD | ME | 1596 |
| MD-2020-11 | M | A | 51 | 03/09/2020 | 3/31/2020 | 22 | 6 | 3.7 | MD | NS | 1253 |
| MD-2020-12 | M | A | 47 | 03/17/2020 | NA | 44 | 6 | 7.3 | MD | NA | 1285 |
| MD-2020-13 | F | Y | 24 | NA | NA | NA | NA | NA | MD | NA | NA |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Maryland* | | | | | | | | | | | |
| MD-2020-14 | F | Y | 57 | 03/09/2020 | NA | 49 | 9 | 5.4 | MD | NA | 1728 |
| MD-2020-15 | F | A | 84 | 03/16/2020 | 4/07/2020 | 22 | 7 | 3.1 | MD | QUE | 1353 |
| MD-2020-16 | F | Y | 67 | 03/11/2020 | NA | 52 | 9 | 5.8 | MD | NA | 1415 |
| MD-2020-17 | M | Y | 54 | 03/11/2020 | 4/04/2020 | 24 | 6 | 4.0 | MD | QUE | 1231 |
| *North Carolina* | | | | | | | | | | | |
| NC-2020-06 | M | Y | 60 | 03/09/2020 | 4/12/2020 | 34 | 6 | 5.7 | NC | NS | 1886 |
| NC-2020-07 | M | Y | 50 | 03/09/2020 | NA | 54 | 9 | 6.0 | NC | NA | 1899 |
| NC-2020-08 | F | A | 96 | 03/09/2020 | 3/19/2020 | 10 | 5 | 2.0 | NC | ME | 1255 |
| NC-2020-09 | F | Y | 78 | 03/12/2020 | 4/09/2020 | 28 | 8 | 3.5 | NC | ME | 1473 |
| NC-2020-10 | M | Y | 10 | NA | NA | NA | NA | NA | NC | NA | NA |
| NC-2020-11 | M | A | 50 | 03/18/2020 | 3/26/2020 | 8 | 3 | 2.7 | NC | ONT | 1051 |
| NC-2020-12 | M | Y | 48 | 03/06/2020 | 3/16/2020 | 10 | 2 | 5.0 | NC | NY | 702 |
| NC-2020-13 | M | Y | 56 | 03/12/2020 | 3/30/2020 | 18 | 4 | 4.5 | NC | NY | 1203 |
| NC-2020-14 | M | Y | 57 | 03/05/2020 | 4/06/2020 | 32 | 9 | 3.6 | NC | QUE | 2055 |
| NC-2020-15 | F | Y | 96 | 03/10/2020 | 3/22/2020 | 12 | 4 | 3.0 | NC | NY | 928 |
| NC-2020-16 | F | A | 93 | 03/18/2020 | 4/03/2020 | 16 | 6 | 2.7 | NC | ME | 1517 |
| NC-2020-17 | F | Y | 74 | 03/15/2020 | 4/20/2020 | 36 | 7 | 5.1 | NC | QUE | 1876 |
| NC-2020-18 | F | Y | 83 | 03/20/2020 | NA | 55 | 14 | 3.9 | NC | NA | 1998 |
| NC-2020-19 | F | A | 92 | 03/20/2020 | 4/16/2020 | 27 | 9 | 3.0 | NC | ME | 1525 |
| NC-2020-20 | M | Y | 62 | 04/05/2020 | 5/13/2020 | 38 | 11 | 3.5 | NC | QUE | 1806 |
| *New Jersey* | | | | | | | | | | | |
| NJ-2019-16 | M | Y | 23 | 02/12/2020 | NA | 56 | 7 | 8.0 | NJ | NA | 2217 |
| NJ-2019-18 | M | Y | 34 | 02/29/2020 | NA | 64 | 5 | 12.8 | NJ | NA | 2457 |
| NJ-2019-19 | M | Y | 11 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-22 | M | Y | 36 | 02/12/2020 | 3/09/2020 | 26 | 5 | 5.2 | NJ | CT | 1041 |
| NJ-2019-23 | F | Y | 17 | 02/26/2020 | NA | 2 | 1 | 2.0 | NJ | NA | 271 |
| NJ-2019-24 | F | Y | 92 | 03/10/2020 | 5/10/2020 | 61 | 12 | 5.1 | NJ | QUE | 2065 |
| NJ-2019-25 | F | Y | 80 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-26 | F | Y | 83 | NA | NA | NA | NA | NA | NJ | NA | NA |
| NJ-2019-28 | F | Y | 9 | NA | NA | NA | NA | NA | NJ | NA | NA |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *New Jersey* | | | | | | | | | | | |
| NJ-2019-29 | F | Y | 96 | 03/03/2020 | NA | 86 | 17 | 5.1 | NJ | NA | 2542 |
| *Nova Scotia* | | | | | | | | | | | |
| NS-2019-01 | M | Y | 10 | NA | NA | NA | NA | NA | NS | NA | NA |
| NS-2019-02 | F | Y | 17 | NA | NA | NA | NA | NA | NS | NA | NA |
| *New York* | | | | | | | | | | | |
| NY-2019-10 | F | A | 58 | 03/01/2020 | 3/27/2020 | 26 | 7 | 3.7 | NY | NY | 1533 |
| NY-2019-11 | F | Y | 15 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-12 | F | Y | 56 | 02/10/2020 | 4/15/2020 | 65 | 9 | 7.2 | NY | NY | 2375 |
| NY-2019-13 | F | A | 19 | 03/17/2020 | 4/16/2020 | 30 | 3 | 10.0 | NY | NY | 1413 |
| NY-2019-17 | F | Y | 2 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-19 | F | Y | 5 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-23 | F | A | 28 | 03/10/2020 | 3/10/2020 | NA | NA | NA | NY | OH | 875 |
| NY-2019-29 | F | Y | 12 | 03/22/2020 | NA | 10 | 2 | 5.0 | NY | NA | 1006 |
| NY-2019-30 | M | Y | 4 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-31 | F | A | 2 | NA | NA | NA | NA | NA | NY | NA | NA |
| NY-2019-32 | M | A | 4 | 02/03/2020 | NA | 1 | 1 | 1.0 | NY | NA | 128 |
| *Pennsylvania* | | | | | | | | | | | |
| PA-2019-13 | M | Y | 2 | NA | NA | NA | NA | NA | PA | NA | NA |
| PA-2019-15 | F | A | 33 | 02/12/2020 | 3/22/2020 | 39 | 7 | 5.6 | PA | PA | 1382 |
| *Quebec* | | | | | | | | | | | |
| QUE-2019-08 | M | Y | 21 | 03/06/2020 | 5/11/2020 | 66 | 4 | 16.5 | QUE | QUE | 1956 |
| QUE-2019-11 | F | Y | 57 | 03/10/2020 | 5/02/2020 | 53 | 12 | 4.4 | QUE | QUE | 2710 |
| QUE-2019-12 | F | A | 32 | 02/14/2020 | NA | 69 | 4 | 17.3 | QUE | NA | 1053 |
| QUE-2019-13 | M | Y | 6 | 03/01/2020 | NA | 11 | 2 | 5.5 | QUE | NA | 534 |
| Rhode Island | | | | | | | | | | | |
| RI-2019-18 | M | A | 16 | 03/13/2020 | NA | 21 | 2 | 10.5 | RI | NA | 1032 |
| RI-2019-21 | M | A | 24 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2019-22 | M | A | 22 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2019-23 | M | A | 13 | 02/11/2020 | 2/11/2020 | NA | NA | NA | RI | RI | 695 |
| RI-2019-24 | M | A | 6 | 02/15/2020 | NA | 2 | 2 | 1.0 | RI | NA | 157 |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Rhode Island* | | | | | | | | | | | |
| RI-2019-25 | F | A | 51 | 02/12/2020 | 4/13/2020 | 61 | 7 | 8.7 | RI | RI | 1641 |
| RI-2019-26 | M | A | 5 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2019-28 | M | A | 16 | NA | NA | NA | NA | NA | RI | NA | NA |
| RI-2019-29 | M | A | 15 | 02/10/2020 | 2/11/2020 | 1 | 1 | 1.0 | RI | RI | 188 |
| *South Carolina* | | | | | | | | | | | |
| SC-2020-10 | M | Y | 54 | 03/08/2020 | NA | 76 | 14 | 5.4 | SC | NA | 1998 |
| SC-2020-11 | F | A | 27 | 03/12/2020 | NA | 18 | 3 | 6.0 | SC | NA | 366 |
| SC-2020-12 | F | Y | 89 | 03/04/2020 | 5/04/2020 | 61 | 11 | 5.5 | SC | QUE | 2310 |
| SC-2020-13 | M | Y | 45 | 03/12/2020 | 4/16/2020 | 35 | 5 | 7.0 | SC | ME | 1883 |
| SC-2020-14 | M | A | 57 | 04/04/2020 | 5/06/2020 | 32 | 3 | 10.7 | SC | QUE | 1799 |
| SC-2020-15 | M | A | 39 | 04/05/2020 | NA | 9 | 2 | 4.5 | SC | NA | 593 |
| SC-2020-16 | F | Y | 90 | 04/05/2020 | 5/15/2020 | 40 | 16 | 2.5 | SC | QUE | 2066 |
| SC-2020-17 | M | A | 42 | 03/16/2020 | 4/02/2020 | 17 | 3 | 5.7 | SC | NY | 1300 |
| *Virginia* | | | | | | | | | | | |
| VA-2019-22 | F | A | 1 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2019-26 | M | A | 22 | 03/12/2020 | 3/12/2020 | NA | NA | NA | VA | VA | 769 |
| VA-2019-27 | M | A | 24 | 03/01/2020 | NA | 39 | 2 | 19.5 | VA | NA | 1280 |
| VA-2019-28 | M | Y | 7 | 02/11/2020 | NA | 24 | 3 | 8.0 | VA | NA | 263 |
| VA-2019-29 | F | Y | 34 | 03/12/2020 | NA | 63 | 10 | 6.3 | VA | NA | 2081 |
| VA-2019-30 | M | Y | 9 | 02/20/2020 | 3/01/2020 | 10 | 2 | 5.0 | VA | VA | 1013 |
| VA-2019-33 | F | A | 49 | 03/12/2020 | 3/15/2020 | 3 | 1 | 3.0 | VA | VA | 487 |
| VA-2019-34 | F | Y | 56 | 03/01/2020 | 3/10/2020 | 9 | 4 | 2.3 | VA | IL | 1227 |
| VA-2019-35 | F | Y | 13 | 03/01/2020 | NA | 7 | 2 | 3.5 | VA | NA | 582 |
| VA-2019-36 | F | A | 53 | 03/26/2020 | 4/08/2020 | 13 | 4 | 3.3 | VA | NB | 2342 |
| VA-2019-39 | M | Y | 9 | 02/11/2020 | 3/01/2020 | 19 | 2 | 9.5 | VA | VA | 673 |
| VA-2019-43 | M | A | 31 | 03/05/2020 | 4/27/2020 | 53 | 10 | 5.3 | VA | QUE | 2610 |
| VA-2019-45 | F | Y | 28 | 03/16/2020 | NA | 42 | 8 | 5.3 | VA | NA | 1536 |
| VA-2019-46 | F | A | 50 | 03/28/2020 | NA | 56 | 7 | 8.0 | VA | NA | 1582 |
| VA-2019-47 | F | Y | 55 | 03/07/2020 | NA | 89 | 10 | 8.9 | VA | NA | 1851 |
| VA-2019-48 | F | Y | 3 | NA | NA | NA | NA | NA | VA | NA | NA |

| Bird ID | Sex[a] | Age[b] | No. Loc.[c] | Initiation Date[d] | Termination Date[e] | Days Migr[f] | No. Stop[g] | Days Per Stop[h] | Site of Capture[i] | Site of Residency[j] | Distance Migrated[k] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Virginia* | | | | | | | | | | | |
| VA-2019-49 | F | A | 32 | 03/12/2020 | 4/14/2020 | 33 | 3 | 11.0 | VA | NB | 1596 |
| VA-2019-50 | F | Y | 19 | 03/05/2020 | NA | 41 | 4 | 10.3 | VA | NA | 2126 |
| VA-2020-51 | M | Y | 24 | 03/18/2020 | NA | 52 | 10 | 5.2 | VA | NA | 2176 |
| VA-2020-52 | M | Y | 31 | 03/05/2020 | 4/08/2020 | 34 | 1 | 34.0 | VA | NH | 896 |
| VA-2020-55 | F | A | 36 | 03/30/2020 | 5/09/2020 | 40 | 9 | 4.4 | VA | QUE | 1527 |
| VA-2020-56 | M | Y | 6 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2020-57 | M | Y | 23 | 05/04/2020 | 5/04/2020 | NA | NA | NA | VA | QUE | 1155 |
| VA-2020-58 | M | Y | 18 | NA | NA | NA | NA | NA | VA | NA | NA |
| VA-2020-59 | F | A | 3 | NA | NA | NA | NA | NA | VA | NA | NA |