

# **MULTIPLE DIMENSIONS OF PASSERINE MORNING FLIGHT IN CENTRAL NEW YORK STATE: SPECIES, NUMBERS, DIRECTION, AND ALTITUDE**

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This is a recap of 2020 fall migration morning flight observations of passerines made from an inland site in the Town of Danby, southern Tompkins County, central New York State (lat: 42.34324, long: -76.50394). Beginning 6 Aug, I sampled migratory flight activity for at least a short period each morning, logging as best I could numbers, flight direction, general altitude, and behavior characteristics for each species. The count site is about eight miles directly south of the south end of Cayuga Lake, on the weathered south-southeastern rim of the Lake Ontario Basin. At 488 m above sea level, it also is a point along the zig-zag northern reaches of the Appalachian-Allegheny Plateau. With a nearly unobstructed view to the northwest, north, and northeast, one looks out northward across a hayfield and patchy forested landscape, terrain that generally descends in altitude for about 100 km to Lake Ontario.

As I begin this write-up it is 18 Dec, a few days before the start of winter and a day after a major snowstorm has blanketed much of northeastern U.S. The count site received 38 cm of snow, with 76 cm in Tioga County (16 km to the south) and 101 cm in Broome County (55 km to the southeast). The snow is too deep for me to walk to the count site, so I drive. Normally I would park off the side of the road, but in order to do so this morning I first need to shovel out a space in the dense wall of snow created by the plow. The few people who drive by regularly have seen me scanning with binoculars from the site each morning for four months. Perhaps then I was just a curiosity; now I imagine they see a madman vigorously shoveling snow on the edge of a field. The urgency and excitement this morning is driven by possibility: will the Red Crossbills that have occupied pinecone-laden eastern NY in the great finch irruption of 2020 pick up camp and move out now that part of their food supply (cones on the ground) is suddenly buried under snow? Will the curious westward pulse of Purple Finches that has occurred over the past two weeks continue, now more than a month after the main wave passed? How long will the Cedar Waxwing flight persist? Will any Pine Grosbeaks or Bohemian Waxwings drift south? I am in a ready state of mind where the next bird I see may be the leading edge of a continental movement.

This year's regular daily count was possible because my family and I have been largely homebound during the Covid-19 pandemic. The count was not intended to be precisely consistent regarding the start time relative to sunrise or in the length of time surveyed. I generally aimed to be at the watch site in the 15 minutes before sunrise and count for at least 30 minutes. If steady morning flight

continued, I stayed until it had diminished, usually less than two hours; for exceptional flight mornings I stayed longer. On average over the 133 days of the survey reported here, I counted just under 1.5 hours per morning, and the starting time was within 15 minutes of local sunrise on all but eleven mornings. Figure 1 shows how my count period varied in length during the season.

I approached the count with a preliminary goal of establishing a baseline for flight activity of common migrant species like Cedar Waxwing and American Robin. I used a pair of Celestron NatureDX 8x42s, preferring a relatively wide field of view for helping quickly find birds passing over in the sky and for estimating the number of individuals in flocks.

The following are season accounts for selected passerine species for which I logged at least 20 individuals. Each species summary includes a graph showing the weekly rate of passage, with the number of the species counted during the week divided by the number of hours surveyed during the week. In the narrative for each species, flight altitude is reported as distance above ground level at the count site. Information on other species and more details regarding this count are available by accessing the “Cayuga South” migration count site at [www.trektellen.nl](http://www.trektellen.nl)

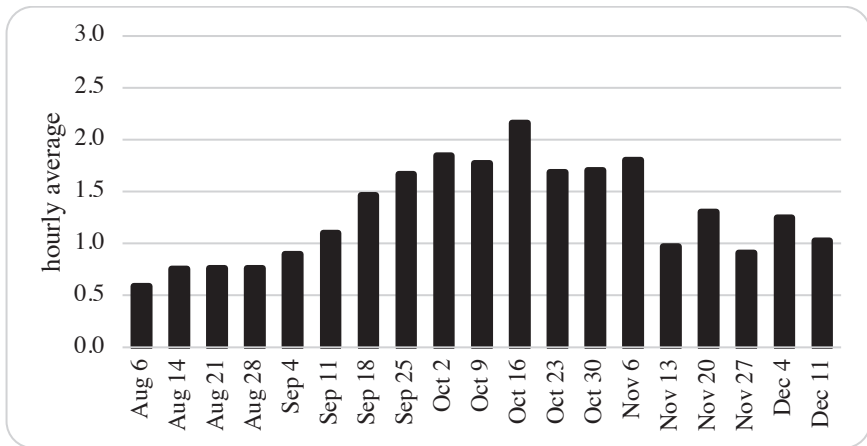


Figure 1. Average coverage per morning (total = 171 hours) at a Danby, Tompkins, NY, morning flight site, by count week, 6 Aug-17 Dec 2020.

**Northern Flicker** The flight was characterized by a slow onset to the peak week of the season, which began 2 Oct. Regular morning flight activity occurred between mid-September and mid-October and 80% of the flight occurred in the two weeks from 22 Sep to 6 Oct. The largest morning total was 12 on 3 Oct and the largest group passing together was three. Flickers often appeared from the east and headed west to northwest. Flight altitude was less than 40 m and the range of detection was up to 500 m to the north and northwest.

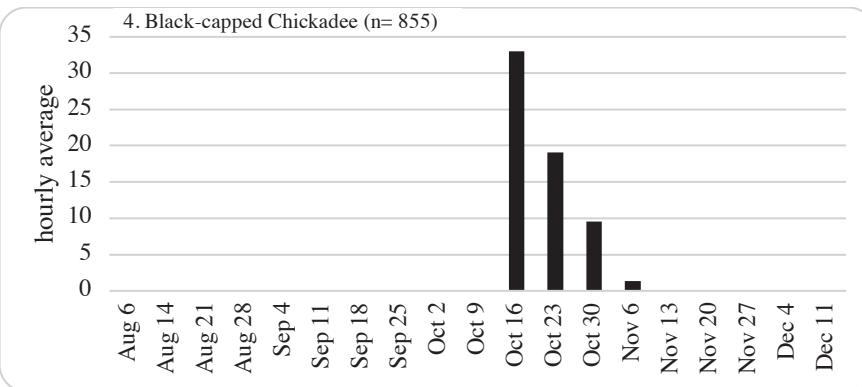
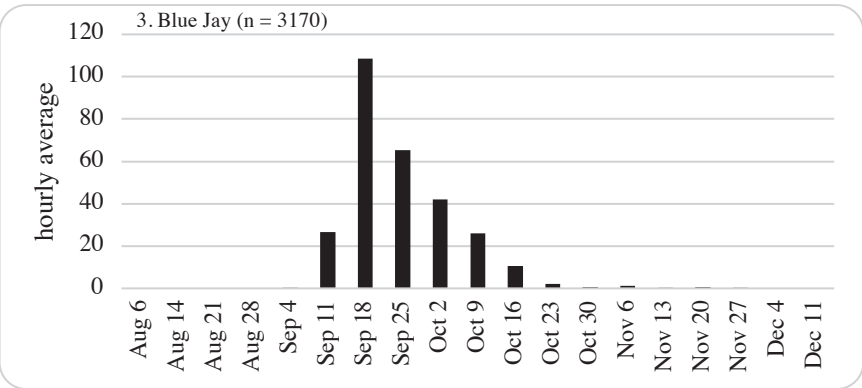
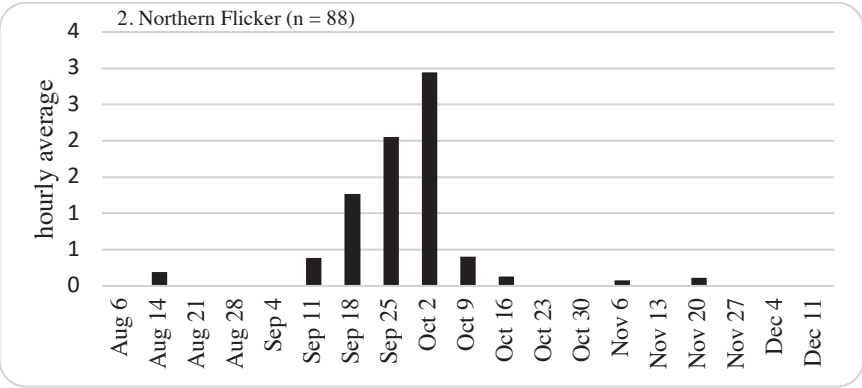
**Blue Jay** The flight was characterized by a sudden onset to peak flight density. Their movement got going in the week of 11 Sep and the peak flight occurred the next week (18-24 Sep). The bulk (92%) of the flight occurred over 30 days 15 Sep through 14 Oct, with 72% in the 17-day period 18 Sep-4 Oct. The largest flight morning was 18 Sep with 288 in 1.5 hours. That day also had the largest flock of the season, 58. Flight direction was predominantly toward the south or southwest. Later in the morning count period, a regular stream of singles (never flocks) often was seen flying eastward. In many cases these birds had what appeared to be acorns in their mouths. Since this seemed like a flight associated with feeding and not migration, these birds were not tallied in the count.

Jays migrated every morning during the peak flight period regardless of wind direction, even into strong southerly headwinds. In the latter cases, flight altitude would be low, with largish flocks passing just 3-12 m over the watch site. On mornings with northerly winds, flight altitude could be surprisingly high with a few flocks estimated to be passing at least 150 m overhead. In general, they passed at less than 60 m.

Most jays were counted as they passed from left to right over the swale or ridge to the north. Because of the Blue Jay's distinctive individual manner of flight and flock spacing, individuals could be detected and counted out to ~550 m to the north and northwest.

**Black-capped Chickadee** Chickadee migration was an unexpected phenomenon at the count site. A few small local flocks had been present in the woods nearby, with no more than eight typically noted in a morning through 18 Oct. But an increase in activity was noticed 19 Oct. It became apparent that chickadee flocks were moving southward toward the count site along the forest edge to the north, then turning and following the edge's bend to the southwest and crossing the road right behind the watch site. This species' flight, which occurred largely on six mornings during the brief period 19 Oct-6 Nov, is described in daily detail here. On 19 Oct three noisy flocks of 10, 18, and 11 crossed the road in 1.7 hours of counting. On 20 Oct, flocks of 12 and 31 passed in about two hours of counting. Then on 21 Oct, 34 flocks totaling 417 individuals passed in 4.7 hours, one flock having 53 individuals. There was another sizeable movement of 156 on 25 Oct and a combined pulse of 114 on the mornings of 2 and 3 Nov. The last apparent migrants were noted 6 Nov.

The Black-capped Chickadee movement spanned about three weeks, characterized by a sudden onset to peak passage rate. The direction of flight was predominantly toward the southwest. Flocks streamed through the forest at treetop level or through the mid-story, most crossing the road at 3-12 m. Counting was performed without binoculars within 30 m of the crossing location. Wind direction did not seem to play a role in whether migration occurred—in the largest flight morning flocks were pressing forward into a moderately strong southerly headwind.



Figures 2-4. Hourly passages of Northern Flicker, Blue Jay, and Black-capped Chickadee at a Danby, *Tompkins*, NY morning flight site, by count week, 6 Aug-17 Dec 2020.

**Nuthatches** Both species were regularly present in the woods nearby, but the appearance in mid-August of Red-breasted, and in mid-September of White-breasted, well above the trees in southbound flight left no doubt migration was occurring. White-breasted migration was first noted about a month later than that of Red-breasted and was more prevalent later in the season.

Red-breasted was observed as singles and groups up to three, usually in southbound migration less than 60 m high, but occasionally moving northwesterly. In one instance, three individuals took off together from trees just north of the count site. They circled up quite high, until only visible with binoculars, then headed straight northwest. White-breasted was observed as singles or pairs, often quite high (up to ~60 m), but always in straight southbound migration. Both species were only detected in morning flight in light wind conditions.

**American Robin** This was the most abundant species and had two distinct seasonal peaks of morning flight activity. There was a small pulse in the latter two weeks of August and a larger more protracted pulse that built during the month of October, peaking in the last week, and then diminished through November.

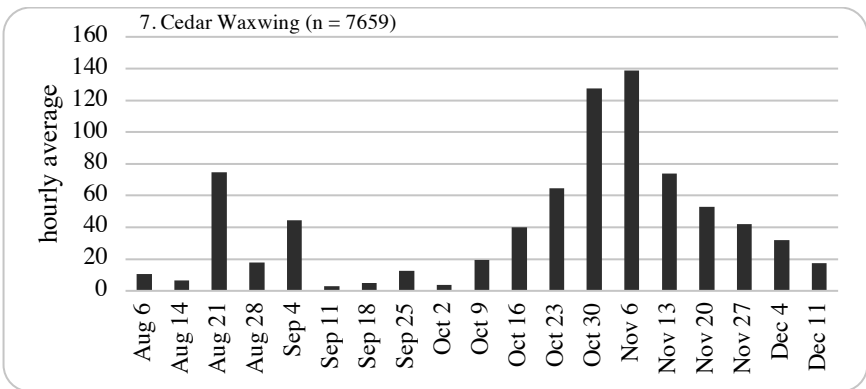
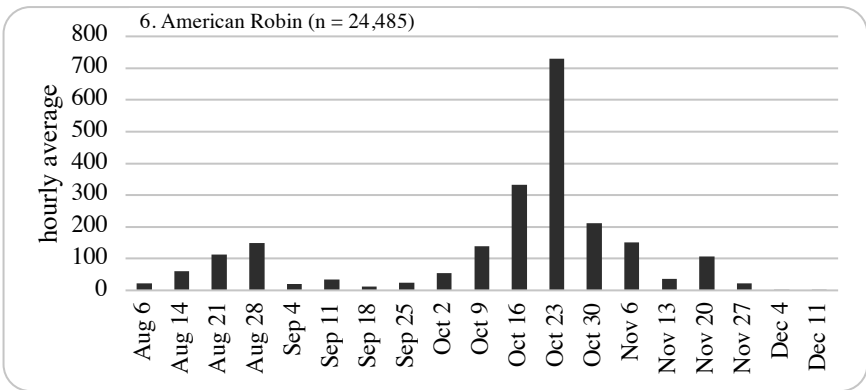
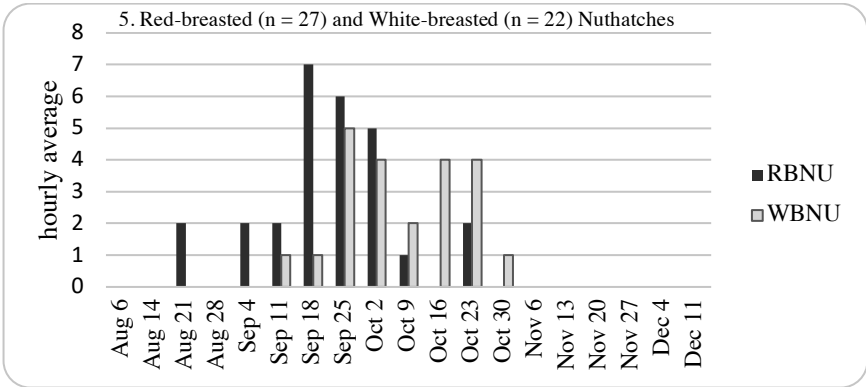
The largest flight documented in the first peak was 260 on 26 Aug. The largest flight documented in the second peak was 2370 on 26 Oct, and 59% of the season's total occurred 16 Oct-1 Nov. The largest flock size of the season was around 300 on multiple occasions, but during the peak flight mornings flocks streamed past closely following one another almost in a continuous stream. Flight direction was predominantly toward the west (+/- 10 degrees), but there were also substantial flights toward southeast and south.

Robins seemed to move every morning during the peak periods, regardless of wind direction, even with strong westerly headwinds and snow. Altitude was highly variable, but largely below 60 m. In November during northerly winds, large flocks of robins appeared from the north in high (150+ m) southbound flight.

Robins were counted as they passed from left to right over the swale or ridge to the north. They also regularly arrived from due east and flew over the count site heading directly west. Their often-distinctive flight pattern and loose flock association enabled counting out to ~500 m to the north and northwest. During high density flights, counting was made by estimating blocks of 10 or 50 birds.

**Cedar Waxwing** This species had two peaks in flight activity—a small pulse in the two-week period from 21 Aug–4 Sep and a larger more protracted pulse from 9 Oct to early December. The largest flight documented in the first peak was 210 on 31 Aug. The largest flight documented in the second peak was 545 on 7 Nov. The largest flock size of the season was around 35 on multiple occasions. Flight direction was predominantly toward the west.

Cedar Waxwings seemed to be migrating every morning during the peak flight periods regardless of wind direction, even with strong westerly headwinds and snow. Flight altitude was mostly below 60 m.



Figures 5-7. Hourly passages of Red-breasted and White-breasted Nuthatches, American Robin, and Cedar Waxwing at a Danby, *Tompkins*, NY morning flight site, by count week, 6 Aug-17 Dec 2020.

Waxwings were counted as they passed from left to right over the swale and ridge to the north. They also regularly arrived from due east and flew over the count site heading directly west. Their often-distinctive tight flock formation enabled counting out to ~500 m to the north and northwest, but the constantly shifting individual positions made precise counting difficult. Count totals for mid-to-large flocks were estimated to the nearest five.

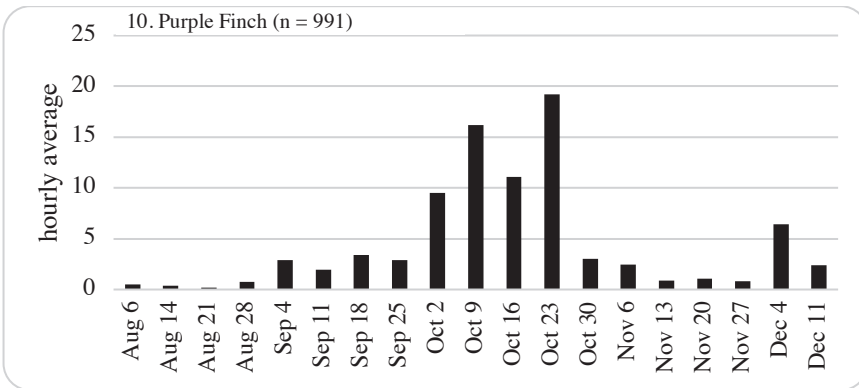
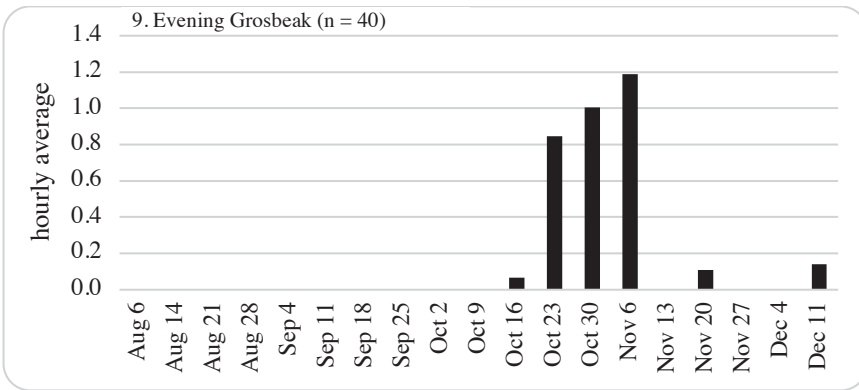
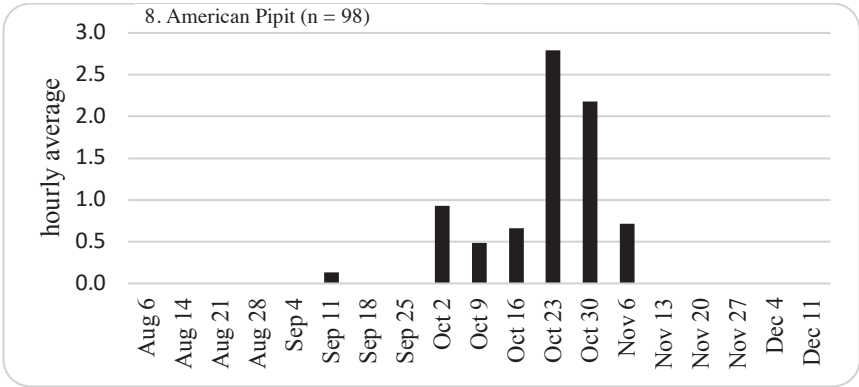
**American Pipit** Pipits were observed passing regularly in small numbers from October through mid-November, with a peak in the last week of October and first week of November. The highest morning total was 16 on 25 Oct. Their direction of flight was toward the south and altitude of flight at least up to 60 m. In many cases, calls were heard overhead but the birds could not be located. Pipits were not counted unless calls helped confirm ID and numbers. The range of detection was less than 120 m. Many distant birds suspected of being pipits were recorded as passerine sp.

**Evening Grosbeak** 95% of the season's observations occurred on 12 mornings from 22 Oct through 10 Nov. Most were singles; the largest flock was six. Many singles were heard-only and their direction of flight was variable or undetermined. The most common direction of flight seemed to be toward the west or northwest.

**Purple Finch** This species breeds in small numbers in the vicinity of the count site, and these are likely the source of occasional flyovers documented throughout August. Morning flight activity was greater in September than August, suggesting migration was underway, and the peak flight of the season occurred throughout October. The species was a relatively scarce flyover during November, but there was a distinct increase of morning flight activity in the first half of December.

During the main flight in October, birds arrived primarily from the northeast, heading southwest. The late flight in December was nearly all moving straight west. The peak flight period was difficult to determine because countability varied a lot with wind direction and sky cover. With tail winds, birds often passed over up to at least 60 m and could be difficult to locate—calls were heard but nothing seen, so only one individual was often logged in cases when there were likely small flocks passing over. Also, cloud cover made for easier counting than blue sky. The peak flight morning, 151 in 2.6 hrs. on 23 Oct, occurred as Purple Finches were flying into a moderately strong southerly headwind with a cloudy background. They were passing relatively low, mostly less than 30 m, and were relatively easy to find in the sky and count. The day prior (22 Oct), 80 were counted in 2.4 hrs. but there was a north wind and mostly clear sky—birds were flying high and difficult to find. The total likely would have been substantially higher on the 22<sup>nd</sup> if counting conditions had been better. The largest flock size during the season was 14.

Individuals counted in the study were largely detected and identified by call as they passed within 150 m of the count site. Many distant or silent birds were



Figures 8-10. Hourly passages of American Pipit, Evening Grosbeak, and Purple Finch at a Danby, *Tompkins*, NY morning flight site, by count week, 6 Aug-17 Dec 2020.



recorded as finch sp. or passerine sp., but confidence in counting unheard, seen-only Purple Finches passing at a distance increased during the season as familiarity improved with their relatively chunky, short-tailed silhouette and often loosely spaced positions of individuals in flocks.

**Common Redpoll** The redpoll flight started with a few singles in the first week of November (4 and 7 Nov), then five separate flocks totaling 79 on 8 Nov. 55% (145) of the season's total of 265 occurred over three consecutive mornings from 8-10 Nov. Nearly all flocks arrived from the east and headed straight west. Wandering singles first thing in the morning moved in all directions. The largest flock size of the season was 20 and flight altitude of passing redpolls was below 60 m.

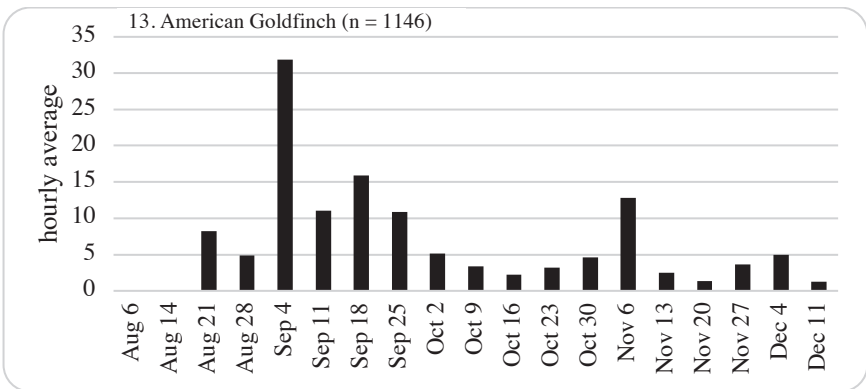
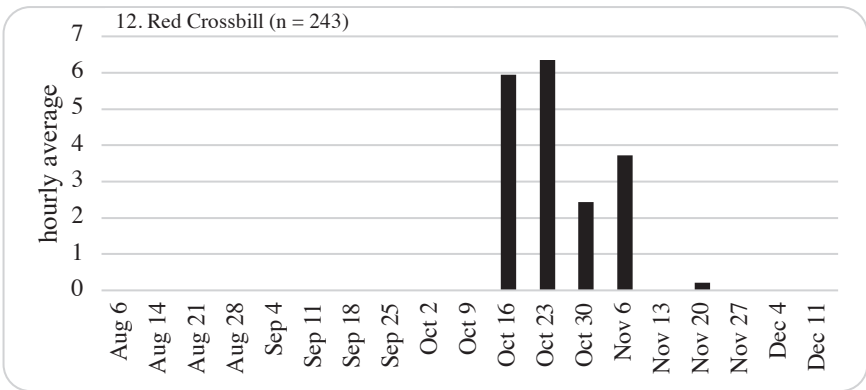
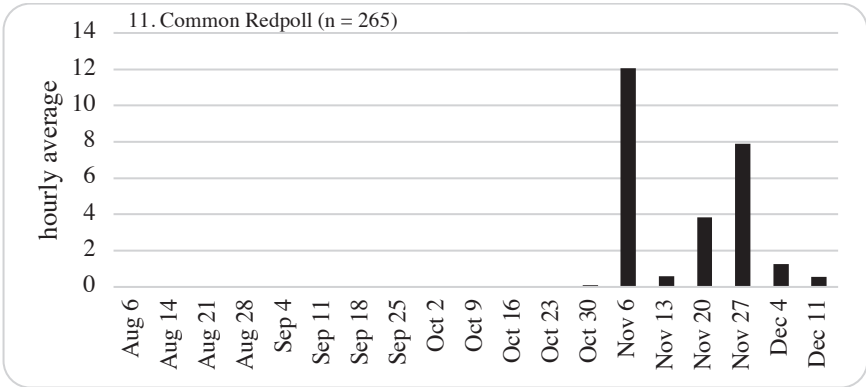
**Red Crossbill** The Red Crossbill flight began 20 Oct with a flock of 14, then on the 22<sup>nd</sup> and 23<sup>rd</sup> eight independent flocks passed over, estimated with 123 individuals in total (largest flock size ~45). During the first two weeks of November passage continued in lower numbers, and after that there were only a few individual flyovers. 87% were headed straight west. Some of the flocks passed over surprisingly high above the count site, the highest at least 60 m. Most of the type-determined birds were the eastern Type-10 population. Several early flocks were of undetermined type. The only southbound flock noted was of 16 birds that sounded like Type-3. A few Type-3 calls were also recorded within a different mixed-type flock and spectrographically verified by Matt Young. Type-2 birds were in the area but were not heard at the count site.

**American Goldfinch** This species commonly breeds and winters near the count site, and local flight activity can contaminate migration counts. Generally, local goldfinches can be recognized by flight call types and by flock size, behavior, and direction, but there is likely some local clutter in the migration data reported here.

Southbound migration activity took shape in the first week of September and continued through the month. There was a lull in migratory flight activity through October followed by a small peak in the first two weeks of November. The last small flocks of migrants were noted on 6 Dec. The largest flock size of the season was 18. Flight direction was more than 85% straight south and flight altitude appeared to be less than 60 m.

American Goldfinch was the most challenging species to find in the sky over the count site, and the season total is certainly a substantial underestimate. Calls were often heard overhead but no birds seen, defaulting to a minimum estimate of one.

**Pine Siskin** This species was first detected 21 Sep, and morning flight activity increased steadily to the peak period, 6-12 Oct, when 63% of the season total passed over. The magnitude of the flight diminished rapidly after the peak and



Figures 11-13. Hourly passages of Common Redpoll, Red Crossbill, and American Goldfinch at a Danby, *Tompkins*, NY morning flight site, by count week, 6 Aug-17 Dec 2020.

persisted at a low level through mid-November, with just an occasional single after that. The largest flock size of the season was ~40.

More than 95% of the flocks moved past the count site from west to east less than 50 m high. Wandering singles first thing in the morning moved in all directions.

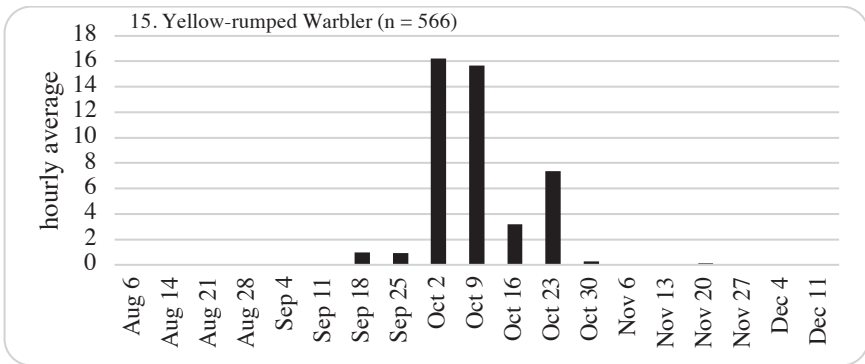
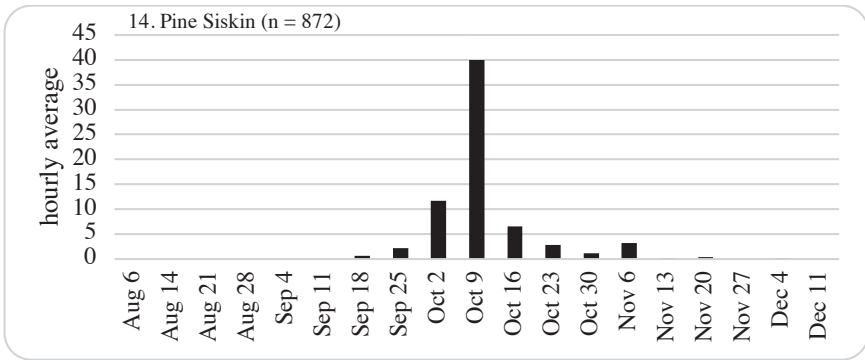
**Yellow-rumped Warbler** This species was first detected 24 Sep and 32% of the season total passed in three mornings (2-4 Oct). Flight direction was toward the south and flight altitude was largely below 60 m. Yellow-rumped were not counted unless calls helped confirm ID of an individual or a flock. The range of detection was less than 120 m and many distant birds suspected of being Yellow-rumped ended up classified as passerine sp.

## DISCUSSION

The more one counts, the more one understands the flight dynamics of the site, and that in turn affects one's count method: where in the sky and on which species one allocates attention. Initially, my "absorbing concern" was counting Cedar Waxwings and American Robins. When I realized nuthatches were on the wing, my search routine changed a bit—each distant small passerine now needed to be evaluated. When I realized a major boreal finch irruption was underway, that expanded my scope and supercharged my attention. When I noticed a stream of chickadee flocks crossing behind the watch site, I adjusted to listen for flocks approaching from the east. As I heard them approaching, I would step out into the road and look south to count them as they crossed, reducing attention to potential robin and waxwing passage to the north. The chickadee movement now took top priority because of its novelty, yet when a crossbill flock was heard approaching, there was no hesitation in breaking off from counting chickadees. Both were equally high priority, but crossbills were more fleeting, typically passing by in less than 15 seconds; if I wanted to get a number, I had to see the flock.

There were mornings in late October and early November when the attention demands of different components of the flight were overwhelming to the point where precision in counting some species was reduced—the robin and waxwing flight was in peak passage to the north, seven species of finches were arriving from three different directions, nuthatches were trickling by overhead, and chickadees streaming past behind me. All the while I was thinking I must keep watch for early Common Loons passing overhead or to either side.

Bird counts are potential protein for conservation efforts. In this regard, one strives in counting to be a robot, minimizing variables that might affect accuracy and consistency. If I am fortunate enough to be able to count another fall, I will bring a more evolved counting protocol gained from this year's sojourn. It would be an improved count, so this would need to be considered when comparing the numbers with this year. But the relative species composition, migration peaks, and direction of flight should stand up well for future comparison.



Figures 14-15. Hourly passages of Pine Siskin and Yellow-rumped Warbler at a Danby, *Tompkins*, NY morning flight site, by count week, 6 Aug-17 Dec 2020.

There are more than 1000 morning flight count sites in Europe while perhaps only a few dozen in North America, several of which are conducted on the ocean coast of Long Island (S. Mitra, pers. comm.). But morning flight occurs everywhere in New York State. If you can view of the landscape from a site close to your home and can carve out an hour first thing in the morning during any portion of the migration periods, you can tune in to the flow and start laying a record for intra- and inter-station comparison. Indeed, there is elegance and economy in morning flight data; it is a powerful independent index for certain bird populations, and even short surveys can sample a relatively large number of birds. Of course, there is also an intangible element that may lead one to watch or count morning flight... for pure wonder and enjoyment, and accordingly for tapping into the marvelous ether of our ancient relationship with birds and their migrations.

As I conclude this report it is mid-January. Morning flight has diminished at my count site except for occasional southward pulses of Canada and Snow Geese, and an ongoing enigmatic westward flow of small flocks of Cedar Waxwings and Purple Finches.