

Dans Rock Fall Migration Count: 2023 Season Report

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Abstract: The second season of the fall migration count at Dans Rock was held from 1 August to 30 November 2023. The count provided valuable data on the phenology and diversity of bird migration and how weather impacts movement at this location in the Appalachian Mountains. The impact of this season's data is magnified by comparison to counts conducted using the same protocol at similar latitudes on the head of the Chesapeake Bay and on the New Jersey coast, as well as with count data collected at this location last year. The 2023 count recorded 43,066 birds of 125 species in southbound migration. This year's warbler flights were larger than last year, but the absence of large flocks of blackbirds and waxwings moving in late November resulted in a lower overall total for the 2023 count.

Fall 2023 marked the second consecutive season of the Maryland Biodiversity Project's (MBP) fall migration count at Dans Rock Overlook in western Maryland. Located on the Allegheny Front at 883 m (2,898 ft) above sea level (Maryland Geological Survey 2024), Dans Rock offers a prime viewing location to observe birds migrating along the ridgeline. Long known for its hawkwatching potential, last year's count established that Dans Rock also sees concentrated passerine migration (Engstrom 2023). As the first non-coastal flight count in the Mid-Atlantic region and the first in the Appalachians, a second year furthered the understanding of bird migration in the mountains. Dans Rock was one of three similar counts this year in the Mid-Atlantic region, with one at the head of the Chesapeake Bay at Turkey Point, Maryland (Reb and Irons 2024), and the other along the Atlantic coast in Cape May, New Jersey, both of which provided additional levels of comparison. Like last season, the goal of the 2023 Dans Rock Fall Migration Count was to document all birds in active migration moving past Dans Rock.

METHODS

Methods were consistent with those outlined in the Dans Rock Fall Migration Count: 2022 Season Report (Engstrom 2023). The count was held every morning from 1 August to 30 November 2023, except for a single day in late November when snowy roads prohibited access to the overlook. Birds were counted starting 15 minutes before sunrise and for at least three hours after sunrise, continuing until morning flight activity subsided as determined by the counter. The count was delayed or suspended in periods of heavy precipitation that prevented bird movement. The species, or lowest level taxonomic unit, and

flight direction was recorded for each bird that moved past the overlook. The cloud cover, wind speed and direction, and weather conditions were recorded at the start and end of each count. The number of visitors interacting with the counter each day was also noted at the end of the count. Data were collected using the Dutch software Trektellen (Trektellen 2024f), which allowed for live postings of sightings on the Maryland Biodiversity Project’s count page (Maryland Biodiversity Project 2023). Observations were also entered into the Cornell Lab of Ornithology’s eBird database (eBird 2024a). Alternative counters ran the count on the lead counter’s days off. All alternative counters had years of experience identifying birds and either had previous experience conducting flight counts or were trained in count protocols by the lead counter.

RESULTS

Between 1 August and 30 November 2023, the Dans Rock Fall Migration Count recorded 43,046 birds of 126 species and 9 other taxonomic levels (e.g., warbler sp.) (Table 1). The count was active on 121 of the 122 days in that period, logging 404 observation hours. August recorded the fewest individuals, with 5,691 birds tallied. September tallied 10,355 individuals. October saw the most movement of any month, with 16,214 birds counted. November had just slightly more birds than September, with 10,786 counted. Species totals for each month were 75 in August, 81 in September, 78 in October, and 49 in November. Below the table is a narrative summary of each month featuring highlights, notable counts, and weather conditions.

Table 1. 2023 Bird Count Data at Dans Rock, Allegany County, Maryland.

Species	AUG	SEP	OCT	NOV	Total	Max Count	First Obs.	Last Obs.
Canada Goose	0	5	5	18	28	18 (19 Nov)	18-Sep	19-Nov
Tundra Swan	0	0	0	64	64	64 (26 Nov)	26-Nov	26-Nov
American Black Duck duck sp.	0	0	3	0	3	3 (22 Oct)	22-Oct	22-Oct
Rock Pigeon	33	20	0	0	53	18 (1 Sep)	2-Aug	16-Sep
Mourning Dove	14	4	10	8	36	6 (30 Oct)	9-Aug	12-Nov
Yellow-billed Cuckoo	0	0	1	0	1	1 (12 Oct)	12-Oct	12-Oct
Common Nighthawk	3	1	0	0	4	3 (30 Aug)	30-Aug	1-Sep
Chimney Swift	281	247	30	0	558	96 (12 Aug)	2-Aug	3-Oct
Ruby-throated Hummingbird	88	75	0	0	163	21 (4 Sep)	3-Aug	25-Sep
Killdeer	0	0	1	0	1	1 (13 Oct)	13-Oct	13-Oct
Upland Sandpiper	0	1	0	0	1	1 (27 Sep)	27-Sep	27-Sep
Lesser Yellowlegs	0	1	0	0	1	1 (12 Sep)	12-Sep	12-Sep
Great Blue Heron	0	0	1	0	1	1 (13 Oct)	13-Oct	13-Oct
Black Vulture	2	9	7	1	19	9 (13 Sep)	13-Aug	18-Nov
Turkey Vulture	3	0	146	237	386	73 (7 Nov)	13-Aug	25-Nov
Osprey	1	0	2	0	3	2 (7 Oct)	18-Aug	7-Oct
Golden Eagle	0	0	0	8	8	4 (25 Nov)	9-Nov	27-Nov
Northern Harrier	2	1	1	3	7	1 (15 Aug)	15-Aug	29-Nov
Sharp-shinned Hawk	3	17	29	4	53	10 (28 Sep)	11-Aug	12-Nov
Cooper’s Hawk	1	18	10	0	29	11 (28 Sep)	15-Aug	22-Oct
Bald Eagle	1	12	6	7	26	5 (28 Sep)	31-Aug	18-Nov

Species	AUG	SEP	OCT	NOV	Total	Max Count	First Obs.	Last Obs.
Red-shouldered Hawk	0	0	1	1	2	1 (13 Oct)	13-Oct	20-Nov
Broad-winged Hawk	18	450	0	0	468	279 (14 Sep)	2-Aug	28-Sep
Red-tailed Hawk	3	12	11	11	37	8 (28 Sep)	13-Aug	27-Nov
Red-headed Woodpecker	0	2	1	0	3	1 (12 Sep)	12-Sep	3-Oct
Red-bellied Woodpecker	0	3	2	3	8	2 (5 Nov)	21-Sep	15-Nov
Yellow-bellied Sapsucker	0	0	3	1	4	2 (3 Oct)	3-Oct	17-Nov
Downy Woodpecker	6	6	5	2	19	2 (2 Aug)	1-Aug	30-Nov
Hairy Woodpecker	2	10	20	9	41	2 (13 Sep)	2-Aug	24-Nov
Northern Flicker	0	4	15	1	20	5 (1 Oct)	12-Sep	19-Nov
Pileated Woodpecker	0	0	0	2	2	1 (6 Nov)	6-Nov	17-Nov
American Kestrel	4	0	2	0	6	2 (13 Aug)	13-Aug	7-Oct
Merlin	0	0	0	1	1	1 (7 Nov)	7-Nov	7-Nov
Peregrine Falcon	0	0	1	0	1	1 (15 Oct)	15-Oct	15-Oct
Olive-sided Flycatcher	6	0	0	0	6	4 (22 Aug)	22-Aug	30-Aug
Eastern Wood-Pewee	10	23	2	0	35	5 (26 Aug)	24-Aug	4-Oct
Yellow-bellied Flycatcher	1	1	0	0	2	1 (26 Aug)	26-Aug	10-Sep
Willow Flycatcher	0	1	0	0	1	1 (5 Sep)	5-Sep	5-Sep
Least Flycatcher	4	2	0	0	6	2 (28 Aug)	28-Aug	7-Sep
Eastern Phoebe	0	0	7	0	7	2 (1 Oct)	1-Oct	29-Oct
flycatcher sp.	0	1	0	0	1	1 (2 Sep)	2-Sep	2-Sep
Yellow-throated Vireo	1	0	0	0	1	1 (29 Aug)	29-Aug	29-Aug
Blue-headed Vireo	2	9	11	0	22	3 (13 Oct)	26-Aug	29-Oct
Philadelphia Vireo	0	2	0	0	2	1 (16 Sep)	16-Sep	19-Sep
Warbling Vireo	1	0	0	0	1	1 (5 Aug)	5-Aug	5-Aug
Red-eyed Vireo	40	21	2	0	63	9 (4 Aug)	2-Aug	10-Oct
Blue Jay	0	21	74	2	97	18 (28 Sep)	28-Sep	11-Nov
American Crow	0	0	57	20	77	33 (7 Oct)	7-Oct	15-Nov
Common Raven	0	0	0	1	1	1 (22 Nov)	22-Nov	22-Nov
Black-capped Chickadee	2	4	4	12	22	4 (19 Sep)	11-Aug	22-Nov
Tufted Titmouse	0	0	4	1	5	3 (28 Oct)	16-Oct	9-Nov
Horned Lark	0	0	2	3	5	3 (26 Nov)	31-Oct	26-Nov
Cedar Waxwing	1,900	1,662	1,351	874	5,787	329 (19 Aug)	1-Aug	30-Nov
Bank Swallow	1	0	0	0	1	1 (20 Aug)	20-Aug	20-Aug
Tree Swallow	7	0	0	0	7	4 (13 Aug)	13-Aug	22-Aug
Purple Martin	4	0	0	0	4	4 (26 Aug)	26-Aug	26-Aug
Barn Swallow	444	15	0	0	459	60 (11 Aug)	1-Aug	4-Sep
Cliff Swallow	24	2	0	0	26	23 (12 Aug)	12-Aug	6-Sep
Ruby-crowned Kinglet	0	51	363	16	430	42 (10 Oct)	18-Sep	15-Nov
Golden-crowned Kinglet	0	0	481	84	565	64 (29 Oct)	1-Oct	20-Nov
Red-breasted Nuthatch	1	1	1	0	3	1 (17 Aug)	17-Aug	11-Oct
White-breasted Nuthatch	0	5	4	2	11	2 (7 Sep)	5-Sep	7-Nov
Brown Creeper	0	1	4	1	6	1 (29 Sep)	29-Sep	2-Nov
Blue-grey Gnatcatcher	17	17	0	0	34	5 (26 Aug)	6-Aug	30-Sep
House Wren	0	4	0	0	4	1 (19 Sep)	19-Sep	29-Sep
Winter Wren	0	0	2	7	9	2 (12 Nov)	29-Oct	25-Nov
Gray Catbird	0	0	2	0	2	2 (27 Oct)	27-Oct	27-Oct
Brown Thrasher	0	1	0	0	1	1 (11 Sep)	11-Sep	11-Sep
European Starling	31	32	86	413	562	280 (7 Nov)	5-Aug	29-Nov
Eastern Bluebird	9	1	119	107	236	23 (5 Nov)	4-Aug	26-Nov
Veery	1	0	0	0	1	1 (17 Aug)	17-Aug	17-Aug
Gray-cheeked Thrush	0	5	0	0	5	5 (30 Sep)	30-Sep	30-Sep
Swainson's Thrush	0	77	8	0	85	51 (30 Sep)	8-Sep	14-Oct
Hermit Thrush	0	4	1	1	6	2 (30 Sep)	10-Sep	9-Nov
Wood Thrush	0	2	0	0	2	1 (20 Sep)	20-Sep	30-Sep
American Robin	43	85	9,595	5,692	15,415	1,246 (24 Oct)	3-Aug	30-Nov
thrush sp.	1	0	0	0	1	1 (7 Aug)	7-Aug	7-Aug
American Pipit	0	0	9	15	24	6 (5 Nov)	1-Oct	23-Nov

Species	AUG	SEP	OCT	NOV	Total	Max Count	First Obs.	Last Obs.
House Finch	17	6	30	12	65	4 (3 Aug)	1-Aug	24-Nov
Purple Finch	1	4	7	97	109	22 (5 Nov)	27-Aug	30-Nov
finch sp.	0	0	8	9	17	5 (24 Oct)	24-Oct	9-Nov
Red Crossbill	0	0	0	1	1	1 (23 Nov)	23-Nov	23-Nov
Pine Siskin	0	0	183	180	363	61 (31 Oct)	17-Oct	30-Nov
American Goldfinch	137	384	251	608	1,380	55 (8 Nov)	2-Aug	30-Nov
Snow Bunting	0	0	20	16	36	20 (28 Oct)	28-Oct	25-Nov
Chipping Sparrow	2	11	38	0	51	8 (13 Oct)	19-Aug	29-Oct
Field Sparrow	1	1	8	0	10	4 (3 Oct)	21-Aug	29-Oct
Dark-eyed Junco (Slate-colored)	0	0	151	284	435	37 (4 Nov)	12-Oct	25-Nov
Dark-eyed Junco	0	0	0	7	7	7 (5 Nov)	5-Nov	5-Nov
White-throated Sparrow	0	0	94	17	111	29 (29 Oct)	3-Oct	19-Nov
Song Sparrow	0	0	0	5	5	1 (6 Nov)	6-Nov	15-Nov
Bobolink	21	18	1	0	40	5 (22 Aug)	2-Aug	6-Oct
Baltimore Oriole	1	0	0	0	1	1 (26 Aug)	26-Aug	26-Aug
Red-winged Blackbird	53	21	1,124	1,842	3,040	1505 (8 Nov)	2-Aug	22-Nov
Brown-headed Cowbird	1	0	0	0	1	1 (6 Aug)	6-Aug	6-Aug
Rusty Blackbird	0	0	32	0	32	20 (22 Oct)	15-Oct	23-Oct
blackbird sp.	1	0	0	0	1	1 (13 Aug)	13-Aug	13-Aug
Common Grackle	4	0	28	27	59	28 (13 Oct)	2-Aug	19-Nov
Ovenbird	117	35	0	0	152	24 (28 Aug)	3-Aug	26-Sep
Worm-eating Warbler	8	0	0	0	8	2 (3 Aug)	2-Aug	28-Aug
Louisiana Waterthrush	2	0	0	0	2	1 (1 Aug)	1-Aug	2-Aug
Northern Waterthrush	2	1	0	0	3	1 (18 Aug)	18-Aug	2-Sep
Louisiana/Northern Waterthrush	1	0	0	0	1	1 (15 Aug)	15-Aug	15-Aug
Blue-winged Warbler	2	0	0	0	2	1 (20 Aug)	20-Aug	31-Aug
Black-and-white Warbler	53	24	0	0	77	6 (10 Aug)	1-Aug	28-Sep
Tennessee Warbler	58	376	96	0	530	33 (29 Sep)	3-Aug	18-Oct
Nashville Warbler	0	19	5	0	24	4 (26 Sep)	7-Sep	29-Oct
Connecticut Warbler	0	8	1	0	9	4 (20 Sep)	13-Sep	19-Oct
Common Yellowthroat	8	9	1	0	18	3 (29 Aug)	9-Aug	5-Oct
Hooded Warbler	24	3	0	0	27	10 (4 Aug)	3-Aug	19-Sep
American Redstart	68	117	1	0	186	17 (12 Sep)	1-Aug	9-Oct
Cape May Warbler	971	3,153	360	0	4,484	481 (5 Sep)	13-Aug	19-Oct
Cerulean Warbler	3	0	0	0	3	1 (3 Aug)	3-Aug	17-Aug
Northern Parula	1	22	5	0	28	5 (7 Sep)	23-Aug	23-Oct
Magnolia Warbler	18	123	3	0	144	18 (7 Sep)	16-Aug	12-Oct
Bay-breasted Warbler	36	336	35	0	407	56 (29 Sep)	14-Aug	12-Oct
Blackburnian Warbler	200	420	3	0	623	55 (26 Aug)	12-Aug	21-Oct
Yellow Warbler	4	1	0	0	5	2 (2 Aug)	2-Aug	7-Sep
Chestnut-sided Warbler	61	57	2	0	120	14 (29 Aug)	6-Aug	5-Oct
Blackpoll Warbler	1	649	329	0	979	167 (29 Sep)	30-Aug	23-Oct
Bay-breasted/Blackpoll Warbler	0	1	2	0	3	1 (22 Sep)	22-Sep	12-Oct
Black-throated Blue Warbler	22	168	37	0	227	21 (14 Sep)	10-Aug	13-Oct
Palm Warbler	0	18	7	0	25	10 (18 Sep)	13-Sep	28-Oct
Pine Warbler	3	3	0	0	6	1 (18 Aug)	18-Aug	19-Sep
Yellow-rumped Warbler (Myrtle)	4	32	672	8	716	84 (13 Oct)	20-Aug	8-Nov
Black-throated Green Warbler	418	753	130	0	1,301	58 (8 Sep)	2-Aug	17-Oct
Canada Warbler	1	5	0	0	6	1 (16 Aug)	16-Aug	25-Sep
Wilson's Warbler	0	6	1	0	7	2 (19 Sep)	6-Sep	1-Oct
warbler sp.	306	552	40	0	898	44 (4 Sep)	1-Aug	25-Oct
Scarlet Tanager	21	37	0	0	58	7 (6 Sep)	1-Aug	30-Sep
Northern Cardinal	0	0	0	7	7	2 (4 Nov)	4-Nov	14-Nov
Rose-breasted Grosbeak	15	28	5	0	48	4 (8 Sep)	2-Aug	3-Oct
Indigo Bunting	7	1	0	0	8	2 (11 Aug)	9-Aug	19-Sep
Dickcissel	0	4	0	0	4	2 (10 Sep)	6-Sep	10-Sep
passerine sp.	2	1	2	1	6	1 (30 Aug)	30-Aug	26-Nov

August

The count tallied 5,691 birds of 75 species moving past Dans Rock. The first day of the count was slow, with just 25 individuals of 9 species moving in light northwest winds. Similar conditions on 2 AUG, however, yielded a good flight of 92 birds, including a Rose-breasted Grosbeak and 30 Black-throated Green Warblers. Light south winds on 3 AUG also produced some movement, with a Cerulean Warbler, an early Tennessee Warbler, and the season's first Broad-winged Hawk being clear highlights. On 4 AUG, light winds from the west and a mid-morning fog brought in 10 Hooded Warblers, the high count for the season. Light winds continued for the next three days, generating consistent flights of around 100 birds each morning. The first Chestnut-sided Warbler and Blue-gray Gnatcatcher of the season were added on 6 AUG in light northeast winds.

The first cold front of the season blew through on 8 AUG. High winds kept numbers low on that date, but the following morning brought in the count's first-of-the-fall Common Yellowthroat. An early Black-throated Blue Warbler and 18 Black-throated Green Warblers were notable on 10 AUG, despite the persistent drizzle that morning. Once the weather cleared, 11–12 AUG saw a strong flight of swifts, swallows, and waxwings, with 23 Cliff Swallows and 96 Chimney Swifts on 12 AUG being both species' high count for the season. Winds were consistently light and from the south or west through the following week with decent flights most mornings and several season firsts. Particularly notable were 2 Bay-breasted Warblers on 14 AUG (the earliest fall record on eBird in Allegany County [eBird 2024b]), an early Northern Harrier on 15 AUG, and first-of-the-season Magnolia and Canada Warblers on 16 AUG. Another cold front arrived on 18 AUG, bringing with it the first Osprey of the season. Light northwest winds the following day produced a strong flight on 19 AUG, with 8 species of warblers and 329 Cedar Waxwings, the season's high count.

Winds were out of the north for the rest of the week, allowing for good movement. The first Yellow-rumped and Blue-winged Warblers made appearances on 20 AUG. On 22 AUG, 4 Olive-sided Flycatchers turned up, representing a new species for Dans Rock as well as a new state high count. South winds on 24 and 25 AUG reduced movement, but light north winds on 26 AUG produced the most diverse flight of the month, with 444 birds of 33 species including another Olive-sided Flycatcher; a Yellow-bellied Flycatcher, and 4 Purple Martins, both eBird hotspot firsts; 37 Black-throated Green Warblers, 97 Cape May Warblers, and 55 Blackburnian Warblers, a new record for Maryland as well as the season high count. Fog and southeast winds on 28 AUG forced migrants low over the observation area, resulting in the detection of 418 individuals of 22 species, including 173 Cape May Warblers, 37 Black-throated Green Warblers, and 24 Ovenbirds, the season high count. Similar conditions on 29 AUG yielded the first and only migrant Yellow-throated Vireo

of the season, as well as the season high count of 14 Chestnut-sided Warblers. On 30 AUG, clear conditions and steady northwest winds produced the largest flight of the month, with 574 individuals of 30 species, including 17 Ruby-throated Hummingbirds, the first Blackpoll Warbler and Common Nighthawks of the season, and 321 Cape May Warblers, a new state high count. North winds on 31 AUG closed the month with a modest flight of 126 individuals, a Blue-winged Warbler and 54 Cape May Warblers being the highlights.

September

The team documented 10,355 individual birds of 81 species at Dans Rock, making it the most diverse month of the count. September opened with clear skies and light winds out of the east, which brought in a sizable flight dominated by 142 Cape May Warblers and 212 Cedar Waxwings. Winds shifted to the west on 2 SEP and remained that way through 9 SEP, facilitating several days of good movement. After a few comparatively slow mornings on 2 and 3 SEP, the count saw its largest push of the month, with 2,315 birds recorded over the following three days. Cape May Warblers made up 42% of this movement, with 977 Cape May Warblers flying over between 4–6 SEP, and 481 Cape Mays detected on 5 SEP alone, setting a new single-day high count for the state. Cedar Waxwings comprised another 35% of the flights over these three days, with 815 waxwings detected. Other notables of these flights were a Red-breasted Nuthatch, 51 Black-throated Green Warblers, and the season high count of 21 Ruby-throated Hummingbirds on 4 SEP, 34 Blackburnian Warblers and a count-first Willow Flycatcher on 5 SEP, and a location-first Dickcissel on 6 SEP.

Daily totals the second week of September were slightly lower, averaging around 400 birds per day instead of 750 as recorded the previous week, but flights were consistently diverse. Cape May Warblers remained the dominant component of these flights, with numbers surpassing 100 individuals every day through 13 SEP. The 7 SEP flight was highlighted by 16 warbler species, including the first Nashville Warbler of the season and season high counts of 18 Magnolia Warblers and 5 Northern Parulas. Blackburnian Warblers and Black-throated Green Warblers moved in some of their highest numbers the second week of September, with 46 Blackburnian Warblers and 58 Black-throated Green Warblers, a new state high count, passing through on 8 SEP. Winds shifted to the southeast mid-morning on 9 SEP, bringing in fog that was also present on 10 SEP. Dickcissels flew over both mornings, and the dense fog and southwest winds on 10 SEP brought in a high count of 42 Bay-breasted Warblers. Winds shifted back to the northwest on 11 SEP, producing a decent flight of 304 individuals including 139 Cape May Warblers and 39 Black-throated Green Warblers. Light west winds the following morning brought in the first Red-headed Woodpecker of the season, as well as a location-first Lesser Yellowlegs that called as it flew over the ridge. Cloudy conditions and strong west winds on 13 SEP saw the first Connecticut Warbler of the season as well as

the first big influx of Blackpoll Warblers, with 37 tallied. Clear skies and northwest winds on 14 SEP generated the best Broad-winged Hawk flight of the season, with 279 counted lifting up out of both valleys. That morning also saw the season high count of 21 Black-throated Blue Warblers as well as 2 additional Connecticut Warblers that briefly dropped into the trees by the overlook.

Winds continued to have a northern component through 21 SEP, with solid warbler flights dominated by Cape May, Blackpoll, Tennessee, and Black-throated Green Warblers. A cold front blew through on 15 SEP, but the strong winds kept totals low. The following morning saw the first Philadelphia Vireo and second Red-headed Woodpecker of the season, as well as 68 Chimney Swifts, the season high count. Rain on 17 SEP washed out most of the count, with 82 waxwings and a handful of warblers being the only birds moving. Strong northwest winds and some fog on 18 SEP brought in the season's largest influx of Palm Warblers, with 10 tallied. A small flock of heard-only Canada Geese that morning was a season first. Lighter northwest winds on 19 SEP produced the second-most diverse flight of the season, with 19 warbler species and the first Ruby-crowned Kinglets of the season among the 34 species detected. On 20 SEP, 4 Connecticut Warblers flew past the ridge, representing a new state high count. Clear conditions and northeast winds on 21 SEP produced a diverse flight of 33 species, including 29 American Goldfinches, the first migrant Red-bellied Woodpecker, 60 Cape May, 20 Bay-breasted, 28 Blackpoll, and 27 Black-throated Green Warblers, and another Connecticut Warbler. An early Purple Finch was detected the next day moving in light east winds.

Heavy rains from Tropical Storm Idalia severely limited movement on 23 and 24 SEP, and brought in overcast conditions that would stick through the end of the month. Winds were out of the northwest on 25 SEP, producing a notable count of 44 Blackpoll Warblers, but would be from the southeast the following morning through 29 SEP. Only 124 individuals flew past the rock on 26 SEP in southeast winds and dense fog. Similar conditions on 27 SEP, however, produced an Upland Sandpiper, the latest fall record for the state (eBird 2024b). September closed with three straight days of good flights produced by a variety of weather conditions. Strong winds and reduced fog on 28 SEP saw one of the best raptor flights of the season, with a Northern Harrier, 77 Broad-winged Hawks, and season high counts of 5 Bald Eagles, 8 Red-tailed Hawks, 10 Cooper's Hawks, and 11 Sharp-shinned Hawks. Dense fog returned on 29 SEP, forcing hundreds of warblers to fly over low or move through the vegetation near the platform, resulting in state high counts of 56 Bay-breasted Warblers, 167 Blackpoll Warblers, and 58 Black-throated Green Warblers. A first-of-the-season Brown Creeper, 2 more Purple Finches, and the first double-digit tally of 14 Ruby-crowned Kinglets were also notable that morning. Northwest winds and cloudy skies generated a spectacular thrush flight on 30 SEP, with 51 Swainson's, 5 Gray-cheeked, and 2 Hermit Thrushes calling as they flew over in

the first hour after sunrise. Other notables on the last day of the month were 138 Cape May Warblers, 57 Blackpoll Warblers, and the season's first push of Yellow-rumped Warblers, with 16 counted.

October

The count tallied 16,214 birds of 78 species in October. Light northwest winds continued the first three days of the month with morning temperatures in the upper 60s °F (~19–21 °C) lasting through the first week. October opened with a solid flight of 346 birds of 27 species, with a Golden-crowned Kinglet and 5 American Pipits being season firsts. Yellow-rumped Warblers saw a huge influx as soon as the month turned, with 70, and then 81, birds tallied on 1 and 2 OCT. Consistent northerly winds from the previous few days generated the largest flight of early October on 3 OCT, with 378 individuals of 29 species. Notable observations included the first Yellow-bellied Sapsuckers and White-throated Sparrows of the season, a season high of 4 Field Sparrows, and a solid warbler flight of 86 Cape May, 69 Blackpoll, 36 Yellow-rumped, and 12 Black-throated Green Warblers. Winds shifted to the south late in the morning on 3 OCT and would remain from that direction through 6 OCT. Numbers and diversity steadily declined with each day of southern winds, but 4 and 5 OCT still had decent flights of 297 and 226 individuals. Warblers made up 50–60% of these flights, with the dominant species being Cape May, Blackpoll, Yellow-rumped, Black-throated Green, and Tennessee Warblers. Cedar Waxwings and Ruby-crowned Kinglets were also significant components. An interesting phenomenon observed between 2 and 5 OCT that was not replicated during this season was a consistent northward movement of several warbler species. Over those 4 days, 47% of 251 Cape May Warblers, 48% of 21 Tennessee Warblers, 39% of 179 Blackpoll Warblers, 25% of 77 Black-throated Green Warblers, and 19% of 177 Yellow-rumped Warblers flew over the platform moving north.

A strong cold front brought an end to the south winds and warm temperatures on 7 OCT. Blustery conditions reduced passerine movement compared with the previous week, but 2 Ospreys and 6 Sharp-shinned Hawks were notable, as well as the first migrant American Crows, moving south over the ridge in a flock of 33 birds. Strong winds and driving mist severely restricted movement on 8 OCT, and northwest winds on 9 OCT failed to produce a good flight, with only 93 birds detected. A late American Redstart, however, was notable that morning. West winds on OCT 10 brought in a strong flight of 273 birds, including 105 Cedar Waxwings, 30 Blackpoll Warblers, and the season high count of 44 Ruby-crowned Kinglets. Similar conditions on OCT 11 yielded only the third Red-breasted Nuthatch of the season, as well as the first American Robin flight of more than 30 individuals, with 67 tallied. South winds and temperatures in the 50s °F (~10–15 °C) on 12 OCT resulted in the last strong neotropical migrant flight of the season. The morning tallied 10 warbler species, including high counts of 29 Tennessee, 17 Blackpoll, 10 Cape May, 10 Black-throated Green,

and 6 Black-throated Blue, as well as the last Magnolia and Bay-breasted Warblers of the season. The only Yellow-billed Cuckoo of the season and 46 Golden-crowned Kinglets were additional highlights. Warm temperatures and light north winds on 13 OCT produced a solid flight of 360 birds of 29 species; it would be the last time the count would get more than 23 species in a morning for the season. Highlights included the season's only Great Blue Heron and Killdeer, as well as the season high count of 84 Yellow-rumped Warblers. East winds and drizzle dampened migration on 14 OCT, but birds were still detected, with 14 Ruby-crowned and 14 Golden-crowned Kinglets, and a Hermit Thrush moving in the poor conditions.

Cloudy or foggy conditions were dominant the third week of October, and consistent northwest winds kept the migration calendar turning. The strong warbler flights prevalent earlier in the month ceased, with only Yellow-rumped Warblers reaching double-digits for the rest of the season. American Robins hit 170 individuals for the first time on 15 OCT, a morning that also included 42 Turkey Vultures, the season's first Rusty Blackbirds, and the only Peregrine Falcon of the season. The first migrant Tufted Titmouse was recorded in foggy conditions on 16 OCT, along with 40 Golden-crowned Kinglets. Pine Siskins abruptly appeared on 17 OCT, with 19 individuals counted. The following morning saw a flock of 40 Pine Siskins, as well as 403 American Robins, 25 Yellow-rumped Warblers, and singles each of Nashville, Tennessee, and Blackpoll Warbler. West winds and clear conditions on 19 OCT produced a strong flight of 855 birds. American Robins made up the bulk of the movement with 536 individuals, but 90 Cedar Waxwings, 24 Ruby-crowned Kinglets, 17 Golden-crowned Kinglets, and a late Connecticut Warbler were also notable. Hundreds of robins moved on 20 OCT as well, but south winds that morning reduced totals of every other species. Of the 711 birds detected that day, 578 were robins. Strong north winds and driving fog limited the robin flight on 21 OCT but brought in a very late Blackburnian Warbler, representing the latest eBird fall record for western Maryland (eBird 2024b). West winds on 22 OCT produced the first 1,000+ bird day of the season, bringing in 1,180 birds of which 947 were robins. A decent raptor flight also occurred that morning, along with 3 count-first American Black Ducks and a season high count of 20 Rusty Blackbirds. Another solid flight of 1,279 birds occurred in northwest winds on 23 OCT. Dominant species included 975 American Robins, 156 Red-winged Blackbirds, 51 Cedar Waxwings, and 33 Golden-crowned Kinglets. A late Northern Parula and the first two migrant Eastern Phoebes of the season were notable.

A warm front moved into the region on 24 OCT, leading to warmer temperatures in the mid-60s °F (~18–19 °C) and cloudy conditions through the last week of October. Following the passage of the front, winds were primarily out of the northwest during this period, but shifted back around to the south on

29 OCT. The largest flight of the month occurred in southwest winds shifting to northwest on 24 OCT, tallying 1,609 birds of 17 species. The 1,246 American Robins streaming southward across the ridge north of the platform that morning contributed most to the total, but 183 Red-winged Blackbirds, 81 Cedar Waxwings, 33 Golden-crowned Kinglets, and 23 Dark-eyed Juncos were also tallied. American Robins continued to be the dominant component of flights the following mornings, with another 974 birds counted on 26 OCT, but robin numbers, and consequently count totals, steadily declined each subsequent day through 29 OCT. Red-winged Blackbird numbers hit a peak on 25 OCT, with 343 individuals counted, and abruptly disappeared from the daily totals after 184 birds were tallied on 26 OCT. Cedar Waxwings also saw a localized peak in the last week of October, with 126, and then 135, waxwings counted on 26 and 27 OCT. Overcast conditions and west northwest winds brought in the last Blue-headed Vireo and first migrant Gray Catbirds on 27 OCT. A flock of 20 Snow Buntings was a count highlight on 28 OCT. Winds shifted to the southeast on 29 OCT, yielding just 332 birds—the lowest total since robins began moving in earnest. Golden-crowned Kinglets, however, hit their highest total that morning with 64 birds and a late Nashville Warbler and the first migrant Winter Wren were also notable. Winds still had a southern component on 30 OCT, but yielded a solid flight of 847 birds, including 625 American Robins, 53 Golden-crowned Kinglets, 30 Dark-eyed Juncos, and 34 Yellow-rumped Warblers. A cold front passed through on 31 OCT, bringing north winds, cooler temperatures, and a strong flight of 1,241 birds. Robins hit 1,000 individuals for the second time in the season, and the 61 Pine Siskins counted that day represented a season high count.

November

The count recorded 10,786 birds of 49 species in November. The high daily totals of late October continued through the first of the month, but numbers and diversity steadily decreased as November progressed. North winds were prevalent the first week of the month. Strong winds, snow flurries, and temperatures in the upper 20s °F (~3–2 °C) yielded a small flight of only 59 birds of eight species on 1 NOV. Slightly warmer temperatures and reduced wind speeds the following two mornings produced the last 1,000+ robin flights of the season, with 1,175 robins detected on 2 NOV and 1,113 on 3 NOV. Unlike last season, Cedar Waxwings and Red-winged Blackbirds were not major components of these flights, with only 29 waxwings and 140 Red-winged Blackbirds present on those two mornings. Another 703 robins flew over the ridge on 4 NOV, a morning that also recorded a season high count of 37 Dark-eyed Juncos and the first 2 migrant Northern Cardinals at Dans Rock. A steady west-northwest breeze and clear skies on 5 NOV produced a diverse flight of finches and field birds, though only 155 robins were detected. Highlights included season high counts of 23 Eastern Bluebirds, 22 Purple Finches, and 6

American Pipits; notable counts of 51 American Goldfinches, 136 Cedar Waxwings, and 39 Pine Siskins; and a flock of 15 Snow Buntings.

The following four days (6–9 NOV) marked the final big push of the fall season. Flights varied in numbers of individuals detected, but were consistently diverse, with 20 or more species tallied on three mornings. Similar species totals would not be replicated for the rest of the season. Light southwest winds on 6 NOV saw a big movement of 155 Cedar Waxwings, their highest total since early September. Waxwings would not surpass 75 birds in a morning for the rest of the season. The following three days saw strong northwest winds paired with unseasonably warm temperatures up to the low 60s °F (~16–17 °C). The only Merlin of the season was the highlight of a solid raptor flight on 7 NOV, which also saw the season high count of 73 Turkey Vultures, 4 Red-tailed Hawks, 3 Bald Eagles, and a Northern Harrier. Pine Siskin numbers peaked with 47 birds on 7 NOV and would not hit double-digits again after 9 NOV. Only 16 species were detected on 8 NOV, but a massive flock of 1,500 Red-winged Blackbirds flying over the western valley gave the morning the highest individual tally of the season, with 1,992 birds counted. Also notable on 8 NOV were 16 Purple Finches, the season high count of 55 American Goldfinches, and the last Yellow-rumped Warbler of the season. Strong west-northwest winds on 9 NOV brought in the first Golden Eagle of the season, as well as a solid robin flight of 435 birds.

The warm weather ended with northwest winds and snow showers on 10 NOV. Just 21 birds of six species made their way past Dans Rock that day. Clear conditions and winds from the southeast on 11 NOV saw the last double-digit totals of 12 Golden-crowned Kinglets and 13 Purple Finches for the season. Purple Finches would continue to be detected in smaller numbers through the rest of the month, but Golden-crowned Kinglets would only be seen on two more count days. The last flight of more than 500 individuals occurred on 13 NOV. Northwest winds that morning saw 667 birds of 12 species, including 477 American Robins, 66 Cedar Waxwings, 47 Red-winged Blackbirds, and 6 American Pipits. The last Ruby-crowned Kinglet moved through on 15 NOV.

The second half of November continued to be slow as birds moved out of the region or settled into winter territories. Flights seemed to be tied more to clear skies and mild conditions than north winds blowing new migrants into the region. The last robin flights of more than a hundred birds took place mid-month, with 324 robins on 16 NOV and 217 on 17 NOV. A flock of 40 ducks scoped moving over the ridge three miles to the north were potentially a new species for the count on 17 NOV, but they were too far away to identify. American Goldfinches were detected every day of November, with high counts of 43 on 19 NOV and 52 on 24 NOV. Golden Eagles were seen on four more days in November, for a season total of 8 birds. The first and only Red Crossbill

of the season flew down the ridge on 23 NOV. A season high count of 4 Golden Eagles and a Snow Bunting were notable on 25 NOV. Light southeast winds on 26 NOV saw 64 Tundra Swans in three separate family groups fly over the rock. A Golden Eagle was the highlight of a very slow day of five individuals of five species on 27 NOV. The count was canceled on 28 NOV due to icy road conditions and 29 NOV was the coldest day of the season with a wind chill below 0°F (-18 °C). A male Northern Harrier zipping over the ridge was a highlight on 29 NOV. The last day of the count closed with 29 individuals of six species, including 14 American Robins and all three of the expected finches: 1 Pine Siskin, 2 Purple Finches, and 10 American Goldfinches.

Species Accounts - The Season's Notable Five

Cape May Warbler

For the second year in row, Cape May Warblers moved in spectacular numbers past Dans Rock. Last year recorded 1,138 Cape May Warblers for the season and set a new state high count for the species with 273 birds on 1 SEP 2022 (Engstrom 2023). This year saw four times that number, with 4,484 birds counted, and broke the previously set high count twice, with 321 on 30 AUG followed by 481 Cape May Warblers on 5 SEP (Figure 1). Daily counts surpassed 100 individuals for 10 straight days between 4 SEP and 13 SEP, with constant streams of birds flying over Dans Rock well into mid-morning on peak days. Cape May Warblers were the third most abundant species at Dans Rock this season, surpassed only by American Robins and Cedar Waxwings. Cape May Warblers feed on eastern Spruce Budworms, *Choristoneura fumiferana* (Lepidoptera: Tortricidae), on their breeding ground in the boreal forest, and numbers swell in years of budworm outbreaks (Venier and Holmes 2010). Last year's numbers were partly attributed to this cycle, based on high numbers at other eastern flight counts such as Cape May, New Jersey and Turkey Point, Maryland (Engstrom 2023). Cape May Warbler numbers at those counts this year, however, were either similar to last year's at Cape May, with 736 compared with 731, or significantly lower at Turkey Point, with only 613 compared to 1,556 in 2022 (Trekten 2024b, Trekten 2024c). The 4,484 birds detected at Dans Rock this season represented 56% of all Cape May Warblers observed in fall 2023 season at migration counts using Trekten (Trekten 2024b). The high numbers of Cape May Warblers at Dans Rock these two seasons could be due to the count's location on a regular migration path for this species along the Appalachian ridgeline, rather than the boom-bust cycle of budworms. Future seasons of this count are needed to determine if 2022 and 2023 were irruption years for this species or if similar numbers can be expected every year at this location. The first Cape May Warbler was detected on 13 AUG, a day later than last season, and the last bird was recorded on 17 OCT, 5 days later than the previous season. Monthly totals were 971 birds in August, 3,153 in September, and 360 in October for a season total of 4,484

birds. Cape May Warblers were present on 56 days of the 121 days of monitoring.

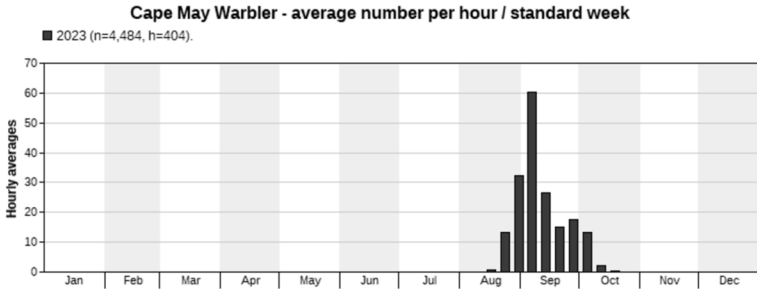


Figure 1. Timing of Cape May Warbler movement in 2023 at Dans Rock, Allegany County, Maryland.

Black-throated Green Warbler

Black-throated Green Warblers were second only to Cape Mays as the most abundant warbler at Dans Rock this season, with 1,301 birds detected. The 2023 season total was more than four times that of 2022, which recorded 281 birds for the entire fall. Black-throated Green Warblers also had the longest migration window of any warbler at the count, with the first birds noted on 2 AUG and the last individual recorded on 17 OCT (Figure 2). Unlike any other warbler, high daily totals for the species occurred early and held steady through most of its migration period, with 30 birds in morning flight on 2 AUG and double-digit totals occurring consistently through 4 OCT. The 30 birds on 2 AUG were particularly notable for being just 3 birds shy of the previous county high count, set on 29 SEP in 2013 (Carney 2013). Black-throated Green Warblers breed on Dans Mountain and west into Garrett County (eBird 2024b), so this early push of the species may have been mostly local breeders and young. Peak daily counts of 58 birds were recorded on both 8 SEP and 29 SEP, both of which broke the previous state high count of 55 Black-throated Green Warblers set in 1959 in Baltimore County (Kaestner 1959). As noted in the 2022 report, Black-throated Green Warblers seem to use the Appalachian ridgeline as a migration corridor far more than they do the coast (Engstrom 2023). The morning flight count at Cape May, New Jersey recorded 101 Black-throated Green Warblers in the fall 2023 season, while Turkey Point, Maryland logged only 61 (Trekzellen 2024a). Incredibly, the 1,301 Black-throated Green Warblers observed at Dans Rock this season represent 79% of all fall 2023 records for the species in Trekzellen, illustrating the value of an Appalachian flight count (Trekzellen 2024a). Monthly totals were 418 birds in August, 753 in September, and 130 in October for a total of 1,301 birds. Black-throated Green Warblers were present on 73 of the 121 days of monitoring.

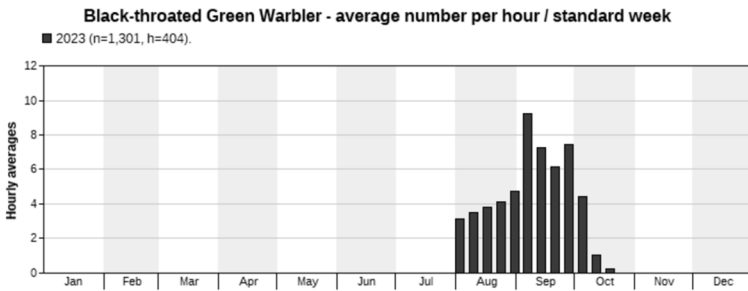


Figure 2. Timing of Black-throated Green Warbler movement in 2023 at Dans Rock, Allegany County, Maryland.

Golden-crowned Kinglet

Fall 2023 was a banner season for both Ruby-crowned and Golden-crowned Kinglets, but especially Golden-crowned Kinglets, at Dans Rock. This fall saw 565 of these diminutive birds make their way past the Rock, compared with only 45 in the 2022 fall season. Compared with other small songbirds at Dans Rock, neither kinglet species was ever observed in sustained migratory flight but would instead make short jumps through vegetation southward down the ridgeline. High-pitched “tsee tsee tsee” calls would often herald sizable flocks of up to 30 birds that would quickly move through and out of the area. The first Golden-crowned Kinglet was seen on 1 OCT and the last on 20 NOV. The peak flight occurred on 29 OCT, with 64 counted, which also represented a new county high count (Figure 3). Monthly totals were 481 in October and 84 in November for a season total of 565. Golden-crowned Kinglets were present on 38 of 121 days of monitoring.

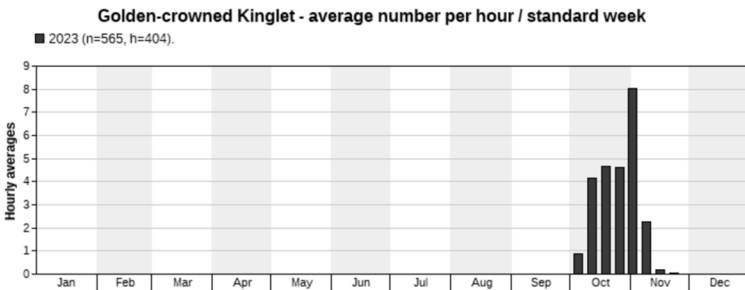


Figure 3. Timing of Golden-crowned Kinglet movement in 2023 at Dans Rock, Allegany County, Maryland.

Connecticut Warbler

A seldom-seen migrant in the state (eBird 2024b), the detection of multiple Connecticut Warblers in morning flight at Dans Rock was a highlight of the

season. Only one bird was observed skulking in dense cover as this species is wont to do. Most birds were located by flight call and then visually identified as they zipped over the ridge. Three birds even dropped briefly into the crowns of trees below the overlook before they continued south. Of the five migration counts that recorded Connecticut Warblers this fall in Trektellen, Dans Rock had the second highest species total of the 2023 fall season (Trekellen 2024d). The morning flight count in Cape May, New Jersey detected 13 Connecticut Warblers this fall, while Turkey Point, Maryland recorded only 1 individual this season (Trekellen 2024d). The first Connecticut Warbler of the season was detected on 13 AUG and the last individual flew over on 19 OCT. The peak flight of 4 individuals occurred on 20 SEP, which broke the previous state high count in eBird of 3 individuals (eBird 2024b). Monthly totals were 8 birds in September and 1 bird in October for a season total of 9 birds. Connecticut Warblers were present on five of the 121 days of monitoring

Pine Siskin

Pine Siskins are an irruptive species whose numbers can fluctuate in a given region from year to year (Bock and Lepthien 1976). Despite several species of winter finches moving into the region in 2022, Pine Siskins were not one of them, with only 35 birds detected last season (Engstrom 2023). This year, however, saw a good influx of Pine Siskins, with 363 birds tallied over the season. Large flocks of siskins appeared suddenly in mid-October and saw their highest numbers around the first week in November. Daily totals dropped off rapidly after 9 NOV, but individual siskins continued to be detected through the end of the month. The first birds of the season were recorded on 17 OCT and one bird flew over on 30 NOV, the last day of the count. The peak siskin flight occurred on 31 OCT, with 61 birds counted (Figure 4). Monthly totals were 183 siskins in October and 180 in November for a season total of 363 birds. Pine Siskins were present 30 of the 121 days of monitoring.

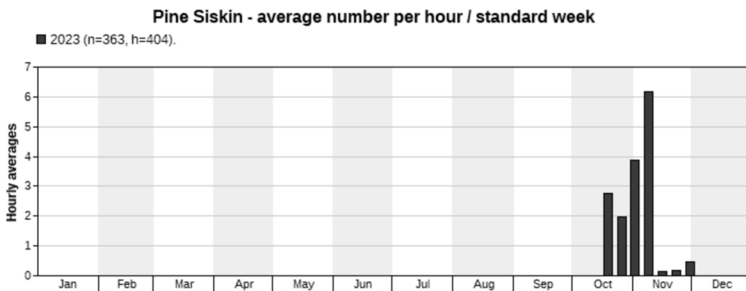


Figure 4. Timing of Pine Siskin movement in 2023 at Dans Rock, Allegany County, Maryland.

DISCUSSION

The 2023 Fall Migration Count at Dans Rock produced another season of valuable migration data in the Appalachian Mountains. Several elements converged to make 2023 a very different season than 2022. The total number of birds was lower compared to last season, with 43,046 birds this year compared with 52,746 in 2022, but diversity was higher, with 126 species identified this season compared with 103 in 2022 (Engstrom 2023).

As at all migration counts, weather played an important role in the numbers and composition of each morning's flight. The best flights occurred on days with light winds from the north or west. Wind speed was a more important factor than wind direction in determining the quality of the flight, especially early in the season. Speeds above 25 mph (40 km/h) seemed to deter small passerines from migrating above the exposed ridgeline, limiting the birds detected from the overlook and reducing daily totals in August and September. Raptors, however, seemed to prefer to move on days with strong winds, and the larger passerines of early November, like robins and blackbirds, seemed unaffected by wind speed. South winds did not seem to impact flight totals to the same extent as they did last year. Flights would still occur in light south winds, and most days this season with south winds were sandwiched between days with winds out of the north, which kept the migration calendar turning. One stretch of south winds in early October did see a steady decrease in diversity with each day. Some of the best flights in late September occurred over a stretch of three days with southeast winds. These southeast winds followed Tropical Storm Idalia and were combined with dense fog or overcast conditions. Fog and cloud cover also affected the number of birds detected at the count. Cloud cover early in the season kept birds lower, increasing the likelihood of detection. Fog brought migrants even closer towards the platforms. High counts of Black-throated Green, Bay-breasted, and Blackpoll Warblers and an Upland Sandpiper were all detected due to dense fog on the ground. Later in the season, fog and cloud cover may have had a detrimental effect on flights, as sunny skies fueled thermals and increased temperatures, which made conditions more suitable for movement.

Flight paths were generally similar to those observed in 2022, with a couple notable differences. The most common flight path taken by warblers and other small passerines was southwest following the direction of the ridge. Last year's count noted that most of the warblers were flying east of the platforms over the slope facing the Potomac valley, which limited identification as birds were backlit by the sunrise (Engstrom 2023). Many warblers were observed taking this flight line, but birds would also fly southeast directly overhead or out over the western slope. As discussed in Engstrom's report, these loose flight paths are probably due to the lack of geographical features that would funnel birds in a

particular direction. Raptors also flew in a southwestern direction paralleling the ridge. There were several flight lines that raptors were observed using. Falcons, and some accipiters, would zip directly overhead. Eagles and buteos would usually move close to the ridge above the eastern or western slopes, but raptors were also seen moving parallel to the ridge low in the eastern valley or far out over the western valley. Other birds were not as tied to the ridgeline. Yellow-rumped Warblers, Eastern Bluebirds, and American Goldfinches were often observed moving due south without regard for the ridgeline below. A very distinct flight path, taken mostly by American Robins, Red-winged Blackbirds, and a few Cedar Waxwings, emerged in late October and early November. This flight path occurred about 2 mi (3 km) northeast of the platforms and involved birds crossing over the ridge at a perpendicular angle where it seemed they would then drop into the eastern valley to continue moving southwest. Robin flocks would sometimes cross over closer to the overlook where the counter stood, but most of the movement seemed fixed at a spot 2 mi (3 km) up-ridge.

In late November, most migratory movement was discovered to be occurring in the valley rather than on the ridgetop. Ben McGrew, a local birder and alternate counter at Dans Rock for two days this season, observed morning flight from his house in Cresaptown concurrently with Dans Rock on a couple of occasions in late November and had much higher species totals than the primary counter had on Dans Rock (McGrew, pers. comm., 17 November 2023). A few of these may have been resident birds that winter at lower elevations, but McGrew had several more raptors moving low in the valley that the primary counter did not see, as well as a flock of White-winged Crossbills on 17 NOV (McGrew 2023).

A good portion of the migratory movement at Dans Rock occurred on or near the ground, as birds moved in mixed feeding flocks southward through the vegetation down the ridge. Warblers tended to switch from sustained flight to ground-based migration about an hour or so after sunrise, dropping into trees and shrubs on the ridge where they would continue their direction of movement in short jumps through the vegetation until they were out of sight. While passerines flying over in sustained flight usually declined as the morning progressed, new migrants would continue to be added throughout the day as they passed through in mixed feeding flocks moving down the ridge. Several species were detected exclusively in such feeding flocks on or near the ground. Both Ruby-crowned and Golden-crowned Kinglets passed through in large numbers this season, but all were moving through vegetation and none were seen in sustained flight. Migrating sparrows were also only ever seen on the ground. Sparrows, in particular, had an interesting flight path. Most would congregate in the parking lot and then move over the ridge due southeast right past the north platform or by the old fire tower. One explanation for this unique path is that sparrows were funneled up to Dans Rock through the scrubby habitat

along the powerline cut on the western slope and then opted to fly over the ridge rather than move through the forested areas down the ridge.

There were several notable differences in the size and compositions of flights between the 2022 and 2023 Dans Rock seasons. The 2022 season enjoyed irruptions of winter finches, waxwings, and acorn-associated species, none of which occurred this year. Last year saw 169 Red-breasted Nuthatches move past the rock, while this year's count noted just 3 for the entire season. Purple Finch numbers this year were about a third of last year, with 109 detected this year compared with 343 from last year, and Evening Grosbeaks did not move into the region at all. Cedar Waxwing numbers were similar for the first half of the season, but 2022 saw a late season push of 8,259 waxwings between the last week of October through the second week in November that did not occur this year, which recorded 5,747 waxwings for the entire season (Trekellen 2024e). Last year was a poor year for acorns in the northeastern United States (The Connecticut Agricultural Experiment Station 2022). As a result, the 2022 count saw noticeable movements of Blue Jay, Red-bellied Woodpecker, and White-breasted Nuthatch (Engstrom 2023). The 2023 acorn crop was good (pers. obs.) and these three species, though present as migrants, did not move in the same numbers as last year. One species that did irrupt to a greater extent than last year was Pine Siskin. The 2023 count logged 363 of these finches this season while only 35 were noted last year (Engstrom 2023).

A key difference between the 2022 and 2023 seasons was the much larger warbler and kinglet flights. Every species of warbler documented at Dans Rock this year occurred in equal or higher numbers than last year, with 16 out of the 24 warbler species shared between seasons seeing increases of 400% or more. Including unidentified warbler species, the 2023 season recorded 11,021 warblers in flight while the 2022 season tallied only 5,954. There may be a few elements that could explain the differences in the warbler flights. One is that, due to certain weather conditions, more warblers moved in morning flight past Dans Rock than last. Weather may certainly have played a role. The 2022 season had long stretches of south winds and was plagued with rain the first week of September (Engstrom 2023), while the 2023 season experienced light north or west winds and clear skies during the peak of warbler migration the last week in August into the third week of September. Due to some unknown factor, more warblers may have been flying over the platforms or moving through the vegetation where they were more easily detected than flying out over the eastern valley, where detection and identification was harder. Another factor could have been the reduction of trees and shrubs on the overlook itself. Between this season and last, maintenance had chopped down many of the trees on the rocky slope up to the overlook, as well as some trees under the overlook itself. The change allowed for an expanded sightline than previously existed and thus, may have increased detection rates. Finally, some of the differences could be

attributed to variability between counters and seasons. Many of the warblers this season were detected by flight call, and differences in detection between counters or changes in the acoustic environment between seasons could add up over the course of a season. Later in the fall, kinglets also moved in much higher numbers, with 565 Golden-crowned and 430 Ruby-crowned Kinglets this year far surpassing the 45 Golden-crowned and 70 Ruby-crowned Kinglets detected last year (Engstrom 2023). This difference seems to represent a legitimate increase in the number of kinglets between seasons, as kinglets moved on the ground rather than overhead, allowing for better rates of detection. Kinglets are not known to be an irruptive species, so the reason for the increase in numbers this season is unclear.

A few non-irruptive species were also less abundant this year. Fewer blackbirds were counted at Dans Rock this year than last, with only 3,040 Red-winged Blackbirds in 2023 compared with 7,278 in 2022, and only 59 Common Grackles compared with 1,096 grackles in 2022. European Starlings also flew over in larger numbers in 2022, with 4,390 detected last season compared with only 562 in 2023. Last season saw massive flights of blackbirds and waxwings the first three days of November that were not replicated this year, with 14,708 birds detected between 1 NOV–3 NOV 2022 where this season saw only 2,594 birds, mostly robins, moving in that same period. This one change accounts for much of the difference in flight totals between the 2022 and 2023 seasons. In 2022, November was by far the month with the highest species totals, with 26,655 birds. In comparison, October was the 2023 count's biggest month at 16,214 birds, and November logged only 10,801 birds, only 446 more birds than the month of September. The lower number of Red-winged Blackbirds, Cedar Waxwings, and European Starlings detected in 2023 more than explains the difference in overall totals between the two seasons.

As always, there are factors that make counting birds complex and could contribute to slightly different totals between years. One of these areas is the difficulty in separating migrant birds from locals when both occur in the area at the same time, especially when migrants are traveling through the same shrubs in which the local birds will forage. I counted birds as migrants if they were intentionally moving in a generally southern direction out of sight and did not appear later again in the day, but this is subjective and there were probably local birds I misidentified as migrants and vice versa. Some of the main species where this was a concern were Black-capped Chickadees, Dark-eyed Juncos, and Turkey Vultures. Eastern Phoebe, Gray Catbirds, and Northern Cardinals were able to be recorded as migrants later in the season because birds would turn up weeks after the local birds had left and then not be seen the following mornings. Migrants of these species could be moving through earlier and we would never know. The detection of stopover migrants also raises a few questions. A Gray Catbird appeared at the overlook in late October several weeks after the last

local birds had moved out and was consistently detected in the same area for a few days before disappearing after the passage of a cold front. That catbird was not ultimately recorded on Trektellen because it was locally present for several observation mornings, though an argument could be made that it should have been included because it was clearly a migrant moving past the observation point.

Another factor that could contribute to differences between seasons is the layout of the Dans Rock overlook itself. The site has two platforms and several rocky outcrops that offer different vantage points along the overlook. It is impossible to see everything moving at Dans Rock and by choosing one location, counters will inevitably miss movement viewable from another location. This variability may have contributed to the lack of blackbirds this year. Due to the cutting of the trees around the overlook, the north platform offered a solid viewing platform into the eastern valley, the northern ridge, and birds migrating high over the western valley. Viewing from the north platform in late October, I discovered a steady robin flight line that I spent most of my time occupied with in the first hours after sunrise. The 2022 counter opted for the southern platform, which offered better views into the eastern valley last year, and by looking down the powerline cut, got on a flight line on the western slope of the ridge that was not visible from the north platform (Engstrom 2023). Most of the blackbirds last year were reported in this flight line, which may explain the discrepancy in numbers. For consistency between seasons, it may prove necessary to designate one of the platforms as the primary viewing location for future counters.

In this second year of morning flight counts at Dans Rock, we counted 43,066 birds representing 125 species. We noted many high counts for Dans Rock and Allegany County. We also noticed some intriguing differences and trends between the 2022 and 2023 counts. Future surveys at this site will allow for statistical analysis of trends in bird migration. These data also contribute to our overall understanding of bird migration in the eastern United States.

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