

Pennsylvania Raptor Migration Summary - Spring 2023

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Following a warm, dry winter with below average snowfall, the 2023 spring count season started with one of the warmest and driest Februaries on record. Temperatures moderated in March, but warmed up again in April, before cooling off in May. Precipitation, however, remained below average throughout the spring. Early season winds were predominantly out of the west and northwest which slowed the migration, but southerly winds during the first and third weeks in April produced a few pulses of migrants.

MIGRATION SUMMARY

Seven Pennsylvania spring watch sites counted 27,696 total raptors in 1,919 hours during 323 days of counting between February 14 and June 6, for a rate of 14.4 raptors per hour (please refer to Table 1, below, for data referred to in this section). Spring count hours were 32% above the 10-year average of 1,453 hours. The total spring raptor count was six percent above the average of 26,144 and the number of raptors counted per hour was 21% below the average of 18.2. Nine species had below average counts with notably low counts of Northern Harriers (31% below average) Sharp-shinned Hawk (31% below average), and American Kestrel (28% below average). Black Vultures, Red-shouldered Hawks, Red-tailed Hawks, Rough-legged Hawks, Golden Eagles, and Peregrine Falcons also had counts below their 10-year averages. The counts of Northern Harriers and Red-tailed Hawks were the second and fifth lowest count totals, respectively, in 24 years of Pennsylvania's spring counts.

Four species had above average counts. Turkey Vultures were 13% above average, Ospreys were 10% above average, Bald Eagles were 24% above average, and Merlins were 13% above average. Cooper's Hawks, American Goshawks, Broad-winged Hawks, and Mississippi Kites had average counts.

SITE HIGHLIGHTS

Allegheny Front (*Somerset/Bedford*)

Counters recorded 880 raptors in 360 hours over 63 days from February 14 to May 7, a rate of 2.4 birds per hour. The overall count was 16% below the 10-year average and effort was 8% above average. Counts of Bald and Golden Eagles were 52% and 17% above average respectively (Table 1). The Bald Eagle total of 53 was the second highest spring count. Counts of Red-shouldered Hawks were also above average. Counts of Black Vultures, Turkey Vultures, Ospreys, Broad-winged Hawks, and Red-tailed Hawks were all below their 10-year averages (Table 1). The Osprey count of 25 was 56% below average and the 2nd lowest count recorded in Allegheny Front's 26-year history.

The first migrant of the season was an adult Golden Eagle recorded at 10:22 am on February 14. The day's count also included three Black Vultures, two Turkey Vultures, and five Red-tailed Hawks. Moderate southeast winds on March 6 produced the highest count of the season with 86 raptors, including season highs of 16 Red-shouldered Hawks, 23 Red-tailed Hawks, and 32 Golden Eagles. Thirteen raptor spp. were

observed on April 3, including a juvenile American Goshawk, one of only two goshawks recorded at PA watch sites this spring.

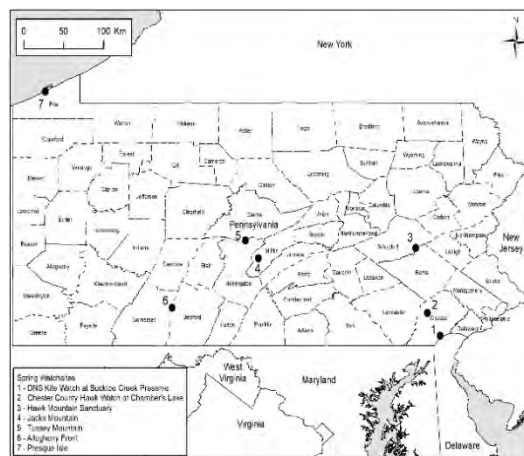


Fig. 1. Spring raptor watchsites in Pennsylvania, 2023.

Chester County Hawk Watch & Migration Count at Chambers Lake (*Chester*)

This was the second full season count for this watch site. Chambers Lake counters recorded 963 raptors in 554 hours over 84 days from March 1 to May 31, a rate of 1.74 birds per hour. The Osprey total of 138 was the largest of any Pennsylvania watch site (Table 1). A season-high 79 birds were recorded on April 18, including four Ospreys, one Bald Eagle, one Cooper's Hawk, 72 Broad-winged Hawks, and one Merlin (Table 2).

Delaware Nature Society Kite Watch at Bucktoe Creek Preserve (*Chester*)

During the 6th year for this late spring kite and shorebird watch, counters tallied 15 raptors in 117 hrs over 21 days from May 17 to June 6, a rate of 0.13 birds per hr. Two Mississippi Kites were tallied on May 21, the only kites recorded this year and below the 6-yr average of 6.3. Bucktoe Creek was the only watch site in Pennsylvania to record Mississippi Kites this spring.

Hawk Mountain (*Berks/Schuylkill*)

Counters recorded 1,189 raptors in 267 hrs over 44 days from March 20 to May 15, a rate of 4.5 birds per hour. The total count was 29% above the 10-year average of 922 and effort was average. The count of 173 Turkey Vultures was 157% above average and a new high count (Table 1). Counts of Bald Eagles, Broad-winged Hawks, Red-tailed Hawks, and American Kestrels were also above average. Counts of Ospreys and Red-shouldered Hawks were 21% and 69% below average. The 46 Ospreys tied for the lowest count in 25 years of spring counts at Hawk Mountain. Counts of all other species were average (Table 1).

A flock of 67 Turkey Vultures observed on March 27 was a season high and accounted for 39% of the Turkey Vulture count total. Twelve Bald Eagles were counted on April 17 along with

three Ospreys, nine Sharp-shinned Hawks, 133 Broad-winged Hawks, and 10 Red-tailed Hawks. Broad-winged Hawks peaked on April 21 with a high of 215 (Table 2). The only Golden Eagle of the season was observed on May 2.

Jack's Mountain (Mifflin)

Hawk watchers counted 240 raptors in 33 hours over 7 days from March 1 to April 27. a rate of 7.2 birds per hour (Table 1). The high-count day was April 21 with 50 raptors, including one Osprey, two Sharp-shinned Hawks, two Cooper's Hawks, and 45 Broad-winged Hawks.

Table 1: Spring 2023 Count Results for Pennsylvania Watch Sites. KEY TO TABLE HEADERS: BLVU: Black Vulture; BWHA: Broad-winged Hawk; TUVU: Turkey Vulture; RTHA: Red-tailed Hawk; OSPR: Osprey; RLHA: Rough-legged Hawk; BAEA: Bald Eagle; GOEA: Golden Eagle; NOHA: Northern Harrier; AMKE: American Kestrel; SSHA: Sharp-shinned Hawk; MERL: Merlin; COHA: Cooper's Hawk; PEFA: Peregrine Falcon; AGOS: American Goshawk; MIKI: Mississippi Kite; RSHA: Red-shouldered Hawk; Unid: Unidentified.

ALLEGHENY FRONT (BEDFORD) - BOB STEWART, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
FEB	11	53.5	3	26	0	5	0	1	1	0	2	0	17	0	5	0	0	0	0	4	64
MAR	22	129.0	0	26	0	19	2	25	13	0	26	0	81	0	75	5	1	2	0	20	295
APR	26	158.3	0	29	20	26	7	55	18	1	3	204	75	0	14	6	3	1	0	18	480
MAY	4	19.3	0	0	5	3	2	2	1	0	0	20	8	0	0	0	0	0	0	0	41
TOTAL	63	360.0	3	81	25	53	11	83	33	1	31	224	181	0	94	11	4	3	0	42	880
TOTAL/HR			0.01	0.23	0.07	0.15	0.03	0.23	0.09	0.00	0.09	0.62	0.50	0.00	0.26	0.03	0.01	0.01	0.00	0.12	2.44
% OF FLIGHT			0.3	9.2	2.8	6.0	1.3	9.4	3.8	0.1	3.5	25.5	20.6	0.0	10.7	1.3	0.5	0.3	0.0	4.8	100
AVG 2014-'23	56.6	334.7	7.9	130.2	59.9	34.8	11.8	79.2	32.0	1.4	24.2	324.2	205.1	0.2	80.3	10.9	4.0	3.6	0.0	36.4	1043.0
CHESTER COUNTY HAWK WATCH AT CHAMBERS LAKE (CHESTER) - LARRY LEWIS, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
MAR	28	183.0	39	291	22	29	0	6	4	0	2	0	38	0	0	1	1	0	0	0	433
APR	30	221.5	5	79	105	25	9	39	23	0	13	156	47	0	0	8	1	0	0	0	510
MAY	26	149.5	0	0	11	1	0	5	3	0	0	0	0	0	0	0	0	0	0	0	20
TOTAL	84	554.0	44	370	138	55	9	50	30	0	15	156	85	0	0	9	2	0	0	0	963
TOTAL/HR			0.08	0.67	0.25	0.10	0.02	0.09	0.05	0.00	0.03	0.28	0.15	0.00	0.00	0.02	0.00	0.00	0.00	0.00	1.74
% OF FLIGHT			4.6	38.4	14.3	5.7	0.9	5.2	3.1	0.0	1.6	16.2	8.8	0.0	0.0	0.9	0.2	0.0	0.0	0.0	100
DELAWARE NATURE SOCIETY KITE WATCH AT BUCKTOE CREEK PRESERVE (CHESTER) - LARRY LEWIS, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
MAY	15	84.5	0	0	8	1	0	1	0	0	0	0	0	0	0	0	1	0	2	0	13
JUN	6	32.5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL	21	117.0	0	0	10	1	0	1	0	0	0	0	0	0	0	0	1	0	2	0	15
TOTAL/HR			0.00	0.00	0.09	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.13
% OF FLIGHT			0.0	0.0	66.7	6.7	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	13.3	0.0	100
AVG 2014-'23	20.8	155.2	0.0	0.0	7.7	2.2	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	6.3	0.0	17.2
HAWK MOUNTAIN (BERKS/SCHUYLKILL) - DAVID BARBER, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
MAR	2	5.5	0	69	1	1	1	1	2	0	0	0	2	0	0	4	0	0	0	0	81
APR	27	172.4	17	102	38	56	19	63	23	0	2	592	77	0	0	28	6	1	0	31	1055
MAY	15	89.0	6	2	7	6	0	4	6	0	0	13	6	0	1	0	1	1	0	0	53
TOTAL	44.0	266.9	23	173	46	63	20	68	31	0	2	605	85	0	1	32	7	2	0	31	1189
TOTAL/HR			0.09	0.65	0.17	0.24	0.07	0.25	0.12	0.00	0.01	2.27	0.32	0.00	0.00	0.12	0.03	0.01	0.00	0.12	4.45
% OF FLIGHT			1.9	14.6	3.9	5.3	1.7	5.7	2.6	0.0	0.2	50.9	7.1	0.0	0.1	2.7	0.6	0.2	0.0	2.6	100
AVG 2014-'23	42.4	255.4	19.8	67.4	58.2	43.9	18.0	72.2	28.6	0.1	6.5	442.6	73.7	0.1	1.6	24.3	6.1	2.1	0.0	59.0	922.1
JACKS MOUNTAIN (MIFFLIN) - DARRELL SMITH, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
MAR	2	10.0	0	30	1	3	0	4	2	0	0	0	14	0	4	0	0	0	0	1	59
APR	5	23.3	0	64	11	1	1	5	4	0	1	77	10	0	0	1	1	1	0	4	181
TOTAL	7	33.3	0	94	12	4	1	9	6	0	1	77	24	0	4	1	1	1	0	5	240
TOTAL/HR			0.00	2.82	0.36	0.12	0.03	0.27	0.18	0.00	0.03	2.31	0.72	0.00	0.12	0.03	0.03	0.03	0.00	0.15	7.21
% OF FLIGHT			0.0	39.2	5.0	1.7	0.4	3.8	2.5	0.0	0.4	32.1	10.0	0.0	1.7	0.4	0.4	0.4	0.0	2.1	100
AVG 2018-'23	5.8	28.9	1.0	27.6	11.2	4.8	0.6	10.0	6.0	0.4	2.2	171.0	19.4	0.0	4.6	1.2	0.8	0.4	0.0	1.8	263.0
PRESQUE ISLE (ERIE) - JERRY MCWILLIAMS, COMPILER																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	*Total
FEB	2	4.0	0	9	0	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	20
MAR	13	54.3	0	9994	1	49	5	8	11	1	100	0	106	2	0	20	7	1	0	23	10328
APR	20	74.5	1	6741	22	42	10	289	17	0	13	1891	189	2	0	144	11	1	0	23	9397
MAY	12	37.8	0	1135	40	122	7	54	6	0	0	1555	45	0	0	6	1	0	0	3	2974
TOTAL	47	170.5	1	17879	63	223	23	351	34	1	113	3446	340	4	0	170	19	2	0	49	22719
TOTAL/HR			0.01	104.86	0.37	1.31	0.13	2.06	0.20	0.01	0.66	20.21	1.99	0.02	0.00	1.00	0.11	0.01	0.00	0.29	133.25
% OF FLIGHT			0.0	78.7	0.3	1.0	0.1	1.5	0.1	0.0	0.5	15.2	1.5	0.0	0.0	0.7	0.1	0.0	0.0	0.2	100
AVG 2014-'23	52.8	176.1	1.2	15901.1	69.5	190.1	63.6	672.3	47.2	1.1	147.0	3357.5	461.6	8.6	0.8	271.7	14.3	6.7	0.1	34.2	21249
* INCLUDING SWAINSON'S HAWK ON 4/21/2023																					
TUSSEY MOUNTAIN (CENTRE) - NICK BOLGIANO AND JON KAUFMANN, COMPILERS																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
FEB	5	35.5	0	7	0	2	0	2	1	0	5	0	5	0	9	0	0	0	0	0	31
MAR	27	195.3	0	99	14	43	8	27	9	0	25	0	115	0	94	16	3	4	0	15	472
APR	25	186.8	0	51	63	18	14	127	15	0	2	728	120	0	15	23	1	0	0	10	1187
TOTAL	57	417.5	0	157	77	63	22	156	25	0	32	728	240	0	118	39	4	4	0	25	1690
TOTAL/HR			0.00	0.38	0.18	0.15	0.05	0.37	0.06	0.00	0.08	1.74	0.57	0.00	0.28	0.09	0.01	0.01	0.00	0.06	4.05
% OF FLIGHT			0.0	9.3	4.6	3.7	1.3	9.2	1.5	0.0	1.9	43.1	14.2	0.0	7.0	2.3	0.2	0.2	0.0	1.5	100
AVG 2014-'23	56.7	400.9	7.7	185.6	88.9	69.1	21.3	162.1	26.2	0.6	40.3	919.6	286.0	2.2	169.5	42.3	6.3	2.5	0.0	30.2	2059.9
2023 TOTALS FOR ALL WATCHSITES																					
MONTH	Days	Hrs	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
FEB	18	93.0	3	42	0	17	1	3	2	0	7	0	22	0	14	0	0	0	0	4	115
MAR	94	577.0	39	10509	39	144	16	71	41	1	153	0	356	2	173	46					

Presque Isle (Erie)

Presque Isle counters tallied 22,719 raptors in 170.5 hours over 47 days from February 15 to May 31, a rate of 133.3 birds per hour (Table 1). The total count was 7% above the 10-year average of 21249 and effort was 3% below average. Counts of Turkey Vultures, Bald Eagles, and Merlins were 12%, 17%, and 33% above average, respectively. The 17,879 Turkey Vultures counted was the third highest total in Presque Isle’s 15-year history. Counts of Ospreys, Northern Harriers, Sharp-shinned Hawks, Cooper’s Hawks, Red-shouldered Hawks, Red-tailed Hawks, American Kestrels, and Peregrine Falcons were all below average. The counts of Northern Harriers (23) and Red-tailed Hawks (340) were the lowest count totals recorded at Presque Isle.

The first big Turkey Vulture flight occurred on March 16 with 1,232 vultures counted along with a season-high 55 Red-shouldered Hawks, an American Goshawk, and a Rough-legged Hawk. Flights of Turkey Vultures continued to build over the next two weeks, culminating in a season high 4,303 vultures on March 29. A steady south-southwest wind on April 5 produced the largest flight of the season with 2,277 raptors counted including 1,908 Turkey Vultures and season highs of 105 Sharp-shinned Hawks, 63 Red-tailed Hawks, and 92 American Kestrels. Broad-winged Hawks had two distinct peaks with 1,807 on April 21 and 1,205 on May 19. A juvenile light morph Swainson’s Hawk was seen on April 21, the first record for Presque Isle’s spring count.

Table 2: Peak Count Dates for Broad-winged Hawk and Red-tailed Hawk at Selected Pennsylvania Watch Sites.

Site	Broad-winged Hawk		Red-tailed Hawk	
	Peak Count	Date	Peak Count	Date
Allegheny Front	58	4/20	23	3/6
Chamber’s Lake	72	4/18	8	4/11
Hawk Mountain*	215	4/21	10	4/17
Jacks Mountain	45	4/21	12	3/1
Presque Isle	1807	4/21	63	4/5
Tussey Mountain	236	4/20	29	4/5

* Site begins count in April

Tussey Mountain (Centre)

Counters tallied 1,690 raptors in 417.5 hours over 57 days from February 24 to April 26, a rate of 4.1 birds per hour (Table 1). The total count was 18% below the 10-year average and effort was 4% above average. No species had above average counts this spring. Counts of Turkey Vultures, Ospreys, Red-shouldered Hawks, Broad-winged Hawks, Red-tailed Hawks, and Golden Eagles were all below average. The count of 118 Golden Eagles this year was 30% below the 10-year average of 169.5 and the lowest recorded in Tussey Mountain’s 23-year history. Counts of all other species were near average.

Strong southerly winds on March 1 produced a season high 13 Red-shouldered Hawks and 12 Golden Eagles. March 1 was the only day during the first three weeks of March with southerly winds, the time when most of the Golden Eagles migrate past Tussey Mountain. More favorable winds in early April produced a three-day total of 65 Red-tailed Hawks with a season high 29

counted on April 5 (Table 2). Also tallied on April 5 were 48 Sharp-shinned Hawks and six American Kestrels. The season’s high count occurred on April 20 with 267 raptors observed including eight Ospreys, 17 Sharp-shinned Hawks, 236 Broad-winged Hawks, and two Red-tailed Hawks.

CONCLUSIONS

Although effort was above average at all but one site, it was not reflected in the count totals, with only two sites recording above average totals. And while the overall total for all species and Osprey, in particular, were above average, this was due to the addition of the Chamber’s Lake watch site. When factoring in effort by calculating encounter rate (birds per hour), both the number of raptors and number of Ospreys per hour were below the 10-year average. Osprey was not the only species with a below average rate this spring; encounter rates for Northern Harriers and Sharp-shinned Hawks were the lowest ever recorded during spring in Pennsylvania, and encounter rates for Red-tailed Hawks were the third lowest.

The warm, dry winter certainly could have played a part in the lower numbers recorded for some species. Below average snowfall may have allowed some birds to overwinter farther north than normal. Winter snow cover appears to be one of the factors that affects Golden Eagle migration at Tussey Mountain with their largest counts recorded when snow cover on the lookout is several feet deep and the deep snow pushes the eagles further south. This year there was little snow cover, allowing eagles to access food more readily. Similarly, increasingly warmer winter temperatures due to global climate change has been suggested as a cause for Red-tailed Hawks migrating shorter distances or becoming year-round residents.

While numbers of Red-tailed Hawks are increasing on Christmas Bird Counts, which suggests that declines at watch sites are due to shifts in migration, the same cannot be said for other species such as Northern Harriers, Sharp-shinned Hawks, and Rough-legged Hawks. These three species, along with Ospreys, American Goshawks, and American Kestrels were recently named as Raptors at Risk by the Raptor Population Index. Raptors at Risk are the North American raptors with the greatest number of watch sites with declining 10- or 20-year trends. The potential causes for declines among these species are both numerous and varied and include habitat loss, environmental contaminants, loss of prey, and disease. Research is needed to better understand the migration ecology and the conservation threat to these species. For more information on species declines and their causes, visit RPI-Project.org/raptors-at-risk/.

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