

Pennsylvania Raptor Migration Summary – Spring 2024

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The winter of 2023-2024 was Pennsylvania's third warmest in 130 years of record keeping. It was also one of the wettest, and with the warm temperatures, snowfall was below average. This spring was more of the same, with monthly temperatures from February to May ranking from sixth to 20th warmest on record. February was drier than average, but March through May saw above-average precipitation, making this spring the 11th wettest on record. A predominantly southerly flow of wind fueled the early Golden Eagle flight in March and provided lift for a push of Broad-winged Hawks the third week of April.

MIGRATION SUMMARY

Seven Pennsylvania spring watchsites counted 27,845 total raptors in 1,730 hours during 286 days of counting between February 15 and June 6, for a rate of 16.1 raptors per hour. Spring count hours were 15% above the 10-year average of 1,498 hours. The total spring raptor count was 4% above the average of 26,844, and the number of raptors counted per hour was 11% below the average of 18.2.

Four species had above-average counts: Broad-winged Hawk, 94% above average; Golden Eagle, 21% above average; Peregrine Falcon, 54% above average; Mississippi Kite, 311% above average. The Broad-winged Hawk count of 11,846 was the second-highest spring count for Pennsylvania, and the count of 25 Peregrine Falcons was the third-highest total. The count of 23 Mississippi Kites shattered the previous record of 10. Osprey, Bald Eagle, and Merlin had average counts.

Ten species had below-average counts. These included: American Kestrel, 42% below average; Northern Harrier, 28% below average; Sharp-shinned Hawk, 29% below average; Red-tailed Hawk, 28% below average. The latter was the lowest in 25 years of Pennsylvania's spring counts. Only one Rough-legged Hawk was counted this spring, and for only the second time, no American Goshawks were counted.

Table 1 summarizes peak dates for Bald Eagle and Broad-winged Hawk, while Figure 1 provides the locations of the seven spring watchsites. Table 2 (pp 78-79) provides the complete details on each spring 2024 watchsite.

Table 1: Peak count dates for Bald Eagle and Broad-winged Hawk at selected Pennsylvania watchsites

Site	Bald Eagle		Broad-winged Hawk	
	Peak Count	Date	Peak Count	Date
Allegheny Front	10	5/3	230	4/17
Chamber's Lake	4	4/5	246	4/16
Hawk Mountain*	9	4/16	101	4/19
Jacks Mountain	3	4/23	31	4/26
Presque Isle	25	5/13	8653	4/17
Tussey Mountain	5	4/23	576	4/18

* Site begins count in April

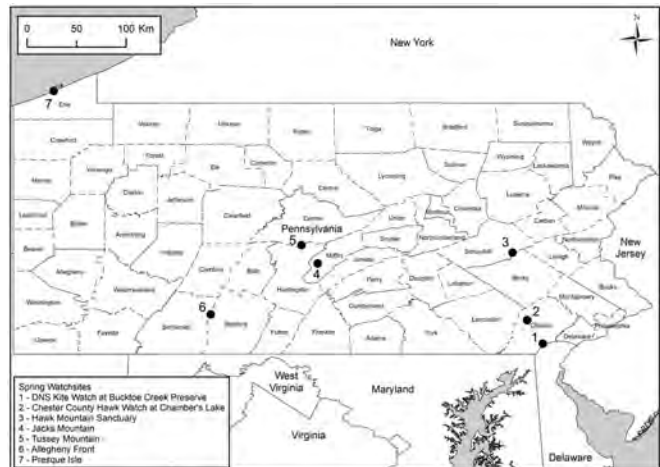


Fig. 1. Spring raptor watchsites in Pennsylvania, 2024.

SITE HIGHLIGHTS

Allegheny Front (Somerset/Bedford)

Watchers counted 1,326 raptors in 379 hours over 62 days from February 15 to May 3, a rate of 3.7 birds per hour. The overall count was 25% above the 10-year average, and effort was 8% above average.

Counts of Bald and Golden eagles were 81% and 65% above average, respectively. The Golden Eagle total of 148 was a new season-long record, and the 74 Bald Eagles counted was the second-highest spring count. Counts of Turkey Vulture, Osprey, Cooper's Hawk, Red-shouldered Hawk, Broad-winged Hawk, American Kestrel, Merlin, and Peregrine Falcon were also above average. The 11 Peregrine Falcons were the second-highest count at Allegheny Front. Counts of Black Vulture, Northern Harrier, Sharp-shinned Hawk, and Red-tailed Hawk were all below their 10-year averages.

Predominantly southeast winds during the first week of March fueled the record Golden Eagle flight. Ninety-two goldens were counted between March 1 and 8, including a season high 27 on March 4. By month's end, 115 Golden Eagles were tallied, the second-highest total for March in Allegheny Front's 25 years of spring counting. Flights of Red-tailed Hawk also peaked in the first week of March with a season-high 17 recorded on March 3 and 8. Falcons were on the move April 7 and 8 with four American Kestrels, two Merlins, and five Peregrine Falcons counted, nearly 50% of the Merlin and Peregrine flights for the season. The high count for the season occurred on April 17 with 241 raptors, including a season-high 230 Broad-winged Hawks. The count ended on May 3 with 73 birds, including season highs of 36 Ospreys, 10 Bald Eagles, and two Merlins.

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

2024 was the third full season for this watch site. Chambers Lake counters recorded 737 raptors in 396 hours over 55 days from March 3 to May 24, a rate of 1.9 birds per hour. A Red-shouldered Hawk circling high to the north on March 3 was the first migrant of the season. The Osprey total of 106 was the largest of any Pennsylvania watch site. Ospreys were observed most days in April with peaks of six recorded April 6 and 14. A season-high 246 Broad-winged Hawks were counted April 16.

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

2024 marked the seventh year for this late spring watch for kites and shorebirds. Bucktoe watchers tallied 32 raptors in 118 hours over 21 days from May 17 to June 6, a rate of 0.3 birds per hour. The count of 22 Mississippi Kites was 69% of the total flight and was well above the five-year average of 10. The high count occurred on May 23 with a season-high eight Mississippi Kites.

Hawk Mountain (Berks/Schuylkill)

Counters recorded 1,001 raptors in 254 hours over 42 days from March 18 to May 15, a rate of 3.8 birds per hour. The total count was 6% above the 10-year average of 947 and effort was average. The count of 87 Bald Eagles was a new record high and 74% above average. Black Vulture, Sharp-shinned Hawk, and Merlin all had above-average counts. Counts of Turkey Vulture, Osprey, and Red-tailed Hawk were below their 10-year averages. All other species had average counts.

Accipiter flights were steady through April, peaking on the 7th with nine Sharp-shinned Hawks and four Cooper's Hawks. A subadult Golden Eagle was recorded on April 11, and another subadult golden was seen on April 13 but did not appear to be migrating. A season-high nine Bald Eagles were tallied on April 16 along with six Black Vultures, one Northern Harrier, four Sharp-shinned Hawks, one Red-shouldered Hawk, 80 Broad-winged Hawks, and one Merlin. Rain shut down the flight on April 19, but not before a season high 101 Broad-winged Hawks soared past North Lookout. A May-high 25 raptors were tallied on the 13th with two Ospreys, five Bald Eagles, one Northern Harrier, 13 Broad-winged Hawks, one Red-tailed Hawk, and two unidentified raptors. The last migrant of the season was a Red-tailed Hawk on the afternoon of May 14.

Jack's Mountain (Mifflin)

Watchers recorded 116 raptors in 27 hours over 5 days from March 1 to April 26, a rate of 3.5 birds per hour. The high-count day was April 26 with 42 raptors, including seven Ospreys, one Cooper's Hawk, 31 Broad-winged Hawks, one Red-tailed Hawk, one American Kestrel, and one Peregrine Falcon.

Presque Isle (Erie)

Counters tallied 22,208 raptors in 142.3 hours over 45 days from February 20 to May 22, a rate of 156.1 birds per hour. The total count was slightly above the 10-year average of 21,906, though effort was 18% below average. The count of 9,259 Broad-winged Hawks was 127% above average and the second-highest count in Presque Isle's 17-year history. It also was the only species at Presque Isle with an above-average count this spring.

Ten species had below-average counts. Most notable were American Kestrel, 55% below average; Osprey, 52% below average; and Sharp-shinned Hawk, 48% below average. The counts of 32 Ospreys and 123 American Kestrels were the lowest count totals ever recorded at Presque Isle. Counts of Turkey Vulture, Bald Eagle, Northern Harrier, Cooper's Hawk, Red-shouldered Hawk, Red-tailed Hawk, and Rough-legged Hawk were all below average. Counts of Merlin and Peregrine Falcon were close to average.

A March-high 2,954 Turkey Vultures were recorded on the 25th along with a Black Vulture, the only one recorded this spring. April showers on the morning of the 17th brought a record Broad-winged Hawk flight. The counter arrived at 12:30 P.M., and there were already an estimated 1,500 broad-wings in the air in three large kettles, with more on the way. An estimated 7,300 broad-wings were tallied in the first 30 minutes. By day's end, counters recorded 8,653 broad-wings. Also mixed with the broad-wings were season-high counts of 107 Sharp-shinned Hawks, 34 American Kestrels, and one Golden Eagle. A light morph Rough-legged Hawk was observed on April 23, the only rough-leg counted at watch sites in Pennsylvania this spring. The first migrant of the day on May 21 was a Mississippi Kite eating insects on the wing, the only watch site other than the Kite Watch at Bucktoe Creek to record a kite this spring. Migrants were still moving through on May 22 when the count ended, with 216 raptors tallied, including 62 Turkey Vultures, three Ospreys, one Bald Eagle, and 149 Broad-winged Hawks.

Tussey Mountain (Centre)

Counters recorded 2,425 raptors in 414.3 hours over 56 days from February 20 to April 26, a rate of 5.8 birds per hour. The total count was 18% above the 10-year average, though effort was 3% above average. Counts of Sharp-shinned Hawk and Broad-winged Hawk were 28% and 43% above average, respectively. Counts of Osprey and Red-tailed Hawk were 27% and 21% below average. Counts of all other species were average.

Southerly winds on February 21 produced the first three Golden Eagles of the season along with two Turkey Vultures and a Bald Eagle. Several days of south-southeast winds during the first week of March produced double-digit Golden Eagle flights, including a season-high 27 goldens on the 8th. Turkey Vultures were on the move April 4 following three days of rain; 78

vultures were tallied along with three Ospreys, one Bald Eagle, eight Sharp-shinned Hawks, one Red-shouldered Hawk, one Golden Eagle, and one American Kestrel. A five-day total of 1,208 Broad-winged Hawks was counted between April 14 and 18 with a peak of 576 broad-wings on the 18th, accounting for 88% of the season's broad-wing flight.

CONCLUSIONS

Although the number of hours spent hawk watching was up this year, this increased effort wasn't reflected in the total count, which was only slightly above average. The passage rate, or the number of birds counted per hour, was 11% below average. Only Broad-winged Hawk and Peregrine Falcon had above-average passage rates. Golden Eagles had average rates, and the remaining 13 of 16 species had below-average passage rates.

Below-average passage rates for species such as Turkey Vulture can probably be attributed to inter-year variation, but for other species, this appears to be a continuation of a long-term trend. The passage rate of Red-tailed Hawk was the lowest recorded in the 25 years of spring hawk counting in Pennsylvania. Moreover, six of the lowest passage rates for Red-tailed Hawks have occurred in the last seven years, and passage rates show a significant decline over the last 25 years, with a steep decline in the last 15 years. A similar trend can be seen during the fall migration. These declines in passage rates may be the result of changes in migration behavior rather than declines in populations. Counts of Red-tailed Hawk on Christmas bird counts in New England are increasing, suggesting that red-tails are migrating shorter distances or becoming year-round residents. However, the same cannot be said for other species.

Passage rates of Northern Harrier and Sharp-shinned Hawk were 40% and 42% below average, and the third- and fourth-lowest passage rates in the last 25 years, respectively. For Northern Harrier, the three lowest passage rates have occurred in the last three years. What is causing declines in passage rates? It does not appear to be caused by shortstopping, or birds migrating shorter distances, such as red-tails. Christmas Bird Counts show an increase in harrier numbers in Maine and an increase in sharp-shin numbers in Vermont, but trends for other states are either stable or declining, suggesting that the declining passage rates may be due to population declines. The causes of these declines may include habitat loss, environmental contaminants, and global climate change, but further research is needed to better understand why we are seeing fewer raptors now than we did 15 years ago.

Acknowledgments: Thank you to the site compilers for providing insight and access to their data, particularly Nick Bolgiano and Bob Stewart. Data were downloaded from www.hawkcount.org (accessed June 2024), a site managed by Jason Sodergren, HMANA database manager and the Hawk Migration Association of North America. Regional weather information was gathered from the Northeast Regional Climate Center at Cornell University.

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Table 2: Spring 2024 Count Results for Pennsylvania Watchsites

ALLEGHENY FRONT (Bedford) - Bob Stewart, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
February	12	64.3	0	28	0	12	1	1	2	0	4	0	31	0	18	0	0	0	0	0	9	106
March	25	158.5	0	103	4	26	2	21	18	0	21	0	100	0	115	12	1	4	0	0	16	443
April	22	137.8	1	63	23	24	6	34	15	0	6	419	55	0	15	5	2	5	0	0	25	698
May	3	18.3	0	0	36	12	2	6	1	0	0	9	6	0	0	0	0	2	2	0	3	79
Total	62	378.9	1	194	63	74	11	62	36	0	31	428	192	0	148	17	5	11	0	0	53	1326
Total per hr			0.00	0.54	0.18	0.21	0.03	0.17	0.10	0.00	0.09	1.19	0.53	0.00	0.41	0.05	0.01	0.03	0.00	0.15	3.68	
% of flight			0.1	14.6	4.8	5.6	0.8	4.7	2.7	0.0	2.3	32.3	14.5	0.0	11.2	1.3	0.4	0.8	0.0	4.0	100.0	
Average last 10 yrs	57.7	339.8	8.0	121.0	58.0	40.9	11.9	76.6	33.0	1.2	26.0	335.8	202.1	0.2	89.5	10.8	4.1	4.3	0.0	38.0	1061.4	

CHESTER COUNTY HAWK WATCH AT CHAMBERS LAKE (Chester) - Larry Lewis, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
March	15	115.5	6	195	24	15	1	5	2	0	16	0	30	0	0	0	0	0	0	0	0	294
April	22	172.0	0	35	61	13	4	12	8	0	0	274	8	0	0	5	0	0	0	0	0	420
May	18	108.5	0	0	21	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	23
Total	55	396.0	6	230	106	28	5	19	10	0	16	274	38	0	0	5	0	0	0	0	0	737
Total per hr			0.02	0.58	0.27	0.07	0.01	0.05	0.03	0.00	0.04	0.69	0.10	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	1.86
% of flight			0.8	31.2	14.4	3.8	0.7	2.6	1.4	0.0	2.2	37.2	5.2	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	100.0

DELAWARE NATURE SOCIETY KITE WATCH AT BUCKTOE CREEK PRESERVE (Chester) - Larry Lewis, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
May	15	83.0	0	0	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0	22	0	31
June	6	34.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	21	117.5	0	0	9	0	0	1	0	0	0	0	0	0	0	0	0	0	0	22	0	32
Total per hr			0.00	0.00	0.08	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.27
% of flight			0.0	0.0	28.1	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.8	0.0	100.0
Average last 5 yrs	21.0	145.9	0.0	0.0	9.6	2.6	0.0	0.8	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	10.4	0.0	23.8	

Table 2: Spring 2024 Count Results for Pennsylvania Watchsites (cont'd)

HAWK MOUNTAIN (Berks/Schuylkill) - David Barber, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
March	2	8.6	0	0	0	7	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	11
April	27	169.5	35	54	45	59	18	81	25	0	3	429	47	0	1	25	11	4	0	0	69	906
May	13	76.0	0	6	8	21	2	6	2	0	1	21	10	0	0	2	0	0	0	0	5	84
Total	42	254.1	35	60	53	87	20	87	28	0	4	450	60	0	1	27	11	4	0	0	74	1001
Total per hr			0.13	0.22	0.20	0.33	0.07	0.33	0.10	0.00	0.01	1.69	0.22	0.00	0.00	0.10	0.04	0.01	0.00	0.28	3.75	
% of flight			3.5	6.0	5.3	8.7	2.0	8.7	2.8	0.0	0.4	45.0	6.0	0.0	0.1	2.7	1.1	0.4	0.0	7.4	100.0	
Average last 10 yrs	42.8	256.9	22.7	72.6	57.1	50.1	18.7	74.8	27.4	0.1	6.2	447.8	73.7	0.0	1.7	25.5	6.7	2.4	0.0	61.5	947.0	

JACKS MOUNTAIN (Mifflin) - Darrell Smith, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
March	2	11.5	0	15	0	1	0	1	3	0	1	0	6	0	0	0	0	0	0	0	0	27
April	3	15.3	0	12	5	0	1	2	0	1	57	9	0	0	0	1	0	1	0	0	89	
Total	5	26.8	0	15	12	6	0	2	5	0	2	57	15	0	0	1	0	1	0	0	0	116
Total per hr			0.00	0.45	0.36	0.18	0.00	0.06	0.15	0.00	0.06	1.71	0.45	0.00	0.00	0.03	0.00	0.03	0.00	0.00	3.48	
% of flight			0.0	12.9	10.3	5.2	0.0	1.7	4.3	0.0	1.7	49.1	12.9	0.0	0.0	0.9	0.0	0.9	0.0	0.0	100.0	
Average last 5 yrs	6.6	32.9	1.0	30.6	13.6	5.4	0.6	10.4	6.8	0.4	2.4	182.4	21.4	0.0	4.6	1.4	0.6	0.6	0.0	1.8	284.0	

PRESQUE ISLE (Erie) - Jerry McWilliams, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total	
February	6	14.0	0	86	0	8	0	0	0	0	0	0	13	0	0	0	0	0	1	0	1	109
March	16	60.0	1	5431	8	32	11	29	12	0	102	0	158	0	0	26	9	1	0	28	5848	
April	12	43.8	0	5952	17	39	19	292	13	0	6	8996	50	1	1	94	3	3	0	12	15498	
May	11	24.5	0	379	7	51	3	33	0	0	0	263	10	0	0	3	0	0	1	3	753	
Total	45	142.3	1	11848	32	130	33	354	25	0	108	9259	231	1	1	123	12	5	1	44	22208	
Total per hr			0.01	83.26	0.22	0.91	0.23	2.49	0.18	0.00	0.76	65.07	1.62	0.01	0.01	0.86	0.08	0.04	0.01	0.31	156.06	
% of flight			0.0	53.4	0.1	0.6	0.1	1.6	0.1	0.0	0.5	41.7	1.0	0.0	0.0	0.6	0.1	0.0	0.0	0.2	100.0	
Average last 10 yrs	52.8	172.8	1.3	#####	66.2	188.2	61.4	673.9	38.5	1.1	139.4	4077.7	432.1	6.9	0.6	271.2	14.7	6.7	0.3	36.2	21905.8	

TUSSEY MOUNTAIN (Centre) - Nick Bolgiano and Jon Kaufmann, compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
February	8	48.2	0	7	0	7	0	0	0	0	4	0	10	0	24	0	0	1	0	1	54
March	26	206.3	0	64	7	27	1	50	16	0	26	0	104	0	125	15	1	2	0	10	448
April	22	159.8	0	125	52	35	18	153	12	0	5	1378	99	0	15	23	3	1	0	4	1923
Total	56	414.3	0	196	59	69	19	203	28	0	35	1378	213	0	164	38	4	4	0	15	2425
Total per hr			0.00	0.47	0.14	0.17	0.05	0.49	0.07	0.00	0.08	3.30	0.51	0.00	0.39	0.09	0.01	0.01	0.00	0.04	5.81
% of flight			0.0	8.1	2.4	2.8	0.8	8.4	1.2	0.0	1.4	56.8	8.8	0.0	6.8	1.6	0.2	0.2	0.0	0.6	100.0
Average last 10 yrs	56.7	401.4	7.5	179.5	80.7	72.3	21.1	158.9	24.3	0.4	37.5	963.6	269.2	2.0	165.8	42.1	6.1	2.4	0.0	32.1	2063.1

2024 TOTALS FOR ALL WATCHSITES

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
February	26	126.5	0	121	0	27	1	1	2	0	8	0	54	0	42	0	0	2	0	11	269
March	86	560.4	7	5808	43	108	15	106	52	0	166	0	401	0	240	53	11	7	0	54	7071
April	108	698.1	36	6229	210	175	65	573	75	0	21	11553	268	1	32	153	19	14	0	110	19534
May	60	310.3	0	385	80	84	7	48	3	0	1	293	26	0	5	2	2	2	23	11	970
June	6	34.5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	286	1729.8	43	12543	334	394	88	728	132	0	196	11846	749	1	314	211	32	25	23	186	27845
Total per hr			0.02	7.25	0.19	0.23	0.05	0.42	0.08	0.00	0.11	6.85	0.43	0.00	0.18	0.12	0.02	0.01	0.01	0.11	16.10
% of flight			0.2	45.0	1.2	1.4	0.3	2.6	0.5	0.0	0.7	42.5	2.7	0.0	1.1	0.8	0.1	0.1	0.1	0.7	100.0
Average last 10 yrs	257.3	1497.8	78.4	#####	330.5	387.0	122.1	1035.6	147.7	3.1	223.1	6098.8	1035.9	9.1	258.3	362.8	34.5	16.2	7.2	170.7	26843.5

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