

Pennsylvania Autumn Raptor Migration Summary 2021

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Another year, another record. Back in 2005, Pennsylvania's watch sites recorded 1206 Bald Eagles, a rate of around 0.16 eagles per hour. Who would have guessed that only 16 years later Pennsylvania hawkwatchers would count three times that number at a rate of 0.47 eagles per hour? This year's total of 3773 Bald Eagles set a new record, eclipsing the old record of 3715 set in 2019. However, while the return of the Bald Eagle is something to celebrate, there are several species whose counts are declining at Pennsylvania's watch sites and deserve our attention. Read on to see how the 2021 autumn migration season in Pennsylvania unfolded and what species to keep an eye on in the following years.

Migration Summary

In autumn 2021, 15 Pennsylvania watch sites counted 121,587 raptors in 8063 hours over 1211 days, for an average of 15.1 hawks per hour (Table 1). Bald Eagle Mountain returned this year and Tussey Mountain conducted its first full season count. Unfortunately, Bucktoe Creek Preserve did not count this year. Total effort was 4% above average and the total raptor count was 2% above the 10-year average of 119,095 (Table 1). Above average counts were observed for Turkey Vulture, 11,863, up 43% from the 10-year average of 8327; Bald Eagle, 3773, 28% above average; Sharp-shinned Hawk, 23,561, up 6%; Golden Eagle, 1490, up 26%; American Kestrel, 1980, up 8%; and Merlin, 693, up 7% (Table 1).

Eight of 16 species had counts below their 10-year averages. The largest dips were seen in Northern Goshawk, 17, 83% below average and Rough-legged Hawk, 4, 51% below average. Osprey and Red-tailed Hawk continued short-term declines; Ospreys, 1736, were 13% below average and Red-tailed Hawks, 8252, were 25% below average. Other species with below average counts include Northern Harrier, 780, 4% below average; Cooper's Hawk, 2331, 6% below average; and Red-shouldered Hawk, 945, 19% below average (Table 1).

Site Highlights

Allegheny Front (Somerset/Bedford) – Allegheny Front counters tallied 9638

raptors in 713 hours on 112 days for an average of 13.5 hawks per hour from August 15 to December 21. Effort was 3% below average. Total raptors were slightly below the 10-year average of 9794. Only counts of Bald Eagles and Broad-winged Hawks were above average, 22% and 8% above, respectively. Most other species had counts below the 10-year averages. Notably, Turkey Vultures, 155, were 61% below average, the lowest since the early 90s. Counts of Red-tailed Hawks, 869, were 23% below average and the lowest in count history, and no Northern Goshawks were recorded for only the second time.

Morning fog shrouded the ridge on September 19 and as it dissipated, kettles of Broad-winged Hawks could be seen circling in the mist. A steady stream of 1249 broad-wings over the next hour kept the counters busy and by day's end a season high 1818 broad-wings were recorded (Table 2). Moderate southeast winds on October 8 produced the best flight in October and season high counts of 247 Sharp-shinned Hawks, 8 American Kestrels, and 7 Peregrine Falcons. October's high count of 365 raptors on the 28th included 253 Red-tailed Hawks, a high day for the season, and the highest single day red-tail total of a watch site in the state this autumn. The peak flight of Golden Eagles came on December 5 with 19.

Bake Oven Knob (Lehigh/Carbon) – Counters observed 12,926 raptors in 667 hours on 98 days for an average of 19.4 raptors per hour from August 15 to November 26. Effort was 15% below the average of 784 hours, but the total count was slightly above the 10-year average of 12,738. Counts of both vultures were above average - Black Vultures were 18% above average and Turkey Vultures 24% above average. The count of 1182 Turkey Vultures set a new season-long record. Counts of Bald Eagle, 387, and Broad-winged Hawk, 6692, were 7% and 17% above average, respectively. Counts of the remaining 11 species were below average. Counts of Northern Goshawk, one, and Red-tailed Hawk, 679, were 91% and 52% below average, respectively, and were the lowest counts for both species in Bake Oven's history. The count of 30 Peregrine Falcons was 40% below average and the lowest since 1998. Other species with below

average counts include Osprey, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, American Kestrel, and Merlin.

Two early Golden Eagles were recorded on September 6. The first big Broad-winged Hawk flight occurred on September 14 with 1148 tallied and broad-wing counts peaked on September 20 with 1798 (Table 1). The middle of October saw six straight days with triple-digit Sharp-shinned Hawk counts, with a peak of 325 on the 20th, as well as a season high 15 Cooper's Hawks. The only Northern Goshawk, an immature, was seen November 9.

Bald Eagle Mountain – Eagle Field (Centre) – Bald Eagle hawk watchers counted 5078 raptors in 585 hours over 85 days from September 9 to December 22 for an average of 8.7 raptors per hour. This was the second year for this watch site, which last counted in 2019. Bald Eagle's count of 351 Golden Eagles was the largest ever recorded in the eastern flyway. They also had the four highest single-day Golden Eagle counts in Pennsylvania this year with a season high 42 goldens recorded on November 26. Turkey Vultures, the most abundant migrant, peaked October 28 with 543.

Council Cup (Luzerne) – Council Cup watchers recorded 561 raptors in 50.5 hours over 13 days from September 20 to November 9 for an average of 11.1 raptors per hour. Effort was 19% below average and the count was 27% below the average of 769.

Counters recorded a high of 191 raptors on October 27, including season highs of 78 Turkey Vultures, 15 Sharp-shinned Hawks, 5 Cooper's Hawks, 69 Red-tailed Hawks, 15 Red-shouldered Hawks, one Osprey, 2 Northern Harriers, and 6 Bald Eagles. A season high 12 Bald Eagles was tallied November 1 (Table 2) and a late Osprey on November 2.

Hawk Mountain (Berks/Schuylkill) – Hawk Mountain counters tallied 17,326 raptors in 1115 hours over 120 days from August 15 to December 26 for an average of 15.5 raptors per hour. Effort was similar to the average of 1109 hours and the overall

Table 2. Peak One-day counts at watchsites in Autumn 2021

Site Name	Broad-winged Hawk Peak Count	Hawk Date	Bald Eagle Peak Count	Bald Eagle Date
Allegheny Front	1818	9/19	15	9/20
Bake Oven Knob	1798	9/20	19	9/3
Bald Eagle Mountain	326	9/18	17	12/3
Council Cup	-	-	12	11/1
Hawk Mountain	1534	9/20	41	9/2
Jack's Mountain	1302	9/19	14	several
Little Gap	1915	9/20	22	11/26
Militia Hill	1069	9/25	12	9/18
Rocky Ridge	872	9/20	12	9/10
Rose Tree Park	112	9/19	16	10/27
Second Mountain	795	9/21	18	11/19
Stone Mountain	804	9/16	11	10/17
Summit Mountain	1702	9/14	1	several
Tussey Mountain	238	9/25	12	9/10
Waggoner's Gap	1485	9/19	38	9/2

count was 6% above the 10-year average of 16,292. Counts of Black Vultures, 490, and Bald Eagles, 611, were 217% and 31% above average, respectively, and set new season long count records (Table 1). The Peregrine Falcon count of 71 was 12% above average and the third highest season long count. Other species with above average counts include Sharp-shinned Hawk, Cooper's Hawk, and Broad-winged Hawk, all 11% above average; Golden Eagle, 7%; and American Kestrel, 10% (Table 1). Four species were below average. Counts of Northern Goshawk, 1, and Red-tailed Hawk, 1157, were 95% and 35% below average, respectively; the lowest counts in Hawk Mountain history. Counts of Osprey, 339, and Red-shouldered Hawk, 145, were 7% and 15% below average, respectively.

Bald Eagles were on the move September 2 following the remnants of Hurricane Ida on the first. Forty-one Bald Eagles were counted including 26 after 4:00 pm (Table 2). This was the second highest single-day total at Hawk Mountain. Gusty northwest winds on October 18 produced season highs of 409 Sharp-shinned Hawks and 51 Cooper's Hawks along with 8 Bald Eagles, 24 Red-tailed Hawks, 13 American Kestrels, 6 Merlins, and 3 Peregrine Falcons. The only Northern Goshawk of the season, an adult, was recorded November 3 along with a season high 13 Golden Eagles. A light morph Rough-legged Hawk was recorded November 29 in addition to 11 Bald Eagles, 34 Red-tailed Hawks, and 8 Golden Eagles. Five of the ten highest single day counts of Black Vultures occurred in 2021, with a record high 95 Black Vultures tallied December 5.

Jack's Mountain (Mifflin) – Jack's Mountain counters tallied 8054 raptors in 496 hours across 84 days from August 19 to December 26 for an average of 16.2 hawks per hour. Effort was slightly below the 10-year average of 512 hours and the total count was 20% above the average of 6704. Nine of 15 species had counts above their 10-year average and a new season record was set for Turkey Vulture with 433, 107% above average. Counts of Bald Eagle, 223, were 41% above average and the third highest seasonal total at Jack's Mt. Counts of Red-shouldered Hawk, 34, were 36% above average. Jack's Mountain was the only watch site in Pennsylvania with above average red-shoulder counts. Other species above average include Osprey, Northern Harrier, Sharp-shinned Hawk, Broad-winged Hawk, American Kestrel, and Peregrine Falcon. Black Vultures, Cooper's Hawks, Red-tailed Hawks, Golden Eagles, and Merlins were below average. The count of Golden Eagles, 92, was 25% below average and the lowest count since 2013. While never abundant, no Black Vultures were recorded this year.

Light and variable winds on September 15 produced the biggest flight of the season with a season high 1305 Broad-winged Hawks along with 14 Bald Eagles, the second highest single day count (Table 2). A second pulse of Broad-winged Hawks moved through four days later on the 19th when 1302 streamed past the watch. October's high count of 257 raptors on the 28th included season highs of 10 Red-shouldered Hawks and 142 Red-tailed Hawks. The Red-shouldered Hawk count on the 28th was the second highest single

day count in Jack's history. Golden Eagles peaked November 3 with 12.

Little Gap (Northampton) – Little Gap observers counted 13,605 hawks in 382 hours over 63 days from September 4 to December 19 for an average of 35.6 birds per hour. Effort was 25% below average. Despite the lower effort, the overall total was 11% above the average of 12,302, due in large part to the above average Broad-winged Hawk count. Counts of broad-wings, 9101, were 31% above the 10-year average of 6945. Counts of Black and Turkey Vultures were 40% and 25% above average, respectively. Counts of Bald Eagle, 313, and Cooper's Hawk, 286, also were above average. Counts of all other species, except Merlin and Peregrine Falcon, were below average. Like other sites, counts of Northern Goshawk and Red-tailed Hawk, showed the largest drops, 92% and 54%, respectively.

An early immature Golden Eagle was recorded September 13. Mid-September saw large Broad-winged Hawk flights with counts over 1000 on four of five days, peaking on the 20th with 1905, the largest broad-wing flight in Pennsylvania this autumn (Table 2). A strong cold front October 17 produced a peak flight of 237 Sharp-shinned Hawks. A strong flight continued the next day when counters recorded peak counts of 35 Cooper's Hawks and 17 Merlins, the third highest one-day total for Little Gap. An immature Northern Goshawk recorded November 1 was the first and only goshawk spotted this autumn. A late afternoon push of Black Vultures November 14 produced a new single-day high record of 32.

Militia Hill (Montgomery) – Militia Hill counters recorded 6981 raptors in 466.5 hours across 75 days from September 1 to November 15 for an average of 15.0 raptors per hour. Effort was 5% above the 10-year average 444. The overall count was 33% below the average of 10,475. The count of 2384 Turkey Vultures was 146% above the average of 969 and set a new season-long count record. Counts of Cooper's Hawks, 140, also were above average. Counts of all other species were either average or below average. Most notably, the count of Osprey, 123, was 38% below average and the lowest season long count at Militia Hill. Counts of Broad-winged Hawks, 3093, and Red-tailed Hawks, 59, were 60% and 38% below average, respectively. Northern Harriers continued to decline with this year's count of 36 being 25% below average.

The high count of the season occurred on September 25 with 1085 raptors including a season high 1069 Broad-winged Hawks (Table 2). A Mississippi Kite was spotted September 26, the only Mississippi Kite recorded at Pennsylvania watches this autumn. Flights of Turkey Vulture increased the last week of October with four days over 300, including a season high 362 October 28, the third highest day in Militia Hill's history.

Rocky Ridge Park (York) – Rocky Ridge observers tallied 3306 raptors in 244 hours on 57 days from August 15 to November 17 for an average of 13.5 birds per hour. Effort was well above the 10-year average of 159 hours, whereas the total count was 17% below the 10-year average of 3962. Due to the increased effort, counts for most species were above average with the exception of the 1881 Broad-winged Hawks, 40% below the 10-year average of 3185. New count records were set for Turkey Vulture, 354, and Bald Eagle, 95; 312% and 161% above average, respectively.

A season high 12 Bald Eagles were counted September 10, the second highest day at Rocky Ridge (Table 2). The count peaked September 20 with a high of 916 raptors including a season high 872 Broad-winged Hawks (Table 2). Easterly winds October 10 produced 110 Sharp-shinned Hawks, a new single day record for Rocky Ridge.

Rose Tree Park (Delaware) – Rose Tree Park counters recorded 2844 raptors in 425 hours over 78 days from September 1 to November 19 for an average of 6.7 hawks per hour. Effort was 8% below the 10-year average of 464 hours, and the overall count was 39% below the average of 4697. Turkey Vulture, Bald Eagle, and American Kestrel were all above average. The total of 201 American Kestrels was 35% above average, the highest since 2011. Counts of all other species were either at or below average (Table 1). The largest drops were seen in counts of Broad-winged Hawk and Red-tailed Hawk, 73% and 56% below average, respectively. Both species had the second lowest counts in Rose Tree Park's 23 years of counting. Counts of Osprey continue to decline; the 113 counted was 18% below average.

Clear blue skies made counting challenging September 19 when a season high 112 Broad-winged Hawks were tallied along with 6 Bald Eagles, 2 Sharp-shinned Hawks, 3 Cooper's Hawks, and 12 American Kestrels (Table 2). September ended on a high note with 141 Sharp-

shinned Hawks and a late push of 95 Broad-winged Hawks. The first migrating Turkey Vultures were recorded October 8 along with a season high 26 American Kestrels. A distant soaring Golden Eagle spotted November 14 was the only golden recorded this autumn. The last official migrant was an adult Bald Eagle at 2:59 pm on November 19.

Second Mountain (Lebanon) – Second Mountain hawk watchers counted 7192 raptors in 814 hours across 117 days from August 9 to December 15 for an average of 8.8 hawks per hour. Effort was 3% above the 10-year average of 788 hours and the overall count was 14% below the 10-year average of 8407. Counts of Turkey Vulture, Bald Eagle, Cooper's Hawk, and American Kestrel all were above average (Table 1). The largest increase was seen in counts of American Kestrel; the 136 kestrels counted was 27% above average. Interestingly, Second Mountain is the only watch site in Pennsylvania that has recorded an increasing trend in kestrel counts the last 10 years! Eight of 15 species had counts below their 10-year averages. Most notable was the low count of Northern Goshawks. The total of 2 goshawks tied for the lowest season count and was 78% below average. Counts of Broad-winged Hawk, 3390, were 20% below the average of 4253. Second Mountain was the only ridge-top site in Pennsylvania that recorded below average broadwing numbers this autumn.

Light southwesterly winds September 14 and 15 produced a pulse of American Kestrels with 17 on the 14th and 14 on the 15th. Also seen on the 15th was a season high 13 Ospreys, 8 Bald Eagles, and 300 Broad-winged Hawks. Triple-digit broadwing flights continued over the next week peaking on the 21st with 795 (Table 2). The first Golden Eagle was spotted September 29. A single-day record of 58 Cooper's Hawks was recorded October 8 along with 77 Sharp-shinned Hawks. Moderate northwest winds on October 20 produced a season high 145 Turkey Vultures, 89 Sharp-shinned Hawks, and an immature Northern Goshawk, one of only two for the fall. A season high 18 Bald Eagles were tallied November 19, the second highest single day total for Second Mountain (Table 2).

Stone Mountain (Huntingdon/Mifflin) – Stone Mountain counters recorded 5750 raptors in 451.1 hours over 80 days from September 3 to December 13 for an average of 12.8 raptors per hour. Effort was 3% below the 10-year average, whereas the total count was 27% above the average of

4541. The count of Broad-winged Hawks, 3559, was 73% above average and was the second highest season long total for Stone Mountain. Bald Eagles and Golden Eagles were the only other species with above average counts, 19% and 30% above average, respectively (Table 1). Nine of the 15 species recorded this autumn had counts below their 10-year averages. Most notable were the counts of Ospreys, 34, 44% below average; and Red-tailed Hawks, 470, 20% below average. Counts for both species were the lowest in the count's 27-year history.

The peak Broad-winged Hawk flight occurred earlier than most watch sites in central Pennsylvania with 804 broad-wings September 16 (Table 2). A second peak three days later produced another 729 broad-wings. Strong west-northwest winds on October 17 produced the best falcon flight of the autumn with 2 American Kestrels, 12 Merlins, and 5 Peregrine Falcons. The 12 Merlins on the 17th was the second highest single day count at Stone Mountain and the peregrine total was a season high. The first Golden Eagle was spotted on October 26 and the high Golden Eagle count, 25, occurred November 26.

Summit Mountain (Fayette) – Summit Mountain watchers tallied 1991 raptors in 22.5 hours over 4 days between September 17 and 21 for an average of 88.5 hawks per hour. Effort was much less than the 4-year average of 80.5. The total count was larger than the average of 1474, due to the concentrated effort during the peak of Broad-winged Hawk migration.

Counters hit the jackpot September 18 when 1728 raptors were tallied, including 1702 Broad-winged Hawks in kettles as large as 600 birds. Other birds spotted on the 18th include 3 Ospreys, one Bald Eagle, one Northern Harrier, 5 Sharp-shinned Hawks, one Cooper's Hawk, 2 Red-tailed Hawks, 3 American Kestrels, and 3 Merlins.

Tussey Mountain (Centre) – Tussey Mountain counters tallied 4021 raptors in 545.6 hours over 83 days from September 8 to December 15 for an average of 7.4 birds per hour. This was the first full season count at Tussey Mountain.

September's peak flight occurred on the 25th when 272 raptors were counted including a season high 238 Broad-winged Hawks along with 4 Bald Eagles and 21 Sharp-shinned Hawks. The next day's flight of 142 raptors included 10 Bald Eagles, 59 Sharp-shinned Hawks, and season highs of 5 Cooper's Hawks and 7 Merlins. Strong west and northwest winds October 27

produced the largest flight of Turkey Vultures, 337, along with an immature Northern Goshawk, the first of the season. Golden Eagles peaked in late November with counts of 12 goldens on the 27th and 29th. A dark morph Rough-legged Hawk was recorded December 12 in addition to 5 Bald Eagles, 5 Red-tailed Hawks, and a Golden Eagle.

Waggoner's Gap (Cumberland) – Waggoner's Gap counters recorded 22,314 raptors in 1086 hours over 142 days from August 1 to December 31 for an average of 20.6 birds per hour. Effort was 5% above the 10-year average of 1038 hours and the overall count was 10% above the average of 20,309. Bald Eagles had a record flight for the fifth straight year; the total of 753 was 27% above the average of 593. Counts of Ospreys, 318, and Northern Harriers, 176, both were 8% above average, one of only two watch sites in Pennsylvania to record above average counts for these species. Other species that had above average counts include, Sharp-shinned Hawk, 24% above average; Broad-winged Hawk, 15%; Golden Eagle, 7%; American Kestrel, 21%; Merlin, 42%; and Peregrine Falcon, 13%. Only four species had below average counts, Black Vulture, 79%; Turkey Vulture, 22%, Northern Goshawk, 88%; and Red-tailed Hawk, 17%.

Following a rainy September 1, a record 38 Bald Eagles were recorded on the 2nd (Table 2). Counts of more than 1000 Broad-winged Hawks occurred three days between September 14 and 21 with a high of 1485 on the 19th (Table 2). Light winds during most of the first three weeks of October hampered the flight, but moderate northwest winds on the 17th started a string of five straight days with Sharp-shinned Hawk counts over 370 including a high of 628 on the 18th. A season high 73 Red-shouldered Hawks were tallied October 28, the fourth highest single day count for Waggoner's Gap. November started with a great flight of 282 raptors, including 17 Bald Eagles, 54 Sharp-shinned Hawks, 13 Red-shouldered Hawks, and season highs of both Red-tailed Hawks, 142, and Golden Eagles, 20. Unfortunately, the rest of the month only saw one day with more than 100 red-tails, but Golden Eagles remained steady with counts of 13 on the 4th and 14 on the 8th. A light morph Rough-legged Hawk spotted on the 23rd was a late-November highlight.

Conclusions

As Charles Dickens wrote, "It was the best of times, it was the worst of times". In

autumn 2021, hawk watchers in Pennsylvania experienced a little bit of both. Counts of Bald and Golden eagles set new records for Pennsylvania. Counts of Bald Eagles were above average at all but one watch site, and the addition of two watch sites, Bald Eagle Mountain and Tussey Mountain, certainly pushed the Golden Eagle count into record territory. Given the longitudinal spread and geographic variation among watch sites in Pennsylvania it is not surprising that counts of most species were mixed with some sites showing above average counts and others below average. However, there are a handful of species that showed consistent count total patterns across watch sites. Counts of Bald Eagles, as mentioned above, were above average at nearly all sites in Pennsylvania. Unfortunately, this was the only species to show this pattern; several others showed the opposite pattern with consistent below average counts across watch sites. Northern Goshawks and Red-tailed Hawks were two such species with counts below average at all sites and counts of Northern Harriers and Ospreys were below average at all but two sites. This is a continuation of declines that were identified in the most recent analysis by the Raptor Population Index (www.rpi-project.org). Although the count trends in Northern Goshawk and Red-tailed Hawks can be explained in part by those species not migrating as far or as much as in the past, the continued decline in counts of Northern Harrier, Osprey, and other species is alarming. Check out the RPI website to see how your favorite raptor is doing, you may be surprised.

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Pennsylvania Autumn Hawk Watch Sites

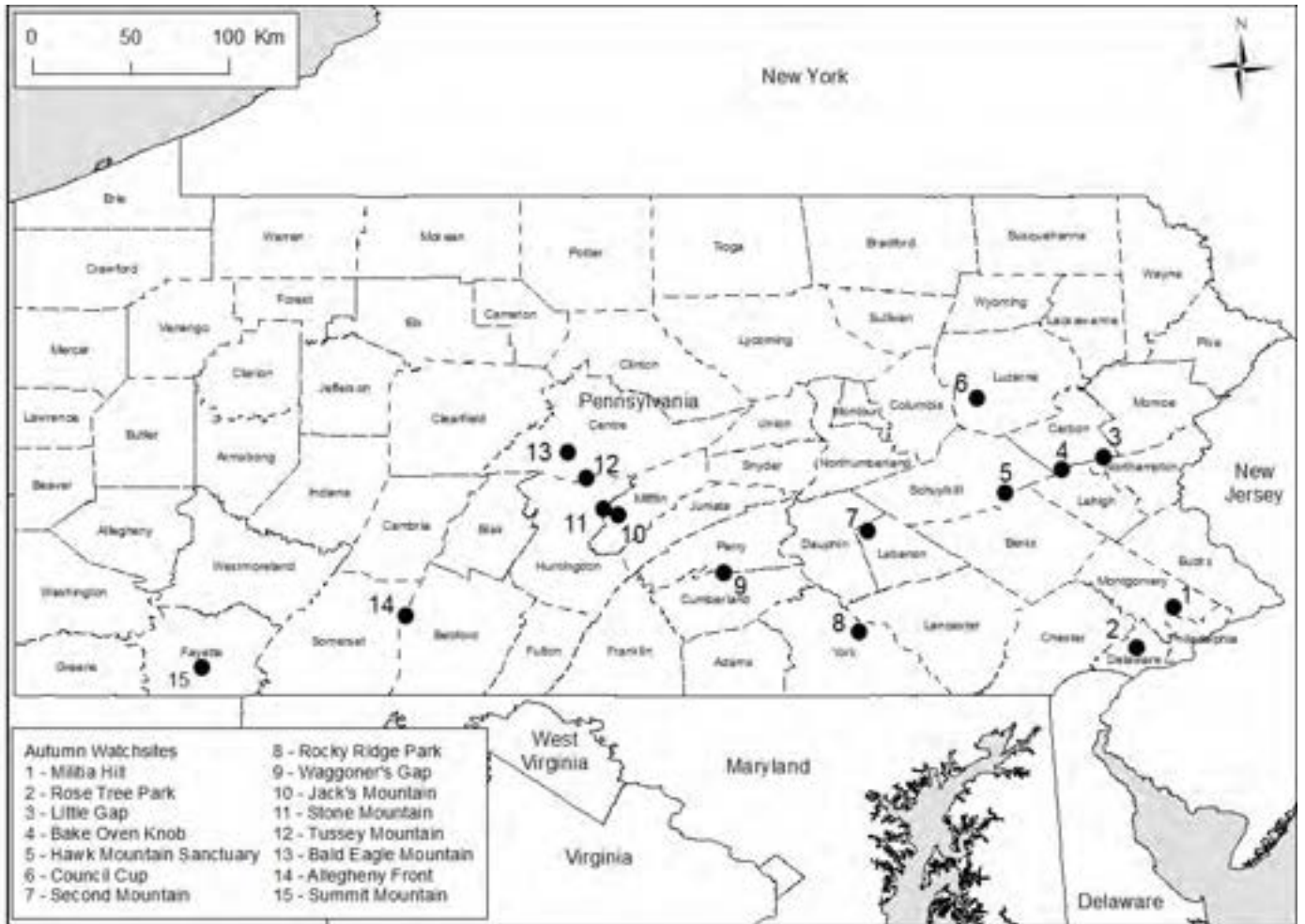


Table 1. Autumn 2021 count results for Pennsylvania watchsites.

ALLEGHENY FRONT (Bedford/Somerset) - Bob Stewart, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	15	100.5	2	0	17	20	2	11	10	0	4	353	141	0	0	2	2	1	0	16	581
September	27	192.5	1	0	60	91	15	178	26	0	10	6365	162	0	2	16	10	10	0	58	7004
October	28	162.3	0	111	5	37	14	850	61	0	8	6	375	0	12	17	10	18	0	20	1544
November	30	190.0	5	43	0	36	4	33	5	0	14	0	169	0	98	0	0	0	0	13	420
December	12	68.0	0	1	0	10	0	2	0	0	2	0	22	0	49	0	0	0	0	3	89
Total	112	713.3	8	155	82	194	35	1074	102	0	38	6724	869	0	161	35	22	29	0	110	9638
Total per hr			0.01	0.22	0.11	0.27	0.05	1.51	0.14	0.00	0.05	9.43	1.22	0.00	0.23	0.05	0.03	0.04	0.00	0.15	13.51
% of flight			0.1	1.6	0.9	2.0	0.4	11.1	1.1	0.0	0.4	69.8	9.0	0.0	1.7	0.4	0.2	0.3	0.0	1.1	100.0
Average last 10 yrs	116.2	786.6	31.7	392.7	85.3	158.9	36.8	1140.4	135.0	4.8	39.8	6236.3	1130.1	1.1	198.3	56.1	26.8	29.3	0.0	90.7	9794.1

BAKE OVEN KNOB (Lehigh) - Bob Hoopes, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	17	107.5	40	143	15	39	3	2	3	0	0	77	19	0	0	3	1	0	0	41	386
September	27	203.3	104	335	169	153	15	646	53	0	5	6609	85	0	3	90	25	12	0	100	8404
October	29	191.9	109	538	20	110	34	1843	124	0	52	6	263	0	22	25	41	13	0	75	3275
November	25	164.5	98	166	0	85	12	55	10	1	34	0	312	0	56	1	7	5	0	19	861
Total	98	667.2	351	1182	204	387	64	2546	190	1	91	6692	679	0	81	119	74	30	0	235	12926
Total per hr			0.53	1.77	0.31	0.58	0.10	3.82	0.28	0.00	0.14	10.03	1.02	0.00	0.12	0.18	0.11	0.04	0.00	0.35	19.37
% of flight			2.7	9.1	1.6	3.0	0.5	19.7	1.5	0.0	0.7	51.8	5.3	0.0	0.6	0.9	0.6	0.2	0.0	1.8	100.0
Average last 10 yrs	103.3	784.3	297.4	950.7	297.2	362.3	78.4	2620.5	231.2	19.0	126.3	5700.2	1427.6	0.1	104.9	135.4	83.2	50.1	0.1	253.4	12738.1

BALD EAGLE MOUNTAIN - EAGLE FIELD (Centre) - Nick Bolgiano and Jon Kauffman, co-compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	19	146.8	0	0	49	67	15	109	8	0	3	1161	11	0	0	59	8	7	0	18	1515
October	26	168.2	0	1558	4	49	19	239	34	1	9	3	317	0	28	23	11	6	0	15	2316
November	28	197.0	0	323	0	106	10	39	7	0	6	0	336	1	200	0	5	0	0	9	1042
December	12	73.3	0	5	0	47	2	8	1	0	2	0	16	0	123	0	0	0	0	1	205
Total	85	585.3	0	1886	53	269	46	395	50	1	20	1164	680	1	351	82	24	13	0	43	5078
Total per hr			0.00	3.22	0.09	0.46	0.08	0.67	0.09	0.00	0.03	1.99	1.16	0.00	0.60	0.14	0.04	0.02	0.00	0.07	8.68
% of flight			0.0	37.1	1.0	5.3	0.9	7.8	1.0	0.0	0.4	22.9	13.4	0.0	6.9	1.6	0.5	0.3	0.0	0.8	100.0

COUNCIL CUP (Luzerne) - Donald Kapral, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	3	9.0	0	0	2	7	0	10	0	0	0	0	0	0	0	6	3	0	0	2	30
October	2	9.0	0	131	1	8	2	20	5	0	15	0	104	0	1	0	0	0	0	0	287
November	8	32.5	0	122	1	22	1	15	4	0	1	1	71	0	0	4	0	0	0	2	244
Total	13	50.5	0	253	4	37	3	45	9	0	16	1	175	0	1	10	3	0	0	4	561
Total per hr			0.00	5.01	0.08	0.73	0.06	0.89	0.18	0.00	0.32	0.02	3.47	0.00	0.02	0.20	0.06	0.00	0.00	0.08	11.11
% of flight			0.0	45.1	0.7	6.6	0.5	8.0	1.6	0.0	2.9	0.2	31.2	0.0	0.2	1.8	0.5	0.0	0.0	0.7	100.0
Average for 10 yrs	15.2	62.3	1.0	113.6	5.9	26.7	6.3	66.4	7.8	0.0	2.7	310.2	186.1	0.0	1.4	18.4	0.9	0.8	0.0	7.7	769.2

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	17	156.3	0	0	53	48	1	6	7	0	1	169	15	0	0	26	1	1	0	5	333
September	28	294.5	16	9	246	198	40	1007	108	0	6	8053	100	0	3	260	71	33	0	44	10194
October	30	286.8	44	458	37	137	52	3012	348	0	61	5	369	0	18	82	88	35	0	55	4801
November	30	259.8	185	137	3	142	25	162	45	1	69	0	589	1	98	3	11	2	0	7	1480
December	15	117.3	245	45	0	86	4	13	6	0	8	0	84	0	26	0	1	0	0	0	518
Total	120	1114.7	490	649	339	611	122	4200	514	1	145	8227	1157	1	145	371	172	71	0	111	17326
Total per hr			0.44	0.58	0.30	0.55	0.11	3.77	0.46	0.00	0.13	7.38	1.04	0.00	0.13	0.33	0.15	0.06	0.00	0.10	15.54
% of flight			2.8	3.7	2.0	3.5	0.7	24.2	3.0	0.0	0.8	47.5	6.7	0.0	0.8	2.1	1.0	0.4	0.0	0.6	100.0
Average last 10 yrs	123.9	1108.9	154.3	656.2	364.5	463.5	125.0	3788.4	464.1	20.6	170.8	7382.2	1770.7	1.0	135.2	337.4	169.1	63.4	0.2	175.9	16291.5

JACK'S MOUNTAIN (Mifflin) - Darrell Smith, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	1	4.0	0	26	1	2	0	0	0	0	0	4	3	0	0	1	0	1	0	0	38
September	26	153.8	0	0	62	122	15	257	23	0	3	5476	31	0	1	44	7	11	0	5	6057
October	22	128.8	0	343	4	42	24	591	47	2	14	4	308	0	20	16	6	11	0	9	1441
November	27	165.3	0	64	0	48	7	24	9	1	16	0	218	0	64	1	2	4	0	10	468
December	8	44.5	0	0	0	9	3	1	0	0	1	0	15	0	7	0	0	0	0	14	50
Total	84	496.3	0	433	67	223	49	873	79	3	34	5484	575	0	92	62	15	27	0	38	8054
Total per hr			0.00	0.87	0.14	0.45	0.10	1.76	0.16	0.01	0.07	11.05	1.16	0.00	0.19	0.12	0.03	0.05	0.00	0.08	16.23
% of flight			0.0	5.4	0.8	2.8	0.6	10.8	1.0	0.0	0.4	68.1	7.1	0.0	1.1	0.8	0.2	0.3	0.0	0.5	100.0
Average last 10 yrs	78.7	511.7	32.4	208.9	61.8	158.5	45.8	757.7	96.9	3.5	25.1	4479.0	598.3	0.4	123.0	58.6	16.1	21.1	0.0	16.9	6704.2

LITTLE GAP (Northampton) - Michael Schall, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	20	142.3	6	12	174	128	12	500	62	0	4	9094	54	0	1	83	35	13	0	14	10192
October	24	138.8	30	390	33	91	28	1511	204	0	51	7	215	0	16	27	43	21	0	28	2695
November	16	90.5	65	88	0	86	15	36	17	1	32	0	257	0	47	0	13	5	0	13	675
December	3	10.3	11	6	0	8	0	1	3	0	0	0	11	0	2	0	0	1	0	0	43
Total	63	381.8	112	496	207	313	55	2048	286	1	87	9101	537	0	66	110	91	40	0	55	13605
Total per hr			0.29	1.30	0.54	0.82	0.14	5.36	0.75	0.00	0.23	23.84	1.41	0.00	0.17	0.29	0.24	0.10	0.00	0.14	35.64
% of flight			0.8	3.6	1.5	2.3	0.4	15.1	2.1	0.0	0.6	66.9	3.9	0.0	0.5	0.8	0.7	0.3	0.0	0.4	100.0
Average last 10 yrs	74.8	505.5	78.0	372.4	232.0	264.2	74.2	2306.2	255.5	12.0	90.2	6944.0	1174.2	0.4	77.2	149.8	87.6	39.7	0.0	75.3	12232.9

MILITIA HILL (Montgomery) - Rich Conroy and Jamie Stewart, co-compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	*Total
September	29	185.0	0	0	84	70	13	179	40	0	6	2995	1	0	1	105	10	8	0	12	3525
October	31	226.8	0	2124	39	48	19	428	93	0	32	98	40	0	1	122	19	5	0	22	3090
November	15	54.8	0	260	0	7	4	31	7	0	33	0	18	0	1	1	1	1	0	2	366
Total	75	466.5	0	2384	123	125	36	638	140	0	71	3093	59	0	3	228	30	14	0	36	6981
Total per hr			0.00	5.11	0.26	0.27	0.08	1.37	0.30	0.00	0.15	6.63	0.13	0.00	0.01	0.49	0.06	0.03	0.00	0.08	14.96
% of flight			0.0	34.1	1.8	1.8	0.5	9.1	2.0	0.0	1.0	44.3	0.8	0.0	0.0	3.3	0.4	0.2	0.0	0.5	100.0
Average last 10 yrs	62.1	444.0	15.1	968.5	197.6	126.8	48.2	779.0	129.9	0.9	78.5	7681.0	94.4	0.2	3.3	226.1	36.9	23.8	0.3	63.6	10474.9

* Including Mississippi Kite on 9/26/2021

ROCKY RIDGE (York) - Brandon Pentz, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	10	32.0	2	0	11	4	1	3	1	0	3	5	6	0	0	2	0	0	0	3	41
September	22	114.3	0	0	37	66	15	167	10	0	5	1874	19	0	0	71	3	3	0	29	2299
October	20	81.5	20	287	3	20	18	399	14	0	9	2	24	0	0	33	6	4	0	18	857
November	5	16.5	6	67	0	5	0	7	7	0	9	0	7	0	0	0	0	0	0	1	109
Total	57	244.3	28	354	51	95	34	576	32	0	26	1881	56	0	0	106	9	7	0	51	3306
Total per hr			0.11	1.45	0.21	0.39	0.14	2.36	0.13	0.00	0.11	7.70	0.23	0.00	0.00	0.43	0.04	0.03	0.00	0.21	13.54
% of flight			0.8	10.7	1.5	2.9	1.0	17.4	1.0	0.0	0.8	56.9	1.7	0.0	0.0	3.2	0.3	0.2	0.0	1.5	100.0
Average last 10 yrs	31.8	159.3	17.7	85.9	43.2	36.4	20.4	380.8	19.1	0.1	11.9	3184.9	46.5	0.0	0.6	85.6	6.0	4.1	0.0	18.7	3962.0

ROSE TREE PARK (Delaware) - Holly Merker and Janet Crawford, co-compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	29	184.8	0	0	93	81	11	247	21	0	18	590	13	0	0	103	6	4	0	22	1209
October	31	156.5	0	317	19	55	20	447	69	0	43	64	46	0	0	96	10	10	0	13	1209
November	18	84.0	0	264	1	26	7	25	7	0	51	0	36	0	1	2	1	0	0	5	426
Total	78	425.25	0	581	113	162	38	719	97	0	112	654	95	0	1	201	17	14	0	40	2844
Total per hr			0.00	1.37	0.27	0.38	0.09	1.69	0.23	0.00	0.26	1.54	0.22	0.00	0.00	0.47	0.04	0.03	0.00	0.09	6.69
% of flight			0.0	20.4	4.0	5.7	1.3	25.3	3.4	0.0	3.9	23.0	3.3	0.0	0.0	7.1	0.6	0.5	0.0	1.4	100.0
Average last 10 yrs	79.4	463.6	26.6	504.6	137.5	130.7	40.3	718.9	124.9	0.6	157.4	2401.1	217.7	0.1	2.2	148.7	23.7	16.4	0.0	45.8	4697.4

SECOND MOUNTAIN (Lebanon) - David Schwenk, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	13	73.5	0	0	2	12	2	6	1	0	1	27	18	0	0	2	3	0	0	2	76
September	29	221.0	0	0	79	66	18	365	30	0	2	3358	70	0	1	102	14	6	0	14	4125
October	30	219.5	84	479	13	47	25	1045	178	2	23	5	148	0	17	32	13	9	0	22	2142
November	30	210.8	56	208	0	84	6	28	10	0	37	0	198	0	56	0	2	2	0	11	698
December	15	88.8	35	25	0	28	1	0	0	0	2	0	46	0	11	0	2	0	0	1	151
Total	117	813.5	175	712	94	237	52	1444	219	2	65	3390	480	0	85	136	34	17	0	50	7192
Total per hr			0.22	0.88	0.12	0.29	0.06	1.78	0.27	0.00	0.08	4.17	0.59	0.00	0.10	0.17	0.04	0.02	0.00	0.06	8.84
% of flight			2.4	9.9	1.3	3.3	0.7	20.1	3.0	0.0	0.9	47.1	6.7	0.0	1.2	1.9	0.5	0.2	0.0	0.7	100.0
Average last 10 yrs	120.6	788.1	288.2	568.7	93.5	211.0	66.9	1665.4	198.7	9.1	92.2	4253.4	666.2	1.7	82.5	107.4	32.8	22.8	0.1	46.2	8406.9

STONE MOUNTAIN (Huntingdon) - Greg Grove, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	23	144.5	1	1	25	64	6	144	14	0	1	3558	21	0	0	38	4	7	0	4	3888
October	24	123.1	7	283	9	52	27	527	56	1	17	0	174	0	21	21	27	14	0	7	1243
November	27	152.0	0	25	0	51	11	41	11	1	15	1	247	0	125	2	0	3	0	3	536
December	6	31.5	0	0	0	17	0	4	0	0	3	0	28	0	31	0	0	0	0	0	83
Total	80	451.1	8	309	34	184	44	716	81	2	36	3559	470	0	177	61	31	24	0	14	5750
Total per hr			0.02	0.69	0.08	0.41	0.10	1.59	0.18	0.00	0.08	7.89	1.04	0.00	0.39	0.14	0.07	0.05	0.00	0.03	12.75
% of flight			0.1	5.4	0.6	3.2	0.8	12.5	1.4	0.0	0.6	61.9	8.2	0.0	3.1	1.1	0.5	0.4	0.0	0.2	100.0
Average last 10 yrs	81.2	466.1	21.1	352.7	61.2	154.6	43.2	811.4	99.7	3.6	50.6	2054.4	589.4	1.1	136.6	78.9	35.1	23.2	0.0	24.5	4541.3

SUMMIT MOUNTAIN (Fayette) - Peter Livengood, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	4	22.5	4	0	4	3	1	7	2	0	1	1945	7	0	0	7	3	1	0	6	1991
Total	4	22.5	4	0	4	3	1	7	2	0	1	1945	7	0	0	7	3	1	0	6	1991
Total per hr			0.18	0.00	0.18	0.13	0.04	0.31	0.09	0.00	0.04	86.44	0.31	0.00	0.00	0.31	0.13	0.04	0.00	0.27	88.49
% of flight			0.2	0.0	0.2	0.2	0.1	0.4	0.1	0.0	0.1	97.7	0.4	0.0	0.0	0.4	0.2	0.1	0.0	0.3	100.0

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	21	155.8	0	0	39	75	9	173	17	0	0	1264	15	0	0	96	10	12	0	21	1731
October	27	176.1	0	867	4	47	10	325	25	1	2	1	137	0	13	29	9	10	0	22	1502
November	27	174.5	0	303	0	47	6	34	4	1	4	0	268	0	63	0	6	0	0	10	746
December	8	39.3	0	0	0	11	0	2	0	1	1	0	12	1	13	1	0	0	0	0	42
Total	83	545.6	0	1170	43	180	25	534	46	3	7	1265	432	1	89	126	25	22	0	53	4021
Total per hr			0.00	2.14	0.08	0.33	0.05	0.98	0.08	0.01	0.01	2.32	0.79	0.00	0.16	0.23	0.05	0.04	0.00	0.10	7.37
% of flight			0.0	29.1	1.1	4.5	0.6	13.3	1.1	0.1	0.2	31.5	10.7	0.0	2.2	3.1	0.6	0.5	0.0	1.3	100.0

WAGGONER'S GAP (Cumberland) - David Grove, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	30	162.5	0	0	41	59	7	16	13	0	3	225	155	0	0	18	2	5	0	9	553
September	27	249.6	0	0	227	280	59	2164	96	0	17	8216	239	0	1	224	66	35	0	53	11677
October	29	238.8	2	1040	47	157	74	5395	336	0	114	15	598	0	38	79	69	23	0	24	8011
November	30	272.3	8	211	3	195	32	164	35	2	61	0	892	1	179	5	6	5	0	24	1823
December	26	162.8	0	48	0	62	4	7	4	1	1	0	97	0	20	0	0	2	0	4	250
Total	142	1085.9	10	1299	318	753	176	7746	484	3	196	8456	1981	1	238	326	143	70	0	114	22314
Total per hr			0.01	1.20	0.29	0.69	0.16	7.13	0.45	0.00	0.18	7.79	1.82	0.00	0.22	0.30	0.13	0.06	0.00	0.10	20.55
% of flight			0.0	5.8	1.4	3.4	0.8	34.7	2.2	0.0	0.9	37.9	8.9	0.0	1.1	1.5	0.6	0.3	0.0	0.5	100.0
Average last 10 yrs	137.1	1038.3	46.8	1670.2	293.8	593.1	163.3	6256.2	496.9	24.6	200.8	7374.9	2396.5	1.6	223.0	270.2	100.7	62.0	0.1	134.5	20309.2

2021 TOTALS FOR ALL WATCHSITES

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	103	636	44	169	140	184	16	44	35	0	12	860	357	0	0	54	9	8	0	76	2008
September	334	2419	132	357	1350	1471	244	6153	510	0	81	60558	828	0	13	1304	275	162	0	402	73841
October	353	2308	296	8926	238	900	366	16632	1594	7	450	216	3118	0	207	602	352	179	0	330	34413
November	316	2064	423	2281	8	940	140	694	178	8	382	2	3618	3	988	19	54	27	0	129	9894
December	105	636	291	130	0	278	14	38	14	2	20	0	331	1	282	1	3	3	0	23	1431
Total	1211	8063.4	1186	11863	1736	3773	780	23561	2331	17	945	61636	8252	4	1490	1980	693	379	0	960	121587
Total per hr			0.15	1.47	0.22	0.47	0.10	2.92	0.29	0.00	0.12	7.64	1.02	0.00	0.18	0.25	0.09	0.05	0.00	0.12	15.08
% of flight			1.0	9.8	1.4	3.1	0.6	19.4	1.9	0.0	0.8	50.7	6.8	0.0	1.2	1.6	0.6	0.3	0.0	0.8	100.0
Average of last 10 yrs	1175	7728	1175	8327	1993	2942	809	22296	2481	101	1165	61821	10937	8	1182	1829	649	373	1	1007	119095
% compared to average	3.0	4.3	1.0	42.5	-12.9	28.2	-3.6	5.7	-6.1	-83.1	-18.9	-0.3	-24.5	-51.2	26.1	8.2	6.8	1.6	-100.0	-4.7	2.1

KEY TO TABLE HEADERS

BLVU	Black Vulture	RSHA	Broad-winged Hawk
TUVU	Turkey Vulture	BWHA	Red-tailed Hawk
OSPR	Osprey	RTHA	Rough-legged hawk
BAEA	Bald Eagle	RLHA	Golden Eagle
NOHA	Northern Harrier	GOEA	American Kestrel
SSHA	Sharp-shinned Hawk	AMKE	Merlin
COHA	Cooper's Hawk	PEFA	Peregrine Falcon
NOGO	Northern Goshawk	SWHA	Swainson's Hawk
RSHA	Red-shouldered Hawk	Unid	Unidentified