

# Pennsylvania Raptor Migration Summary - Autumn 2023

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Fall 2023 was an exciting season of hawkwatching. Record numbers of Bald Eagles were counted, Turkey Vultures outnumbered Red-tailed Hawks for the third time in the last four years, a new single-day record was set for Broad-winged Hawks, and both Swallow-tailed and Mississippi Kites were spotted.

Weather, as usual, played a role in this fall's migration. Globally, it was the hottest autumn (September through November) on record. Pennsylvania certainly felt the heat with a hotter and drier-than-average September and October. The hot temperatures along with cloudless skies (a.k.a. blue skies of death) and northwest winds plagued watch sites mid-September, making high flying Broad-winged Hawks difficult to spot and likely pushing them more to the east (see Militia Hill report below). Late September also saw the return of hazy conditions from the wildfires in Canada, which lasted into early October. The temperatures dipped below average in November, but it remained dry. Precipitation returned in December, but with warmer-than-average temperatures, little snowfall was recorded. Warmer-than-average temperatures and lack of snow certainly appeared to influence the Golden Eagle flight, with a later-than-average flight and an increase in the number of juvenile goldens noted at one site.

**NOTE:** for reference throughout the article, please refer to Fig. 1 (Autumn watch sites in Pennsylvania, 2023) and Table 1 (Peak One-Day Counts of Bald Eagle and Broad-winged Hawk at 2023 Autumn Watch Sites in Pennsylvania) on page 212 and Table 2 (Autumn 2023 Count Results for Pennsylvania Watch Sites) on pages 212-216.

## MIGRATION SUMMARY

In autumn 2023, 16 Pennsylvania watch sites counted 157,983 raptors in 8,415.5 hours over 1,201 days for an average of 18.8 raptors per hour. Bald Eagle Mountain had a limited late-season count, Little Gap had its first full-season count in five years, and Route 183 had its first full-season count, thanks to a grant from the Pennsylvania Department of Conservation and Natural Resources. Total effort was 8% above average, and the total raptor count was 33% above the 10-year average of 118,715. More Bald Eagles were counted in the state during autumn migration than ever before; the 4,238 Bald Eagles counted were 30% above average. Above-average counts were observed for Turkey Vulture, up 17%; Sharp-shinned Hawk, up 12%; Broad-winged Hawk, up 60%; and Rough-legged Hawk, up 28%.

Nine species had below-average counts. Three species—American Goshawk, Osprey and Red-tailed Hawk—had below-average counts at all PA sites and were 67%, 22%, and 25% below average, respectively. Golden Eagles had below-average counts at all sites that have been active for more than 10 years. Other species with below-average counts were Black Vulture, down 12%; Northern Harrier, down 4%; Cooper's Hawk, down 12%; Red-shouldered Hawk, down 7%; American Kestrel, down 21%; Merlin, down 10%; and Peregrine Falcon, down 3%.

## SITE HIGHLIGHTS

### Allegheny Front (*Somerset/Bedford*)

Counters tallied 7,130 raptors in 699.5 hours on 109 days from August 15 to December 23, for an average of 10.2 raptors per hour. Effort was 6% below average, and the total raptors were 27% below the 10-year average of 9,710. Bald Eagle and Red-shouldered Hawk were the only species with above-average counts. The count of 307 Bald Eagles was 58% above average and a new season-long count record, and the count of 51 Red-shouldered Hawks was 21% above average. Most species had below-average counts, with the largest drops seen in the numbers of Turkey Vulture, at 47% below average, and Osprey, at 34% below average. Counts of Northern Harrier and Red-tailed Hawk were 33% and 30% below average, respectively, and record low counts for Allegheny Front. No American Goshawks or Rough-legged Hawks were recorded this year.

An August high 148 raptors were counted on the 22nd, tying the record for August. The count included four Ospreys, 11 Bald Eagles, five Sharp-shinned Hawks, two Cooper's Hawks, 83 Broad-winged Hawks, 38 Red-tailed Hawks, and two American Kestrels. The largest Broad-winged Hawk flight occurred on September 16 with 2,892 observed, 10 times higher than the next largest flight of 274. Light southeast winds on September 28 produced season highs of 38 Bald Eagles, the second highest single-day count, 186 Sharp-shinned Hawks, and eight American Kestrels. November days with easterly winds produced multiple double-digit Golden Eagle flights, but it was gusty southeast winds on November 26 that produced a season high of 44 goldens.

### Bake Oven Knob (*Lehigh/Carbon*)

Counters observed 10,952 raptors in 722.5 hours over 93 days from August 15 to November 24, for an average of 15.2 raptors per hour. Effort was 5% below the average of 758.3 hours, and the total count was 7% below the 10-year average of 11,787.

Counts of Broad-winged Hawk were 14% above the 10-year average, and it was the only species that had above-average counts this year. Counts of Osprey suffered the largest drop; the 84 Ospreys recorded were 64% below average, the third lowest season total recorded, and the lowest rate ever recorded at Bake Oven, averaging only 0.11 Ospreys per hour. Counts of Northern Harrier, Red-shouldered Hawk, Red-tailed Hawk, and Golden Eagle were all more than 40% below average. Counts of American Goshawk were 74% below average.

An early Golden Eagle was recorded on September 16. Flights of Broad-winged Hawk peaked September 22 with 3,220 broad-wings counted, the third highest count in Bake Oven's 63 years. Gusty northwest winds on October 15 produced season highs of 23 Bald Eagles, 355 Sharp-shinned Hawks, 22 Cooper's Hawks, six Merlins, and seven Peregrine Falcons. Also seen on the 15th was an adult American Goshawk, one of only three counted this year. A dark-morph Rough-legged Hawk was observed on November 6, the first seen since 2012.

#### **Bald Eagle Mountain – Eagle Field (Centre)**

Hawk watchers counted 1,289 raptors in 234.4 hours over 33 days from October 21 to December 30, for an average of 5.5 raptors per hour. This is the second year that this site started in late October and focused on Golden Eagles, only counting on days with favorable west or northwest winds. Numbers of Golden Eagles were lower than the past three seasons, which may be due to the warmer temperatures resulting in adult goldens remaining further north. A season-high 130 raptors were counted on October 22 including season highs of 12 Bald Eagles, 21 Sharp-shinned Hawks, six Cooper's Hawks, and 42 Red-tailed Hawks. Red-tailed Hawk flights peaked on November 1 with 54 redtails counted. A male light-morph Rough-legged Hawk was observed on November 9. Counts of Golden Eagle continued to build through November with 22 recorded on the 14th and a season high 35 on the 24th, including 21 goldens counted between 10:00 am and 12:00 noon. Strong WNW winds on December 18 produced an excellent late-season eagle flight with 39 counted, including eight Bald Eagles, 30 Golden Eagles, and one unidentified eagle. The parade continued the next day with an additional 19 Golden Eagles counted, the last big flight of the season.

#### **Chester County Hawk Watch at Chambers Lake (Chester)**

Watchers observed 6,702 raptors in 449 hours over 56 days from September 1 to November 30, for an average of 14.9 raptors per hour. This is only the third year a full-season count has been conducted at Chambers Lake. The largest count of the season occurred on September 17 with 1,582 raptors, including a season-high 1,556 Broad-winged Hawks. A season-high 77 Ospreys were counted on September 22 along with 11 Bald Eagles, eight Sharp-shinned Hawks, one Cooper's Hawk, 1143 Broad-winged Hawks, six American Kestrels, and one Merlin. An adult Golden Eagle on October 31 was a nice treat. A light-morph Rough-legged Hawk was counted on November 1.

#### **Council Cup (Luzerne)**

Counters recorded 390 raptors in 29 hours over 9 days from September 15 to October 18, for an average of 13.5 raptors per

hour. Effort was 45% below the 10-year average of 53 hours, and the total count was 46% below the average of 724 raptors. Species totals reflected the drop in effort with all species posting below-average counts.

The high-count day of the season occurred on the first day with 188 raptors counted, including four Bald Eagles, one Sharp-shinned Hawk, one Cooper's Hawk, and 182 Broad-winged Hawks. A season-high 11 Bald Eagles were counted on September 19.

#### **Hawk Mountain (Berks/Schuylkill)**

Counters tallied 15,140 raptors in 1,110.7 hours over 124 days from August 15 to January 20, for an average of 13.6 raptors per hour. Effort was average, and the overall count was 7% below the 10-year average of 16,303. A record high 639 Bald Eagles were counted this season, 25% above average. The count of 965 Turkey Vultures was 35% above average and the second-highest count at Hawk Mountain. Nine species had counts below their 10-year averages. The count of 989 Red-tailed Hawks was 34% below average and a record low for Hawk Mountain, and the 112 Red-shouldered Hawks counted was 30% below average and the second-lowest count recorded. Other notable low counts were Osprey, 29% below average; American Goshawk, 56% below average; and Golden Eagles, 18% below average.

August saw a steady stream of Ospreys with a high of 11 counted on the 30th. Gusty northwest winds on August 31 produced an early push of 27 Bald Eagles past the North Lookout. The first large Broad-winged Hawk flight occurred on September 15 with 813 tallied. Broad-wing flights continued to build with a peak of 2,537 broad-wings on September 22. Strong northwest winds on October 15 produced a memorable flight that included 515 Sharp-shinned Hawks and season highs for numerous species including Bald Eagle (31), Cooper's Hawk (35), American Kestrel (15), Merlin (13), and the first two Golden Eagles of the season. The largest Sharp-shinned Hawk flight of the season occurred the next day when 545 sharpies were tallied. Two immature American Goshawks were observed on October 24 along with a season-high eight Northern Harriers. Counts of Red-shouldered and Red-tailed Hawks peaked on November 11 with counts of 13 and 59, respectively. A light-morph Rough-legged Hawk was counted on the afternoon of December 9. A fresh dusting of snow and gusty northwest winds produced an excellent late-season flight on January 20 when 19 raptors were counted in 4 hours, including one Turkey Vulture, 12 Bald Eagles, four Red-tailed Hawks, and two Golden Eagles.

#### **Jack's Mountain (Mifflin)**

Hawk watchers tallied 4,827 raptors in 522.9 hours across 87 days from August 17 to December 29 for an average of 9.2 raptors per hour. Effort was 5% below the 10-year average of 548.9 hours, and the total count was 32% below the average of 7,044. Flights of vultures were above average again this year. The 624 Turkey Vultures recorded was 122% above average and a new single-season record. The Black Vulture count of 97 was 115% above average and the highest count since 1999. Other species with above-average counts included Bald Eagle, up 17%, and American Kestrel, up 22%. Counts for 10 of 14 species had below-average counts. The largest declines in counts were for

Broad-winged Hawk and Golden Eagle, 48% and 42% below average, respectively. Osprey, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, Red-tailed Hawk, Merlin, and Peregrine Falcon all had below-average counts.

Moderate west-northwest winds produced a pulse of Bald Eagles on August 30; 16 were tallied, the third highest single-day count for Jack's Mountain. Mid-September saw another pulse of Bald Eagles with 27 counted on the 13th, a new single-day record. The 13th also saw the first triple-digit Broad-winged Hawk flight of the season, with 358. The Broad-winged Hawk count peaked the next day with 687 broad-wings observed along with a season-high 11 American Kestrels. Turkey Vultures were on the move early on October 15, with 74 counted in the first hour and more throughout the morning until spotty rain showers slowed the flight. By day's end, counters had tallied 233 Turkey Vultures, the third-highest single-day count at Jack's Mountain. The first two Golden Eagles were observed on October 24. The count ended with a season high count of 18 Black Vultures along with three Bald Eagles, one Northern Harrier, five Red-tailed Hawks and three Golden Eagles.

#### **Little Gap** (*Northampton*)

Counters tallied 20,338 raptors in 661.2 hours over 87 days from August 19 to November 29, for an average of 30.8 birds per hour. Effort was 34% above the 10-year average, and the count total was 64% above the average of 12,309. Despite the increase in effort, several species had below-average counts: Red-shouldered Hawk, down 12%; Red-tailed Hawk, down 29%; and Golden Eagle, down 15%. On the flip side, counts of Bald Eagle, Broad-winged Hawk, and Peregrine Falcon were 49%, 89%, and 48% above average, respectively, and were the largest in Little Gap's 34-year history. Counts of Sharp-shinned Hawks also were well above average.

The first large flight of Broad-winged Hawks occurred on September 15 with 1,726, another 3,690 broad-wings were tallied on September 18, and the flight peaked on September 22 with 4,752, the second-highest day in Little Gap's 34-year history. A September-high 25 Bald Eagles were tallied on the 19th. Southerly winds on October 6 produced the best Peregrine Falcon flight of the season with 16 tallied, the third-highest one-day total for Little Gap. Two light-morph Rough-legged Hawks were spotted on October 15 along with the first Golden Eagle of the year and season highs of 27 Bald Eagles, 496 Sharp-shinned Hawks, and 38 Cooper's Hawks. The first American Goshawk of the season, an immature, was counted on November 8. Counters closed the season on November 29 with a Turkey Vulture, the last bird of the season.

#### **Militia Hill** (*Montgomery*)

Hawk watchers tallied a record 40,518 raptors in 446.5 hours across 69 days from September 1 to November 15, for an average of 90.8 raptors per hour. Effort was average, but the total count was 257% above the average of 11,359. Bald Eagle and Broad-winged Hawk both had record high counts. The count of 37,355 Broad-winged Hawks was 336% above average and smashed the previous record count of 23,639 set in 2013. Turkey Vulture and Red-shouldered Hawk were 37% and 77% above average,

respectively, and were the third largest counts in Militia Hill's 36-year history. Six of 14 species had below-average counts, with Osprey 23% below average and Red-tailed Hawk 36% below average. All three species of falcons were below average also: American Kestrel, down 32%; Merlin, down 23%; and Peregrine Falcon, down 26%. No migrating Black Vultures were recorded this year.

September flights started out slow, with daily totals less than ten for the first third of the month. Several double-digit Osprey flights occurred mid-September, with 10 recorded on the 12th and 15th and a season high 19 on the 17th. The first large Broad-winged Hawk flight also occurred on the 17th, with 3,741 tallied. Three days later on the 20th, south-southeast winds brought a wave of broad-wings the likes of which no one had ever seen at Militia Hill. A jaw-dropping 22,248 broad-wings were counted, including 14,850 seen between 12 and 1 pm, a new single-day record for Militia Hill. An additional 8,188 broad-wings were counted the following day. Accipiters peaked mid-October with a season-high 10 Cooper's Hawks on the 15th and a season-high 73 Sharp-shinned Hawks on the 16th. Just before 1:00 pm on November 13, a juvenile light morph Swainson's Hawk flew directly over the platform, the only Swainson's Hawk recorded at a Pennsylvania watch site this fall.

#### **Rocky Ridge Park** (*York*)

Observers counted 5,010 raptors in 150.5 hours on 34 days from August 22 to November 11, for an average of 33.3 raptors per hour. Effort at Rocky Ridge increased significantly starting in 2018, so comparisons are made to their 5-year averages.

Effort was 44% below the five-year average of 267.4 hours, and the total count was 10% below the average of 5,545. Counts of Black Vulture and Bald Eagle were slightly above average, 12% and 7%, respectively, and Broad-winged Hawk had average counts. All the remaining species had below-average counts. The largest drops were seen in counts of Turkey Vulture, Cooper's Hawk, Red-shouldered Hawk, and American Kestrel; all were greater than 60% below average.

The best day at Rocky Ridge this year was September 22 when season-high 69 Sharp-shinned Hawks and 2,394 Broad-winged Hawks were counted. After four days of rain, east-southeast winds produced a pulse of birds on September 27 with 578 raptors counted, including 11 Bald Eagles, eight Northern Harriers (the third-highest harrier count recorded at Rocky Ridge), 65 Sharp-shinned Hawks, and 481 Broad-winged Hawks. Rocky Ridge ended the season with 55 birds tallied on November 11, including 26 Black Vultures, 15 Turkey Vultures, six Bald Eagles, one Sharp-shinned Hawk, and seven Red-tailed Hawks.

#### **Rose Tree Park** (*Delaware*)

Counters observed 7,265 raptors in 365 hours over 69 days from September 1 to November 17 for an average of 19.9 birds per hour. Effort was 18% below the 10-year average of 443 hours, and the overall count was 90% above the average of 3,820. The above-average total was driven by the Broad-winged Hawk count of 5,231, which was 187% above average, and one of only three species with above-average counts this year. Counts of Turkey Vulture and Northern Harrier were 77% and 15% above

average, respectively. All other species had below-average counts, including record-low counts of American Kestrel, 76, 44% below average, and the second lowest counts for Osprey, 94, and Merlin, 12, which were 24% and 45% below average, respectively.

The official count opened on September 1 with two Bald Eagles for the day. Bald Eagles peaked later in the month with a high of 11 counted on the 22<sup>nd</sup>. The high day for the season occurred on September 19 when 1,090 raptors were tallied, including eight Osprey, two Northern Harriers, 12 Bald Eagles, four Sharp-shinned Hawks, 10 Cooper's Hawks, 1,045 Broad-winged Hawks, and six American Kestrels. Other pulses of broad-wings passed by on September 24 and 26 with 618 and 571 counted, respectively. October's high count came on the 21st with 100 raptors, including a season-high 63 Turkey Vultures. The last Osprey of the season was observed on November 3. Counts of Red-tailed Hawk peaked in early November with 13 recorded on the 6th.

### **Route 183** (*Schuylkill*)

Counters tallied 8,505 raptors in 606 hours over 83 days from August 22 to November 24, for an average of 14.0 raptors per hour. Historically, this site was monitored mostly on north or west winds. This is the first year the site had season-long coverage. A very early adult Peregrine Falcon was seen on August 27. The high-count day occurred on September 15 with 784 including an Osprey, six Bald Eagles, 15 Sharp-shinned Hawks, four Cooper's Hawks, a season-high 739 Broad-winged Hawks, 10 Red-tailed Hawks, and a Merlin. The accipiter flights peaked in mid-October. From October 15 to 17, counters tallied 1,772 Sharp-shinned Hawks and 80 Cooper's Hawks. On October 15, a dark-morph Rough-legged Hawk was observed flying in a kettle of Turkey Vultures before it flew directly over the lookout and was photographed. The first American Goshawk of the season was recorded on October 31. Flights of Red-tailed Hawk were steady throughout November. A high of 46 red-tails was counted on Nov 1, followed by 40 counted on the 11th and 14th.

### **Second Mountain** (*Lebanon*)

Hawk watchers counted 5,042 raptors in 851.1 hours across 117 days from August 15 to December 15, for an average of 5.9 raptors per hour. Effort was 10% above the 10-year average of 773.4 hours, and the overall count was 31% below the 10-year average of 7,271, and a record low count. A new record high set for Bald Eagles, with 299, was 30% above average. Turkey Vulture and Red-shouldered Hawk were 7% and 17% above average, respectively. Twelve species had below-average counts including record low counts for Black Vulture, Cooper's Hawk, American Goshawk, American Kestrel, and Merlin. Counts of Broad-winged Hawk and Red-tailed Hawk were 51% and 19% below average, respectively, and the third lowest counts at Second Mountain. No Rough-legged Hawks were recorded for the fourth straight year.

Second Mountain's season began with an Osprey and a Peregrine Falcon recorded in the first hour of counting on August 15. Ospreys and Bald Eagles continued to migrate past in August in low numbers. Two early migrating Red-shouldered Hawks

were counted on August 19 and 20. The first triple-digit count of the season occurred on September 15 with 204 birds, including two Bald Eagles, nine Sharp-shinned Hawks, 183 Broad-winged Hawks, and ten Red-tailed Hawks. A late peak of 560 Broad-winged Hawks on September 27 followed several days of rain and unsettled weather from Tropical Storm Ophelia. A juvenile Golden Eagle observed on the afternoon of October 15 was the first of the season. Also recorded the 15th were 105 Turkey Vultures, a season high. The season's only American Goshawk was tallied on November 3, along with season highs of six Black Vultures and 49 Red-tailed Hawks. Rain and fog stalled the migration for the first week of December. December's high count occurred on the 13th with 20 birds, including one Turkey Vulture, 11 Bald Eagles, two Cooper's Hawks, two Red-shouldered Hawks, one Red-tailed Hawk, and three Golden Eagles.

### **Stone Mountain** (*Huntingdon/Mifflin*)

Counters recorded 5,859 raptors in 487 hours over 88 days from August 19 to December 19, for an average of 12.0 raptors per hour. Effort was similar to the 10-year average, and the total count was 19% above the average of 4935. The count of 275 Bald Eagles was 50% above average and a new season-long record. The Broad-winged Hawk count of 3,772 was 58 above average and the second-highest season total. Peregrine Falcon also had above-average counts this year. Unfortunately, 12 of the 16 species had below-average counts. Counts of Black Vulture, Red-shouldered Hawk, and Red-tailed Hawk saw the sharpest declines with counts 73%, 46% and 38% below average, respectively. No American Goshawks were counted for the second consecutive year.

Osprey flights peaked early with a season-high 10 counted on August 30, along with 13 Bald Eagles, two Northern Harriers, three Sharp-shinned Hawks, ten Broad-winged Hawks, four Red-tailed Hawks, and one American Kestrel. The season's high count occurred on September 13 with 1,257 raptors, including a record-high 27 Bald Eagles, 1,207 Broad-winged Hawks, the third highest broad-wing day recorded at Stone Mountain, and nine American Kestrels, a season high. An early juvenile dark-morph Rough-legged Hawk was observed on October 7. The next day, counters tallied eight Peregrine Falcons, a season high and 25% of the season's peregrine flight. The Accipiter flight peaked on October 22 with 56 Sharp-shinned Hawks and 8 Cooper's Hawks counted, both season highs. Flights of Golden Eagles peaked on November 14 with 17 and continued through December on favorable wind days, with the count ending on December 19 with 12 raptors including seven goldens.

### **Summit Mountain** (*Fayette*)

Watchers tallied 182 raptors in 22 hours between September 16 and 19 for an average of 8.3 raptors per hour. Effort was 35% below the five-year average of 34.1 hours, and the total count was 84% below the average of 1,133.

Clear blue skies and a scattered flight line made for challenging hawkwatching on September 16. A season-high 101 raptors were tallied including two Sharp-shinned Hawks, 93 Broad-winged Hawks, three Red-tailed Hawks, one American Kestrel, and two unidentified raptors.

### **Waggoner's Gap (Cumberland)**

Counters recorded 18,834 raptors in 1,058 hours over 139 days from August 1 to December 31, for an average of 17.8 raptors per hour. Effort was 3% above the 10-year average of 1,030 hours, and the overall count was 6% below the average of 19,943. Counts of Turkey Vulture were 28% above average and the second-highest season-long count. Counts of Bald Eagles and Sharp-shinned Hawks also were 14% and 6% above average, respectively. Most species had below-average counts, and several had their second-lowest count since Waggoner's Gap started counting daily from August 1 to December 31 in 1997. The second-lowest counts in Waggoner's Gap history were recorded for Osprey, down 40%, Cooper's Hawk, down 35%, Red-tailed Hawk, down 28%, and American Kestrel, down 30%. Other species with below-average counts included Black Vulture, Northern Harrier, American Goshawk, Red-shouldered Hawk, Red-tailed Hawk, Golden Eagle, and Peregrine Falcon.

A Mississippi Kite was spotted on August 12, but did not migrate past the lookout and wasn't counted. Several double-digit Red-tailed Hawk flights during the second half of August produced a record-high 161 red-tails for August. A Swallow-tailed Kite that was being seen in nearby Landisburg was spotted from the lookout but was not migrating and didn't make the count. The first triple-digit Broad-winged Hawk flight occurred on September 12, and flights continued to build for the next four days, peaking with 905 broad-wings on the 16<sup>th</sup>. Accipiter flights peaked in mid-October with a total of 2,848 Sharp-shinned Hawks and 83 Cooper's Hawks counted from October 15 to 17. The first American Goshawk of the fall was seen on October 19. Despite light winds and blue skies of death, counters recorded the second-largest single-day flight of Turkey Vultures at Waggoner's Gap on October 24 when 474 vultures streamed past the lookout along with a season-high 17 Northern Harriers. Two late Ospreys were spotted on November 2. A light-morph Rough-legged Hawk was recorded on November 5 and another on the 25<sup>th</sup>. A season-high 35 Red-shouldered Hawks were counted on November 8, including 12 between 1:00 and 2:00 pm. Counters on November 24 completed the Accipiter sweep, tallying one each Sharp-shinned Hawk, Cooper's Hawk, and American Goshawk, along with ten Bald Eagles, 31 Red-tailed Hawks and 15 Golden Eagles.

### **CONCLUSIONS**

Hawk watchers are a passionate bunch. Why else would we stand out in the hot sun for hours, staring into clear blue skies, searching for a swirling kettle of Broad-winged Hawks, or shiver in the cold wind hoping to catch a glimpse of an American Goshawk or Rough-legged Hawk? The more time spent hawk-watching, the more apparent patterns in species numbers

become. Twenty years ago, hawk watchers in Pennsylvania were lucky to see 15 Bald Eagles for every 100 hours they spent watching; today, 50 can be seen during that same amount of time. Turkey Vultures, too, have seen an increase in the last two decades. Unfortunately, the opposite is true for many species. We are only seeing about half as many American Kestrels as we did 20 years ago, from 30 per 100 hours in 2003 to 16 in 2023. The same trends can be seen for Northern Harrier, Osprey, Northern Goshawk, and Sharp-shinned Hawk. Notably, this year Pennsylvania hawk watchers recorded the lowest rate of passage for Osprey, Cooper's Hawk, Red-tailed Hawk, and American Kestrel in the last 21 years.

These trends are not just in Pennsylvania. Many watch sites in the eastern U.S. are showing 10-year and 20-year declines. For example, 55% of watch sites in the East are showing declines in the number of Sharp-shinned Hawks counted from 2009–2019 (RPI-Project 2021). These declines, coupled with declining numbers of sharpies on Christmas Bird Counts in the Northeast and in eastern Canada suggest that these declines are indicative of drops in overall numbers and not the result of changes in migration patterns. Sharp-shinned Hawks are just one of the species labeled as "Raptors at Risk" by the Raptor Population Index (RPI-project.org); Osprey, Northern Harrier, American Goshawk, Rough-legged Hawk, and American Kestrel all have been included in that group. To conduct this sort of analysis, long-term data from multiple sites are needed. Contributions from Pennsylvania's watch sites are critically important, and the dedicated hawk watchers at the above watch sites should be applauded for their effort. Now the hard work begins: determining the cause of these declines.

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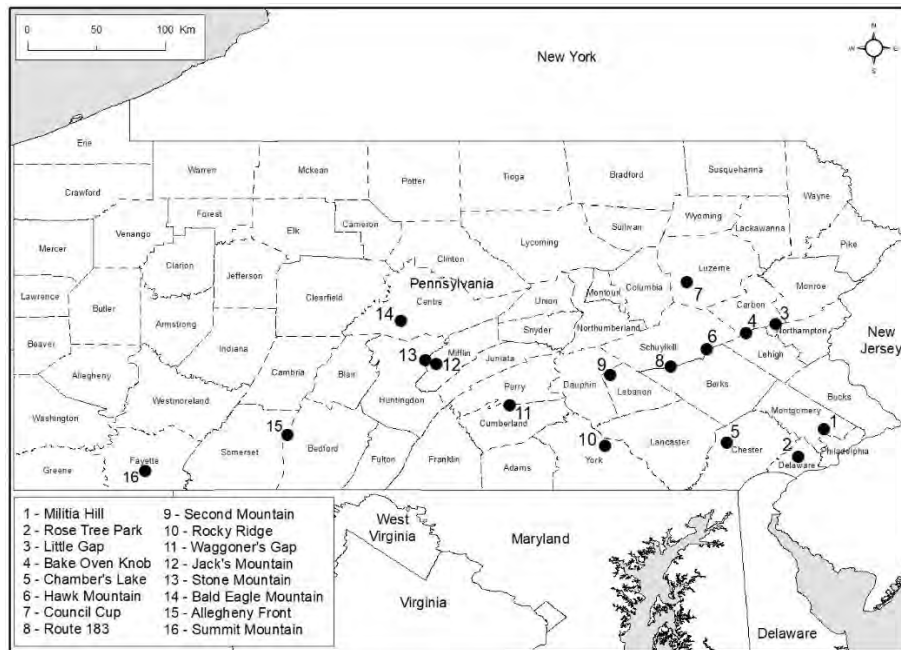


Fig. 1. Autumn watch sites in Pennsylvania, 2023.

**Table 1: Peak One-Day Counts of Bald Eagle and Broad-winged Hawk at 2023 Autumn Watch Sites in Pennsylvania**

Site Name	Bald Eagle		Broad-winged Hawk	
	Peak Count	Date	Peak Count	Date
Allegheny Front	38	9/28	2892	9/16
Bake Oven Knob	23	10/15,10/22	3220	9/22
Chamber's Lake	12	9/19	1556	9/17
Council Cup	11	9/19	182	9/15
Hawk Mountain	31	10/15	2537	9/22
Jack's Mountain	27	9/13	687	9/14
Little Gap	27	10/15	4752	9/22
Militia Hill	18	9/20	22,248	9/20
Rocky Ridge	11	9/27	2394	9/22
Rose Tree Park	11	9/22	2656	9/20
Route 183	28	10/15	464	9/22
Second Mountain	12	10/18	560	9/27
Stone Mountain	27	9/13	1207	9/13
Waggoner's Gap	26	9/16	905	9/16

**Table 2: Autumn 2023 Count Results for Pennsylvania Watch Sites – see pages 213 through 216**

**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	SWHA	Swainson's Hawk
RSHA	Red-shouldered Hawk	Unid	Unidentified

Table 2: Autumn 2023 Count Results for Pennsylvania Watch Sites – part 1.

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	17	109.5	5	2	12	35	4	16	5	0	2	347	86	0	0	4	0	0	0	23	541
September	27	172.5	9	0	34	149	4	314	39	0	1	4089	118	0	1	27	10	4	0	33	4832
October	26	176.0	8	162	5	84	7	381	73	0	7	3	211	0	7	20	9	26	0	25	1028
November	27	181.8	0	39	0	39	8	31	11	0	41	0	329	0	174	4	0	1	0	21	698
December	12	59.8	0	0	0	0	0	0	0	0	0	0	14	0	14	0	1	0	0	1	31
<b>Total</b>	<b>109</b>	<b>699.5</b>	<b>22</b>	<b>203</b>	<b>51</b>	<b>307</b>	<b>23</b>	<b>743</b>	<b>128</b>	<b>0</b>	<b>51</b>	<b>4439</b>	<b>758</b>	<b>0</b>	<b>196</b>	<b>55</b>	<b>20</b>	<b>31</b>	<b>0</b>	<b>103</b>	<b>7130</b>
Total per hr			0.03	0.29	0.07	0.44	0.03	1.06	0.18	0.00	0.07	6.35	1.08	0.00	0.28	0.08	0.03	0.04	0.00	0.15	10.19
% of flight			0.3	2.8	0.7	4.3	0.3	10.4	1.8	0.0	0.7	62.3	10.6	0.0	2.7	0.8	0.3	0.4	0.0	1.4	100.0
Average last 10 yrs	116.1	744.2	29.3	384.7	77.3	193.8	34.2	1064.1	125.1	3.1	42.1	6259.3	1087.9	0.9	207.6	53.5	24.8	27.9	0.0	94.0	9709.6

**BAKE OVEN KNOB (Lehigh) - Chad Schwartz, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	16	118.5	45	121	27	58	0	10	12	0	8	205	83	0	0	8	12	2	0	34	625
September	26	203.8	89	227	46	92	7	281	36	0	4	6211	73	0	1	40	17	9	0	37	7170
October	27	217.3	80	407	11	120	21	1266	86	2	12	5	181	0	12	47	22	19	0	41	2332
November	24	183.0	75	133	0	97	10	64	17	1	29	0	332	1	35	1	9	2	0	19	825
<b>Total</b>	<b>93</b>	<b>722.5</b>	<b>289</b>	<b>888</b>	<b>84</b>	<b>367</b>	<b>38</b>	<b>1621</b>	<b>151</b>	<b>3</b>	<b>53</b>	<b>6421</b>	<b>669</b>	<b>1</b>	<b>48</b>	<b>96</b>	<b>60</b>	<b>32</b>	<b>0</b>	<b>131</b>	<b>10952</b>
Total per hr			0.40	1.23	0.12	0.51	0.05	2.24	0.21	0.00	0.07	8.89	0.93	0.00	0.07	0.13	0.08	0.04	0.00	0.18	15.16
% of flight			2.6	8.1	0.8	3.4	0.3	14.8	1.4	0.0	0.5	58.6	6.1	0.0	0.4	0.9	0.5	0.3	0.0	1.2	100.0
Average last 10 yrs	102.2	758.3	287.0	921.8	235.8	359.9	68.4	2297.2	208.9	11.3	103.7	5627.8	1110.8	0.1	88.0	118.2	75.4	46.1	0.0	226.2	11786.7

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
October	5	31.6	0	140	0	24	2	52	10	0	1	0	93	0	5	7	4	1	0	0	339
November	15	117.8	0	270	0	57	10	16	8	0	8	0	229	1	144	2	3	2	0	5	755
December	13	85.0	0	2	0	43	1	2	2	0	1	0	12	0	130	0	0	0	0	2	195
<b>Total</b>	<b>33</b>	<b>234.4</b>	<b>0</b>	<b>412</b>	<b>0</b>	<b>124</b>	<b>13</b>	<b>70</b>	<b>20</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>334</b>	<b>1</b>	<b>279</b>	<b>9</b>	<b>7</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>1289</b>
Total per hr			0.00	1.76	0.00	0.53	0.06	0.30	0.09	0.00	0.04	0.00	1.42	0.00	1.19	0.04	0.03	0.01	0.00	0.03	5.50
% of flight			0.0	32.0	0.0	9.6	1.0	5.4	1.6	0.0	0.8	0.0	25.9	0.1	21.6	0.7	0.5	0.2	0.0	0.5	100.0

**CHESTER COUNTY HAWK WATCH AT CHAMBER'S LAKE (Chester) - Larry Lewis, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	21	180.0	0	67	144	57	3	103	15	0	3	4584	8	0	0	17	8	3	0	0	5012
October	14	113.0	43	403	22	31	3	145	30	0	6	0	43	0	1	16	10	1	0	0	754
November	21	156.0	39	546	4	51	2	124	26	0	62	0	80	1	0	0	0	1	0	0	936
<b>Total</b>	<b>56</b>	<b>449.0</b>	<b>82</b>	<b>1016</b>	<b>170</b>	<b>139</b>	<b>8</b>	<b>372</b>	<b>71</b>	<b>0</b>	<b>71</b>	<b>4584</b>	<b>131</b>	<b>1</b>	<b>1</b>	<b>33</b>	<b>19</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>6702</b>
Total per hr			0.18	2.26	0.38	0.31	0.02	0.83	0.16	0.00	0.16	10.21	0.29	0.00	0.00	0.07	0.04	0.01	0.00	0.00	14.93
% of flight			1.2	15.2	2.5	2.1	0.1	5.6	1.1	0.0	1.1	68.4	2.0	0.0	0.0	0.5	0.3	0.1	0.0	0.0	100.0

**COUNCIL CUP (Luzerne) - Donald Kapral, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	5	19.5	0	0	2	19	0	7	3	0	0	292	0	0	0	4	0	0	0	1	328
October	4	9.5	0	32	1	1	1	16	4	0	0	0	1	0	0	5	0	0	0	1	62
<b>Total</b>	<b>9</b>	<b>29.0</b>	<b>0</b>	<b>32</b>	<b>3</b>	<b>20</b>	<b>1</b>	<b>23</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>292</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>390</b>
Total per hr			0.00	1.10	0.10	0.69	0.03	0.79	0.24	0.00	0.00	10.07	0.03	0.00	0.00	0.31	0.00	0.00	0.00	0.07	13.45
% of flight			0.0	8.2	0.8	5.1	0.3	5.9	1.8	0.0	0.0	74.9	0.3	0.0	0.0	2.3	0.0	0.0	0.0	0.5	100.0
Average for 10 yrs	14.5	53.1	0.7	88.1	4.9	24.5	5.1	48.6	8.1	0.0	2.6	362.0	140.7	0.0	1.2	16.4	0.9	0.6	0.0	6.3	723.8

Table 2: Autumn 2023 Count Results for Pennsylvania Watch Sites –part 2.

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	17	178.9	0	7	71	75	1	20	12	0	1	400	79	0	0	45	16	5	0	4	736
September	30	283.9	2	13	120	113	28	546	52	0	7	6956	74	0	0	112	53	15	0	22	8113
October	29	277.8	78	553	28	195	54	2850	245	2	32	9	221	0	18	91	64	36	0	15	4501
November	30	262.1	41	270	0	172	40	164	38	2	68	0	543	0	60	3	9	7	0	12	1429
December	16	101.6	36	121	0	70	8	5	3	1	4	0	68	1	21	0	0	1	0	1	340
January	2	6.5	0	1	0	14	0	0	0	0	0	0	4	0	2	0	0	0	0	0	21
<b>Total</b>	<b>124</b>	<b>1110.7</b>	<b>157</b>	<b>965</b>	<b>219</b>	<b>639</b>	<b>131</b>	<b>3595</b>	<b>350</b>	<b>5</b>	<b>112</b>	<b>7365</b>	<b>989</b>	<b>1</b>	<b>101</b>	<b>251</b>	<b>142</b>	<b>64</b>	<b>0</b>	<b>54</b>	<b>15140</b>
Total per hr			0.14	0.87	0.20	0.58	0.12	3.24	0.32	0.00	0.10	6.63	0.00	0.00	0.09	0.23	0.13	0.06	0.00	0.05	13.63
% of flight			1.0	6.4	1.4	4.2	0.9	23.7	2.3	0.0	0.7	48.6	6.5	0.0	0.7	1.7	0.9	0.4	0.0	0.4	100.0
Average last 10 yrs	122.4	1104.0	158.7	715.4	311.8	511.0	122.2	3605.9	443.7	11.4	158.2	7886.7	1508.5	1.0	122.4	310.1	169.6	65.8	0.1	150.8	16300.4

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	5	29.0	0	0	6	25	1	7	2	0	0	105	8	0	0	9	1	0	0	0	164
September	25	145.5	0	0	35	111	12	104	12	0	6	2249	39	0	0	50	4	2	0	5	2529
October	27	159.0	28	590	8	48	16	514	48	0	7	5	117	0	2	26	7	12	0	4	1432
November	24	153.2	42	34	0	35	12	34	13	0	13	0	285	0	61	2	4	4	0	3	542
December	6	36.3	27	0	0	9	1	0	1	0	1	0	10	0	11	0	0	0	0	0	60
<b>Total</b>	<b>87</b>	<b>522.9</b>	<b>97</b>	<b>624</b>	<b>49</b>	<b>228</b>	<b>42</b>	<b>659</b>	<b>76</b>	<b>0</b>	<b>27</b>	<b>2359</b>	<b>459</b>	<b>0</b>	<b>74</b>	<b>87</b>	<b>16</b>	<b>18</b>	<b>0</b>	<b>12</b>	<b>4827</b>
Total per hr			0.19	1.19	0.09	0.44	0.08	1.26	0.15	0.00	0.05	4.51	0.88	0.00	0.14	0.17	0.03	0.03	0.00	0.02	9.23
% of flight			2.0	12.9	1.0	4.7	0.9	13.7	1.6	0.0	0.6	48.9	9.5	0.0	1.5	1.8	0.3	0.4	0.0	0.2	100.0
Average last 10 yrs	89.2	548.9	45.2	281.5	61.8	195.3	51.0	861.1	108.6	3.5	29.6	4527.8	621.2	0.4	127.6	71.2	18.2	22.3	0.0	17.4	7044.3

**LITTLE GAP (Northampton) - Michael Schall, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	4	27.5	0	0	12	13	0	9	2	0	0	111	22	0	0	18	2	0	0	2	191
September	26	201.1	0	5	145	154	15	712	42	0	0	14343	56	0	0	90	41	11	0	55	15669
October	29	237.8	43	197	25	162	39	2402	195	0	28	8	177	2	12	33	26	48	0	46	3443
November	28	194.8	43	159	0	97	25	108	47	3	44	0	418	0	44	2	9	2	0	34	1035
<b>Total</b>	<b>87</b>	<b>681.21</b>	<b>86</b>	<b>361</b>	<b>182</b>	<b>426</b>	<b>79</b>	<b>3231</b>	<b>286</b>	<b>3</b>	<b>72</b>	<b>14462</b>	<b>673</b>	<b>2</b>	<b>56</b>	<b>143</b>	<b>78</b>	<b>61</b>	<b>0</b>	<b>137</b>	<b>20338</b>
Total per hr			0.13	0.55	0.28	0.64	0.12	4.89	0.43	0.00	0.11	21.87	1.02	0.00	0.08	0.22	0.12	0.09	0.00	0.21	30.76
% of flight			0.4	1.8	0.9	2.1	0.4	15.9	1.4	0.0	0.4	71.1	3.3	0.0	0.3	0.7	0.4	0.3	0.0	0.7	100.0
Average last 10 yrs	69.5	471.5	72.0	376.1	175.7	276.9	64.7	2119.9	234.6	7.2	81.8	7593.5	915.5	0.6	66.2	131.1	81.8	41.2	0.0	70.3	12309.1

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

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	26	168.0	0	13	111	85	13	270	36	0	3	37344	0	0	0	89	13	8	0	4	37989
October	29	218.5	0	1210	20	87	22	390	75	0	39	11	16	0	1	40	12	6	0	14	1943
November	14	60.0	0	297	0	7	5	77	14	0	134	0	38	0	0	5	2	2	1	4	586
<b>Total</b>	<b>69</b>	<b>446.5</b>	<b>0</b>	<b>1520</b>	<b>131</b>	<b>179</b>	<b>40</b>	<b>737</b>	<b>125</b>	<b>0</b>	<b>176</b>	<b>37365</b>	<b>54</b>	<b>0</b>	<b>1</b>	<b>134</b>	<b>27</b>	<b>16</b>	<b>1</b>	<b>22</b>	<b>40518</b>
Total per hr			0.00	3.40	0.29	0.40	0.09	1.65	0.28	0.00	0.39	83.66	0.12	0.00	0.00	0.30	0.06	0.04	0.00	0.05	90.75
% of flight			0.0	3.8	0.3	0.4	0.1	1.8	0.3	0.0	0.4	92.2	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.1	100.0
Average last 10 yrs	64.2	442.5	14.3	1110.7	170.1	131.9	40.3	701.5	123.0	0.5	99.7	8570.2	839.9	0.1	2.7	196.7	35.1	21.6	0.4	55.4	11358.9



Table 2: Autumn 2023 Count Results for Pennsylvania Watch Sites – part 3.

ROCKY RIDGE (York) - Carter Johnson, compiler																						
Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total	
August	2	6.5	0	0	3	7	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	13
September	16	94.8	0	0	23	58	23	308	5	0	5	4190	21	0	0	34	4	3	0	24	4698	
October	13	39.8	20	16	2	9	5	75	4	0	0	0	11	0	0	11	2	1	0	2	158	
November	3	9.5	40	33	0	14	2	11	2	0	3	0	34	0	0	0	0	0	0	0	2	141
<b>Total</b>	<b>34</b>	<b>150.5</b>	<b>60</b>	<b>49</b>	<b>28</b>	<b>88</b>	<b>30</b>	<b>394</b>	<b>11</b>	<b>0</b>	<b>8</b>	<b>4191</b>	<b>67</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>28</b>	<b>5010</b>	
Total per hr			0.40	0.33	0.19	0.58	0.20	2.62	0.07	0.00	0.05	27.85	0.45	0.00	0.00	0.31	0.04	0.03	0.00	0.19	33.29	
% of flight			1.2	1.0	0.6	1.8	0.6	7.9	0.2	0.0	0.2	83.7	1.3	0.0	0.0	0.9	0.1	0.1	0.0	0.6	100.0	
Average last 5 yrs	54.6	267.4	53.4	159.0	49.2	82.2	35.8	567.2	33.0	0.0	26.2	4249.8	106.8	0.0	0.8	120.8	11.0	8.0	0.0	42.2	5545.0	

ROSE TREE PARK (Delaware) - Alan Simon, compiler																					
Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
September	26	170.5	0	4	76	65	23	187	47	0	6	5222	2	0	0	49	6	6	0	14	5707
October	28	130.5	0	650	18	27	14	254	40	0	31	9	18	0	0	27	4	6	0	14	1112
November	15	64.0	3	274	0	16	4	15	10	0	59	0	59	0	1	0	2	1	0	2	446
<b>Total</b>	<b>69</b>	<b>365.0</b>	<b>3</b>	<b>928</b>	<b>94</b>	<b>108</b>	<b>41</b>	<b>456</b>	<b>97</b>	<b>0</b>	<b>96</b>	<b>5231</b>	<b>79</b>	<b>0</b>	<b>1</b>	<b>76</b>	<b>12</b>	<b>13</b>	<b>0</b>	<b>30</b>	<b>7265</b>
Total per hr			0.01	2.54	0.26	0.30	0.11	1.25	0.27	0.00	0.26	14.33	0.22	0.00	0.00	0.21	0.03	0.04	0.00	0.08	19.90
% of flight			0.0	12.8	1.3	1.5	0.6	6.3	1.3	0.0	1.3	72.0	1.1	0.0	0.0	1.0	0.2	0.2	0.0	0.4	100.0
Average last 10 yrs	77.4	443.1	14.4	525.1	124	121.3	35.6	569.3	108.4	0.4	126.5	1625.3	154.8	0.1	1.5	135.9	21.7	16.5	0.0	38.6	3819.6

ROUTE 183 (Schuylkill) - Laurie Goodrich, compiler																					
Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	2	10.0	3	0	3	8	0	2	2	0	1	72	24	0	0	0	0	1	0	0	116
September	29	202.3	0	0	46	81	12	547	52	0	2	3033	69	0	0	40	13	0	0	57	3952
October	28	215.9	81	274	16	122	16	2579	163	1	21	2	161	1	13	41	18	9	0	56	3574
November	24	178.2	68	83	2	81	7	98	29	3	45	0	374	0	46	2	4	4	0	17	863
<b>Total</b>	<b>83</b>	<b>606.4</b>	<b>152</b>	<b>357</b>	<b>67</b>	<b>292</b>	<b>35</b>	<b>3226</b>	<b>246</b>	<b>4</b>	<b>69</b>	<b>3107</b>	<b>628</b>	<b>1</b>	<b>59</b>	<b>83</b>	<b>35</b>	<b>14</b>	<b>0</b>	<b>130</b>	<b>8605</b>
Total per hr			0.25	0.59	0.11	0.48	0.06	5.32	0.41	0.01	0.11	5.12	1.04	0.00	0.10	0.14	0.06	0.02	0.00	0.21	14.02
% of flight			1.8	4.2	0.8	3.4	0.4	37.9	2.9	0.0	0.8	36.5	7.4	0.0	0.7	1.0	0.4	0.2	0.0	1.5	100.0

SECOND MOUNTAIN (Lebanon) - Frederick Wilcox, compiler																					
Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total
August	17	118.3	0	3	18	16	3	7	3	0	3	195	36	0	0	4	0	2	0	4	294
September	28	201.8	2	6	34	63	9	247	30	0	8	1495	53	0	0	48	7	1	0	23	2026
October	30	233.8	8	355	8	89	26	1148	72	0	19	1	78	0	5	23	6	14	0	24	1876
November	30	216.5	6	158	0	94	11	66	12	1	66	0	293	0	37	2	3	2	0	17	768
December	12	80.8	2	9	0	37	0	1	2	0	2	0	13	0	8	0	0	0	0	4	78
<b>Total</b>	<b>117</b>	<b>851.08</b>	<b>18</b>	<b>531</b>	<b>60</b>	<b>299</b>	<b>49</b>	<b>1469</b>	<b>119</b>	<b>1</b>	<b>98</b>	<b>1691</b>	<b>473</b>	<b>0</b>	<b>50</b>	<b>77</b>	<b>16</b>	<b>19</b>	<b>0</b>	<b>72</b>	<b>5042</b>
Total per hr			0.02	0.62	0.07	0.35	0.06	1.73	0.14	0.00	0.12	1.99	0.56	0.00	0.06	0.09	0.02	0.02	0.00	0.08	5.92
% of flight			0.4	10.5	1.2	5.9	1.0	29.1	2.4	0.0	1.9	33.5	9.4	0.0	1.0	1.5	0.3	0.4	0.0	1.4	100.0
Average last 10 yrs	119.7	773.8	211.7	494.6	77.5	229.8	59.7	1544.3	183.3	6.4	83.5	3521.7	586.3	1.4	74.6	99.2	31.1	21.9	0.1	43.9	7271.0

Table 2: Autumn 2023 Count Results for Pennsylvania Watch Sites – part 4.

**STONE MOUNTAIN (Huntingdon) - Greg Grove, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total	
August	3	11.5	0	0	12	15	2	4	0	0	0	18	10	0	0	1	0	0	0	0	1	63
September	26	133.0	0	0	31	110	7	123	12	0	0	3750	25	0	0	37	11	9	0	8	8	4123
October	28	160.5	6	335	10	70	17	447	48	0	14	4	105	1	6	23	17	21	0	8	8	1132
November	23	135.0	0	73	0	62	10	40	4	0	10	0	182	0	88	0	3	3	0	5	5	450
December	8	47.0	0	0	0	18	2	3	0	0	1	0	9	0	28	0	0	0	0	0	0	61
<b>Total</b>	<b>88</b>	<b>487</b>	<b>6</b>	<b>408</b>	<b>53</b>	<b>275</b>	<b>38</b>	<b>617</b>	<b>64</b>	<b>0</b>	<b>25</b>	<b>3772</b>	<b>331</b>	<b>1</b>	<b>122</b>	<b>61</b>	<b>31</b>	<b>33</b>	<b>0</b>	<b>22</b>	<b>22</b>	<b>5859</b>
Total per hr			0.01	0.84	0.11	0.56	0.08	1.27	0.13	0.00	0.05	7.75	0.68	0.00	0.25	0.13	0.06	0.07	0.00	0.05	0.05	12.03
% of flight			0.1	7.0	0.9	4.7	0.6	10.5	1.1	0.0	0.4	64.4	5.6	0.0	2.1	1.0	0.5	0.6	0.0	0.4	0.4	100.0
Average last 10 yrs	84.7	489.1	22.3	480.6	59.7	183.8	44.2	797.2	95.9	2.8	46.4	2386.6	530.2	1.2	139.8	75.6	35.5	26.0	0.0	22.6	22.6	4934.9

**SUMMIT MOUNTAIN (Fayette) - Peter Livengood, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total	
September	4	22.0	2	0	2	2	0	6	1	0	0	159	5	0	0	3	0	0	0	2	2	182
<b>Total</b>	<b>4</b>	<b>22.0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>159</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>182</b>
Total per hr			0.09	0.00	0.09	0.09	0.00	0.27	0.05	0.00	0.00	7.23	0.23	0.00	0.00	0.14	0.00	0.00	0.00	0.09	0.09	8.27
% of flight			1.1	0.0	1.1	1.1	0.0	3.3	0.5	0.0	0.0	87.4	2.7	0.0	0.0	1.6	0.0	0.0	0.0	1.1	1.1	100.0

**WAGONER'S GAP (Cumberland) - David Grove, compiler**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total	
August	30	177.0	0	0	40	68	2	13	14	0	6	229	161	0	0	16	4	0	0	11	11	564
September	28	224.8	0	0	94	167	28	950	52	0	9	5834	149	0	0	82	43	4	0	29	29	7441
October	30	270.8	4	1842	15	228	79	5672	217	2	53	5	342	0	32	74	50	37	0	17	17	8659
November	29	252.0	4	327	2	207	36	168	23	3	119	0	898	2	138	1	9	3	0	11	11	1951
December	22	133.3	2	21	0	75	2	1	2	0	2	0	69	0	32	0	1	0	0	2	2	209
<b>Total</b>	<b>139</b>	<b>1057.8</b>	<b>10</b>	<b>2190</b>	<b>151</b>	<b>745</b>	<b>147</b>	<b>6804</b>	<b>308</b>	<b>5</b>	<b>189</b>	<b>6068</b>	<b>1619</b>	<b>2</b>	<b>202</b>	<b>173</b>	<b>107</b>	<b>44</b>	<b>0</b>	<b>70</b>	<b>70</b>	<b>18834</b>
Total per hr			0.01	2.07	0.14	0.70	0.14	6.43	0.29	0.00	0.18	5.74	1.53	0.00	0.19	0.16	0.10	0.04	0.00	0.07	0.07	17.81
% of flight			0.1	11.6	0.8	4.0	0.8	36.1	1.6	0.0	1.0	32.2	8.6	0.0	1.1	0.9	0.6	0.2	0.0	0.4	0.4	100.0
Average last 10 yrs	137.1	1030.0	33.2	1706.1	252.2	652.6	157.1	6640.5	472.8	15.6	205.4	6993.9	2258.2	1.4	215.1	246.7	107.6	59.2	0.1	125.3	125.3	19943.0

**2023 TOTALS FOR ALL WATCHSITES**

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	AGOS	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	SWHA	Unid	Total	
August	113	786.7	53	133	204	320	13	88	52	0	21	1683	510	0	0	106	35	10	0	79	79	3307
September	343	2423.3	104	335	943	1326	184	4705	434	0	54	99751	692	0	2	722	230	75	0	314	314	109871
October	347	2491.6	399	7166	189	1297	322	18201	1310	7	270	62	1775	4	114	484	251	237	0	267	267	32355
November	307	2163.8	361	2696	8	1029	182	1016	254	13	701	0	4094	5	828	24	58	33	1	152	152	11455
December	89	543.6	67	153	0	252	14	13	10	1	11	0	195	1	244	0	2	1	0	10	10	974
January	2	6.5	0	1	0	14	0	0	0	0	0	0	4	0	2	0	0	0	0	0	0	21
<b>Total</b>	<b>1201</b>	<b>8415.5</b>	<b>984</b>	<b>10484</b>	<b>1344</b>	<b>4238</b>	<b>715</b>	<b>24023</b>	<b>2060</b>	<b>21</b>	<b>1057</b>	<b>101496</b>	<b>7270</b>	<b>10</b>	<b>1190</b>	<b>1336</b>	<b>576</b>	<b>356</b>	<b>1</b>	<b>822</b>	<b>822</b>	<b>157983</b>
Total per hr			0.12	1.25	0.16	0.50	0.08	2.85	0.24	0.00	0.13	12.06	0.86	0.00	0.14	0.16	0.07	0.04	0.00	0.10	0.10	18.77
% of flight			0.6	6.6	0.9	2.7	0.5	15.2	1.3	0.0	0.7	64.2	4.6	0.0	0.8	0.8	0.4	0.2	0.0	0.5	0.5	100.0
Average of last 10 yrs	1182.8	7764.3	1125.0	8959.6	1716.6	3246.5	745.9	21496.1	2348.5	63.6	1135.6	63416.1	9648.5	7.8	1193.3	1682.5	639.9	367.6	0.7	920.3	920.3	118712.9
% compared to average	1.5	8.4	-12.5	17.0	-21.7	30.5	-4.1	11.8	-12.3	-67.0	-6.9	60.0	-24.7	28.2	-0.3	-20.6	-10.0	-3.2	42.9	-10.7	-10.7	33.1