



Detroit River Hawk Watch 2014 Season Summary

Submitted by:

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Bald Eagle (*Haliaeetus leucocephalus*). Andrew Sturgess

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ABSTRACT

The 2014 count represented the 32nd consecutive year of monitoring diurnal raptor and turkey vulture migration from the mouth of the Detroit River and the 17th year of consistent coverage at the Lake Erie Metropark (LEMP) boat launch. There were 627.5 hours of data collection with counts conducted on 90 days between 1 September and 30 November. A total of 266,931 raptors of 16 species were recorded. Turkey vulture (*Cathartes aura*), Bald eagle (*Haliaeetus leucocephalis*), red-shouldered hawk (*Buteo lineatus*), broad-winged hawk (*Buteo platypterus*), golden eagle (*Aquila chrysaetos*), and peregrine falcon (*Falco peregrinus*) were detected above their long-term average (LTA) since 1998. Six species (northern harrier [*Circus cyaneus*], Cooper's hawk [*Accipiter cooperii*], Swainson's hawk [*Buteo swainsoni*] red-tailed hawk [*Buteo jamaicensis*], rough-legged hawk [*Buteo lagopus*] and merlin [*Falco columbarius*]) were detected in average numbers. There were four species detected below their LTA (osprey [*Pandion haliaetus*], sharp-shinned hawk [*Accipiter striatus*], northern goshawk [*Accipiter gentilis*], and American kestrel [*Falco sparverius*]).

METHODS

An hourly count of diurnal raptors was conducted each day between 1 September and 30 November 2014. 627.5 hours of coverage occurred at the Lake Erie Metropark boat launch (LEMP; 42.0792° N, 83.1937° W). Observations began at 07:00 EST and ended at 15:00 EST, but were delayed one hour starting 25 October due to declining day length. All counting was conducted by allowing a maximum of three observers to freely scan the skies with 8 to 10X magnification binoculars. Spotting scopes with 20 to 60X magnification were used only to confirm the identification of raptors and vultures previously sighted using 8 to 10X magnification binoculars. Hours with excessive rain, exceptionally strong winds, or heavy fog were excluded. Raptors were determined to be migrating if they were observed crossing (and not returning) an imaginary line originating at the observer and running to the northwest and southeast.

Wind direction and speed, cloud cover, visibility, precipitation, humidity, and temperature were collected at the beginning of each hour with a Kestral 3000®, Nielsen-Kellerman, by the counter standing at the count site. Counts attempted to estimate birds exiting kettles in a stream-like fashion during periods of large migration volume. Results are reported in relation to LEMP's long-term averages since 1998 when consistent coverage began there.

MONTHLY REPORTS

September

Consistent with past seasons, the first week of the count lacked much migratory activity. Some early season rain along with humid temperatures, deep blue skies, strong winds out of the south and east and a lingering low pressure system led to limited overall numbers. It took until the middle portion of the month before favorable conditions granted us better, more consistent movement. The second half of the month featured a lengthy string of days with light winds, a nice mix of sun and clouds and a lingering high pressure system, which are optimal conditions for high quality raptor migration at this site. Other than an early red-shouldered hawk observed on 4 September, the season's first instance of notable movement came on 7 September when our first solid flight of broad-winged hawks (39), sharp-

shinned hawks (62), bald eagles (19), northern harriers (10), American kestrels (23) and a month high of red-tailed hawks (44) passed overhead. Small groups of broad-winged hawks and a fair number of sharp-shinned hawks continued to move through over the next week but other species remained mostly inactive. Bald eagles (29) picked up the pace on 14 September, producing a season high count. Broad-winged hawks (13,428) asserted themselves for the first time on this date as well, pushing past in long streams well into the evening hours. The next day, 15 September, featured poor conditions and limited movement. But the floodgates opened on 16 September, kicking off a two-week period of steady, high-volume movement to finish out the month.

A pattern that has emerged at this watch site over the years is the possible occurrence of a *single* “big flight day” of broad-winged hawks. Should one occur in a year, it invariably happens between 15-20 September. But there were *three* consecutive big flights this year on 16 (68,193), 17 (52,635), and 18 (39,339) September. Broad-winged hawks filled the sky, amassing into large swirling kettles and streaming past in lengthy lines for a three-day total of 160,167. This is the second largest count ever recorded at this watch site in its 32-year history. For the rest of the month, broad-winged hawks continued to dominate the count totals, most notably on 19 September (4,309), 22 September (2,091) and 23 September (2,099).

Coinciding with their typical mid- to late September peak, American kestrel, sharp-shinned hawk and northern harrier remained a steady presence during the second half of the month. Sharp-shinned hawks reached triple-digit count totals eight times during the 15-day period spanning 16-30 September. Northern harriers reached double digit count totals six times and 30 or more American kestrels were tallied seven times during the same period.

On 23 September, a season high of 417 sharp-shinned hawks and a season high of 31 northern harriers flew past. Then, a day after, on 24 September, a season high of 71 American kestrels did the same. Not to be overlooked, a season high of seven osprey and a month high of five merlins made their way south on 17 September. Our only four Swainson’s hawks of the season also pushed through during the latter portion of the opening month, two on 16 September and two more on 22 September. Also, during the last week of the month, Cooper’s hawk and turkey vulture began to build in anticipation of the typical early-to-mid October peak of movement for both species.

October

The steady, high-volume movement that dominated the end of September failed to carry over into October. Like the first week of September, the first week of October featured poor conditions for raptor migration with several days of intermittent drizzle and overcast skies. Not until clearer skies arrived on 8 October did migration pick up again. That day on strong west winds, a season high of nine peregrine falcons were counted, as were a month high of five merlins and a month high of 27 American kestrels.

In what was the start of their first peak of movement, turkey vultures (2,401) also began to assert themselves more fully on 8 October. Over the next four days, from 9-12 October, another 23,722 floated past, with a high of 9,951 moving through on 10 October. Then, later in the month, the second peak of turkey vulture movement, spanning from 19-23 October, saw another 28,478 make their way south, with a season high count of 13,622 coming on 22 October. The long-term Detroit River Hawk Watch dataset generally exhibits at least one peak of vulture passage typically centered around October 10th, although there is wide variation. Unusual this year was a second heavy passage between 19-24

October, which also occurred last year.

Much like September, it took better weather conditions during the latter half of October for raptors to move, when clearer skies, lighter wind and a lingering high pressure system predominated. Before that last week, though, a few notable firsts of the season surfaced. The season's first golden eagle arrived on 16 October and the season's first northern goshawk and rough-legged hawk both arrived on 22 October.

As is typical of late October, red-tailed hawks and red-shouldered hawks were by far the most numerous raptors counted. Both species first asserted themselves on 22 October when 411 red-tailed hawks and 71 red-shouldered hawks were tallied. Over the next five days, another 1,309 red-tailed hawks and another 327 red-shouldered hawks flew past, including a month high of 492 red-tailed hawks and a seasonal high of 141 red-shouldered hawks on 26 October. Then, after a two-day dry spell, both species reasserted themselves on 30 October, with another 401 red-tailed hawks and another 124 red-shouldered hawks making their way south on that date.

During the latter portion of October, golden eagles, rough-legged hawks, cooper's hawks and sharp-shinned hawks all made a big push as well. A month high count of 171 sharp-shinned hawks and a seasonal high count of 29 Cooper's hawks pumped south on 23 October. On 24 October, there was a month high count of four rough-legged hawks. Then, on 25 and 26 October, a total of 30 golden eagles were counted.

November

Despite many trying weather days, raptors this season continued to make their way south throughout the month. Traditionally our least active month, one would think this season's high number of November days featuring bitter cold, heavy southwest wind and overcast skies would depress raptor numbers considerably. But that was not the case this year. Besides a relatively unproductive period during the middle of the month, there was much raptor activity. Red-tailed hawks, in particular, remained a constant presence throughout the month. Other species appeared as well, most notably golden eagles early in November and northern harriers later.

As so often occurs, the first week of November was the most active. Red-shouldered hawks, red-tailed hawks, rough-legged hawks and golden eagles all pushed through in good numbers during that first week. Seasonal high counts of red-tailed hawk (506), rough-legged hawk (6) and golden eagle (30) and month high counts of red-shouldered hawk (97) and northern goshawk (2) were tallied on 2 November. Red-tailed hawks continued to move over the next few days, with 258 counted on 5 November and 178 counted on 7 November. Also on 7 November, 11 bald eagles came across, as did another four golden eagles.

While consistent movement of red-tailed hawks continued over the next two weeks, turkey vulture and red-shouldered hawk numbers dropped precipitously, and other species remained mostly quiet as well, over the 14-day period. But then, on 20 November, northern harrier and bald eagle movement started up again. On this date, five bald eagles and nine harriers flew past and the day after, 21 November, month highs of 18 bald eagles and 21 northern harriers were tallied. After 21 November, migration quieted for a time before revving up again toward the close of the count, with 19 more harriers observed on 26 November and red-tailed hawks and red-shouldered hawks moving through in good numbers (considering the late dates) on 27 November and 28 November.

SPECIES ACCOUNTS

Turkey Vulture

69,768 between 1 September and 28 November (Table 1). Turkey vulture numbers remained remarkably steady, only diverging by 35 individuals between this year and last. Also consistent between this year and last were the two distinct peaks of vulture movement, centered around the periods spanning 8-14 October and 19-24 October.

High Count: (13,622) 22 October

Osprey

56 between 1 September and 24 October. Ospreys were detected in limited numbers, failing to break into triple digits for a sixth straight season.

High Count: (7) 17 September

Bald Eagle

354 between 1 September and 29 November. Bald eagle activity continued its upward ascent, edging out the previous season high set last fall. Most abundant during the month of September when 165 individuals were tallied, bald eagles were seen with regularity well into the latter portion of the season, with adult eagles asserting themselves more fully in November. Of note, this year's high count date of 14 September was the same as last year's.

High Count: (29) 14 September

Northern Harrier

423 between 3 September and 29 November. Northern harriers were seen in their highest numbers since the 2010 season, exhibiting a customary late September peak of movement but also an unexpectedly strong surge of movement in late November. The 119 harriers counted this November were the most since an above-average November flight in 2006.

High Count: (31) 23 September

Sharp-shinned Hawk

4,627 between 3 September and 29 November. While still remaining below their long-term average, sharp-shinned hawks showed an uptick in activity this season, observed in slightly bigger numbers than the previous two falls.

High Count: (417) 23 September

Cooper's Hawk

472 between 3 September and 30 November. Like turkey vultures, Cooper's hawk numbers remained remarkably steady, topping out at approximately 465 individuals counted for a third straight season.

High Count: (29) 23 October

Northern Goshawk

9 between 22 October and 21 November. Northern goshawk numbers failed to reach double digits for a second straight fall.

High Count: (2) 2 November and 21 November

Red-shouldered Hawk

804 between 5 September and 29 November. There were large flights in the second half of October and into early November. In the end, the 804 red-shouldered hawks observed this season was the most seen here since 2007.

High Count: (141) 26 October

Broad-winged Hawk

184,860 between 6 September and 1 November. Nearly equaling 2011's record total, this season's broad-winged hawk migration proved to be a memorable one. Unlike most seasons when a single-day tally stands high above the rest, sizable numbers of broad-winged hawks moved through during a three-day window from 16-18 September. Also of note, more broad-winged hawks were seen after 15 October this season than any season previously, with 33 individuals counted in late October and early November.

High Count: (68,193) 16 September

Swainson's Hawk

4 between 16 September and 22 September. A fairly typical season for Swainson's hawk, two individuals were observed on both 16 September and 22 September, all four times closely associated with large groups of broad-winged hawks.

High Count: (2) 16 September and 22 September

Red-tailed Hawk

4,616 between 1 September and 30 November. Like red-shouldered hawks, red-tailed hawks had their best season since 2007. Unlike the last three falls, no dark morph individuals were observed. Instead, this year, three leucistic birds were noted, two on 30 October and one on 5 November.

High Count: (506) 2 November

Rough-legged Hawk

34 between 22 October and 29 November. It was another above-average season for rough-legged hawks, as this species posted its second highest single season total since 2005.

High Count: (6) 2 November

Golden Eagle

129 between 16 October and 28 November. Continuing to fluctuate from year-to-year, golden eagle numbers were up overall this season. The 30 eagles counted on 2 November were the most seen in a single day since 2011.

High Count: (30) 2 November

American Kestrel

563 between 1 September and 13 November. American kestrel numbers fell slightly this season but remained similar to totals observed during the previous four falls. In line with their usual peak, this year's kestrel single-day high count fell on the same date as last year's.

High Count: (71) 24 September

Merlin

46 between 3 September and 18 November. In a fairly typical season for Merlin, this species was observed most often during its usual late September peak and finished the year at an overall number

consistent with its long-term average.
High Count: (5) 16 September and 8 October

Peregrine Falcon

51 between 4 September and 20 November. Peregrine falcons were observed in overall numbers not seen here since the 2007 season. The nine peregrine falcons counted on 8 October was the highest single-day total since the 2009 season.

High Count: (9) 8 October

NON-RAPTOR HIGHLIGHTS

There were several notable non-raptor highlights this season. Groups of American white pelicans (*Pelecanus erythrorhynchos*) numbering between 13 and 48 were seen from the watch site on 3 September and each day between 11 and 14 September. Two black terns (*Chlidonias niger*) flew past on 8 September. Individual snow geese (*Chen caerulescens*) were seen on both 12 and 20 November, with an additional four on 25 November. On 29 November, a glaucous gull (*Larus hyperboreus*) and four white-winged scoters (*Melanitta fusca*) were noted. Most unusual were two observations of a juvenile parasitic jaeger (*Stercorarius parasiticus*) on 17 October when a single individual twice flew overhead. Whether or not it was the same individual observed twice or two separate individuals could not be confirmed.

Waterfowl

Small numbers of wood ducks (*Aix sponsa*) were seen during the months of September and October. Small numbers of pied-billed grebes (*Podilymbus podiceps*) were observed foraging in the channel, mostly during the month of September. Horned grebes (*Podiceps auritus*) showed up in early November and were uncommonly abundant throughout the duration of the season. Flocks of blue-winged teal (*Anas discors*) were noted passing by in September. Small numbers of American wigeon (*Anas americana*) were observed flying past, mostly in September. Northern shovelers (*Anas clypeata*) were less abundant than previous seasons, observed only once in the month of November. On the other hand, Gadwall (*Anas strepera*) were more abundant than previous seasons, noted in very good numbers especially during the latter portion of November. Northern Pintail (*Anas acuta*) were also more abundant, small numbers of which were noted on multiple occasions in September and October. American black ducks (*Anas rubripes*) were seen foraging with flocks of Mallard (*Anas platyrhynchos*) several times in November. Canada geese (*Branta canadensis*) arrived in large numbers in late September and were seen frequently throughout the rest of the season. Tundra swans (*Cygnus columbianus*) were earlier than usual this season, with the first swans being seen in late October. Many more tundra swans were seen over the rest of November.

The location of the count site does not effectively capture general patterns in the migration of divers [canvasback (*Aythya valisineria*), Redhead (*Aythya americana*), scaup (*Aythya marila* and *Aythya affinis*)] through the region, which number in the tens of thousands offshore from lakes St. Clair to Erie during the fall and winter. We did note the first lesser scaup (*A. affinis*) in late October and they continued to be seen regularly for the duration of the count. For a third straight season, common loons (*Gavia immer*) were quite abundant, with multiple sightings in October and November, including a high of eight individuals counted on 8 November. Flocks of red-breasted mergansers (*Mergus serrator*) arrived in early November and were seen frequently thereafter. Hooded (*Lophodytes cucullatus*) and common mergansers (*Mergus merganser*) were abundant as well, with small flocks of both species

spotted often during November. Small numbers of ruddy ducks (*Oxyura jamaicensis*), buffleheads (*Bucephala albeola*) and common goldeneyes (*Bucephala clangula*) began to be seen in early November and were present throughout the rest of the month.

Shorebirds

Killdeer (*Charadrius vociferus*) were heard overhead at various points throughout the season. They were particularly noticeable on 9 November when two large flocks flew by out over the lake. Lesser yellowlegs (*Tringa flavipes*) were detected on multiple occasions during the months of September and October. A flock of dunlin (*Calidris alpina*) was observed passing through on 8 September. Spotted sandpipers (*Actitis macularia*) were noted on 5 September and 7 September. Six black-bellied plovers (*Pluvialis squatarola*) were counted on 3 September.

Gulls and Terns

The season's first Bonaparte's gulls (*Larus philadelphia*) arrived, as usual, in early October and remained noticeable until the end of the count, with peak activity observed in early November. Great black-backed gulls (*Larus marinus*) were spotted on multiple occasions during the month of November. Herring gulls (*Larus argentatus*) were abundant for a third straight season and were seen particularly often during the month of November. Caspian (*Sterna caspia*) and Forster's terns (*Sterna forsteri*) were seen frequently during the month of September and both species continued to be seen into October, but specific late dates were not recorded.

Wading Birds

Very much like previous seasons, Black-crowned night herons (*Nycticorax nycticorax*) were noted several times throughout the month of September. Unlike previous seasons, though, this species was seldom seen after September. Great blue herons (*Ardea herodias*) were observed throughout the season but could be seen flying past in greater abundance during the month of November, often during the morning hours. Great Egrets (*Ardea alba*) were noted on several occasions during the months of October and November. Six green herons (*Butorides virescens*) were observed flying past the count site together on 3 September.

Corvids

The first migrant blue jays (*Cyanocitta cristata*) were detected 17 September, which is a date that coincides with the usual arrival of this species. Blue jays were seen often until mid-October, frequently filling the skies during their migratory period, with a peak of movement occurring on 10 October when more than 30,000 were estimated to have moved through the site. The first migrant American crows (*Corvus brachyrhynchos*) were detected on 10 October as well. Peak movement occurred during late October and early November with the single largest flight on 22 October when more than 80,000 were noted. Throughout their migratory period, there were a few other days when the number of American crows exceeded 10,000, but this year crow migration appeared more diffuse than in year's past, when large flocks would blanket the sky for hours.

Icterids

The first red-winged blackbirds (*Agelaius phoeniceus*) of the season were seen moving through in early September and continued to be seen throughout the fall with flocks flying past into late November. But like American crow migration, red-winged blackbird migration was not as condensed this year, lacked a usual peak and was without many big flight days. Small numbers of rusty blackbirds (*Euphagus carolinus*) were detected in the red-winged blackbird flocks starting in early October. Flocks of rusty

blackbirds continued to be seen in varying numbers up until early November with a peak of movement occurring in late October. Common grackles (*Quiscalus quiscula*) were seen mixed in among the flocks of blackbirds, most frequently during the month of November. Of note, European starlings (*Sturnus vulgaris*) were again abundant this season, particularly in November, when several large flocks passed overhead.

Swifts and Swallows

Purple martins (*Progne subis*) and swallows peak just before the count starts in September and migration slowed considerably by mid-September. Tree swallows (*Tachycineta bicolor*) were most often seen in September and early October. This season, abnormally large numbers of lingering tree swallows continued to be seen into late November. Northern rough-winged swallows (*Stelgidopteryx serripennis*) were also abundant in September and continued to be seen regularly into early October. Four late northern rough-winged swallows were noted on 25 October. Barn swallow (*Hirundo rustica*) migration was observed through mid-September and rarely thereafter. Small, but notable numbers of bank swallows (*Riparia riparia*) were noted on two days in early September. Chimney Swifts (*Chaetura pelagica*) were first seen in early September with a peak in migration during the end of the month and early October.

Sparrows and Finches

Other than pine siskins (*Carduelis pinus*), which were noted just about daily from early October on, winter finches were not particularly abundant this fall. No red (*Loxia curvirostra*) or white-winged crossbills (*Loxia leucoptera*), nor evening grosbeaks (*Coccothraustes vespertinus*) were observed, and only a single common redpoll (*Carduelis flammea*) was seen on 26 November. Snow buntings (*Plectrophenax nivalis*) and lapland longspurs (*Calcarius lapponicus*) were detected on 23 November. American goldfinches (*Carduelis tristis*) were noted throughout the count period with peak movement during the month of October. House finches (*Carpodacus mexicanus*) were noted on multiple occasions in October and November and purple finches (*Carpodacus purpureus*) were noted a few times during the month of September. Dark-eyed juncos (*Junco hyemalis*) were first noted in mid-October and were frequently seen foraging nearby in November. The first white-throated sparrows (*Zonotrichia albicollis*) of the season were detected in early October and seen often thereafter. The first white-crowned sparrows (*Zonotrichia leucophrys*) of the season were also seen in early October but were observed far less often thereafter. The first American tree sparrows (*Spizella arborea*) arrived in early November and were heard frequently throughout the rest of the month.

Larks and Pipits

Horned larks (*Eremophila alpestris*) arrived in early October and were heard migrating overhead more frequently this year than in previous seasons. Their peak came on 17 November when more than 550 larks were detected. American pipit (*Anthus rubescens*) was also more abundant this season with first detections of birds flying overhead in late October. A large flock of pipits spent several days foraging near the count site in mid-November.

Warblers and Vireos

Wood-warblers were highly abundant this September, moving through in good numbers as compared to previous seasons, especially during the middle of the month. A total of 17 species of warblers were detected including American redstart (*Setophaga ruticilla*), northern parula (*Parula americana*), pine (*Dendroica pinus*), blackpoll (*Dendroica striata*), Cape May (*Dendroica tigrina*), Nashville (*Vermivora*

ruficapilla), Wilson's (*Wilsonia pusilla*), Canada (*Wilsonia canadensis*), palm (*Dendroica palmarum*), black-throated blue (*Dendroica caerulescens*), black-throated green (*Dendroica virens*), bay-breasted (*Dendroica castanea*), black-and-white (*Mniotilta varia*), chestnut-sided (*Dendroica pensylvanica*), magnolia (*Dendroica magnolia*), yellow (*Dendroica petechia*) and yellow-rumped (*Dendroica coronata*). Warbling vireos (*Vireo gilvus*) could be heard singing up until the middle of September. A single blue-headed (*Vireo solitarius*), red-eyed (*Vireo olivaceus*) and yellow-throated vireo (*Vireo flavifrons*) were sighted during the month of September.

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Table 1. 1998–2014 season totals at Lake Erie Metropark Boat Launch with the 2014 percent deviation from the previous 16-year mean. Seasonal records in bold. See Table 2 for a reference to the species codes.

| | Hours | TV | OS | BE | NH | SS | CH | NG | RS | BW |
|-------------------------|-------|----------------|------------|------------|--------------|---------------|------------|-----------|--------------|----------------|
| 1998 | 451 | 19,743 | 135 | 111 | 807 | 4,968 | 378 | 17 | 517 | 63,689 |
| 1999 | 481 | 17,559 | 58 | 69 | 556 | 6,534 | 299 | 23 | 556 | 45,711 |
| 2000 | 510 | 29,421 | 133 | 83 | 138 | 7,132 | 408 | 49 | 875 | 57,585 |
| 2001 | 526 | 28,237 | 213 | 115 | 757 | 14,715 | 693 | 46 | 858 | 19,386 |
| 2002 | 562 | 42,644 | 238 | 185 | 696 | 7,307 | 572 | 22 | 962 | 91,499 |
| 2003 | 545 | 54,975 | 234 | 147 | 1,005 | 10,643 | 709 | 28 | 533 | 84,085 |
| 2004 | 479 | 36,893 | 201 | 118 | 214 | 5,027 | 461 | 49 | 869 | 27,381 |
| 2005 | 456 | 29,699 | 218 | 116 | 291 | 5,623 | 432 | 18 | 299 | 56,229 |
| 2006 | 476 | 51,722 | 196 | 162 | 616 | 7,013 | 628 | 7 | 1,019 | 50,718 |
| 2007 | 599 | 62,882 | 195 | 211 | 818 | 9,909 | 724 | 6 | 1,026 | 69,574 |
| 2008 | 465 | 35,173 | 140 | 141 | 149 | 3,593 | 294 | 10 | 185 | 36,216 |
| 2009 | 519 | 54,989 | 46 | 118 | 169 | 3,259 | 335 | 24 | 615 | 20,016 |
| 2010 | 565 | 122,325 | 63 | 220 | 465 | 6,504 | 834 | 21 | 488 | 79,572 |
| 2011 | 592 | 52,745 | 85 | 235 | 278 | 5,331 | 763 | 26 | 487 | 195,858 |
| 2012 | 619 | 43,285 | 70 | 222 | 248 | 3,590 | 468 | 18 | 450 | 40,923 |
| 2013 | 643 | 69,723 | 71 | 350 | 234 | 3,230 | 460 | 3 | 532 | 49,629 |
| 2014 | 628 | 69,768 | 56 | 354 | 423 | 4,627 | 472 | 9 | 804 | 184,860 |
| Average | 536 | 48,340 | 138 | 174 | 463 | 6,412 | 525 | 22 | 652 | 68,996 |
| 2014 % Mean Dev. | 18 | 48 | -61 | 118 | -9 | -29 | -11 | -61 | 25 | 199 |

| | SW | RT | RL | GE | AK | ML | PG | UNK | TOTAL |
|------------------------|-----|-------|-----|-----|-------|----|----|-----|---------|
| 1998 | 5 | 3,782 | 17 | 33 | 1,046 | 95 | 52 | 86 | 95,481 |
| 1999 | 8 | 3,504 | 76 | 208 | 664 | 30 | 49 | 47 | 75,951 |
| 2000 | 5 | 5,754 | 55 | 188 | 790 | 34 | 24 | 37 | 102,711 |
| 2001 | 3 | 8,153 | 55 | 120 | 1,026 | 50 | 48 | 45 | 74,520 |
| 2002 | 3 | 6,565 | 63 | 79 | 2,277 | 64 | 52 | 15 | 153,240 |
| 2003 | 12 | 5,789 | 31 | 60 | 2,128 | 72 | 82 | 0 | 160,533 |
| 2004 | 0 | 6,155 | 101 | 79 | 470 | 38 | 20 | 0 | 78,076 |
| 2005 | 8 | 2,619 | 30 | 45 | 1,018 | 55 | 37 | 0 | 96,737 |
| 2006 | 8 | 6,025 | 27 | 124 | 1,314 | 40 | 38 | 0 | 119,657 |
| 2007 | 2 | 9,406 | 29 | 124 | 1,275 | 41 | 67 | 8 | 156,297 |
| 2008 | 0 | 2,507 | 18 | 89 | 404 | 19 | 23 | 0 | 78,961 |
| 2009 | 4 | 2,474 | 13 | 117 | 441 | 39 | 35 | 14 | 82,708 |
| 2010 | 5 | 3,207 | 29 | 76 | 675 | 52 | 40 | 18 | 214,594 |
| 2011 | 5 | 4,100 | 19 | 167 | 664 | 21 | 21 | 169 | 260,974 |
| 2012 | 4 | 2,986 | 14 | 51 | 531 | 38 | 30 | 182 | 93,110 |
| 2013 | 5 | 3,473 | 43 | 69 | 681 | 53 | 46 | 112 | 128,714 |
| 2014 | 4 | 4,616 | 34 | 129 | 563 | 46 | 51 | 115 | 266,931 |
| Average | 5 | 4,772 | 39 | 103 | 939 | 46 | 42 | 50 | 123,267 |
| 2014 % Mean Dev. | -17 | -4 | -12 | 27 | -42 | -1 | 23 | 151 | 117 |

Table 2. Species codes used in Table 1.

TV: turkey vulture (*Cathartes aura*)
OS: osprey (*Pandion haliaetus*)
BE: bald eagle (*Haliaeetus leucocephalis*)
NH: northern harrier (*Circus cyaneus*)
SS: sharp-shinned hawk (*Accipiter striatus*)
CH: Cooper's hawk (*Accipiter cooperii*)
NG: northern goshawk (*Accipiter gentilis*)
RS: red-shouldered hawk (*Buteo lineatus*)
BW: broad-winged hawk (*Buteo platypterus*)
SW: Swainson's hawk (*Buteo swainsoni*)
RT: red-tailed hawk (*Buteo jamaicensis*)
RL: rough-legged hawk (*Buteo lagopus*)
GE: golden eagle (*Aquila chrysaetos*)
AK: American kestrel (*Falco sparverius*)
ML: merlin (*Falco columbarius*)
PG: peregrine falcon (*Falco peregrinus*)
UNK: unknown raptor species