



## Detroit River Hawk Watch 2017 Season Summary

Submitted by:

Jerome S. Jourdan, Detroit River Hawk Watch Advisory Committee (Primary Author)

Kevin Georg, 2017 Contract Counter

Andrew Sturgess, Detroit River Hawk Watch Advisory Committee



Migrating Golden Eagle. Photo credit Andrew Sturgess 2017.

Suggested Citation: Jourdan, J.S., Georg, K., and Sturgess, A.J. *Detroit River Hawk Watch 2017 Season Summary*. U.S. Fish and Wildlife Service, Detroit River International Wildlife Refuge.

## Abstract

The 2017 count was the 35<sup>th</sup> consecutive season of monitoring diurnal raptor and Turkey Vulture migration at the mouth of the Detroit River, and the 20<sup>th</sup> year of consistent coverage at Lake Erie Metropark. There were 636.75 hours of data collection with counts conducted on 89 days between 1 September and 30 November<sup>1</sup>. 72,263 total Turkey Vultures and raptors of 15 species were counted, which includes 1 unknown accipiter, 7 unknown buteos, and 3 unknown raptors. We compare this season's totals to the respective long-term average (LTA) for each species since 1998. Turkey Vultures (8%), Bald Eagles (34%), Merlin (26%) and Peregrine Falcons (58%) were the only species counted above the LTA. Osprey (-73%), Northern Harrier (-30%), Sharp-shinned Hawk (-33%), Cooper's Hawk (-75%) Northern Goshawk (-90%), Red-shouldered Hawk (-44%), Broad-winged Hawk (-84%), Swainson's Hawk (-52%), Red-tailed Hawk (-46%), American Kestrel (-40%) and total numbers (-43%) were significantly lower than the LTA (where values >15% are considered "significant" for the count). Rough-legged Hawk (-4%) and Golden Eagle (-5%) numbers were insignificantly lower than the LTA. Two Northern Goshawks and two Swainson's Hawks were counted this year.

## Methods

An hourly count of migrating diurnal raptors and Turkey Vultures was conducted each day between 1 September and 30 November 2017 with a total of 636.75 hours of coverage at the Lake Erie Metropark Boat Launch (LEMP; N 42.0792, W 83.1937). Observation protocol<sup>2</sup> was conducted except in the case of hourly weather recording. Instead of recording wind direction, speed, relative humidity, barometric pressure and temperature using a Kestrel 3500® Pocket Weather Meter the hourly measurements were recorded directly from the Grosse Ile Weather Station<sup>3</sup>. Reasoning behind this deviation was that local ground-level measurements from the LEMP count site had no bearing on whether raptors aloft migrated past the site.

Counters attempted to estimate birds exiting kettles in a stream-like fashion during periods of large migration volume. Hourly results were reported at the end of the day to [Hawk Count](#) where results are then used to build a raptor population index (RPI) to assess species population trends.

Results referenced below are reported as a percent deviation in relation to LEMP's long-term average (LTA) since 1998, when consistent coverage began at LEMP. If the deviation between this year's total count of a given species was within  $\pm 15\%$  of the LTA, we considered that species to have been counted in "approximately average" numbers. If the deviation was greater than 15% from the LTA we considered that deviation to be statistically significant.

## Monthly Reports

### September



Broad-winged Hawk. Photo credit Andrew Sturgess 2017.

September is the month of new hope and promise. The weather is slowly transitioning from summer to fall with the usual unpredictability from year to year and the thought of mid-month Broad-winged Hawk kettles dance in the head. These birds too, have an element of unpredictability from year to year. The variable “steering winds” that the soaring birds use for lift ensure that their presence from year to year at one specific spot is not guaranteed.

This year started off in fine fashion with a cool wind in our face for the first week. The NE winds seem to favor our site, which has a wide boulevard from which migrating raptors can choose a lane for their journey. The flight paths can vary anywhere from well north of us to well south of us depending on the winds of the day. From the very first day we were seeing Broad-winged Hawks and this seemed to bode well. The winds during the peak migration times for broad-wings, however, took a turn for the worse and southerly winds for five straight days pushed the birds to the north of us. As a result, we only observed 10,099 Broad-winged Hawks in September. There were people to the north watching for birds at Elizabeth Park in Trenton and the reports indicated that many kettles and birds were passing though they were invisible from our location. This led to one of the lowest counts in recent memory and a sense of disappointment in many ways. Their migration is a great joy to observe but often they are very high in blue skies making the counter's job more difficult. These birds are difficult to find and follow, even in large kettles; and when they glide out of the kettles they present a small profile that can be difficult to see as they assume a very compact glide position for long distances. The long glide distances mean very little flapping of the wings to help you ID the birds. Most of these birds are observed at a distance rather than the preferred low overhead flight that we all hope for. The lister's delight and Holy Grail vagrant bird, Swainson's Hawk, that can be observed with the broad-winged, was spotted twice at our site this year.

Other more dependable birds of September are the Sharp-shinned Hawk and the American Kestrel. Sharp-shinned Hawks numbered 1838 during the month and kestrels numbered 350. During the last few days of the month, the early Turkey Vultures start to drift south and we observed 2489 birds. This is the other bird that kettles in large numbers but they are much easier to count and ID due to their dihedral (upward angle of wings) and rocking motion. They present a larger side profile and darker color that makes them usually a simple call to make.

Table 1 summarizes the total raptor survey from the LEMP Boat Launch site for the month of September. A total of 15,088 Turkey Vultures, and raptors consisting of 12 species, were counted during the period 1 September to 30 September. Species surveyed included Turkey Vulture, Osprey, Bald Eagle, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, Broad-winged Hawk, Red-tailed Hawk, American Kestrel, Merlin, and Peregrine Falcon. One unidentified accipiter (UA) and two unidentified raptor (UR) were included in the monthly tally.

Figure 1 shows plots of daily raptor totals during the period 1 September to 30 September 2017. Broad-winged Hawks were most numerous during the period 9 September to 12 September when northerly winds were present. 6000+ birds were counted, but made up only a fraction of expected numbers for the year. Warm temperatures and southerly winds during the peak period of migration for these birds were presumed responsible for their relative absence.



Sharp-shinned Hawk numbers grew steadily from 6 September through the rest of the month with only 1 day (a rainy 19 September) producing no birds. 1838 birds kept both counters and photographers busy.

Sharp-shinned Hawk. Photo credit Andrew Sturgess 2017.



Forty-three Bald Eagles and 24 Peregrine Falcons were highlights of the month, as well. The first Red-shouldered Hawk was seen on the last day of the month.

Bald Eagle. Photo credit Mark Hainen 2017.

Daily photo highlights, non-raptor observations and commentary from Andrew Sturgess and Mark Hainen were submitted to the [Detroit River Hawk Watch Facebook](#) page during the month of September. Their photos and commentary were compiled into a full document<sup>4</sup> and archived on the website at [drhawkwatch.org](http://drhawkwatch.org). The document can be viewed [here](#).

Detroit River Hawk Watch also welcomed Kevin Georg as its Contract Counter. Kevin comes to DRHW with over 30 years experience performing raptor surveys.



Kevin Georg (reclining), Andrew Sturgess (left), Rosemary Brady (back), and Jim Lynch (right)

## October



Turkey Vulture kettle. Photo credit Andrew Sturgess 2017

The mood in October shifts as the potential for larger and rarer birds begins to grow. The search for the first eagle flying with dihedral intensifies and it becomes more important to study individual birds and their flying habits to pick out the outliers. The month is also known as the moving month for the Turkey Vultures as their numbers increase to the thousands on some days. On 17 October 10,238 TV's, as they are known in shorthand, were counted. These birds are one of the easiest to count due to their "kettle and stream"

behavior. They do have a bad habit of flying to the northeast of our location and staying behind the trees, which can make seeing the entire flock a challenge. For the month, we totaled 44,548 Turkey Vultures.

One other condition that presents itself throughout the watch is the thermal interaction between Lake Erie and the atmosphere. As the ambient temperature drops, the lake, which is still warm from the sunny days of summer, begins to give up heat. This makes the viewing difficult at times with haze that can seemingly absorb a kettle of Turkey Vultures with no problem. The greater the temperature difference, the greater the difficulty seeing through the haze. We see many interesting effects at the interface of the lake and air on the horizon with ships being distorted, inverted or made partially invisible. Fata Morgana is no stranger to the hawk watchers at DRHW.

© M HAINEN



Golden Eagle. Photo credit Mark Hainen 2017.

This month can bring a bigger variety of birds of migrants that are not usually seen in the local area during the summer months. The first Golden Eagle of the season is always welcome as these majestic birds are strangers to most of us except for two months a year during the migration period. The first two were spotted on 10 October. This special date was shared with the first Swainson's Hawk of the season.

Another species more numerically rare than the Golden Eagle during the count is the Rough-legged Hawk. It made its first appearance in grand fashion on 26 October with six individuals passing by. A very distinctly marked bird with long wings, dihedral and two morphs, it always is well received and prized by the spotters.

Seeing the rarest of all accipiters is a possibility during the colder months of October and November; the Northern Goshawk is also a bird that is highly valued. The accipiters are seen in inverse relation to their size. Sharp-shinned Hawks are smaller and very common. Cooper's Hawks are the "tweener" bird of the three, more common, and yet not really frequent. Goshawks are the largest and usually seen least often. All accipiters present challenges of identification for the counters as they are similar birds with similar habits, and given the wide variety of lighting, wind strength and distant viewing conditions they can be difficult to separate at times.



Bald Eagle. Photo credit Andrew Sturgess 2017.

Bald Eagles are much more common and subject to scrutiny to determine whether they are migratory or merely local birds up and riding on the winds. The abundance of this species makes for a dilemma at times as you must make subjective decisions about their motives, but this is a good problem to have as their numbers have rebounded impressively from the DDT days. The sight of a Bald Eagle is no longer rare, although the majesty of the bird is still inspiring. This bird resides at the top of the local bird food chain, and as a consequence, other

species give it a wide berth as they respect the power and danger it represents.

Red-tailed Hawks and Red-shouldered Hawks also begin to show in bigger numbers in October setting the stage for their larger migration in November. In the month of October we totaled 73 Red-shouldered Hawks and 746 Red-tailed Hawks.



Peregrine Falcon. Photo credit Mark Hainen 2017.

Another 36 Peregrine Falcons passed through the count during October with several birds flying in close enough to entertain visitors.



Blue Jay. Photo credit Andrew Sturgess 2017.

Noteworthy during the month of October is the migration of thousands of blue jays flying into the country. Several thousand can be seen on a given day. Their migration is followed by the American crow migration in November that can fill the sky with avian “flak” that makes finding other species difficult. It is still a wonder to watch and absorb as many thousands of birds make their way south. Hawk watchers are eternally grateful that these birds flap their wings all the time and do not glide like raptors. Otherwise, Oy Vey!!

Table 2 summarizes raptor totals for the period 1 October to 31 October 2017. A total of 48,327 raptors were recorded with 44,548 consisting of Turkey Vultures. Individual species distributions during this period are shown in Figure 2. Rain days occurred on the 11<sup>th</sup> and 12<sup>th</sup>, 23<sup>rd</sup>, and 30<sup>th</sup> days of the month when no counts were made. Of interest is number of days (18) where winds were primarily from the south. Strong flying falcons, accipiters and Turkey Vultures did not appear to be affected by the wind direction, but weaker flying American Kestrels and Sharp-shinned Hawks appeared to show significant dips in numbers during stretches of strong southerly winds.

Daily photo highlights, non-raptor observations and commentary from Andrew Sturgess and Mark Hainen were submitted to the [Detroit River Hawk Watch Facebook](#) page during the month of October. Their photos and commentary were compiled into a full document<sup>5</sup> and archived on the website at [drhawkwatch.org](http://drhawkwatch.org). The document can be viewed [here](#).

## November



Golden Eagle. Photo credit Mark Hainen 2017.

November brings its own set of challenges for the dedicated counter. The weather still has a level of unpredictability but the taste of winter is frequent and undeniable. The Hawk Watch site at the edge of the water can be much chillier than just a few hundred yards away and winter clothing can be put to the test. Eyes watering and binoculars shaking from the cold winds can test your ID skills. The mood is much the same as October as you never know what may show on the horizon. Birds are studied closely for their wing cadences and flight postures to separate the rare birds from the more common Red-tailed Hawks and Red-shouldered Hawks. The more frequently occurring high winds can make this difficult as the birds trim their "sails" to accommodate different winds making them fly differently. The weather is changeable and so is the daily number of birds. Many days deliver few birds for the effort expended looking for them and one is often left to ponder the age old migration questions about when and why birds move on any given day.

One of the more desirable birds, the first Northern Goshawk, was noted on 6 November. Our season total was only two this year.

The middle of November finally brings the realization that the end of the watch is close. A quarter of the year is nearly gone and the effort that has required begins to be realized. The occasional rainy day off is welcomed as a way to catch up with normal life habits of shopping, haircuts and other mundane things that have been put off. The watchers start to look at the numbers and see the comparisons to other years and the potential for good totals in different species that are still migrating. Golden Eagles are of special interest as this special bird raises the spirits of all that see them. The loose target is 100 birds and there is an element of joy as each bird or couple gets us closer to that goal. This year 96 birds were as close as we came to the target.



Golden Eagle. Photo credit Mark Hainen 2017.

Red-shouldered and Red-tailed Hawks came in their usual numbers during the month of November and their totals were 280 and 1,672 respectively.

Turkey Vultures taper off after the first ten days of the month and 6,356 made a November appearance this season. This species makes up the bulk of the watch's total count unless the Broad-winged Hawks show up in numbers. That did not happen this year.

Table 3 summarizes raptor totals for the period 1 November to 30 November 2017. A total of 8848 raptors were recorded with 6356 consisting of Turkey Vultures. Individual species distributions during this period are shown in Figure 3. Rain days occurred only on the 5<sup>th</sup>, 12<sup>th</sup>, and 18<sup>th</sup> days of the month when no counts were made. Of more significance was the latter half of the month that was marked by strong winds greater than 20 km/hr during the period 17 November through 28 November. 13 days of the month were marked by more favorable, northerly winds.

Daily photo highlights, non-raptor observations and commentary from Andrew Sturgess and Mark Hainen were submitted to the [Detroit River Hawk Watch Facebook](#) page during the month of November. Their photos and commentary were compiled into a full document<sup>6</sup> and archived on the website at [drhawkwatch.org](http://drhawkwatch.org). The document can be viewed [here](#).

## Species Accounts

### TURKEY VULTURE

53,393 Turkey Vultures migrated through the count site during the period 9 September to 29 November 2017, which is 8% above the LTA (Table 4). The high count (10,238) occurred on 17 October with another 9394 vultures tallied on 16 October.

### OSPREY

Only 34 Ospreys migrated past the count site during the period 1 September to 18 October, which is 73% below the LTA of 125 birds (Table 4). Only 3 of those birds were counted in October. The high count (7) occurred on 22 September.



Bald Eagle. Photo credit Mark Hainen 2017.

### BALD EAGLE

238 Bald Eagles migrated past the count site during the period 9 September and 30 November, which is 34% above the LTA of 178 birds (Table 4). 102 sub-adults, 97 adults and 39 unknown seen. High count for the season occurred on 26 October when 22 birds passed through, with

another 20 birds counted on 4 November. Local pairs of Bald Eagles entertained the counters during the season with their antics, but were relatively easy to distinguish due their habit of flying up and down the river and not passing overhead at high altitudes.

### NORTHERN HARRIER

323 Northern Harriers passed by the count site during the period of 1 September and 21 November, which is 30% below the LTA of 460 birds (Table 4). A high count of 20 harriers occurred on 20 October.

### SHARP-SHINNED HAWK

4116 Sharp-shinned Hawks passed by the count during the period 1 September and 30 November, which is 33% below the LTA of 6156 birds (Table 4). The high count occurred on 25 September when 287 sharpies were counted.



Cooper's Hawk. Photo credit Mark Hainen 2017.

### COOPER'S HAWK

Lowest count in the DRHW history to date. 120 Cooper's Hawks migrated past the count site during the period 1 September and 29 November, which is 75% below the LTA of 473 birds (Table 4). The majority of these accipiters passed during the month of November when high counts (8) occurred on 3 November, 6 November, and 27 November.

### NORTHERN GOSHAWK

Only 2 goshawks were counted this year, which is 90% below the LTA of 19 birds (Table 4). Birds were observed on 6 November and 8 November.

### RED-SHOULDERED HAWK

354 Red-shouldered Hawks were counted between 30 September and 29 November, which is 44% below the LTA of 632 birds (Table 4). The majority of birds were observed between 3 November and 8 November when 60% of the season's count migrated passed observers. Overall, this was the 2<sup>nd</sup> lowest count since 2008.



Broad-winged Hawk. Photo credit Mark Hainen 2017.

### BROAD-WINGED HAWKS

Its hard to imagine that only 10,392 Broad-winged Hawks migrated past the count site between 1 September and 18 October, which is 84% below the LTA of 63,666 birds (Table 4). This season ranked as the lowest count in the DRHW history! The lack of Broad-winged Hawks during the season raised questions as to whether birds were moving along a different pathway, or whether populations were suffering a downturn. The former

thought is favored, as large kettles were observed north of the LEMP boat launch at Elizabeth Park during peak migration that were attributed to strong southerly winds that pushed migrating birds past the count site. A high count of 2609 occurred on 11 September with another 2262 birds counted on 10 September.

### SWAINSON'S HAWK

Two Swainson's Hawks were counted this year, which is always a treat for counters and visitors alike. Birds were counted on 10 October and 16 October. 2 Swainson's Hawks are 52% below the LTA of 4 birds (Table 4).

### RED-TAILED HAWK

2483 Red-tailed Hawks passed by the count site between 1 September and 29 November, which is 46% below the LTA of 4567 birds (Table 4). Between 3 November and 8 November 1305 Red-tailed Hawks were counted, representing 52% of the season's total. This was the 2<sup>nd</sup> lowest count since 2009.

### ROUGH-LEGGED HAWK

35 Rough-legged Hawks migrated past the count site between 26 October and 27 November, which is only 4% below the LTA of 37 birds (statistically insignificant). On 4 November a high count of 10 birds were tallied. Both light-morph and dark-morph birds were observed and photographed.

### GOLDEN EAGLE

An impressive 96 Golden Eagles migrated past the count site between 10 October and 30 November, which is only 5% below the LTA of 102 birds (Table 4). 24 adults and 55 sub-adults and 17 unknown were identified. Most of the birds crossed into Michigan at high altitudes, but a few birds flew low enough for some nice images. Half of the birds were counted between 4 November and 7 November.

### AMERICAN KESTREL

538 American Kestrels passed by the count site between 1 September and 31 October, which is 40% below the LTA of 894 birds (Table 4). No kestrels were counted during November. The high count for our smallest falcon occurred on 29 September when 75 kestrels passed by. The peak migration period occurred between 20 September and 30 September when 222 birds (41%) were counted.

### MERLIN

59 Merlin passed by the count site between 1 September and 24 November, which is 26% above the LTA of 47 birds (Table 4). Seven Merlin on 8 October represented the high count for the season. This was the highest count in 10 years.

### PEREGRINE FALCON

67 Peregrine Falcons between 7 September and 28 November were 58% above the LTA of 42 birds (Table 4). 10 peregrines were counted on 7 October, and another 10 birds were counted on 8 October.

### UNKNOWN RAPTOR

11 unknown raptors, consisting of 1 accipiter, 7 buteos, and 3 "raptors" eluded the counters this year. DRHW normally is unable to identify 54 raptors each year (LTA), so 79% below the LTA is actually a good thing!

## TOTAL

Detroit River Hawk Watch had 72,263 diurnal raptors and Turkey Vultures migrate through the Lake Erie Metropark Boat Launch between 1 September and 30 November, which is 43% below the LTA of 126,818 (Table 4). As mentioned previously, the low numbers were due mostly to a poor Broad-winged Hawk migration. Figure 4 shows Total numbers for 2017 plotted against the previous totals since 1998. Examination of the curve appears to show a more cyclic nature to yearly migration with 2017 leveling out at the bottom of a downturn. If the trend continues we should expect yearly totals to increase once more in the next year or so. Of interest is the observation that the cycles appear to be increasing in amplitude, with higher peaks (2011 and 2014) and deeper valleys (2016 and 2017).

## **Migratory and Non-Raptor Highlights**

Traditionally this section is reserved for seasonal narratives of non-raptors, which includes waterfowl, grebes, loons, shorebirds, migratory songbirds, and passerines. Highlights include: 8 American white pelicans were observed on 9 September, another 49 on 30 September, and 4 more on 1 October. One Little Gull was observed with Bonaparte's Gull on 6 November. The same day also saw 1 White-winged Scoter and a flock of Snow Buntings. A *Plegadis* ibis was photographed flying over the site on 6 November. A Great Black-backed Gull was seen on 30 November.

A short note on American Crows. Between the middle of September and mid-November numbers continued to increase until 12,000+ were counted.

Blue Jays came by in large numbers with 3000+ days observed between October and early November.



Golden-crowned Kinglet. Photo credit Mark Hainen 2017.

Daily narratives and special observations were reported to the [Detroit River Hawk Watch Facebook Page](#). Through the contributions of Andrew Sturgess and Mark Hainen, both exceptional photographers, photo highlights were compiled for [September](#), [October](#) and [November](#) 2017.

Readers are encouraged to click on the links and enjoy the quality photographs and stories.

## Outreach

Detroit River Hawk Watch had the pleasure this year to participate in the annual Hawk Fest, which is hosted by the Huron Clinton Metroparks and supported by the International Wildlife Refuge Alliance. DRHW hosted a table at the festival, which was held on 16-17 September 2017 in conjunction with the peak of the Broad-winged Hawk migration.

DRHW also participated in the Urban Bird Summit as part of the [State of the Strait Conference](#) held at the Detroit Zoo (Royal Oak, MI) on 9 November 2017. Jerry Jourdan gave a [presentation](#)<sup>7</sup> describing the Detroit River Hawk Watch as the Premier Citizen Science Initiative for the USFWS and Detroit River International Wildlife Refuge. Jerry and Will Weber also participated in a roundtable discussing challenges for hawk watch sites and potential path-forwards for growing hawk watch success.

Students from the [James and Grace Lee Boggs School \(Detroit, MI\)](#) visited the Detroit River Hawk Watch on 11 November. Many of the children were witnessing hawks and hawk migration for the first time in their life and were excited by the opportunity to see one of Nature's spectacles in action. The students showed their appreciation by sending DRHW hand-written thank you notes, which can be read [here](#).

## Path Forward

The Detroit River Hawk Watch Advisory Committee is evaluating the possibility of providing additional count participation at locations like Pointe Mouillee State Game Area Headquarters and/or at Elizabeth Park on days when winds are sufficiently strong enough to push migrant raptors south or north of the LEMP count site. Initial discussions have revolved around keeping the Primary Counter at LEMP at all times, but allowing volunteers to survey other locations nearby and keep separate records that could be appended to data submitted to Hawk Count.

## Acknowledgements

The success of the Detroit River Hawk Watch would not be possible without the dedication of Volunteers who log hundreds of hours counting hawks in all weather situations. Thanks go out to Kevin Georg, our Primary Counter, and to the DRHW crew of Andrew Sturgess, Raburn Howland, Rosemary Brady, Patrick Mulawa, John Elliott, Don Sherwood, Frank Kitakis and Jim Lynch. Thanks also go out to those visitors who came out on many occasions to assist with sightings and provide a break during particularly slow days. Special thanks are necessary for Andrew Sturgess and Mark Hainen, who both provided wonderful photos and stories for the DRHW Facebook Page as well as for Jerry Jourdan for his often unsung amazing work on the DRHW website.

Special thanks are also necessary to Will Weber and Jerry Jourdan for organizing the efforts and driving the completion of this report, for Andrew Sturgess, Kevin Georg and Jerry for their contributions to the report's content. Jerry's work in compiling and analyzing the data in the Tables and Figures is particularly appreciated.

The success of the count would not be possible without financial and site support from the United States Fish and Wildlife Service, The International Wildlife Refuge Alliance, Hawk Migration Association of North America, and the Huron Clinton Metroparks. Volunteers are always welcome, and are invited to come out to the boat launch at LEMP to join in our efforts. Keep looking up!

## References

1. [https://www.hawkcount.org/month\\_summary.php?r=on&rsite=285&go=Go+to+site](https://www.hawkcount.org/month_summary.php?r=on&rsite=285&go=Go+to+site)
2. [\*The Detroit River Hawk Watch Monitoring Protocol: A Review and Implementation for Scientific Integrity \(2011\)\*](#)
3. [https://www.wunderground.com/history/airport/KONZ/2017/08/14/DailyHistory.html?req\\_city=Grosse%20Ile&req\\_state=MI&reqdb.zip=48138&reqdb.magic=1&reqdb.wmo=99999](https://www.wunderground.com/history/airport/KONZ/2017/08/14/DailyHistory.html?req_city=Grosse%20Ile&req_state=MI&reqdb.zip=48138&reqdb.magic=1&reqdb.wmo=99999)
4. <https://drive.google.com/file/d/1-7Tllj7HUXRQX5zlqUFb5wrvAfNNxCnz/view>
5. [https://drive.google.com/file/d/1A3iMLuQTsj07ggJmqWK\\_YYAkWjn7Cq-u/view](https://drive.google.com/file/d/1A3iMLuQTsj07ggJmqWK_YYAkWjn7Cq-u/view)
6. [https://drive.google.com/file/d/1vJLkb\\_matl4NeEgGW80a6Vz8aQvOWEtV/view](https://drive.google.com/file/d/1vJLkb_matl4NeEgGW80a6Vz8aQvOWEtV/view)
7. [Jourdan, J., Detroit River Hawk Watch: Citizen Science At Work, 2017, State of the Straits Conference, 9 November 2017, Detroit Zoo, Royal Oak, MI.](#)

**Table 1.** Raptor totals for the Detroit River Hawk Watch during September 2017.

Date	Observer Hrs	BV	TV	OS	BE	NH	SS	CH	NG	RS	BW	SW	RT
9/1	27	0	0	1	0	2	5	2	0	0	14	0	1
9/2	27	0	0	1	0	1	2	0	0	0	14	0	0
9/3	27	0	0	2	0	1	0	0	0	0	3	0	0
9/4	36	0	0	0	0	0	0	0	0	0	1	0	0
9/5	27	0	0	0	0	0	0	0	0	0	1	0	0
9/6	27	0	0	0	0	4	14	0	0	0	82	0	0
9/7	24	0	0	1	0	1	4	0	0	0	63	0	0
9/8	32	0	0	0	1	3	14	1	0	0	55	0	0
9/9	30	0	37	0	0	3	24	0	0	0	1503	0	5
9/10	36	0	19	0	0	10	62	1	0	0	2262	0	5
9/11	47.5	0	57	1	0	5	132	1	0	0	2609	0	4
9/12	38	0	32	0	1	3	58	1	0	0	982	0	3
9/13	21	0	5	0	0	2	55	1	0	0	13	0	0
9/14	32	0	7	2	1	3	34	2	0	0	132	0	0
9/15	32	0	10	2	1	1	91	1	0	0	5	0	0
9/16	36	0	23	3	4	1	60	1	0	0	19	0	1
9/17	36.5	0	14	1	1	2	46	1	0	0	0	0	0
9/18	20	0	1	0	0	0	23	1	0	0	10	0	0
9/19	8.25	0	0	0	0	0	0	0	0	0	0	0	0
9/20	32	0	3	2	0	2	72	1	0	0	18	0	0
9/21	30	0	6	0	4	4	40	0	0	0	0	0	0
9/22	32	0	14	7	5	7	116	0	0	0	1057	0	1
9/23	30	0	79	4	2	3	135	1	0	0	333	0	2
9/24	40	0	27	1	6	6	108	0	0	0	302	0	6
9/25	38	0	7	0	2	4	287	0	0	0	284	0	0
9/26	32	0	2	1	1	5	150	2	0	0	0	0	0
9/27	34	0	192	2	3	4	131	0	0	0	107	0	5
9/28	40	0	203	0	0	2	54	2	0	0	29	0	5
9/29	36	0	440	0	7	6	82	1	0	0	94	0	5
9/30	42.5	0	1311	0	4	10	39	2	0	1	107	0	22
Total	950.75	0	2489	31	43	95	1838	22	0	1	10099	0	65

Date	Observer Hrs	RL	GE	AK	ML	PG	UA	UB	UF	UE	UR	Total	Wind Spd (km/hr)	Wind Dir	Temp C
9/1	27	0	0	2	1	0	0	0	0	0	0	28	15	ENE	15
9/2	27	0	0	0	2	0	0	0	0	0	0	20	15	ENE	18
9/3	27	0	0	1	2	0	0	0	0	0	0	9	5	W	18
9/4	36	0	0	5	0	0	0	0	0	0	0	6	20	SW	21
9/5	27	0	0	0	0	0	0	0	0	0	0	1	10	WSW	18
9/6	27	0	0	6	1	0	1	0	0	0	0	108	10	NNW	15
9/7	24	0	0	6	0	1	0	0	0	0	0	76	5	W	15
9/8	32	0	0	8	0	0	0	0	0	0	0	82	10	NW	11
9/9	30	0	0	14	1	0	0	0	0	0	0	1587	5	ENE	0
9/10	36	0	0	33	0	0	0	0	0	0	0	2392	10	NE	16
9/11	47.5	0	0	17	1	0	0	0	0	0	0	2827	5	ENE	19
9/12	38	0	0	9	1	0	0	0	0	0	0	1090	5	ENE	13
9/13	21	0	0	4	1	0	0	0	0	0	0	81	5	S	19
9/14	32	0	0	1	0	0	0	0	0	0	0	182	5	S	19
9/15	32	0	0	7	2	1	0	0	0	0	0	121	5	SSE	19
9/16	36	0	0	4	2	2	0	0	0	0	0	120	10	SSE	21
9/17	36.5	0	0	5	0	1	0	0	0	0	0	71	10	SE	26
9/18	20	0	0	6	0	0	0	0	0	0	0	41	5	ENE	20
9/19	8.25	0	0	0	0	0	0	0	0	0	0	0	5	NE	21
9/20	32	0	0	21	1	1	0	0	0	0	0	121	5	SE	23
9/21	30	0	0	5	0	0	0	0	0	0	0	59	5	S	25
9/22	32	0	0	11	1	0	0	0	0	0	0	1219	5	S	24
9/23	30	0	0	17	1	3	0	0	0	0	0	580	5	S	24
9/24	40	0	0	16	2	2	0	0	0	0	1	477	5	S	25
9/25	38	0	0	13	1	1	0	0	0	0	0	599	5	S	24
9/26	32	0	0	4	1	4	0	0	0	0	0	170	10	SSE	25
9/27	34	0	0	20	2	3	0	0	0	0	0	469	5	NW	21
9/28	40	0	0	17	3	2	0	0	0	0	0	317	10	NNW	16
9/29	36	0	0	75	1	3	0	0	0	0	1	715	5	WNW	0
9/30	42.5	0	0	23	1	0	0	0	0	0	0	1520	0	0.00	0
Total	950.75	0	0	350	28	24	1	0	0	0	2	15088			

**Table 2.** Raptor totals for the Detroit River Hawk Watch during October 2017.

Date	Observer Hrs	TV	OS	BE	NH	SS	CH	NG	RS	BW	SW	RT
10/1	1	1381	1	5	19	97	2	0	1	235	0	32
10/2	40	636	1	5	7	67	1	0	2	9	0	30
10/3	32	163	0	0	5	46	0	0	0	0	0	0
10/4	25	162	0	0	0	9	0	0	0	0	0	2
10/5	37.5	143	0	1	2	40	0	0	0	0	0	1
10/6	4.5	0	0	0	0	0	0	0	0	0	0	0
10/7	40	177	0	0	0	60	0	0	0	0	0	0
10/8	42.5	528	0	2	6	56	1	0	1	5	0	17
10/9	34	832	0	0	12	165	2	0	1	6	0	15
10/10	40	3218	0	0	4	30	3	0	3	24	1	68
10/11	1	0	0	0	0	0	0	0	0	0	0	0
10/12	1	0	0	0	0	0	0	0	0	0	0	0
10/13	42.5	1360	0	2	17	167	2	0	1	1	0	7
10/14	28	22	0	1	2	4	0	0	0	0	0	2
10/15	20	326	0	0	0	2	0	0	1	0	0	1
10/16	36	9394	0	16	15	121	3	0	8	7	1	99
10/17	34	10238	0	0	7	160	2	0	3	4	0	61
10/18	40	1531	1	3	17	147	4	0	1	2	0	17
10/19	18	2873	0	6	5	92	0	0	0	0	0	26
10/20	24	836	0	9	20	165	2	0	0	0	0	28
10/21	32	83	0	1	4	93	4	0	0	0	0	11
10/22	35	293	0	1	3	152	1	0	2	0	0	26
10/23	8	0	0	0	2	3	0	0	0	0	0	0
10/24	2	109	0	0	0	1	0	0	0	0	0	0
10/25	10	224	0	0	4	63	0	0	4	0	0	19
10/26	30	3586	0	22	8	91	1	0	16	0	0	126
10/27	17	1097	0	7	4	97	2	0	1	0	0	14
10/28	14	1007	0	1	7	51	4	0	3	0	0	19
10/29	24	1860	0	7	2	30	0	0	20	0	0	51
10/30	24	1276	0	1	6	14	3	0	0	0	0	1
10/31	14	1193	0	6	5	42	3	0	5	0	0	73
Total	751	44548	3	96	183	2065	40	0	73	293	2	746

Date	Observer Hrs	RL	GE	AK	ML	PG	UA	UB	UF	UE	UR	Total	Wind Spd	Wind Dir	Temp
10/1	1	0	0	22	0	0	0	0	0	0	0	1795	5	S	17
10/2	40	0	0	4	0	1	0	0	0	0	0	763	10	S	11
10/3	32	0	0	2	0	1	0	0	0	0	0	217	5	S	0
10/4	25	0	0	0	0	4	0	0	0	0	1	178	20	S	26
10/5	37.5	0	0	9	0	1	0	0	0	0	0	197	5	S	0
10/6	4.5	0	0	0	0	0	0	0	0	0	0	0	10	N	18
10/7	40	0	0	5	5	10	0	0	0	0	0	257	15	S	24
10/8	42.5	0	0	5	7	10	0	1	0	0	0	639	10	S	17
10/9	34	0	0	38	3	2	0	0	0	0	0	1076	5	S	19
10/10	40	0	2	4	0	0	0	0	0	0	0	3357	5	N	16
10/11	1	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
10/12	1	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
10/13	42.5	0	0	8	0	0	0	0	0	0	0	1565	10	S	18
10/14	28	0	0	0	0	0	0	0	0	0	0	31	0	S	17
10/15	20	0	0	0	0	1	0	0	0	0	0	331	10	S	0
10/16	36	0	1	19	2	0	0	1	0	0	0	9687	5	N	12
10/17	34	0	0	25	2	0	0	0	0	0	0	10502	10	S	12
10/18	40	0	1	12	1	1	0	0	0	0	0	1738	5	S	16
10/19	18	0	1	3	1	0	0	0	0	0	0	3007	10	W	19
10/20	24	0	1	5	0	0	0	0	0	0	0	1066	5	S	17
10/21	32	0	1	3	1	1	0	0	0	0	0	202	0	S	10
10/22	35	0	0	4	0	0	0	0	0	0	0	482	0	0.00	0
10/23	8	0	0	0	0	0	0	0	0	0	0	5	5	S	11
10/24	2	0	0	0	0	0	0	0	0	0	0	110	20	S	10
10/25	10	0	0	2	0	0	0	0	0	0	0	316	0	W	7
10/26	30	6	2	8	0	0	0	0	0	0	0	3866	5	W	8
10/27	17	0	0	2	1	0	0	0	0	0	0	1225	10	S	14
10/28	14	2	2	2	1	1	0	0	0	0	0	1100	10	S	3
10/29	24	0	1	3	0	0	0	0	0	0	0	1974	10	N	5
10/30	24	0	1	1	2	1	0	0	0	0	0	1306	0	0.00	0
10/31	14	1	3	2	0	2	0	0	0	0	0	1335	10	W	3
Total	751	9	16	188	26	36	0	2	0	0	1	48327			

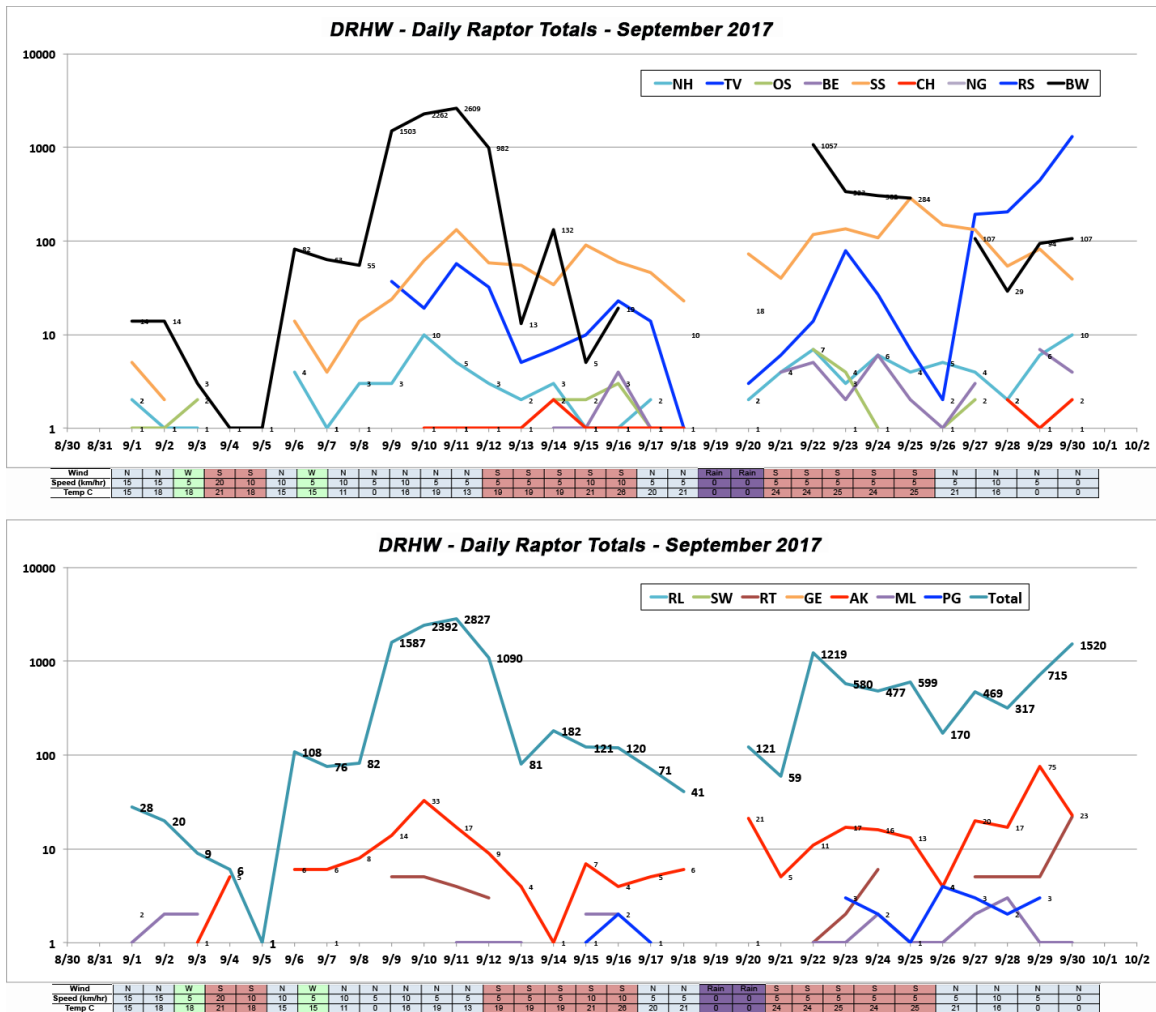
**Table 3.** Raptor totals for the Detroit River Hawk Watch during November 2017.

Date	Observer Hrs	BV	OS	BE	NH	SS	CH	NG	RS	BW	TV	SW	RT
11/1	14	0	0	1	5	40	2	0	1	0	254	0	5
11/2	28	0	0	3	1	19	0	0	0	0	20	0	1
11/3	45	0	0	2	4	38	8	0	69	0	2391	0	114
11/4	28	0	0	20	6	25	6	0	29	0	1589	0	263
11/5	0	0	0	0	0	0	0	0	0	0	0	0	0
11/6	35	0	0	8	1	9	8	1	48	0	873	0	349
11/7	37.5	0	0	9	1	11	4	0	17	0	563	0	368
11/8	35	0	0	3	0	12	1	1	50	0	205	0	211
11/9	18	0	0	2	0	5	2	0	0	0	86	0	6
11/10	32.5	0	0	2	0	0	0	0	8	0	88	0	9
11/11	28	0	0	3	4	3	0	0	9	0	87	0	43
11/12	0	0	0	0	0	0	0	0	0	0	0	0	0
11/13	35	0	0	2	0	2	0	0	0	0	24	0	3
11/14	35	0	0	0	2	2	2	0	4	0	28	0	17
11/15	8	0	0	0	1	0	0	0	0	0	0	0	0
11/16	27	0	0	6	0	2	1	0	1	0	2	0	5
11/17	35	0	0	3	0	4	2	0	13	0	24	0	48
11/18	0	0	0	0	0	0	0	0	0	0	0	0	0
11/19	32.5	0	0	2	1	0	0	0	0	0	23	0	6
11/20	35	0	0	14	4	2	0	0	0	0	24	0	11
11/21	28	0	0	1	1	0	2	0	0	0	4	0	1
11/22	30	0	0	3	0	0	0	0	4	0	14	0	25
11/23	27	0	0	0	0	6	4	0	0	0	0	0	11
11/24	20	0	0	0	0	4	1	0	0	0	9	0	3
11/25	26	0	0	4	4	8	1	0	0	0	4	0	24
11/26	32	0	0	2	6	8	2	0	5	0	1	0	29
11/27	33	0	0	2	2	6	8	0	11	0	14	0	51
11/28	26	0	0	0	0	2	1	0	2	0	13	0	46
11/29	26.5	0	0	4	2	4	3	0	9	0	16	0	23
11/30	16	0	0	3	0	1	0	0	0	0	0	0	0
Total	773	0	0	99	45	213	58	2	280	0	6356	0	1672

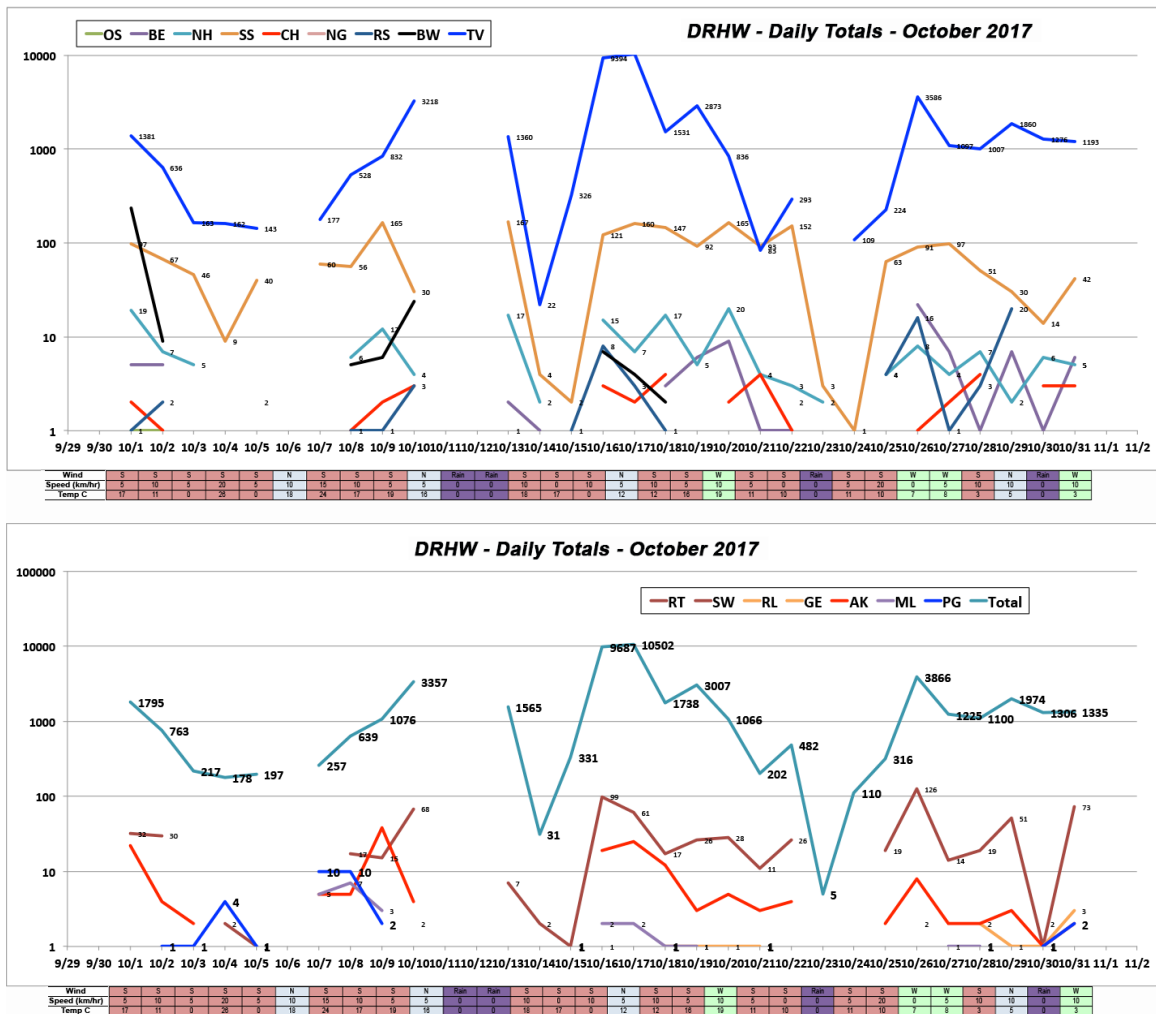
Date	Observer Hrs	RL	GE	AK	ML	PG	UA	UB	UF	UE	UR	Total	Wind Spd	Wind Dir	Temp
11/1	14	0	6	0	0	1	0	0	0	0	0	315	5	S	4
11/2	28	0	0	0	0	0	0	0	0	0	0	44	10	S	11
11/3	45	0	7	0	1	1	0	0	0	0	0	2635	10	N	7
11/4	28	10	13	0	2	2	0	1	0	0	0	1966	10	E	0
11/5	0	0	0	0	0	0	0	0	0	0	0	0	10	N	0
11/6	35	5	16	0	0	1	0	0	0	0	0	1319	5	N	6
11/7	37.5	0	14	0	0	0	0	0	0	0	0	987	10	N	4
11/8	35	2	3	0	0	0	0	0	0	0	0	488	5	N	2
11/9	18	0	0	0	0	0	0	0	0	0	0	101	10	S	4
11/10	32.5	1	0	0	0	0	0	2	0	0	0	110	25	N	-6
11/11	28	0	4	0	0	0	0	0	0	0	0	153	10	S	3
11/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
11/13	35	0	0	0	0	0	0	0	0	0	0	31	10	N	4
11/14	35	0	2	0	0	0	0	0	0	0	0	57	5	S	4
11/15	8	0	0	0	0	0	0	0	0	0	0	1	0	N	4
11/16	27	0	0	0	0	0	0	0	0	0	0	17	10	N	4
11/17	35	0	2	0	0	0	0	0	0	0	0	96	28	S	2
11/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0
11/19	32.5	2	0	0	0	0	0	0	0	0	0	34	19	W	2
11/20	35	2	2	0	1	0	0	1	0	0	0	61	38	S	3
11/21	28	1	0	0	0	0	0	0	0	0	0	10	28	S	9
11/22	30	0	2	0	0	0	0	0	0	0	0	48	28	N	1
11/23	27	0	2	0	0	0	0	0	0	0	0	23	19	S	2
11/24	20	0	1	0	0	0	0	0	0	0	0	18	28	S	6
11/25	26	1	2	0	1	0	0	1	0	0	0	50	38	N	10
11/26	32	1	0	0	0	0	0	0	0	0	0	54	10	N	5
11/27	33	1	1	0	0	0	0	0	0	0	0	96	0	E	6
11/28	26	0	1	0	0	0	0	0	0	0	0	65	38	S	13
11/29	26.5	0	1	0	0	2	0	0	0	0	0	64	10	N	0
11/30	16	0	1	0	0	0	0	0	0	0	0	5	28	W	6
Total	773	26	80	0	5	7	0	5	0	0	0	8848			

**Table 4 - Detroit River Hawk Watch species totals between 1998 - 2017. Bottom of table shows 2017 mean standard deviation from the long-term average (LTA). Numbers in red indicate those species totals for 2017 that were recorded in number less than the LTA. Values greater than 15% are considered "significant".**

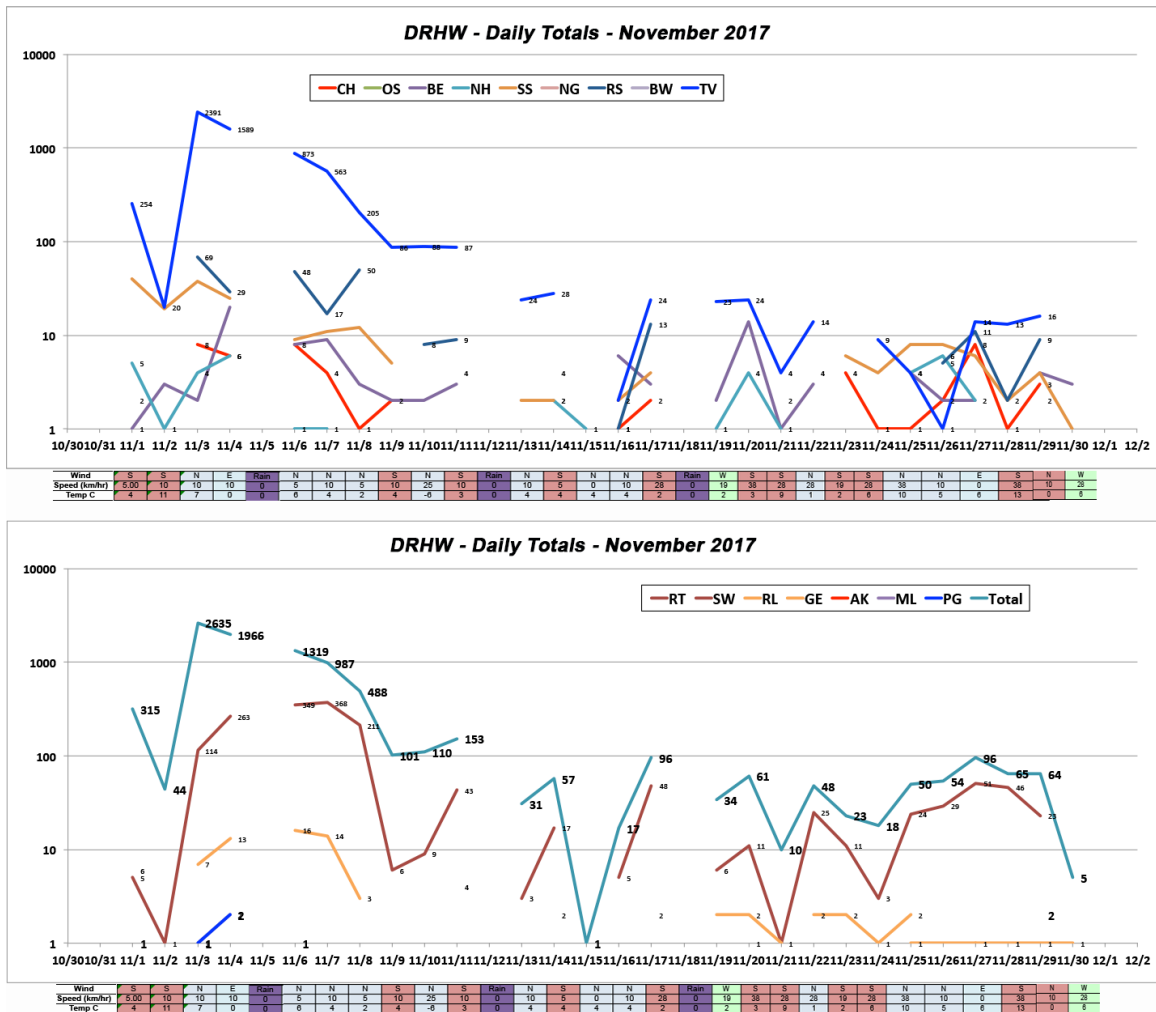
Year	Hours	TV*	OS	BE	NH	SS	CH	NG	RS	BW	SW	RT	RL	GE	AK	ML	PG	UNK	Total
1998	451	19743	135	111	807	4968	378	17	517	63689	5	3782	17	33	1046	95	52	86	95481
1999	481	17559	58	69	556	6534	299	23	556	45711	8	3504	76	208	664	30	49	47	75951
2000	510	29421	133	83	138	7132	408	49	875	57585	5	5754	55	188	790	34	24	37	102711
2001	526	28237	213	115	757	14715	693	46	858	19386	3	8153	55	120	1026	50	48	45	74520
2002	562	42644	238	185	696	7307	572	22	962	91499	3	6565	63	79	2277	64	52	15	153243
2003	545	54975	234	147	1005	10643	709	28	533	84085	12	5789	31	60	2128	72	82	0	160533
2004	479	36893	201	118	214	5027	461	49	869	27381	0	6155	101	79	470	38	20	0	78076
2005	456	29699	218	116	291	5623	432	18	299	56229	8	2619	30	45	1018	55	37	0	96737
2006	476	51722	196	162	616	7013	628	7	1019	50718	8	6025	27	124	1314	40	38	0	119657
2007	599	62882	195	211	818	9909	724	6	1026	69574	2	9406	29	124	1275	41	67	8	156297
2008	465	35173	140	141	149	3593	294	10	185	36216	0	2507	18	89	404	19	23	0	78961
2009	519	54989	46	118	169	3259	335	24	615	20016	4	2474	13	117	441	39	35	14	82708
2010	565	122325	63	220	465	6504	834	21	488	79572	5	3207	29	76	675	52	40	18	214594
2011	592	52745	85	235	278	5331	763	26	487	195858	5	4100	19	167	664	21	21	169	260974
2012	619	43285	70	222	248	3590	468	18	450	40923	4	2986	14	51	531	38	30	182	93110
2013	643	69723	71	350	234	3230	460	3	532	49629	5	3473	43	69	681	53	46	112	128714
2014	628	69768	56	354	423	4627	472	9	804	184860	4	4616	34	129	563	46	51	115	266931
2015	648	73601	81	219	632	5540	250	5	763	72461	1	4830	23	100	816	48	37	102	159509
2016	636	38528	23	142	377	4456	169	4	448	17529	0	2917	19	77	551	41	28	89	65398
2017	636.8	53393	34	238	323	4116	120	2	354	10392	2	2483	35	96	538	59	67	11	72263
Average	552	49365	125	178	460	6156	473	19	632	63666	4	4567	37	102	894	47	42	53	126818
s	70	23727	74	79	260	2850	202	15	247	49161	3	1985	23	47	520	17	17	58	61323
Min	451	17559	23	69	138	3230	120	2	185	10392	0	2474	13	33	404	19	20	0	65398
Max	648	122325	238	354	1005	14715	834	49	1026	195858	12	9406	101	208	2277	95	82	182	266931
2017 Mean % Dev from LTA	15	8	-73	34	-30	-33	-75	-90	-44	-84	-52	-46	-4	-5	-40	26	58	-79	-43



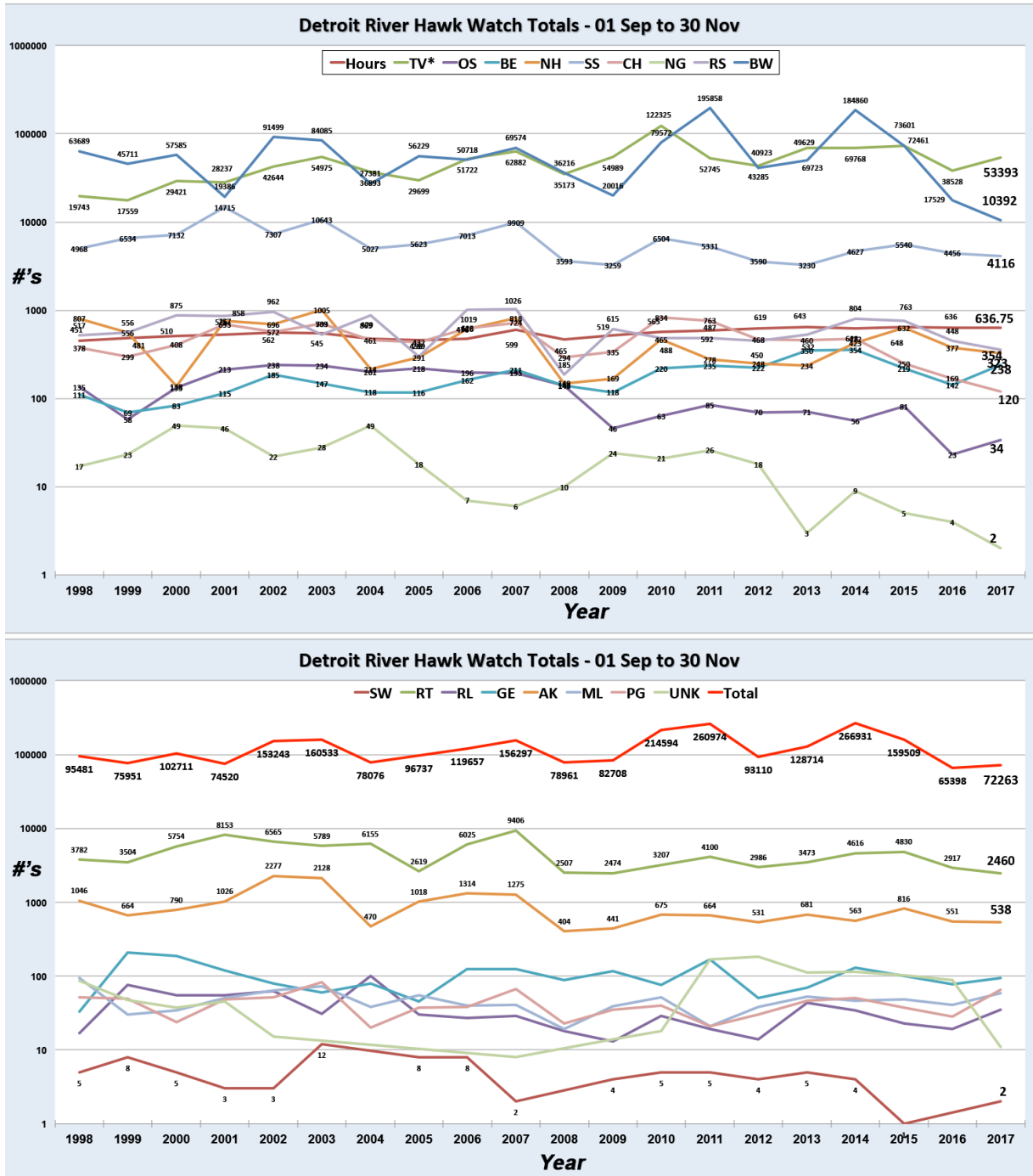
**Figure 1.** Daily raptor totals surveyed at the Detroit River Hawk Watch during the period 1 September to 30 September 2017. Log-scale shows distributions of individual species with Totals. Wind speed, direction and temperature are shown below each graph.



**Figure 2.** Daily raptor totals surveyed at the Detroit River Hawk Watch during the period 1 October to 31 October 2017. Log-scale shows distributions of individual species with Totals. Wind speed, direction and temperature are shown below each graph.



**Figure 3.** Daily raptor totals surveyed at the Detroit River Hawk Watch during the period 1 November to 30 November 2017. Log-scale shows distributions of individual species with Totals. Wind speed, direction and temperature are shown below each graph.



**Figure 4.** Detroit River Hawk Watch yearly totals counted at Lake Erie Metropark, Wayne Co., MI 1998 – 2017.