Thirty-eighth Annual Fall Raptor Migration Count at Holiday Beach Conservation Area, Amherstburg, Essex County, Ontario, Canada

Including Selected Non-raptor Observations

Fall 2011

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Conducted by the Holiday Beach Migration Observatory
in cooperation with the Essex Region Conservation Authority
at Holiday Beach Conservation Area

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Summary

The 38th annual hawk count at Holiday Beach Conservation Area in Amherstburg, Ontario, Canada was conducted from 1 September through 30 November 2011. The migration period produced an excellent total of 101,964 raptors of seventeen species. This season's total is nearly 58% greater than the 10-year (2001-2010) average and over 32% greater than the 20-year (1991-2010) average. Disregarding the large numbers of Broad-winged Hawks and Turkey Vultures observed this fall, 24,830 other raptors were counted, a 38% and 11% increase in the 10-year and 20-year averages, respectively. In general, early season migrants outperformed their historic averages while late season migrants were seen in numbers below their historic averages. Season highlights included three Swainson's Hawks, one Black Vulture, and record-setting seasonal counts for three species: Osprey, Bald Eagle, and Merlin. A single-day record (2,472) for American Kestrels was also recorded in 2011.

Site History

Located on the north shore of Lake Erie near the Detroit River, Holiday Beach of Essex County, Ontario, provides an excellent observation location during the southbound fall migration season. The count is conducted from a 40-foot tower overlooking the Big Creek estuary. Raptor migration counts have taken place at Holiday Beach since 1974. Holiday Beach Migration Observatory was founded in 1986. Holiday Beach Conservation Area (HBCA) has been designated an Important Bird Area by Bird Studies Canada (Chartier and Stimac, 2002). Additional information about Holiday Beach including counts and records of daily weather conditions, volunteer observers, visitors, and hourly breakdowns of each day's migration observations may be found at the HBMO website (www.hbmo.org) or at HawkCount.org. In addition, two recent papers describe the 2009 (Bosler, 2009) and 2010 (Pawlicki, 2010) diurnal raptor migration at HBCA.

Methods

The official count at Holiday Beach Conservation Area occurred daily from approximately 0700 to 1600 EST. Depending on sunrise time and flight activity, monitoring was often conducted before and after these times. The counter was present on the top level of the 40-foot tower every day from 1 September to 30 November unless heavy rain, thunderstorms, or other severe weather made accurate data collection impossible or dangerous. Occasionally, the count would be conducted from a lower level of the tower due to drizzle. Even during rain showers, the count was still usually conducted from inside the counter's vehicle. The primary counter typically worked the five weekdays while volunteers covered the weekends. The counter used binoculars as well as a spotting scope to detect and identify birds. While migrating diurnal raptors were the primary focus, all bird species were tallied each day.

Data was collected hourly, with a separate sheet completed throughout each hour (see Appendix). Data sheet information included meteorological measurements and observations as well as data collected about the raptor flight each hour. The data collected throughout each day was then promptly entered into Hawk Migration Association of North America's electronic database, HawkCount.org, along with observations, comments, and anecdotes from the day's count.

Raptor Migration Summary

From September 1 to November 30, 2011, observers at Holiday Beach recorded 101,964 individual diurnal raptors of 17 species moving west to east along the north shore of Lake Erie (Table 1). This is a 58% increase in the 10-year average and a 32% increase in the 20-year average at the site (Table 2). Broad-winged Hawks and Turkey Vultures made up nearly 76% of all migrants counted. Leaving these two species out of the totals, 24,830 of the remaining 15 species were counted in 2011, a 38% increase in the 10-year average but only an 11% increase in the 20-year average (Table 1 and 2). During the three-month count period in 2011, observers counted an average of 139 raptors per hour, a rate that hasn't been noted since 2001 (Table 1). The 2011 rate is 26% greater than the 10-year average and 14% greater than the 20-year average (Table 2).

September brought favorable northerly winds on fourteen days, pushing 52,697 raptors of 13 species to the north shore of Lake Erie. Three-quarters of the Ospreys and Bald Eagles counted during the fall season passed in the count's first month, as did half of the Sharp-shinned Hawks and two thirds of the Merlin. A five digit raptor total in September, of course, is due in large part to Broad-winged Hawks: over 40,000 went past in September.

The 2011 count was record setting for three raptor species, and this was made possible by the favorable north winds early in the season. Osprey and Bald Eagle each topped 200 migrants for the first time in count history. A season total of 137 Merlin is also a new count record. In addition to these record-setters, Turkey Vulture, Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Broad-winged Hawk, Golden Eagle, American Kestrel, and Peregrine Falcon all bested their 10-year and 20-year species averages (Table 2).

The raptors that make up the bulk of the late fall flight at Holiday Beach were detected in below average numbers in 2011. Northern Goshawk, Red-shouldered Hawk, Red-tailed Hawk, and Rough-legged Hawk were all below the 10-year and 20-year averages for these species (Table 2).

The reasons for these low-recorded numbers may be as follows. After 14 days of northerly winds in September, only 17 days with favorable wind components would follow in the next two months.

October started off strong with winds blowing from the north on each of the first four days (producing an amazing American Kestrel flight), but managed only four more northerly wind days the rest of the month. The count's second month still managed to produce an

impressive 43,896 raptors of 16 species. At Holiday Beach, Turkey Vultures are to October as Broad-winged Hawks are to September; nearly 93% of all Turkey Vultures counted in 2011 wobbled past in October. The second half of the Sharp-shinned Hawks passed in October, along with a diverse group of raptors that included straggling early migrants and the trickle of raptors still to come.

With only eight northerly wind days in October, hopes were high for an exciting November. Unfortunately, the count's final month produced just nine days with winds from a northerly direction. November produced only 5,371 raptors of 15 species. The usual late season raptors – Northern Goshawk, Red-shouldered Hawk, Red-tailed Hawk, Rough-legged Hawk, and Golden Eagle – all went through in peak numbers in November.

Along with many dedicated volunteers, the official counter logged 734 hours in 90 days in 2011. This total is over 25% greater than the 10-year average and over 16% greater than the 20-year average (Table 2). Every day during the three-month period received coverage with the exception of **one day, due to heavy, steady rain**.

Species Accounts

Turkey Vulture

Turkey Vultures elicit interesting and differing reactions from hawkwatchers. A nearly universal sentiment is that they are extremely ugly. However, some will begrudgingly admit that, if they do exhibit any beauty at all, the beauty of the Turkey Vulture is demonstrated during flight. Able to soar despite heavily overcast conditions and in heavy winds, Turkey Vultures should receive more respect for their ability to harness the air necessary to soar. No matter what your personal opinion of these birds, the sight of nearly 1,000 Turkey Vultures kettling up as one and streaming through is undeniably cool.

A total of 33,703 Turkey Vultures eventually made it past the hawk tower at Holiday Beach in 2011 (Table 1). This total is only 10% higher than the 10-year average, but still a 41% increase in the 20-year average (Table 2). In 2011, Turkey Vulture migration started in earnest 1 October and slowed by early November. The daily high count for the season was a modest 3,733 on 21 October, paling in comparison to high counts of over ten thousand that have occurred at the site in the past. The 2011 Turkey Vulture migration may have been more protracted than usual due to poor migration conditions during traditional peak dates in mid-October. Alternatively, Turkey Vultures may have simply taken a different route (with south winds, vultures may have passed north of the count site out of detectable range) that did not lead as many to Holiday Beach as in recent years. Regardless, Turkey Vultures still made up an impressive 33% of all migrants counted in 2011.

Black Vulture

A single Black Vulture migrating past was a treat on 5 November. The bird was seen well as it alternately flapped and soared on a westward path. Usually seen in spring as it overshoots in the region, fall records of Black Vultures are less common. **This is only the third record** of Black Vulture during the fall migration at Holiday Beach since monitoring began in 1974.

Osprey

At Holiday Beach, Ospreys are seen as soon as the count period begins. Ospreys are crowd-pleasers as they often stop to forage in the marsh either briefly or for a few days. In some cases they will even hover at eye level over the trout pond, blasting feet-first into the water or pulling up at the last second. Migrant Ospreys are also fairly vocal, and their piercing whistles are heard as they soar overhead, especially when another Osprey joins them. All of these things add to the entertainment value that Ospreys bring to the migration at Holiday Beach.

A new **single season Osprey record** was set for Holiday Beach in 2011, with 204 migrants counted (Table 1). This count bests the previous record of 186 Ospreys detected in 2007. Out of this 204 total, over three fourths moved past in September, although Ospreys were seen consistently until mid-October after which they became much less frequent. The season's highest single-day count for Osprey was 23 on 9 September. A late Osprey was noted on 23 November. The final count is 94% greater than the 10-year average and 80% greater than the 20-year average (Table 2). Even with a record setting season, Ospreys were still seen in low densities compared to other raptors at Holiday Beach; less than 1% of all counted raptors in 2011 were Ospreys.

Bald Eagle

It is amazing to be able to tell new visitors to Holiday Beach that, in fact, Bald Eagles are quite common and that it would be an odd day to not see any Bald Eagle, whether it be a local or a migrant bird. We were lucky enough to have at least four local Bald Eagles at Big Creek estuary in 2011.

The 2011 season total for Bald Eagles was also record-breaking: all told, 201 migrants were seen (Table 1). Like the Osprey count, nearly three fourths of the migrants were noted in September, with a single-day site record of 33 passing on 15 September. Another peak flight occurred on 9 September with 22 Bald Eagles passing through. 201 Bald Eagles is an increase of 82% in the 10-year average and 142% increase in the 20-year average (Table 2). Also like the Osprey, Bald Eagles made up a tiny portion of the total raptor count in 2011.

Northern Harrier

The lanky frame of the Northern Harrier, fluidly rowing, silhouetted against the dawn's glow is one of the signature experiences at Holiday Beach. Noted for their early morning and late evening movements, Northern Harriers may be under-counted at most watch sites. Strong anecdotal evidence suggests Harriers may even migrate at night (Russell 1991). In addition, harriers seem to migrate

regardless of calendar date, wind direction, precipitation, or temperature. Northern Harriers are one major reason that keeps the dedicated hawk watcher from pressing the snooze button on his or her alarm clock or abandoning the count site on a drizzly day.

A total of 947 Northern Harriers loped past Holiday Beach this fall (Table 1). This is 19% and 6% greater than the 10-year and 20-year averages for this species (Table 2). A full 85% of harriers had passed by the end of October. Peak flights were modest in 2011, with high counts of 64 on 14 September and 61 on 1 October. However, Northern Harriers were very reliable in 2011; only 13 days during the three-month count period went by without a Northern Harrier joining in the migration. Northern Harriers made up nearly 1% of the 2011 season total.

Sharp-shinned Hawk

From early September until early November, "sharpies" are a staple at Holiday Beach. Along with American Kestrels and Northern Harriers, Sharp-shinned Hawks are early morning birds. More days than not a Sharp-shinned Hawk will be the first raptor species on the data sheet as it scatters waking songbirds under the tower.

This count year (2011) was a good season for Sharp-shinned Hawks at Holiday Beach, especially when placed in the context of recent years. A total of 13,073 Sharp-shinned Hawks were counted flapping past the hawk tower (Table 1). This number is **greater than each the previous ten-year's counts.** The 2011 total is 17% greater than the 20-year average but nearly 43% greater than the 10-year average (Table 2). Sharp-shinned Hawk migration started in early September and had wound down by early November. Top flights included 1,177 on 9 September (nearly all of these birds could have been identified with the naked eye) and 1,823 on a blustery 2 October. Approximately 13% of all raptors passing Holiday Beach in 2011 were Sharp-shinned Hawks.

Cooper's Hawk

In hawkwatching circles, Cooper's Hawks really are noted most, of course, for the difficulty in separating them from smaller Sharp-shinned Hawks. Of course, no one field mark or behavior ever works 100% of the time because of changes in flight style due to weather, changes in body shape due to molt, or any of a large number of factors. One more mark to add to the list is that when you see a Cooper's Hawk, it looks fierce. Sure, this may relate to the larger head, longer tail, and large size, but overall a Cooper's Hawk looks like a really scary predator. While a Sharp-shinned Hawk is in fact a well-tuned killing machine, it simply doesn't look the part as well as a "coop".

Like their smaller relatives, Cooper's Hawks also showed well at Holiday Beach in 2011. In total, 1,063 migrants were counted (Table 1). This is the first time the "coop" count has reached four digits at the site since 1991 when a site record of 1,082 was recorded. Not surprisingly, the count averaged well above the 10-year and 20-year averages with 81% and 78%, respectively (Table 2). Peak flights for Cooper's Hawks were 57 on 15 September and 43 on 3 November. Cooper's Hawks made up just over 1% of all raptors counted in 2011.

Northern Goshawk

Holiday Beach hasn't seen Northern Goshawk numbers approach 50 since 2005, and that trend continued in 2011. A total of 15 goshawks were noted passing the count site, a 51% decrease in the 10-year average and a 58% decrease in the 20-year average (Tables 1 and 2). The first goshawk was seen on 18 October and the last passed on 22 November. Only four Northern Goshawks migrated past in October; the rest were seen in November. Northern Goshawks made up well less than 1% of all migrants at Holiday Beach in 2011.

Red-shouldered Hawk

Red-shouldered Hawks are beautiful birds that make hawkwatching along the Great Lakes exciting, where counts of this species can be higher than in any other location. Unfortunately, conditions did not provide many days conducive to seeing migrants at Holiday Beach during peak Red-shouldered Hawk migration dates in 2011.

The season total of 539 Red-shouldered Hawks is less than 5% below the 10-year species average but is 29% below the 20-year average (Table 1 and 2). No Red-shouldered Hawks were detected in September, but by early October small numbers were starting to trickle through. The peak flight of 2011 was 96 birds on 4 November, a respectable total but nowhere close to historic high counts of over 400 in a day. Red-shouldered Hawks made up .5% of all raptors counted in 2011 at Holiday Beach.

Broad-winged Hawk

Broad-winged Hawks were real crowd-pleasers at the count site in 2011. The first migrants were seen on 6 September, but large kettles didn't appear until 14 September. Northerly winds continued for the following three days, resulting in a combined 41,258 "broad-wings" passing between 14 September and 17 September. Even more mind-boggling are the hundreds of thousands of Broad-winged Hawks that almost certainly migrated through the region during those few days, undetectably high. By the time the final two broad-wings passed on 7 October, 43,431 Broad-winged Hawks had been counted (Table 1). This is a 168% increase in the 10-year average and a 40% increase in the 20-year average (Table 2). Broad-winged Hawks made up a **whopping 42.5% of all migrating raptors seen at Holiday Beach in fall 2011**.

Swainson's Hawk

This long-winged prairie *Buteo* was seen on three separate occasions at Holiday Beach in 2011 (Table 1). A lightly colored immature Swainson's Hawk soared low over the tower within a small kettle of Broad-winged Hawks on 17 September. On 1 October, a dark

adult, also very low and close to the tower, powered past. Finally, another light immature bird made its way past in the company of several hundred Turkey Vultures on 27 October. Three Swainson's Hawks **ties the single-season site record set in 2006**.

Red-tailed Hawk

A total of 3,405 Red-tailed Hawks were detected during the 2011 count (Table 1). Like many of the late-season birds, Red-tails never showed in numbers that many seasoned observers have come to expect. The 2011 count is 24% below the 10-year average count and over 41% below the 20-year average (Table 2). Small numbers of Red-tailed Hawks were seen throughout September and into mid-October. The first triple-digit count of Red-tails (226) occurred on 28 October, and more followed in early and mid-late November, with peak flights of 409 on 3 November and 578 the following day. Red-tailed Hawks made up 3.3% of all raptors counted in 2011.

While weather certainly had something to do with this low number, other factors may be in play as well. Red-tailed Hawks continue to winter further north every year. Perhaps the Red-tails still to the north of Holiday Beach eventually would have passed through when weather or lack of food made it a necessity. Whatever the reason, Red-tailed Hawk migration never seemed to get on track in 2011.

Rough-legged Hawk

Holiday Beach managed only 28 Rough-legged Hawks this season, a 36% and 63% decrease in 10-year and 20-year average counts, respectively (Table 1 and 2). The first Rough-legged was noted on 7 October and the last wasn't detected until 23 November. The high count for 2011 was only 4 individuals on 3 November; when Rough-legged Hawks were noted, they were usually single birds. Rough-legged Hawks made up less than 1% of all migrants in 2011.

Golden Eagle

Many words have used to describe these amazing birds, but they all boil down to one thought: Golden Eagles are cool.

Observers at Holiday Beach counted 119 Golden Eagles in 2011 (Table 1). This is a 54% increase in the 10-year and a 56% increase in the 20-year species averages, but shy of the all-time season record of 134 (Table 2). The first Golden Eagle of the season was seen on 25 September, but another was not seen until 6 October. Golden Eagle migration started in earnest in mid-late October, and individuals were still being seen in late November. The daily high count for the season occurred on 4 November when 16 were seen. Golden Eagles made up less than 1% of the 2011 season total.

American Kestrel

Although many more years of high counts would be needed to make any statements about numbers of American Kestrels rebounding, the excellent kestrel count in 2011 was nonetheless exciting and heartening to witness.

American Kestrels had an impressive fall at Holiday Beach in 2011. A number of good count days occurred in both September and October, but the 2011 season will always be remembered for the fabulous kestrel count on **1 October. An astounding 2,472 American Kestrels were counted on this date, shattering the previous one-day record of 1,105**. ***(This is an average of 260 Kestrels per hour!)*** With 506 more kestrels zipping past the following day, nearly 3,000 American Kestrels passed the count site in just 18.75 count hours. Other peak counts included 256 on 14 September and 211 on 15 September. By the end of October, kestrel migration had slowed dramatically, and it was virtually non-existent in November. In all, 4,874 individuals were counted as migrants in 2011 (Table 1). This is an amazing 176% increase in the 10-year average, and 101% increase in the 20-year average (Table 2). American Kestrels made up 4.8% of all raptors counted as migrants in 2011.

Merlin

Not to be outdone by their smaller, friendlier relative, Merlins also migrated past Holiday Beach in record numbers. Merlin migration was fairly evenly spread over September and October, but Merlins were hard to come by in November. The final total of 137 Merlins is a site season record, eclipsing the 130 Merlins counted the previous fall (Table 1). The season total is 47% and 61% higher than the 10-year and 20-year averages, respectively (Table 2). Merlins made up less than 1% of all migrants at Holiday Beach in 2011.

Peregrine Falcon

Observers detected 81 Peregrine Falcons this fall at Holiday Beach (Table 1). This is a 30% increase in the 10-year average and a 42 percent increase in the 20-year average (Table 2). Nearly half of all Peregrines blasted past in September, and virtually all had passed by the beginning of November. Peak flights consisted of 11 on 29 September and 10 on 1 October. Peregrine Falcons are a low-density migrant at Holiday Beach; the count for this species made up less than 1% of the season total.

Non-raptor highlights

Ducks, Geese, and Swans

A large flock containing at least 3,000 dabbling ducks dropped into the marsh on 12 September, and thousands of ducks continued enter until the end of the count period. Notable was the large number of Gadwalls in mid-October, with a peak count of 850. 27 Snow Geese on 22 November was the largest group of this species seen. 18 Tundra Swans on 25 October were the first of the season, and the high daily count was 168 Tundra Swans on 11 November. A total of 423 Tundra Swans was seen in 2011. 24 species of ducks, geese, and swans were noted in 2011.

Pelicans
Three American White Pelicans flew over the marsh and briefly landed on 15 September.

Rails, Gallinules, and Coots
Notable were large numbers of American Coots in the marsh, with a conservative count of 1,800 in sight from the tower on 18 October. Common Gallinules were commonly seen in small numbers until mid-October. A few Soras were heard calling from the marsh throughout the early portion of the season.

Cranes
Four Sandhill Cranes were detected at the count site in 2011. Single birds were seen on 18 September and 4 October. Two Sandhill Cranes went back-and-forth over the tower together on 27 October. All sighting were flyovers.

Shorebirds
One Stilt Sandpiper flew over with a flock of Lesser Yellowlegs on 18 September. The season's shorebird highlight was a single Hudsonian Godwit quickly flying west over the marsh on 4 October. 12 species of shorebirds were seen in 2011.

Gulls, Terns, and Jaegers
Good numbers of Black Terns were seen at Holiday Beach in 2011. Nine Black Terns were detected on 7 September, and a nice count of 205 Black Terns on 8 September. Caspian Terns were on the move 29 September as 52 were seen moving past in the first few hours of the day. A jaeger species (almost certainly a Parasitic Jaeger) glided straight south very high over the tower on 11 October. One Franklin's Gull was seen flying east on 12 November.

Swifts
Large groups of Chimney Swifts were moving on 30 September, with a conservative count of 614 Chimney Swifts by the end of the day.

Hummingbirds
A total of 658 Ruby-throated Hummingbirds were seen zipping past the hawk tower in 2011. An exception flight of 355 Ruby-throated Hummingbirds on 9 September was noteworthy, especially because for a few hours hummingbirds were the only organisms migrating. An additional 92 Ruby-throated Hummingbirds passed on 14 September. The final Ruby-throated Hummingbird was seen on 3 October. No late or uncommon hummingbird species were seen in 2011.

Woodpeckers
Eighteen total Red-headed Woodpeckers passed Holiday Beach in 2011: two Red-headed Woodpeckers on 12 September, one Red-headed Woodpecker each on 13 September, 14 September, 17 September, 21 September, 24 September, 7 October, 14 October. Six Red-headed Woodpeckers was the best one-day count of the season on 22 September. Three more Red-headed Woodpeckers were also seen on 10 October.

Crows and Jays
In total, 203,463 Blue Jays were counted in 2011. Blue Jay migration began on 18 September with 774 jays breaking the seal. 132,374 Blue Jays migrated past in September, with peak flights of 23,390 on 25 September, 24,430 on 27 September and 33,780 on 28 September. One Common Raven was a rare treat on 21 November. (This is believed to be only the second record of raven for the count site.) American Crow migration began with a small flight on 21 October, and peak flights of 13,040 on 3 November and 20,310 on 4 November. The total American Crow count for 2011 was 54,447.

Larks
In total, 2,247 Horned Larks were counted in 2011. Peak counts of 843 Horned Larks on 12 November and 561 on 13 November were the two best of the count period.

Swallows
All six of the expected eastern swallows were detected at Holiday Beach in 2011. Peak Purple Martin movements included 1,275 on 1 September, 494 on 3 September and 1,430 on 13 September. A Tree Swallows count of 750 on 28 September was recorded. No Cave Swallows were detected this fall, and this species appeared to be much more difficult to detect throughout the region in 2011 than in recent years.

Waxwings
3.420 Cedar Waxwings were counted in 2011, with peak flights of 400 on 14 September and 587 Cedar Waxwings on 5 September.

Finches
A fairly modest 12,323 American Goldfinches were counted migrating past in 2011. Peak flights of goldfinches occurred on 27 September with 1,283 and on 5 October with 1,277. Flights numbering in the hundreds occurred frequently. Beginning in early October, Pine Siskins were detected fairly regularly but in small numbers. The largest single day count was 94 on 5 October. Purple Finches were seen in even smaller numbers than Siskins; no day had a double-digit count. No redpolls or crossbills were detected in 2011. A single, calling Evening Grosbeak was heard at dawn on 1 October east of the count site.

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Literature Cited

Bosler, Justin. 2009. *Thirty-Sixth Annual Fall Diurnal Raptor Migration Study at Holiday Beach Conservation Area, Amherstburg, Essex County, Ontario.*

Chartier, A. and Stimac, D. 2002. *Hawks of Holiday Beach*, Holiday Beach Migration Observatory, 2nd edition.

Pawlicki, James. 2010. *Thirty-Seventh Annual Fall Migration Count at Holiday Beach Conservation Area, Amherstburg, Essex County, Ontario, Canada.*

Russell, Robert W. 1991. *Nocturnal Flight By Migrant "Diurnal" Raptors*. Journal of Field Ornithology, 62(4):506-508.

Tables

Table 1. Season Raptor Totals for Holiday Beach Conservation Area, Amherstburg, Essex County, Ontario, Canada 1991-2011. Count Conducted by Holiday Beach Migration Observatory.

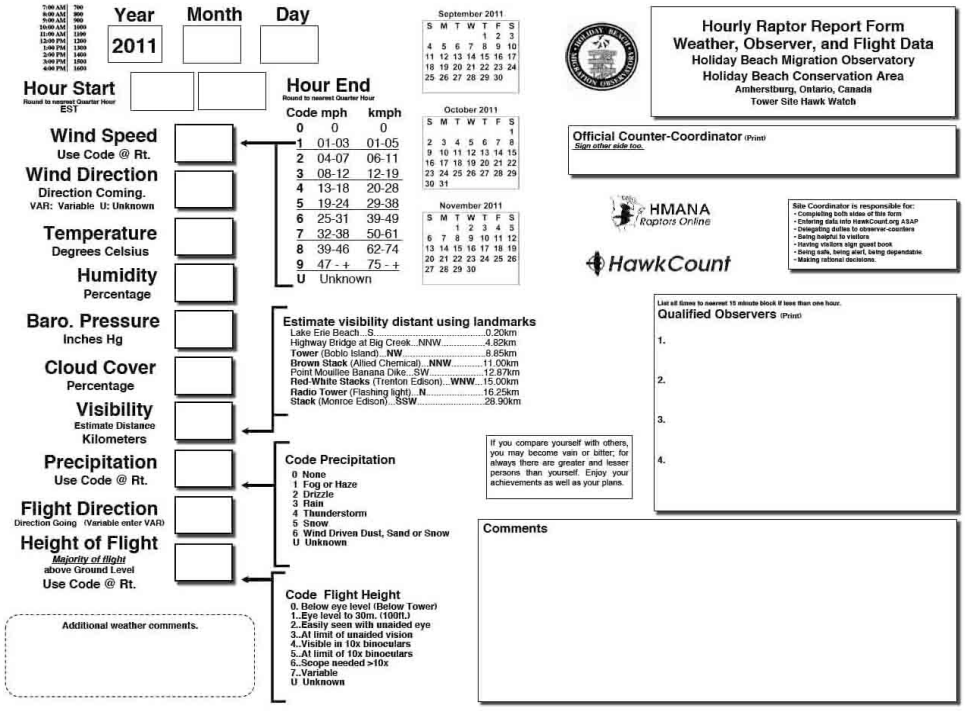
Fall Season	Observer Hours	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	BV	SW	UR	Total minus BW and TV	Raptors Per Hour	Season Total
2011	734	33,703	204	201	947	13,073	1,063	15	539	43,431	3,405	28	119	4,874	137	81	1	3	140	24,830	139	101,964
2010	703	38,149	135	172	746	9,439	580	7	508	16,133	4,114	47	95	1,445	128	50	0	0	40	17,484	102	71,766
2009	645	43,841	94	168	686	9,703	942	28	1,096	18,292	6,162	26	93	1,761	122	108	0	2	27	21,018	129	83,151
2008	424	21,182	48	99	266	3,533	219	7	298	8,953	2,282	23	133	597	36	30	0	0	13	7,584	89	37,719
2007	636	31,339	186	175	1,280	12,389	730	16	509	18,400	6,470	20	79	1,611	108	95	0	0	53	23,721	116	73,460
2006	613	35,665	111	124	1,195	9,814	760	28	492	7,730	4,248	30	63	2,113	122	114	0	3	40	19,257	102	62,652
2005	572	41,543	86	119	807	9,528	773	48	645	7,965	4,730	56	74	2,035	117	57	0	0	110	19,185	120	68,693
2004	469	14,752	83	61	272	5,506	369	28	403	27,843	2,771	64	42	1,369	63	15	0	0	231	11,277	115	53,872
2003	559	24,579	96	83	1,065	9,705	554	48	460	7,009	3,523	26	35	2,214	70	59	0	2	31	17,971	89	49,559
2002	632	21,810	105	48	859	7,658	448	47	457	4,887	4,964	108	66	1,969	94	61	0	0	88	16,972	69	43,669
2001	593	32,186	101	54	750	14,280	484	48	802	44,310	5,573	37	85	2,538	70	35	0	1	17	24,875	171	101,371
2000	622	18,249	68	70	334	9,786	396	16	836	17,240	4,864	39	102	2,197	61	35	0	1	35	18,840	87	54,329
1999	650	18,384	79	62	1,276	14,216	487	23	463	60,804	4,934	92	134	2,643	78	63	0	0	179	24,729	160	103,917
1998	616	18,559	164	70	1,214	13,740	355	29	631	50,746	5,900	51	28	1,986	77	49	0	1	141	24,436	152	93,741
1997	561	17,909	166	64	980	15,719	365	47	1,042	31,375	6,927	97	50	2,894	93	48	0	0	174	28,666	139	77,950
1996	639	17,675	107	27	356	10,778	480	23	414	107,877	7,016	72	77	1,952	47	50	0	1	95	21,495	230	147,047
1995	798	16,461	173	52	1,176	15,344	755	59	825	22,381	10,987	170	79	4,884	120	82	0	0	56	34,762	92	73,604
1994	760	19,391	92	36	1,469	10,338	498	17	859	49,830	8,854	69	87	3,337	51	54	0	0	100	25,861	125	95,082
1993	759	14,227	110	48	1,616	13,914	973	74	1,667	72,428	6,534	71	63	3,196	75	50	0	2	236	28,629	152	115,284
1992	691	14,785	110	37	655	11,715	650	42	1,445	23,918	9,741	123	59	2,110	66	39	0	0	136	26,928	95	65,631
1991	692	16,813	144	91	848	16,182	1,082	77	1,325	18,459	5,731	303	81	5,501	95	54	1	1	337	31,852	97	67,124

Table 2. Comparison of 2011 Fall Raptor Count to Ten-Year (2001-2010) and Twenty-Year (1991-2010) Count Averages from Holiday Beach Conservation Area, Amherstburg, Essex County, Ontario, Canada. Count Conducted by Holiday Beach Migration Observatory.

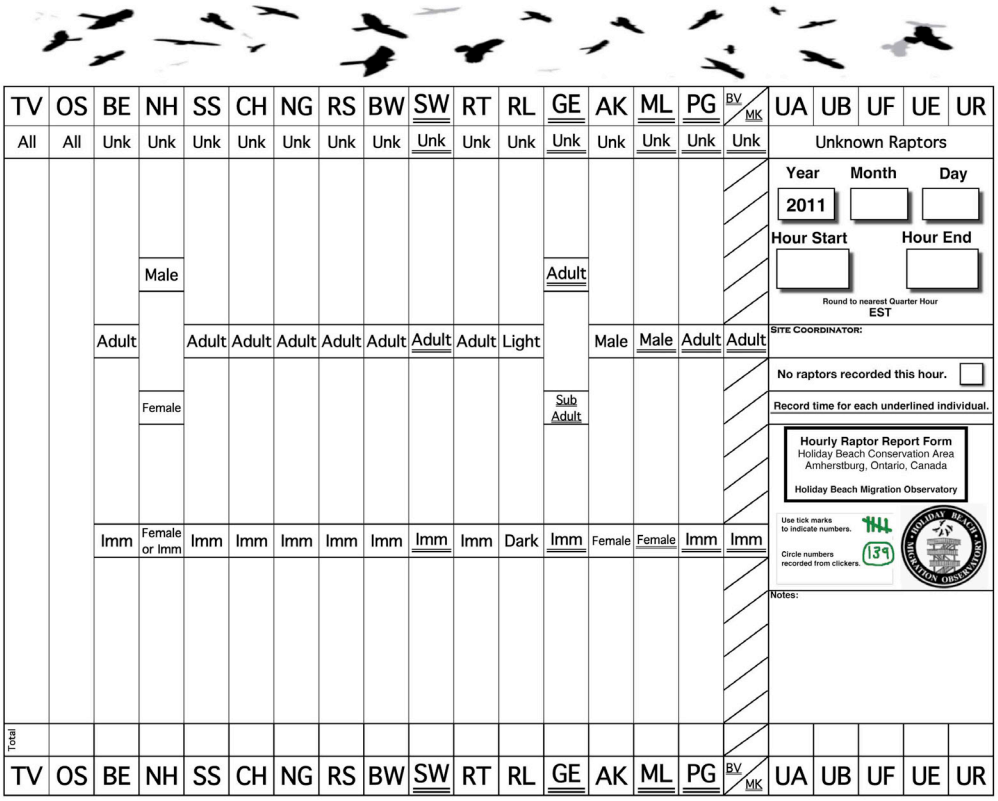
Species	2011	10 Year (2001-2010) Average	Percent Change
Hours	734	584	25.68
TV	33,703	30,505	10.48
OS	204	105	94.29
BE	201	110	82.73
NH	947	793	19.42
SS	13,073	9,156	42.78
CH	1,063	586	81.40
NG	15	31	-51.61
RS	539	567	-4.94
BW	43,431	16,152	168.89
RT	3,405	4,484	-24.06
RL	28	44	-36.36
GE	119	77	54.55
AK	4,874	1,765	176.15
ML	137	93	47.31
PG	81	62	30.65
BV	1	0	N/A
SW	3	1	200.00
Total minus TV and BW	24,830	17,934	38.45
Raptors Per Hour	139	110	26.16
Total	**101,964**	**64,591**	**57.86**

Species	2011	20 Year (1991-2010) Average	Percent Change
Hours	734	631	16.32
TV	33,703	23,875	41.16
OS	204	113	80.53
BE	201	83	142.17
NH	947	893	6.05
SS	13,073	11,164	17.10
CH	1,063	595	78.66
NG	15	36	-58.33
RS	539	759	-28.99
BW	43,431	30,829	40.88
RT	3,405	5,816	-41.45
RL	28	76	-63.16
GE	119	76	56.58
AK	4,874	2,418	101.57
ML	137	85	61.18
PG	81	57	42.11
BV	1	0	N/A
SW	3	1	200.00
Total minus TV and BW	24,830	22,277	11.46
Raptors Per Hour	139	122	14.32
Total	**101,964**	**76,981**	**32.45**

Appendix



HBMO Hourly Weather Side of Data Page



HBMO Hourly Raptor Species Side of Data Page