

# **Keweenaw Raptor Survey**

## **2011 Season Report**

**Arthur W. Green**

*P.O. Box 655*

*Mount Kisco, NY 10549*



**Copper Country Audubon Society**

*P.O. Box 124, Houghton, MI 49931*

**&**

**Laughing Whitefish Audubon Society**

*346 West Crescent, Marquette, MI 49855*

[www.keweenawraptorsurvey.org](http://www.keweenawraptorsurvey.org)

With revisions by KRS Committee

Greg Cleary, Zach Gayk,

Skye Haas, and Dana Richter

**22 August 2011**

## Introduction

2011 was the second year of a three-year raptor survey at Brockway Mountain (Copper Harbor, Keweenaw Co., Michigan) to study spring migration in the Keweenaw Peninsula. The results from the first survey in 2010 are published in Henschell 2010. The protocols used for the 2011 survey were identical to those used in the 2010 survey (Henschell 2010). Mr. Arthur W. Green was the raptor counter.

## The Count

Systematic counts were conducted daily from 15 March to 15 June, 2011 (count season) from West Bluff (count site), a vantage point on Brockway Mountain located at N47.46399, W87.96954 (WGS 84). The site is approximately 4 miles west of the town of Copper Harbor, and stationed 1328 feet above mean sea-level, approximately 728 above the average surface elevation of Lake Superior. A count shelter was erected on-site for temporary relief from inclement weather. The count period each day was: March 15 thru March 31, 0900 – 1500 EST (Eastern Standard Time); April 1 thru May 31, 0800 – 1600 EST; June 1 thru June 15, 0800 – 1400 EST. Observers were instructed to reduce count periods or cancel count days if weather should prove inclement or unsafe.

Of 93 possible count days in the count season, 584.5 count hours were recorded over the course of 87 count days and 6 count days were cancelled completely due to inclement weather and poor visibility on the mountain (March 21, April 4, April 16, April 17, May 6, May 23). Arthur Green functioned as the primary counter/observer, recording 515.1 count hours; with substitute counters Joseph Youngman logging 15.0 count hours, Skye Haas 16.0 count hours, Max Henschell 10.3 hours, Zach Gayk 22.0 hours, and Greg Cleary 6.0 hours.

## Raptors

A standardized hourly count for all species of diurnal raptors (i.e., birds belonging to orders *Accipitriformes* and *Falconiformes*) was conducted in accordance with protocols defined by HMANA 2006 and the KRS. Where contradiction existed between protocols, KRS protocol was used. For field identification of all raptor species, we consulted Sibley 2000, Liguori 2005, Wheeler 2003, and (for Bald Eagle age classes:) Clark 2001. Eastbound and westbound raptor flights were recorded on separate data forms.

At the close of the count season, 14,000 eastbound raptors of 17 species (including 24 birds identifiable only to genus or order) and 2210 westbound raptors of 16 species (including 11 birds identifiable only to genus or order) were observed migrating past the count site. 1 species, Black Vulture, was not observed in previous systematic counts at the site (Henschell 2010; Binford 2006). Common and scientific name, the two-letter HMANA designation (HMANA 2006), and pertinent notes about this season's numbers are included. All 2010 survey results are from Henschell 2010 unless otherwise stated. A condensed count season summary is presented in Appendix A, with daily totals for all raptor species presented in Appendix B-I (eastbound flight) and Appendix B-II (westbound flight).

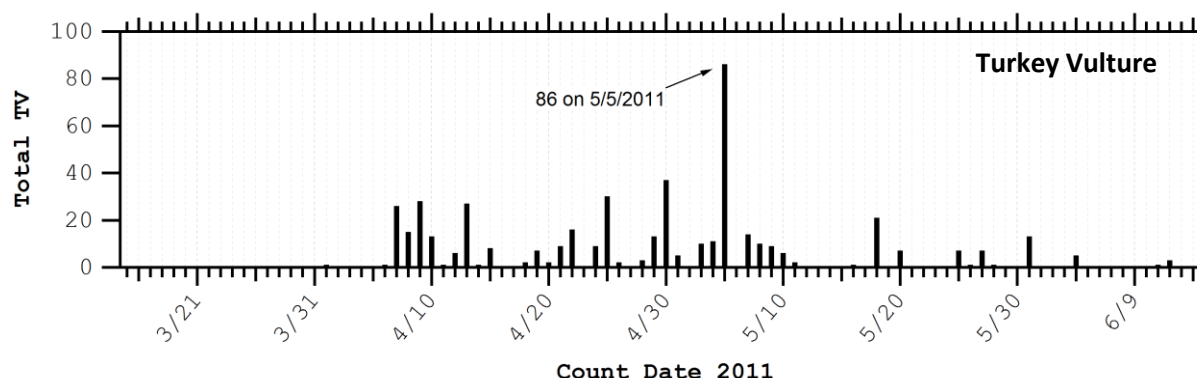
A summary table of all species and raptors counted in 2011 is included at the end of this report.

### **Black Vulture (*Coragyps atratus*) "BV"**

A rare visitor to the Keweenaw Peninsula (Binford 2006), a single eastbound BV was recorded the afternoon of April 25. The bird was observed again on the morning of April 29 moving westbound; it was observed for the last time the afternoon of May 2 being mobbed and chased by 21 American Crow (*Corvus brachyrhynchos*) in the direction of Eagle Harbor. Pending acceptance by the Michigan Bird Records Committee, this will be the fifth documented sighting of a Black Vulture in the Keweenaw (Binford 2006).

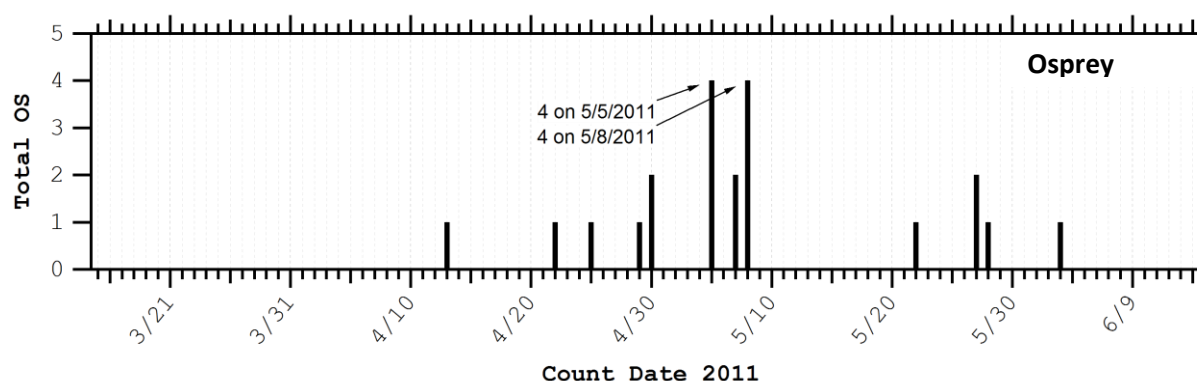
## Turkey Vulture (*Cathartes aura*) “TV”

A spring transient and summer resident in the Keweenaw (Binford 2006), 477 eastbound migrant TV (3.4% of the eastbound total) were recorded, representing 62.9% of 2010's total of 758. First observation April 1, with resident birds observed almost daily from April 18 on. That the 1992 spring survey at Brockway Mountain identified 92.6% (573) of the 619 migrant TV recorded for the season as immature birds (Binford 2006) seems remarkable given that no immatures were recorded in the 2010 survey and only 6 were recorded in 2011. 167 westbound TV (7.5% of the westbound total) were recorded; 38.6% of 2010's total of 432.



## Osprey (*Pandion haliaetus*) “OS”

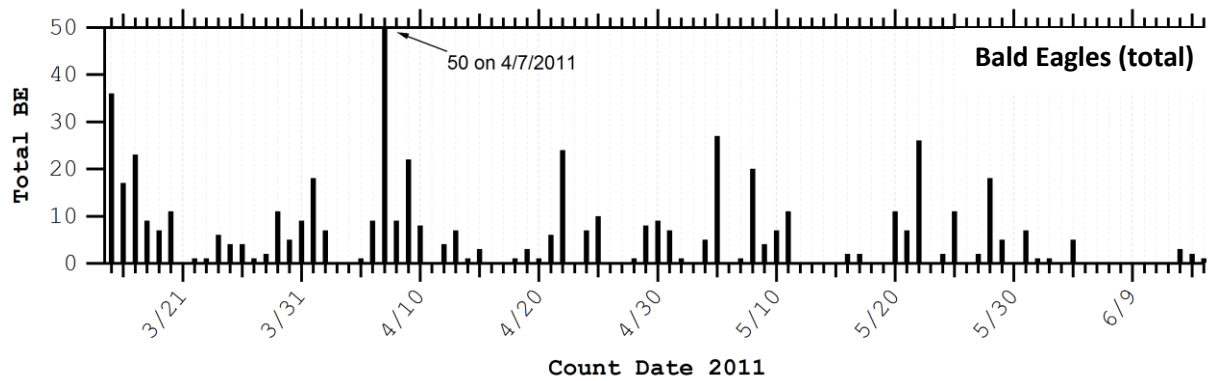
A spring transient in the Keweenaw (Binford 2006), 21 eastbound OS (0.1% of the eastbound total) were recorded, just 44.7% of 2010's total of 47. First observation was on April 13 of an eastbound bird. Only 4 westbound OS were recorded for the season; 30.8% of 2010's total of 13.



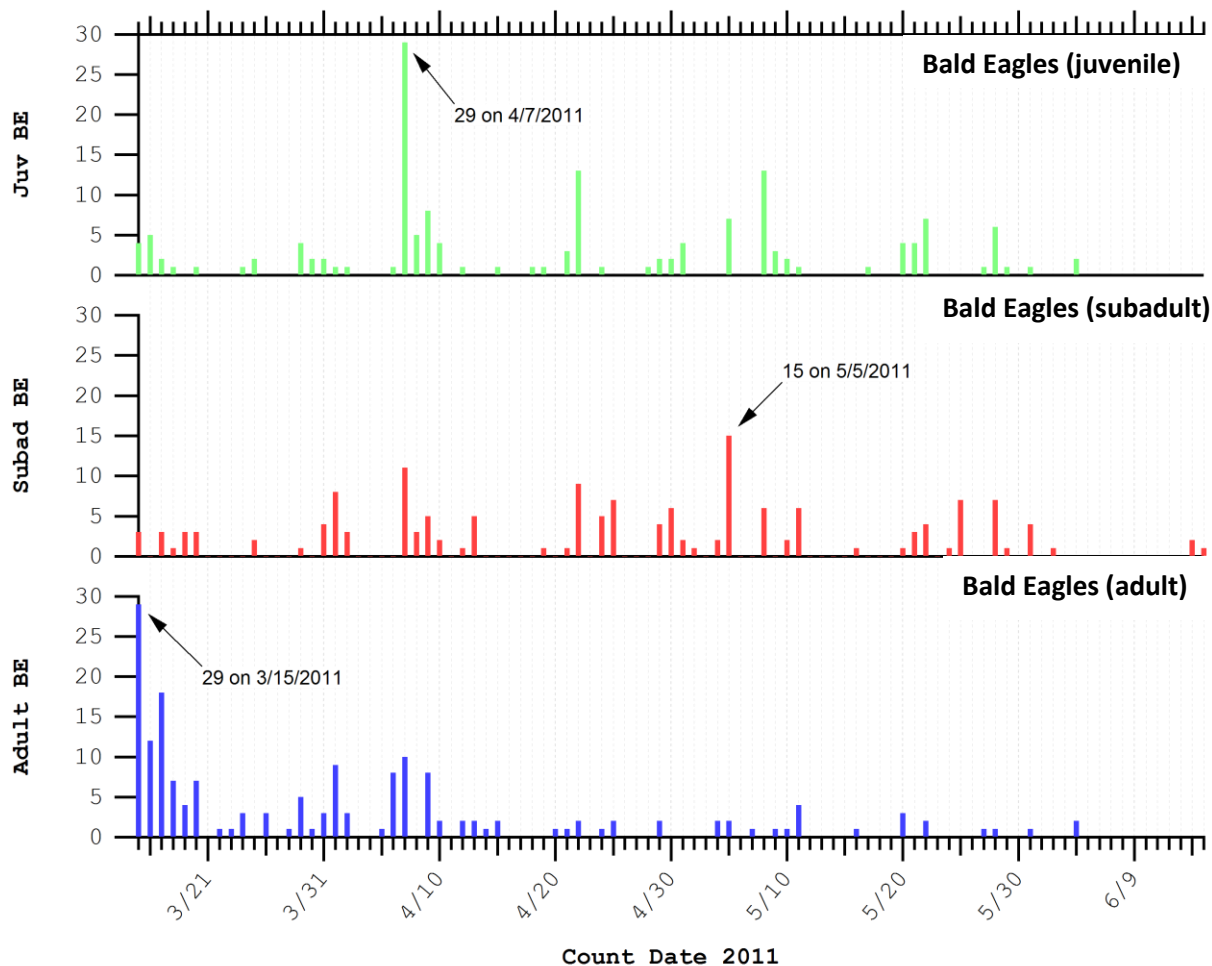
## Bald Eagle (*Haliaeetus leucocephalus*) “BE”

A spring transient and summer resident in the Keweenaw (Binford 2006), 545 eastbound migrant BE (3.9% of the eastbound total), standing at 65.8% of 2010's total of 828. Bald Eagles are observed regularly as both a migrant and resident throughout the count season. 317 westbound BE (14.3% of the westbound total) were recorded; 62.8% of 2010's total of 505.

(Total **Bald Eagle** graph top of next page)

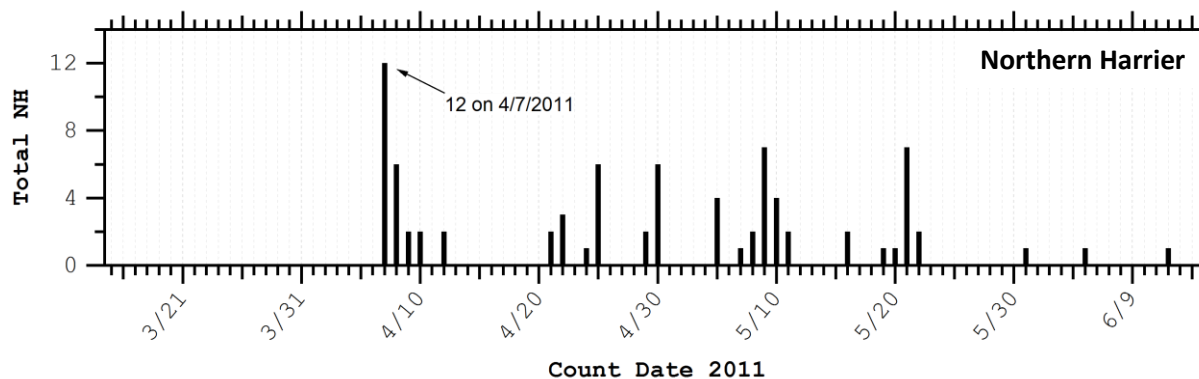


A breakdown of migrant BE by age class is illustrated in the graphs below. Of the 545 birds, there were 156 juveniles, 158 subadults, and 174 adults. (57 birds were not identifiable to age class.) Juvenile and subadult BEs seem to be more or less uniformly distributed, whereas adult BEs taper noticeably by the second week of April.



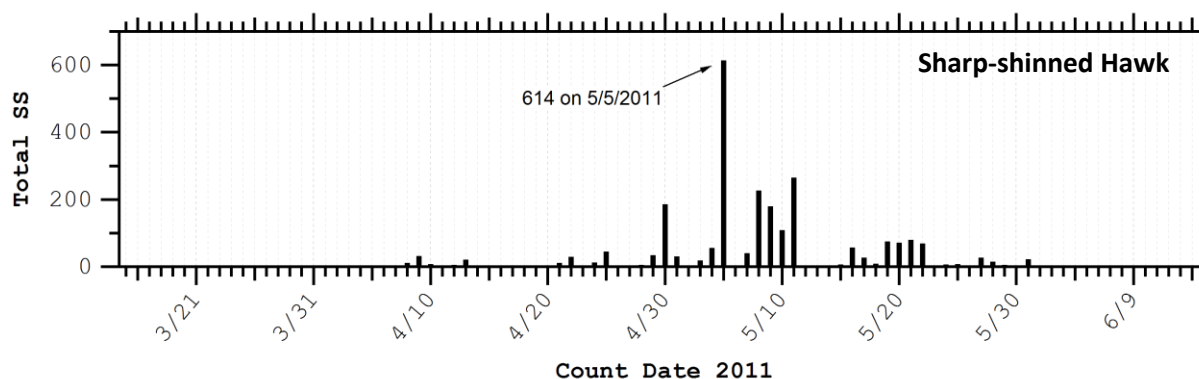
### Northern Harrier (*Circus cyaneus*) "NH"

A spring transient and a sporadic summer resident in the Keweenaw (Binford 2006), 80 eastbound NH (0.6% of the eastbound total) were recorded, 55.2% of 2010's total of 145. A westbound bird on March 28 was first observation; first eastbound observation April 7. 10 westbound NH (0.4% of the westbound total) were recorded; 55.5% of 2010's total of 18. (**Northern Harrier** graph top of next page)



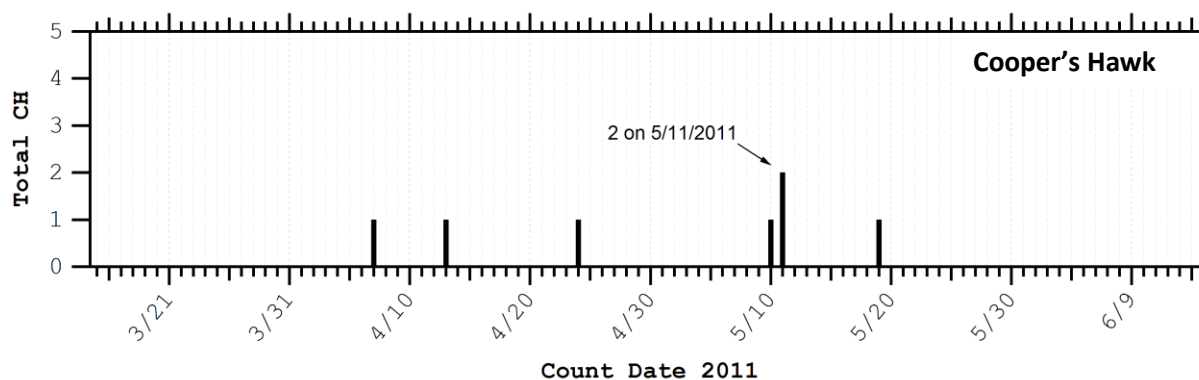
### Sharp-shinned Hawk (*Accipiter striatus*) "SS"

A spring transient and summer resident in the Keweenaw (Binford 2006), 2425 eastbound SS (17.3% of the eastbound total) were recorded, 153.1% of 2010's total of 1584. A westbound bird on March 16 was first observation; first eastbound observation was on March 31. 423 westbound SS (19.1% of the westbound total) were recorded; 174.8% of 2010's total of 242.



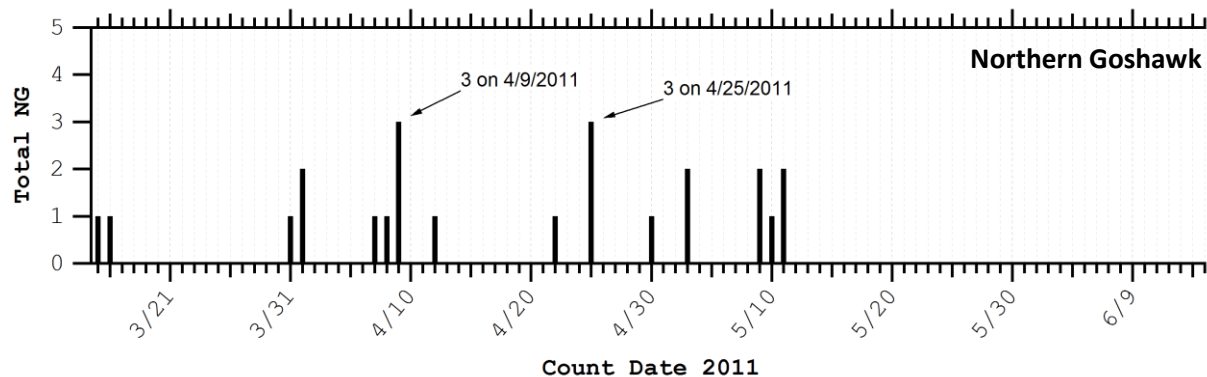
### Cooper's Hawk (*Accipiter cooperii*) "CH"

An uncommon spring transient (Binford 2006), 7 eastbound CH were recorded, 30.4% of the 2010 total of 23. First observation was on April 7; last observation a westbound bird on May 24. Only 2 westbound CH were recorded (May 11, May 24); only 1 CH was seen in 2010.



### Northern Goshawk (*Accipiter gentilis*) “NG”

A rare, sparsely distributed permanent resident (Binford 2006), 23 eastbound NG (0.2% of the eastbound total) were recorded; 79.3% of 2010’s total of 29. First observation was on April 7; last observation was a westbound bird on May 22. Only 2 westbound NG were recorded (April 9, May 22); 18.2% of 2010’s total of 11.



### Red-shouldered Hawk (*Buteo lineatus*) “RS”

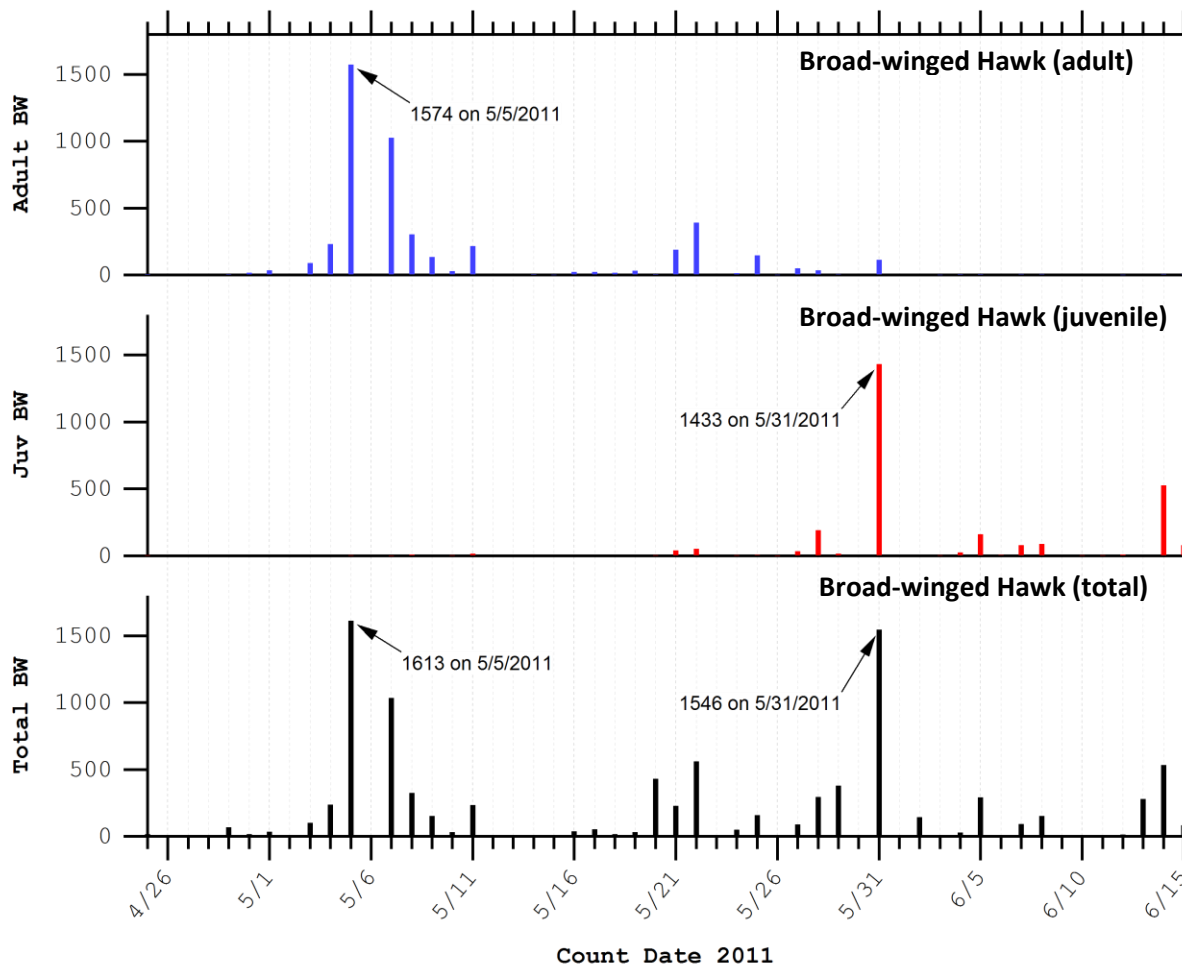
An early spring transient (Binford 2006), 5 eastbound RS were recorded; 55.5% of the 9 recorded in 2010. 1 individual observed on each of five days: March 30, March 31, April 1, April 7, and April 8. Only 1 westbound RS was recorded (March 31), matching the total for 2010.

### Broad-winged Hawk (*Buteo platypterus*) “BW”

A spring transient and the Keweenaw Peninsula’s most common breeding raptor (Binford 2006), 9346 eastbound BW (66.7% of the eastbound total for all species) were recorded, nearly twice as many (190.5%) of 2010’s total of 4905. First observation April 12, but not observed in number until the last week of April. Even in the last days of the 2011 survey, (juvenile) BW migration showed no sign of letting up; the strong numbers that the Manitou Island surveys observed in July in years leading up to this survey (Binford 2006, J. Youngman pers. comm.) may suggest that the window for migrating Broad-winged Hawk in the Keweenaw regularly extends into the summer months. 1076 westbound BW (48.7% of the westbound total) were recorded; 108.4% of 2010’s total of 993.

A breakdown of BW migrants by age class shows a clear “bimodal” distribution, with counts of adult birds peaking nearly a month before juveniles. Of 9346 Broad-winged Hawk, 2782 were juveniles and 4705 were adults. (“Total BW” in graph below includes 1859 that could not be identified to age class.)

(Broad-winged Hawk graphs top of next page)



### Swainson's Hawk (*Buteo swainsoni*) "SW"

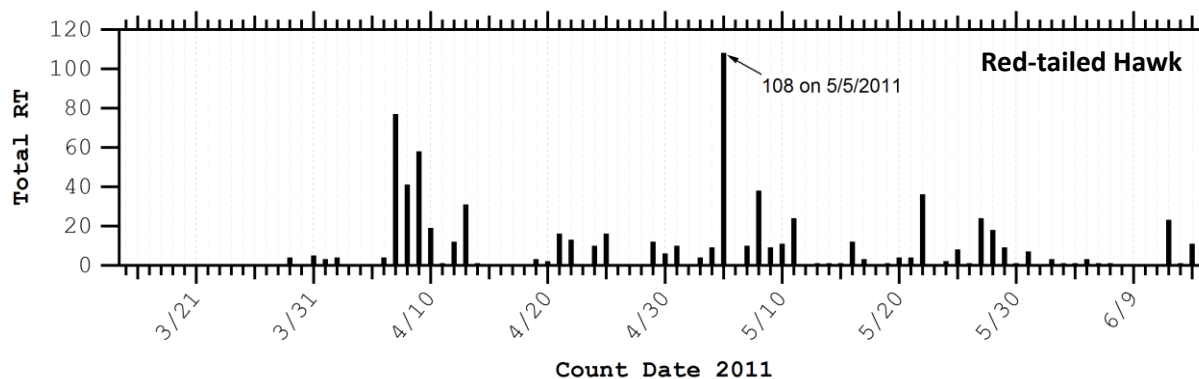
An "occasional vagrant" (Binford 2006), only 4 eastbound SW were recorded; 7 were recorded in the 2010 count. 2 were observed May 5, and 1 on both May 7 and May 10. On April 30, a photographer stationed approximately one-quarter of a mile east down the ridge from West Bluff caught an intermediate morph Swainson's Hawk on camera that was not observed from the count site. (V. Berardi pers. comm.) No westbound SW was recorded in either 2011 or 2010.

### Red-tailed Hawk (*Buteo jamaicensis*) "RT"

A spring transient and a common summer resident to the Keweenaw Peninsula (Binford 2006), 745 eastbound RT (5.3% of the eastbound total) were recorded, 99.6% of 2010's total of 748. First migrant was observed March 29

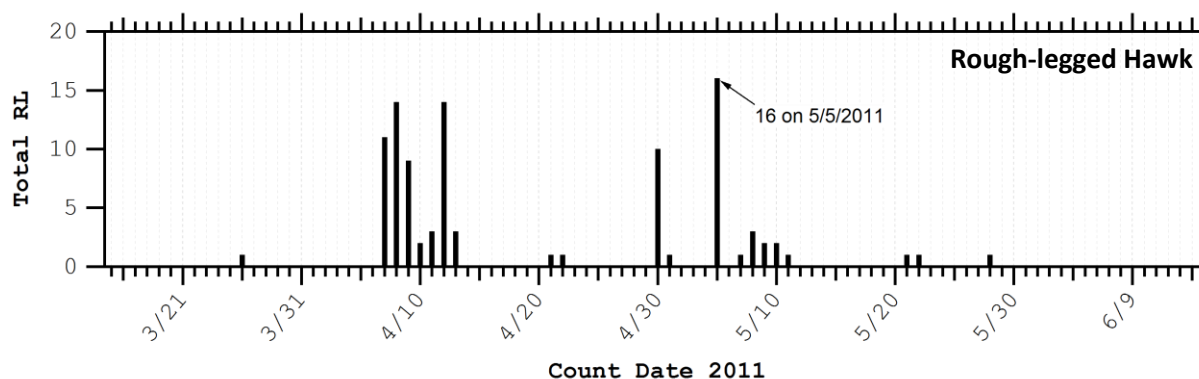
Apart from the "Eastern" Red-tailed Hawk (*B. j. borealis*), it is possible to see other subspecies of RT at Brockway Mountain. 2 dark morph "Western" RT (*B. j. calurus*) were observed on April 21/22, 3 more on May 5, and 1 on June 14. A "Krider's" intergrade RT (*B. j. k* X *B. j. borealis*) was observed May 11. 147 westbound RT (6.7% of the westbound total) were recorded; 83.1% of 2010's total of 178.

(Red-tailed Hawk graph top of next page)



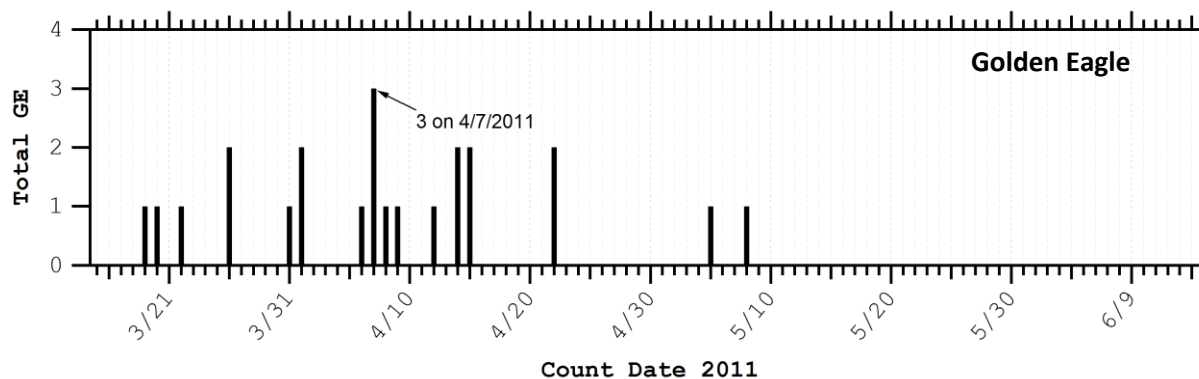
### Rough-legged Hawk (*Buteo lagopus*) "RL"

An uncommon spring transient (Binford 2006), 98 eastbound RL (0.7% of the eastbound total) were recorded, 82.3% of 2010's total of 119. First observation was on March 26; last observation May 28. 15% (15 birds) were dark morph individuals while 85% (83 birds) were light morph, a ratio of approximately 1:5.5. Interestingly, the ratio of dark to light morph individuals reported by both the 1992 survey (Binford 2006) and the 2010 survey were similar. 13 westbound RL (0.6% of the westbound total) were recorded; 50% of 2010's total of 28.



### Golden Eagle (*Aquila chryaetos*) "GE"

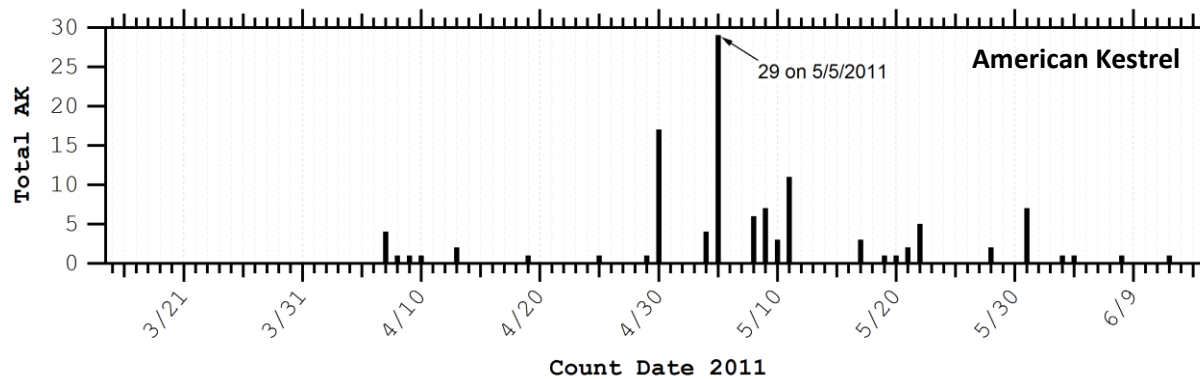
An uncommon spring transient (Binford 2006), 23 eastbound GE (0.16% of the eastbound total) were recorded; 74.2% of the 31 recorded in 2010. A westbound GE on March 16 was first observation; first eastbound observation was on March 19. Last observation was on May 27. 16 westbound GE (0.7% of the westbound total) were recorded; 66.7% of 2010's total of 24.





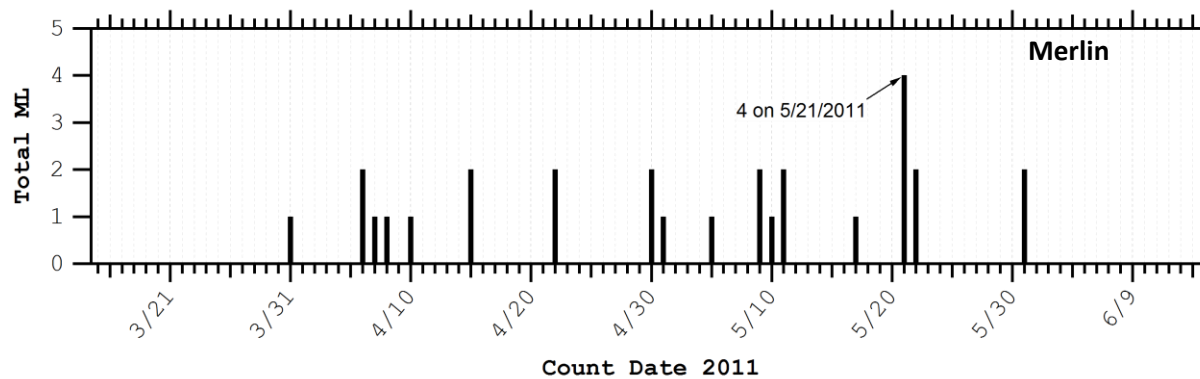
### American Kestrel (*Falco sparverius*) "AK"

A common spring transient and occasional summer resident in the Keweenaw (Binford 2006), 114 eastbound AK (0.8% of the eastbound total) were recorded, 123.9% of the 92 recorded in 2010. First AK observed April 7, with a nesting pair regularly observed at West Bluff by the second week of April. 12 westbound AK (0.5% of the westbound total) were recorded; 133.3% of 2010's total of 9.



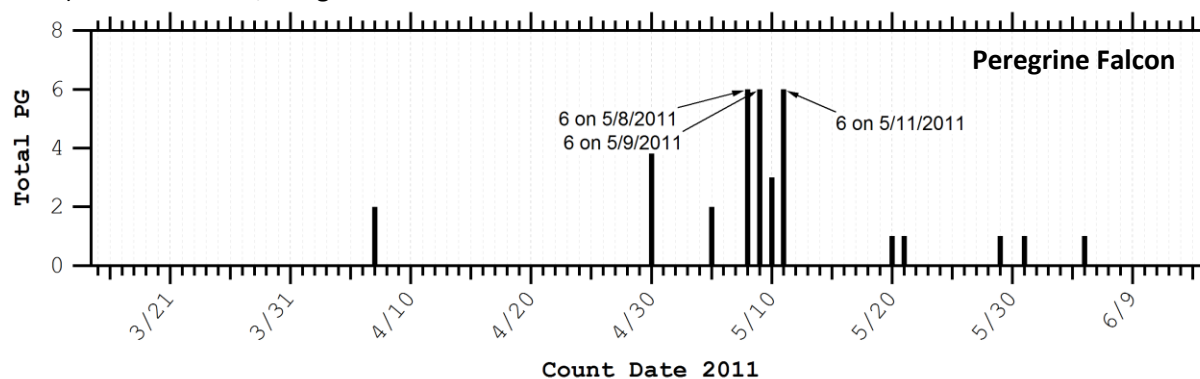
### Merlin (*Falco columbarius*) "ML"

A spring transient and common summer resident (Binford 2006), 28 eastbound ML (0.2% of the eastbound total) were recorded; 66.7% of the 42 recorded in the 2010 count. First ML observed March 31, with resident birds seen in nearby Copper Harbor by the second week of April. Only 2 westbound ML were recorded over the course of the count season (April 24, April 30); just 22.2% of 2010's total of 9.



### Peregrine Falcon (*Falco peregrinus*) "PG"

An uncommon spring transient (Binford 2006), 34 eastbound PG (0.24% of the eastbound total) were recorded, an increase of 170.0% to 2010's total of 20. First observation April 7. Only 6 westbound PG (0.3% of the westbound total) were recorded; a slight increase from 2010's total of 5.



## Unidentified Raptor (*Accipitriformes* sp.)

This broad category includes all unidentified raptors including eagles, buteos, accipiters, falcons and vultures. Common problems that can cause difficulty with identification include poor lighting, exceptional distance or height from the observer, or a brief glimpse from an unfamiliar angle. That *only* 24 eastbound raptors (1 UA, 9 UB, 5 UF, 2 UE, and 7 UR; *merely* 0.2% of the eastbound total) and 11 westbound raptors (0 UA, 3 UB, 0 UF, 1 UE, 7 UR; *just* 0.5% of the westbound total) fell into these categories is probably a better reflection of the high level of confidence the counters had in their identification than it is necessarily a statement about their level of skill. But as the bulk of the raptors observable from Brockway could be said to be within sighting distance of the observer, this confidence is probably well placed. Among other things, the sparseness of Cooper's Hawk in the Keweenaw might help explain why UA counts at Brockway Mountain are lower than many count sites in the northeastern United States (HMANA 2011), as these are a common source of confusion (particularly with Sharp-shinned Hawk) where present in number. In 2010, 192 eastbound birds fell into these unidentified categories; 117 west bound.

## Weather

Weather measurements, including wind speed, wind direction, temperature, barometric pressure, percentage of sky covered by cloud form, visibility, and precipitation type (e.g., haze, rain, snow) were taken at the top of each count hour throughout the count season. These measurements provide atmospheric context for the migration observed each count day.

With only the 1992 and 2010 surveys for context (Binford 2006; Henschell 2010), it is probably too soon to make an educated guess as to what is "normal" or "expected" for spring raptor migration at Brockway Mountain. But just how slowly this season began was surprising: By May 4, count day 47 (seven full weeks into the survey!), only 2220 raptors had been counted. On May 5, 2507 raptors moved past Brockway, exceeding the seasonal count to that point in a single day, and seeming to start off the migration in earnest: 11,780 eastbound raptors were recorded from May 5 through the end of the count season on June 15, 84% of the 14,000 counted recorded for the entire season.

Wind direction is thought to be one of the most significant factors affecting the raptor migration observable from Brockway Mountain (Binford 2006), so bearing in mind that weather almost assuredly played a significant role in the slow onset of the season, a preliminary treatment of wind direction seems appropriate.

From the 584.5 total count hours recorded this season, we selected only "full" count hour blocks (e.g., 0900-1000 EST) of 60 minutes duration for a consistent representation of wind direction for that hour. In so doing, we removed from inclusion partial count hour blocks (i.e., those of less than 60 minutes count duration; thus removing 29 count hour blocks accounting for 15.5 count hours) and count hour blocks where wind measurements were not taken (removing only 1 count hour), retaining 568 "full" count hours for preliminary analysis.

## Non-raptors

In addition to the standardized raptor count, daily simultaneous counts were conducted for all bird species that were detected visually or aurally (including raptors, waterbirds, and passerines) during the count season in accordance with protocols defined by the KRS. A table of 104 non-raptor species with dates of first and last observation are presented in Appendix C. The maximum daily count with date of first occurrence of this count is supplied where appropriate.

As first recorded in 2010, a significant Canada Goose (*Branta canadensis*) migration was observed again this season with an impressive total of 18,972 individuals! The peak flight was 4,746 on 25 April with a secondary peak of 4,620 birds on 15 April. Other notable counts include 2,967 on 19 April, 2,661 on 22 April, and 1,320 on 26 April. Common Loons (*Gavia immer*) also made a strong showing this season with a total of 539 birds observed with a peak of 123 on 5 May. Bohemian Waxwings (*Bombycilla garrulus*) were observed in excellent numbers with 553 from 15 March-16 May with a peak of 80 on 8 April. The 16 May date set a new SLDD (Spring Late Departure Date) for the Keweenaw (Binford 2006). 33 American White Pelicans were observed from 29 Apr to 20 May with a peak of 10 on 4 May, and other notable species recorded included Northern Saw-whet Owl, Northern Mockingbird, Eastern Towhee and Western Meadowlark. Two species have exceptional early dates of observation with respect to the SEAD (Spring Early Arrival Date) cited in Binford 2006; an American Pipit (*Anthus rubescens*) on 7 April, and a Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) with a record early date of 8 April (Binford 2006).

## Visitors

Apart from bearing witness to a significant raptor migration, Brockway Mountain is also a tourist attraction for people when road conditions on Brockway Mountain Drive permit ready access by automobile. We made a best attempt at counting all visitors who came within proximate distance of the count site in an attempt to gauge the potential exposure the spring survey could have with the general public, recording a total of 2765 people over the course of the 2011 survey. Daily visitor totals are presented in Appendix D.

## Acknowledgements

Funding for Keweenaw Raptor Survey was provided by the membership of Copper Country Audubon, Laughing Whitefish Audubon, Michigan Audubon Society, U.P. Sustainable Forest and Wildlife Fund of the Community Foundation for the Upper Peninsula, as well as from the generosity of many individual donors. The Keweenaw Raptor Survey committee provided advice in matters pertinent to count protocol and logistics. Joseph Youngman provided help with the counter shack and expert advice. Special thanks are due Clyde Wescoat for allowing use of the Brockway Mountain property to conduct the count. Ken Stigers also offered substantial personal and logistical support, and generously made his snowmobiles and ATV available to Keweenaw Raptor Survey for the first weeks of the count when Brockway was inaccessible to the primary counter by automobile. Finally, we thank the fine people of Copper Harbor, Michigan, whose unyielding interest in this count showed in their warm encouragement of our efforts on the mountain.

## Literature Cited

Binford, L. C. 2006. Birds of the Keweenaw Peninsula, Michigan. Miscellaneous Publications, Museum of Zoology, University of Michigan.

Clark, W. S. 2001. Aging Bald Eagles. *Birding* 33:18-28.

Hawk Migration Association of North America (HMANA) 2006. Standard Data Collection Protocol for Raptor Migration Monitoring; Retrieved from Raptor Population Index: [http://www.rpi-project.org/docs/HMANA\\_Data\\_Collection\\_Protocol\\_20060611.pdf](http://www.rpi-project.org/docs/HMANA_Data_Collection_Protocol_20060611.pdf)

Hawk Migration Association of North America (HMANA) 2011. HawkCount; Retrieved from: <http://www.hawkcount.org/>

Henschell, M. A. 2010. Keweenaw Raptor Survey 2010 Spring Report. Copper Country Audubon and Laughing Whitefish Audubon of Marquette,

Kerlinger, P. 1989. Flight strategies of migrating hawks. University of Chicago Press.

Liguori, J. 2005. Hawks from Every Angle. Princeton University Press.

Sibley, D. A. The Sibley Guide to Birds. Knopf Doubleday.

Wheeler, B. K. 2003. Raptors of Eastern North America. Princeton University Press.

**Table 1.** Species occurring during the Keweenaw Raptor Survey, Brockway Mountain, 15 March to 15 June 2011. "High" indicates the single day highest number for that species; "East Total" indicates all birds of that species counted traveling eastbound; "West Total" indicates all birds of that species counted traveling westbound (not necessarily the same birds as eastbound). Dates in bold represent westbound flight.

SPECIES	FIRST DATE	HIGH	HIGH DATE	LAST DATE	EAST TOTAL	WEST TOTAL
Black Vulture	25 Apr	1	---	<b>29 Apr</b>	1	1
Turkey Vulture	1 Apr	86	5 May	12 Jun	477	167
Osprey	13 Apr	4	5 May	3 Jun	21	4
Bald Eagle	15 Mar	50	7 Apr	15 Jun	545	317
Northern Harrier	<b>28 Mar</b>	12	7 Apr	12 Jun	80	10
Sharp-shinned Hawk	<b>16 Mar</b>	614	5 May	15 Jun	2425	423
Cooper's Hawk	7 Apr	2	11 May	<b>24 May</b>	7	2
Northern Goshawk	15 Mar	3	9 Apr	<b>22 May</b>	23	2
Red-shouldered Hawk	30 Mar	1	---	8 Apr	5	1
Broad-winged Hawk	12 Apr	1613	5 May	15 Jun	9346	1076
Swainson's Hawk	5 May	2	5 May	10 May	4	0
Red-tailed Hawk	29 Mar	108	5 May	15 Jun	745	147
Rough-legged Hawk	26 Mar	16	5 May	28 May	98	13
Golden Eagle	<b>16 Mar</b>	<b>3</b>	<b>28 Mar</b>	<b>27 May</b>	23	16
American Kestrel	7 Apr	29	5 May	12 Jun	114	12
Merlin	31 Mar	4	21 May	31 May	28	2
Peregrine Falcon	7 Apr	6	8 May	15 Jun	34	6
Unidentified Accipiter	--	--	--	--	1	0
Unidentified Buteo	--	--	--	--	9	3
Unidentified Falcon	--	--	--	--	5	0
Unidentified Eagle	--	--	--	--	2	1
Unidentified Raptor	--	--	--	--	7	7
<b>TOTAL</b>	--	2507	5 May	--	14000	2210