

1. Cover sheet

Project title: A database of hawk migration monitoring sites for the northeast region

Reporting period: March-December 2008

Report date: 9 December 2008

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2. Executive summary

In the spring of 2008, the Northeastern Coordinated Bird Monitoring Partnership granted \$3,000 dollars to the Hawk Migration Association of North America (HMANA) to further develop and populate the raptor migration monitoring site database of HawkCount.org (HMANA's system to collect, archive, visualize, and distribute raptor migration count data).

The objectives of the grant were to corroborate, update, and enhance the descriptions of migration monitoring sites located in the states of the USFWS region 5. Due to a smaller amount granted for this project than the one originally requested, HMANA committed the development of 100 site profiles instead of the 120-150 originally proposed in the grant application.

The sites whose records are now included in HawkCount.org are listed in Appendix 1 (as of 1 December 2008). These records (n=135) are developed to different extents, and can be grouped in three different categories according on the depth of the contents of each description. One important deliverable proposed, the possibility of sharing these site records with the Avian Knowledge Network (AKN), was only partially fulfilled, as AKN does not contemplate storing all the fields in HawkCount.org's site database.

The value of site-specific information in raptor migration monitoring sites is higher than the one collected in many other bird monitoring programs, since the locations for data collection are fixed and many of them are visited regularly by bird watchers. Field sites are one (perhaps the most important) point of access for migration count data.

The depth of the information in each site description depends heavily on the collaboration of the site coordinator. We made all efforts to corroborate the information provided by them, and to collect some of the information by ourselves (e.g. photographic documentation, geo-references, updated contact information, etc.)

Some future important developments for this database are the ability to report site-specific population trend data and visualizations of migration timing.

3. Introduction

Main topic: Data from bird migration monitoring sites (banding stations, migration count sites, acoustic monitoring stations, etc.) have the potential to supplement that of other monitoring programs and, in some cases, they provide the only information available for species underrepresented in these surveys.

This is the case of vultures, hawks, and falcons, whose populations are studied in hundreds of locations across the continent. The directory *Raptor Watch* (Zalles and Bildstein 2000) estimated that nearly 1,800 raptor migration monitoring sites have or have had some kind of field coverage in recent years.

An unknown number of them continue collecting long-term monitoring data. The *Raptor Watch* directory had the goal of profiling the most representative at a global scale, rather than being an exhaustive catalogue, and the number of sites included in the United States chapter is only 112 (Zalles and Bildstein 2000:323).

Specific problem: To this date, however, there is no comprehensive inventory of raptor migration monitoring sites. Why is it important to have a complete directory? Because localities are the point of access to species' count data, as shown by several raptor population trend analyses made in recent years (Bednarz et al. 1989, Hoffman and Smith 2003, Bildstein et al. 2008). Besides its application as a research and monitoring resource, this directory can be of use in planning the development of wind-power projects, since site data can provide specific information on the importance of migration flyways and may be of use to identify areas of possible conflict.

What led to this project's initiation: These records require to be frequently updated, as many fields constantly change when site coordinators shift roles, their addresses change, or their inventory of stored data is updated. The value of this database is increased if it is periodically maintained.

4. Objectives

This project continued the development of an online database of raptor migration monitoring sites, and updated, populated, reviewed, and validated the information of many locations contained in this database. Specifically, we:

- (1) Advanced the format of the database for raptor migration monitoring sites in NE states
- (2) Made data searches to populate/correct/update the database
- (3) Obtained input from site compilers to review site-records
- (4) Published (online and in one case, in print) records of the database. These records can be visualized and exported by users

5. Description of project sites (provide maps where possible)

The records in HawkCount.org's site database (for a list of fields included in this database, please see Appendix 2) come from 135 states in USFWS Region 5. For a model, fully developed site profile, please see Appendix 2. The inventory of migration count data archived for sites in states of USFWS Region 5 is summarized in Appendix 3. Sites with some information in HawkCount.org as of 1 December 2008 are presented in Table 1 (next page).

Table 1. Raptor migration monitoring sites in states of USFWS Region 5 with profiles in HawkCount.org.

State	No. of sites in HawkCount.org	Link to map
WV	1	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=West%20Virginia
VT	1	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Vermont
VA	2	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Maryland
PA	30	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Pennsylvania
NY	16	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=New%20York
NJ	15	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=New%20Jersey
ME	3	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Maine
MD	6	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Maryland
MA	12	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Massachusetts
DE	3	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Delaware
CT	28	http://www.hawkcount.org/sitesel.php?country=USA&stateprov=Connecticut

6. Methodology

Site profiles are populated using the template in Appendix 4. Information comes from published sources, as well as data provided by site contacts, information from the internet, gray literature, and other sources. When a record is updated, the site compiler is contacted to review the content. A site record has 108 fields, 6 of them able to exchange information with Cornell Lab of Ornithology databases. Other HawkCount.org data pertaining monitoring sites is stored

in Cornell's AKN (HawkCount.org is one of the top contributors) when data is harvested from HawkCount.org two times a year. A detailed methodology description is available in this grant's project proposal.

7. Results and progress

Updating and reviewing site profiles is an ongoing process and HMANA will continue to make all efforts to keep its site database as current as possible. As stated above, sites are the point of access to monitoring data, and various papers and reports regarding migration monitoring sites have been published by HMANA personnel within the last year using data contained in site profiles (please see Ruelas 2008a, 2008b, Appendix 5 and Appendix 6 [RPI annual report, see ABC as "Golden Eagle" sponsor]).

Targets attained: As of this date, the site profiles with information in HawkCount.org for states in USFWS Region 5 (n=135), are developed to different extents (Appendix 1): "Fully developed" (n=22), "Partially complete" (n=53), and "Georeferenced placeholder" (n=56) (Table 1).

Targets not attained: The original goal of 120-150 sites was adjusted from the original proposal to 100 due to budget limitations. Communications with site coordinators is key to populate and update site records, and responsiveness from site coordinators prevented the completion of more "Fully developed" profiles.

Actions taken to overcome constraints and obstacles: Increased communication with monitoring sites, frequent updates of contact information.

Prospects for accomplishment of the project's objectives: Objectives completed as stated above.

8. Implications for further work

Lessons learned and an assessment of methods learned: The task of keeping site profiles updated is more labor intensive than originally estimated. Responsiveness of site contacts may limit the accuracy and depth of content in site profiles, and the shortfall filled with paid staff time. Access to data from sources such as the internet and gray literature is important in developing site profiles. Site visits are required in many cases to complete the information of profiles and to collect photographic material.

9. Planned targets and activities for next reporting period

This is a final report, there are no other reports due.

10. Other comments

As of this date, HawkCount.org database manager is developing other site-specific tools, such as reports of population trends online:

<http://rpi-project.org/rpigrapht.php>

And also developing a tool to generate seasonal timing graphs per site using data stored (see two examples below):

<http://hawkcount.org/siteinfo.php?rsite=109>

<http://hawkcount.org/siteinfo.php?rsite=100>

These two types of visualizations are also site-specific and expected to be completed during 2009.

11. Appendices

Appendix 1. Inventory of USFWS Region 5 site profiles (Excel file)

Appendix 2. Model site profile (PDF)

Appendix 3. Inventory of data archived in HawkCount.org for USFWS Region 5 (Excel file)

Appendix 4. Site database template (Excel)

Appendix 5. ENN Press release (PDF)

Appendix 6. RPI 2008 annual report (PDF)

Two articles cited in the “Literature Cited” section

Literature Cited

Bednarz, J.C., D. Klem Jr., L. J. Goodrich, and S. E. Senner. 1990. Migration counts of raptors at Hawk Mountain, Pennsylvania, as indicators of population trends 1934-1986. *The Auk* 107:96-109.

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Hoffman, S.W. and J.P. Smith. 2003. Population trends of migratory raptors in western North America, 1977-2001. *The Condor* 105:397-419.

Ruelas I., E. 2008. Raptor Migration Watchsite Descriptions. Pp. 279-301 In K.L. Bildstein, J.P. Smith, E. Ruelas I., and R.R. Veit (Eds.) *The State of North America’s Birds of Prey*. American Ornithologists’ Union – Nuttall Ornithological Club Series in Ornithology No. 3. Cambridge MA.

Ruelas I., E. 2008. The Raptor Population Index: taking the pulse of raptor migration. *Birding* 40:58-68

Zalles, J. I. and K. L. Bildstein (eds.). 2000. Raptor watch: a global directory of raptor migration sites. BirdLife Conservation Series No. 9. BirdLife International and Hawk Mountain Sanctuary Association. Cambridge, U. K., and Kempton, Pennsylvania.

USFWS Region 5 Monitoring Site Profiles

A=FULLY DEVELOPED, B=PARTIALLY COMPLETE, C=GEOREFERENCED PLACE HOLDER

Number	Site Name	State	Data			Notes
			A	B	C	
	Hanging Rock Tower	WV	0	0	1	Needs all site info
	Putney Mountain	VT	0	1	0	Needs gen site info, site history, site topography, directions and pics
	Bear Mountain Farm	VA	0	1	0	Needs site history and pics
	Candler Mountain	VA	1	0	0	Good info but needs site history, topog, directions and map
	Carvins Cove	VA	0	1	0	brief gen site info, lacking all else
	College Creek	VA	1	0	0	Good info, no pics
	Harvey's Knob	VA	1	0	0	Great info, no site topog or pics
	Hughes River Gap	VA	0	1	0	Needs site history, topog, pics
	Kiptopeke Hawkwatch	VA	1	0	0	Great info, no pics
	Rockfish Gap Hawk Watch	VA	0	1	0	Needs gen site info, topog and pics
	Rocky Knob	VA	0	0	1	Needs all site info
	Short Hill Mountain	VA	0	0	1	Needs all site info
	Snickers Gap	VA	0	1	0	Good info, Needs site history, directions and pics
	Allegheny Front	PA	0	1	0	Good info but needs site history, topog and directions
	Bake Oven Knob	PA	0	1	0	Needs site history, site topog, pics
	Blue Mountain Rte 183	PA	0	1	0	Limited gen site info, needs all else
	Brady's Bend	PA	0	0	1	Needs all site info
	BroadwingSEPT-Buckingham	PA	0	0	1	Needs all site info
	BroadwingSEPT-Core Creek	PA	0	0	1	Needs all site info
	BroadwingSEPT-Lake Nockamixon	PA	0	0	1	Needs all site info
	BroadwingSEPT-Lehigh	PA	0	0	1	Needs all site info
	BroadwingSEPT-Peace Valley	PA	0	0	1	Needs all site info
	BroadwingSEPT-Pipersville	PA	0	0	1	Needs all site info
	BroadwingSEPT-Pleasant Valley	PA	0	0	1	Needs all site info
	Council Cup	PA	0	1	0	Needs site history, topog, directions and pics
	Cove Mountain	PA	0	1	0	Needs site topog and pics
	Hawk Mountain Sanctuary	PA	1	0	0	Great info
	Hopewell Fire Tower	PA	0	1	0	Needs more gen site info, No directions or pics
	Jack's Mountain	PA	0	1	0	Needs site history, site topog, pics
	Kirkridge	PA	0	0	1	Needs all site info
	Lehigh Gap Hawkwatch	PA	1	0	0	Good info, no pics. formerly Blue Mountain?
	Little Gap	PA	0	0	1	Needs all site info
	Meadowood Bird Observatory	PA	0	1	0	brief gen site info, lacking all else
	Militia Hill	PA	0	0	1	Needs all site info
	Niskey Hill Cemetary	PA	0	0	1	Needs all site info
	Presque Isle	PA	0	1	0	brief gen site info, lacking all else
	Rose Tree Park	PA	0	0	1	Needs all site info
	Second Mountain	PA	0	1	0	Needs site history, site topog, pics
	Stone Mt.	PA	0	1	0	Needs site history, site topog, directions and pics

Tuscarora Summit	PA	1	0	0	Needs site topog and pics
Tussey Mountain	PA	0	1	0	Needs site history, pics
Waggoner's Gap	PA	1	0	0	Great but no pics
Braddock Bay	NY	0	1	0	brief gen site info, lacking all else
Chestnut Ridge	NY	0	0	1	Needs all site info
Derby Hill Bird Observatory	NY	1	0	0	Great info, no pics
Fire Island	NY	0	1	0	Needs site history, topog, directions and pics
Franklin Mt NW	NY	0	0	1	brief gen site info, lacking all else
Hamburg Hawk Watch	NY	0	1	0	Good info, needs site history and pics
Hook Mountain	NY	0	1	0	brief, needs gen site info and more detail
I-84 Overlook	NY	0	1	0	Needs site count season, history, topog, pics
Johnson City Hawk Watch	NY	0	1	0	Needs more detail, no site history, pics
Kestrel Haven	NY	1	0	0	Good info, no pics
Lenoir Wildlife Sanctuary	NY	0	1	0	Needs site history, topog, pics
Marine Nature Study Area	NY	0	1	0	Needs site topog, directions, pics
Mohonk Preserve	NY	0	0	1	Needs all site info
Mount Peter	NY	1	0	0	Great info, no pics
Ripley Hawk Watch	NY	1	0	0	Great info, no pics
Summitville Hawkwatch	NY	0	0	1	Needs all site info
Cape May	NJ	1	0	0	Excellent site info!
Chimney Rock Hawk Watch	NJ	0	1	0	Needs all site info
East Point Hawkwatch	NJ	0	0	1	Needs all site info
Kittatinny Mountain	NJ	0	0	1	Needs all site info
Montclair Hawk Lookout	NJ	1	0	0	Excellent, no pics
NJAMP at Duke Farms	NJ	0	0	1	Needs all site info
Picatunny Peak	NJ	0	1	0	Needs site history, topog, directions and pics
Raccoon Ridge	NJ	0	0	1	Needs all site info
Reed's Beach Autumn Hawk Watch	NJ	0	1	0	Good gen site info but lackng rest
Sandy Hook Migration Watch	NJ	0	1	0	Needs site history, site topog, pics
Scott's Mountain	NJ	0	0	1	Needs all site info
Sparta Migration Watch	NJ	0	1	0	Needs more gen site info, No site topog, directions or pics
State Line Hawkwatch	NJ	0	1	0	Needs site history, site topog, pics
Sunrise Mountain	NJ	0	0	1	Needs all site info
Wildcat Ridge	NJ	1	0	0	Great info, no pics
Pack Monadnock Raptor Migration Observatory	NH	1	0	0	Needs site history, site topog, pics
Little Round Top Migration Observatory	NH	1	0	0	Great info/no pics
Carter Hill Observatory	NH	0	1	0	Needs gen site info, site history, site topog, directions, pics
Peter Wood Hill	NH	0	0	1	Needs gen site info, site history, site topog, directions, pics
Peaked Hill	NH	0	0	1	Needs all site info
Interlakes Elementary School	NH	0	1	0	Needs site topography, directions and pics
Cadillac Mountain	ME	1	0	0	Good info but brief site history and site topography/no pics
Harpswell Penninsula/Casco Bay	ME	1	0	0	Good info/brief site history and site topography/no pics
Bradbury Mountain	ME	1	0	0	Great info/no pics

Cromwell Valley Park	MD	0	1	0	Needs more gen site info and pics
Fort Smallwood Park	MD	0	1	0	Needs site history, site topog, pics
Manchester Ridges	MD	0	0	1	Needs all site info
Oliver Street Studios	MD	0	1	0	Needs site history, directions and pics
Turkey Point	MD	1	0	0	Good, but needs site history
Washington Monument State Park	MD	0	0	1	Needs all site info, no map either
Alander Mountain	MA	0	1	0	Needs more gen site info, No site history, site topography or pics
Congamond Plains	MA	0	0	1	Very brief site info, Needs site history, site topog, directions, pics
Blueberry Hill	MA	0	1	0	Good info but needs site history and site topography
Shatterack Mountain	MA	0	0	1	Needs all site info
Mount Tom	MA	0	0	1	Needs all site info
Pilgrim Heights	MA	0	1	0	Needs more gen site info, No site history, site topography or pics
Bare Mountain	MA	0	0	1	Needs all site info
Barre Falls	MA	0	1	0	Needs site history, site topog, directions and pics
Mount Wachusset	MA	0	0	1	Needs all site info
Mount Watatic	MA	0	1	0	Only has directions;Needs gen site info, history, topog, pics
Pinnacle Rock	MA	0	1	0	Needs site history, pics
Plum Island	MA	0	1	0	Needs more gen site info and pics
Ashland Nature Center	DE	1	0	0	Great but no pics
Cape Henlopen Hawk Watch	DE	0	1	0	Needs site history, topog, directions and pics
White Clay Creek State Park-Carpenter Recreation	DE	0	1	0	brief gen site info, lacking all else
Bald Peak	CT	0	0	1	Needs all site info
Beezlebub Street	CT	0	0	1	Needs all site info
Bent of the River	CT	0	0	1	Needs all site info
Booth Hill	CT	0	1	0	Needs more gen site info, No site history, topog, pics
Botsford Hill	CT	0	0	1	Needs all site info
Briggs Hill	CT	0	0	1	Needs all site info
Chestnut Hill	CT	0	0	1	Needs all site info
East Shore Park	CT	0	1	0	Very brief, needs more info
Flat Hill	CT	0	0	1	Needs all site info
Flirt Hill	CT	0	0	1	Needs all site info
Good Hill	CT	0	0	1	Needs all site info
Heritage Village	CT	0	0	1	Needs all site info
Huntington State Park	CT	0	0	1	Needs all site info
Johnycake Mountain	CT	0	1	0	Needs site history, topog, pics
Larson Sanctuary	CT	0	0	1	Needs all site info
Lighthouse Point	CT	0	1	0	Needs site history, topog, pics
Maltby Lakes	CT	0	0	1	Needs all site info
Middle School	CT	0	0	1	Needs all site info
Osborne Hill	CT	0	0	1	Needs all site info
Peak Mountain	CT	0	1	0	brief info, needs site history, topog, pics
Pine Mountain	CT	0	0	1	Needs all site info
Poquonock	CT	0	0	1	Needs all site info

Quaker Ridge	CT	0	1	0	Needs more gen site info, no info on site history, topog or pics
Southbury Training School Farm	CT	0	0	1	Needs all site info
Taft School	CT	0	0	1	Needs all site info
Taine Mountain	CT	0	0	1	Needs all site info
Whipporwill Hill	CT	0	0	1	Needs all site info
White Memorial Foundation	CT	0	1	0	Needs site history, pics
		<u>22</u>	<u>53</u>	<u>56</u>	



Hawk Watch Site Profile

[Main](#)

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Waggoner's Gap

N 40° 16' 37.9", W 77° 16' 33.7"
(N 40.27719, W 77.27603)

<http://www.waggap.com/>

40 km W of Harrisburg, Pennsylvania, USA

[\[Latest count data\]](#)

Map

[Account Request](#)

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Pan: Click and drag the map with the mouse pointer.
Zoom: Select the zoom level with the control at the left of the map.

General Site Information

Waggoner's Gap is small gap in the Kittatinny Ridge (also called Blue and North Mountain) where PA Route 74 crosses between Cumberland and Perry Counties. It was named for a family with extensive landholdings at the base of the mountain in Cumberland County, not for its use by wagons. Hawk watching and counting have been done from two sites over the years. The first, at the concrete tower along Route 74, was used as an alternate during inclement weather. The main site sits on the spine of the mountain 75 yards east of the highway. This site is essentially a rock pile with steep descents on both sides. This enables watchers to see both sides of the ridge from one spot. This gives the advantage of being able to see off wind birds easily and increases the wind directions that are productive without requiring a physical move. The ridge runs from the ENE to WSW. The nearest major ridge to the south is South Mountain, roughly 12 miles distant. The nearest major ridge to the north is Tuscarora Mountain, roughly 14 miles away. This expanse on both sides helps limit diffusion of the flight. Trees on both sides of the ridge limit visibility of low flying birds. They also prevent detection of low flying birds coming down the ridge until they are close to the lookout. It also prevents low flying raptors from seeing the hawkwatchers until they are close. Best winds are NW and S, with higher numbers seen with NW winds, but closer views on the S winds.

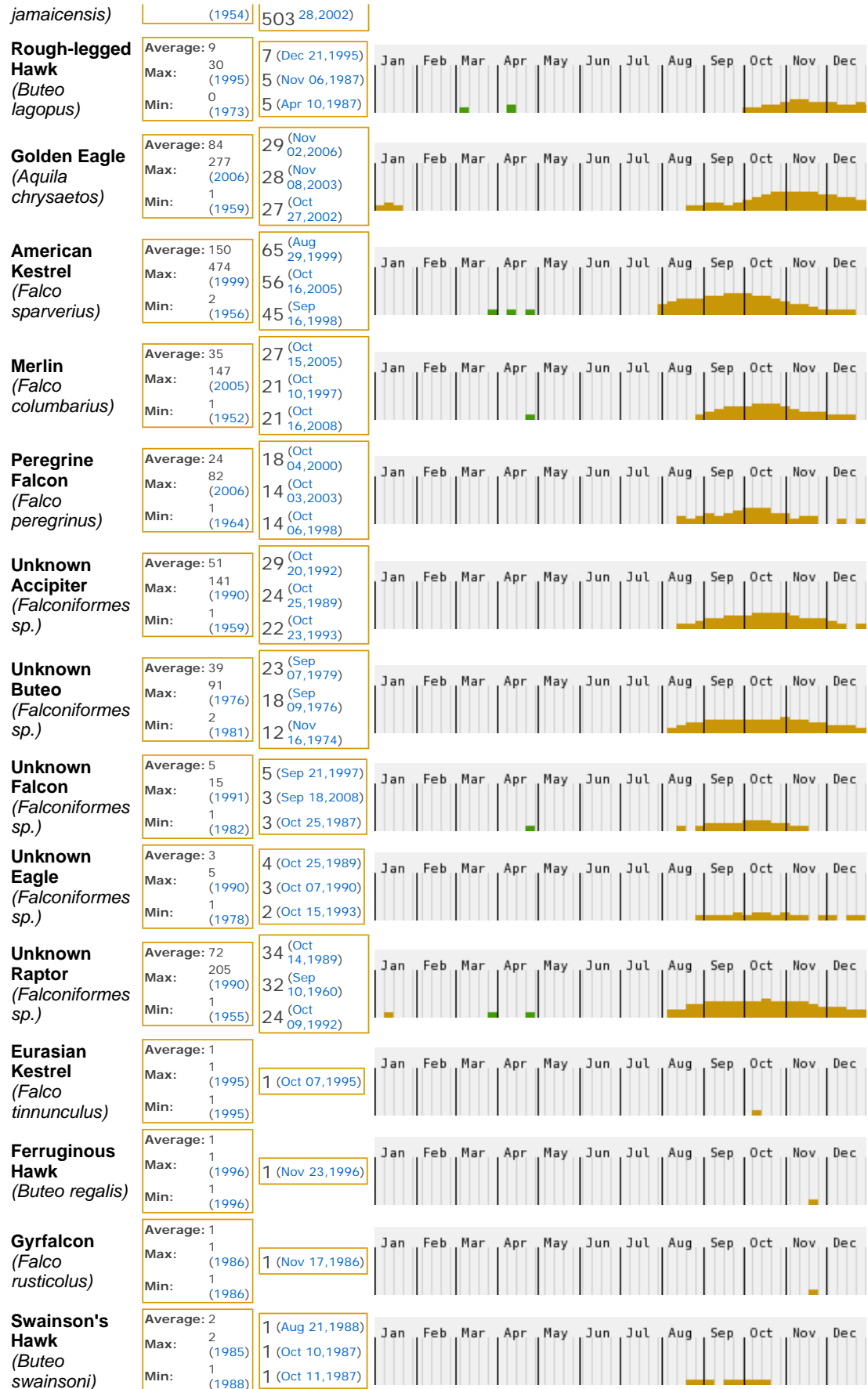
Site Contacts

Name	Role	Email	Phone
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Dave Grove Compiler waggap@comcast.net (717) 258-5253
 Kim Van Fleet kvanfleet@audubon.org (717) 213-6880

Migratory Raptors Observed at Waggoner's Gap

Species	Season Counts	Max. Daily Counts	Timing (Average spring / fall weekly counts)
Black Vulture <i>(Coragyps atratus)</i>	Average: 61 Max: 144 (2007) Min: 0 (1978)	34 (Nov 13, 2002) 34 (Oct 31, 1999) 28 (Dec 24, 2007)	
Turkey Vulture <i>(Cathartes aura)</i>	Average: 800 Max: 1814 (2005) Min: 1 (1976)	341 (Oct 16, 2005) 264 (Oct 23, 2004) 262 (Nov 03, 1997)	
Osprey <i>(Pandion haliaetus)</i>	Average: 213 Max: 682 (2006) Min: 2 (1953)	92 (Sep 18, 1993) 80 (Sep 18, 1996) 78 (Sep 30, 1986)	
Bald Eagle <i>(Haliaeetus leucocephalus)</i>	Average: 62 Max: 333 (2006) Min: 1 (1971)	30 (Sep 12, 2007) 25 (Sep 15, 2007) 24 (Sep 15, 2008)	
Northern Harrier <i>(Circus cyaneus)</i>	Average: 155 Max: 458 (2003) Min: 5 (1956)	42 (Oct 27, 1975) 40 (Oct 28, 1974) 39 (Oct 14, 1989)	
Sharp-shinned Hawk <i>(Accipiter striatus)</i>	Average: 3183 Max: 9727 (2007) Min: 19 (1963)	1981 (Oct 02, 1986) 1628 (Sep 30, 1986) 1560 (Oct 04, 1977)	
Cooper's Hawk <i>(Accipiter cooperii)</i>	Average: 294 Max: 1113 (2007) Min: 3 (1955)	207 (Oct 10, 1998) 137 (Oct 16, 2005) 121 (Oct 04, 1992)	
Northern Goshawk <i>(Accipiter gentilis)</i>	Average: 59 Max: 218 (1999) Min: 1 (1968)	35 (Oct 11, 1986) 29 (Nov 07, 1999) 22 (Nov 05, 2001)	
Red-shouldered Hawk <i>(Buteo lineatus)</i>	Average: 154 Max: 441 (1996) Min: 2 (1962)	105 (Oct 29, 2001) 77 (Oct 27, 1975) 74 (Oct 29, 1991)	
Broad-winged Hawk <i>(Buteo platypterus)</i>	Average: 3131 Max: 14254 (1987) Min: 17 (1954)	5305 (Sep 20, 2002) 4827 (Sep 21, 1987) 3959 (Sep 19, 1993)	
Red-tailed Hawk <i>(Buteo)</i>	Average: 2021 Max: 5731 (1999) Min: 2	748 (Nov 01, 1987) 571 (Nov 10, 1994) (Oct)	



Count Season**Fall:** Aug 01 to Dec 31**Procedures/Protocols**[Waggoner's Gap Data Collection Protocol](#)**Data Inventory (at hawkcount.org, as of Dec 08, 2008)****Data Summary****56** years (4023 days) of data saved:**27** years of hourly totals, **20** years of daily totals, and **9** years of mixed hourly/daily totals.**Data Years** [Click year links for year's data calendar](#)

[1952](#) [1953](#) [1954](#) [1955](#) [1956](#) [1957](#) [1958](#) [1959](#)
[1960](#) [1961](#) [1962](#) [1963](#) [1964](#) [1965](#) [1966](#) [1967](#) [1968](#) [1969](#)
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[2000](#) [2001](#) [2002](#) [2003](#) [2004](#) [2005](#) [2006](#) [2007](#) [2008](#)

Color Key: [Hourly Totals](#) [Daily Totals](#) [Mixed Hourly/Daily](#)**Site History**

During the 1930s a change began to emerge in perceptions about birds of prey. Instead of being only regarded as vermin to be exterminated, people began to study raptors with admiration. This trend first found noted voice at Hawk Mountain, with the efforts of Rosalie Edge beginning to shape new attitudes focused on stopping the ongoing slaughter of hawks. Places that had only seen shooting soon began to see quiet, peaceful observations of the autumn migration replace the carnage. Lesser known ridge lookouts were scouted and became known in the birding community. Most sites were in eastern Pennsylvania, with Bake Oven Knob being the most notable. By the late 30s two locations west of the Susquehanna River began to attract regular visitors. They were Sterrett's Gap and Waggoner's Gap. Reverend E. S. Frey compiled a book of counts made at Sterrett's Gap. Ted Hake from York County was one of the pioneers at Waggoner's Gap. He visited from the late 30s into the 90s, but left no recorded counts. The first known counts were made starting in 1948 by Lou Knohr, a high school science teacher at Carlisle High School. Unfortunately, the counts from 48-51 were lost. The first counts extant from 1952 to 1953 were in a summary format by species and obtained from Dr. Bertram Henry. The first daily counts from Waggoner's Gap were made by Lou Knohr and presented to Dr. C. J. Ralph of Dickinson College. These counts spanned the years 1954-1973 and only listed those raptors seen by Mr. Knohr and his wife Elsie on their frequent visits. A few other counts were recorded during this time and preserved by Dr. Ralph in the archives of the College. By the early 1970s interest in monitoring raptor migration resulted in a count in 1973 sponsored by the Appalachian Audubon Chapter of the National Audubon Society and led by Michael Kotz, a high school student from Harrisburg. This effort of 795 hours has been lost. The year 1974 saw the founding of the Hawk Migration Association of North America. Waggoner's Gap was represented by Dr. Ralph and Malcom Simons Jr. Plans were made to submit the Waggoner's Gap counts to HMANA using the HMANA forms. Rich Peiffer, a Cumberland Valley High School teacher, was chosen to be compiler. Peiffer, with help from Jake Baum and others, held the job until 1981 when he died from a

cancer. Greg Smith, from York, PA then took on the job until 1988, when the job was passed to Kim Van Fleet. She and her husband Glen served until 1994, when Dave Grove became compiler. Hours of observation increased throughout the period and it is now routine for over 1,000 hours of counting to be recorded in a season. The count protocol was oral history until 1998 when a written protocol was adopted by the counters. The land at the site was privately owned until 1953, when the site was purchased by the Reineman Wildlife Sanctuary Trust. In 2001, 20 acres of land encompassing the hawk watch was deeded to Pennsylvania Audubon for the purpose of preserving the site as a hawk watch. That fall a parking lot was built on the north side of the ridge and trails were built from the lot to the hawk watch.

Site Topography

A mountaintop watchsite with a 270 degree view of the SE on Kittatinny Ridge, the SE-most ridge in the C Appalachian Mountains. Counts are made from an exposed boulder field.

Directions to Site

From the east: On I-81 S take the Middlesex exit (exit 52) and turn right on Rt. 11S toward Carlisle. Go through the truckstops to the Carlisle turnpike exchange where we pick up all Pa Turnpike travelers. Continue south on Rt. 11 for 1.5 miles to a traffic light at Wolf Bridge Rd. Turn right. Follow Wolf Bridge Rd 2.5 miles to a stop sign at PA Rt. 34. Turn right and go .4 miles to a left turn on PA Rt. 944 W. Go 5 miles to a stop sign at the intersection with Pa Rt. 74. Turn right and go 2 miles up the mountain, being careful on the 90 degree turns. The parking lot is 200 yards beyond the crest on the right. Sign - Waggoner's Gap 1,476 feet

From Baltimore: Travel north on I83. Either take the Pa Turnpike west from Exit 18 or turn off I-83 onto I 581 W to I 81 S a mile beyond the Turnpike. Then follow the above.

From D.C.: Take Rt. 15N past Gettysburg to Pa Rt. 74N at Dillsburg. Follow Rt. 74 N through Carlisle to the mountain.

From Winchester, VA: Take I 81N to exit 47A in Carlisle. Turn left on Pa Rt. 34N. Go to the square in Carlisle and turn left onto Pa Rt. 74 N. Follow 74 N to the parking lot (Be careful following signs, there are two turns that can be tricky)

The Waggoner's Gap Hawk Watch can be reached by walking up a rock trail from the parking lot on the north side of the Kittatinny Ridge. The parking lot is off PA Route 74, about 6 miles NW of Carlisle, Pa.

Migration Count Data inventory, sites in USFWS Region 5										
HawkCount.org										
Site (id)	Location	RPI Permission	Data Years	Years: Hourly	Years: Daily	Years: Mixed	Hourly Repo	Daily Report	Hourly+ Daily	(H+D)/YR
Lehigh Gap Hawkwatch (110)	2 mi. N of Slatington, PA, Pennsylvania	-	3	0	2	1	2	52	54	18
Bake Oven Knob (399)	2 miles North of Germansville, Pennsylvania	Y	5	0	5	0	0	524	524	105
Snickers Gap (494)	20 Miles West of Leesburg, Virginia	-	5	0	0	5	278	158	436	87
Waggoner's Gap (439)	40 km W of Harrisburg, Pennsylvania	Y	55	26	22	7	3285	479	3764	68
Lighthouse Point (138)	60 km SW of Hartford, Connecticut	-	37	34	1	2	2490	100	2590	70
Stone Mt., Pa. (436)	Allensville, Pennsylvania	-	12	10	0	2	745	3	748	62
State Line Hawkwatch (343)	Alpine, New Jersey	-	2	0	0	2	10	18	28	14
Bare Mountain (308)	Amherst, Massachusetts	-	1	1	0	0	6	6	6	6
Mount Wataatic (229)	Ashburnham, Massachusetts	-	5	1	1	3	50	31	81	16
Chequamegon Bay (514)	Ashland, Wisconsin	-	2	2	0	0	168	0	168	84
Fire Island (359)	Babylon, New York	-	4	0	2	2	21	155	176	44
Cromwell Valley Park (621)	Baltimore, Maryland	-	3	0	0	3	23	83	106	35
Cadillac Mt., Acadia N.P. (280)	Bar Harbor, Maine	Y	2	2	0	2	227	17	244	61
Barre Falls (181)	Barre, Massachusetts	-	5	5	0	0	433	0	433	87
Chestnut Ridge (534)	Bedford, New York	-	3	0	2	1	2	65	67	22
Raccoon Ridge (339)	Blairstown, New Jersey	-	5	0	4	1	3	174	177	35
Washington Monument State Park (279)	Boonsboro, Maryland	-	5	0	2	3	171	147	318	64
Botsford Hill (126)	Bridgewater, Connecticut	Y	17	13	2	2	115	21	136	8
Little Round Top (317)	Bristol, New Hampshire	-	4	4	0	0	70	0	70	18
BroadwingSEPT - Buckingham (405)	Buckingham, Pennsylvania	Y	5	1	4	0	9	42	51	10
BroadwingSEPT - Lake Nockamixon (407)	Bucksville, Pennsylvania	Y	5	0	2	3	8	50	58	12
Kestrel Haven (597)	Burdett, New York	-	1	0	1	0	0	94	94	94
Johnycake Mountain (137)	Burlington, Connecticut	-	5	0	5	0	0	41	41	8
Taine Mountain (158)	Burlington, Connecticut	-	2	2	0	0	6	0	6	3
Cape May (328)	Cape May Point, New Jersey	-	18	16	1	1	1520	91	1611	90
Allegheny Front (111)	Central City, Pennsylvania	Y	5	0	1	4	381	541	922	184
BroadwingSEPT - Peace Valley (408)	Chalfont, Pennsylvania	Y	5	1	4	0	10	41	51	10
Peter Wood Hill (322)	Deering, New Hampshire	-	1	1	0	0	1	0	1	1
Cape Henlopen Hawk Watch (169)	Delaware	-	5	0	5	0	0	571	571	114
Peak Mountain (553)	East Granby, Connecticut	Y	4	4	0	0	298	0	298	75
Flirt Hill (532)	Easton, Connecticut	-	5	2	3	0	36	36	72	14
Hopewell Fire Tower (417)	Elverson, Pa, Pennsylvania	-	1	1	0	0	3	0	3	3
Larson Sanctuary (654)	Fairfield, Connecticut	Y	15	15	0	0	145	0	145	10
Militia Hill (423)	Fort Washington, Pennsylvania	-	3	0	3	0	0	183	183	61
Second Mountain (432)	Ft. Indiantown Gap, Pennsylvania	Y	5	5	0	0	746	0	746	149
Blueberry Hill (107)	Granville, Massachusetts	Y	6	5	0	1	584	1	585	98
Quaker Ridge (149)	Greenwich, Connecticut	Y	20	0	16	4	228	1324	1552	78
Hamburg Hawk Watch (364)	Hamburg, New York	Y	5	2	0	3	305	79	384	77
BroadwingSEPT - Lehigh (411)	Hellertown, Pennsylvania	Y	2	0	2	0	0	5	5	3
Wildcat Ridge (103)	Hibernia, New Jersey	Y	6	0	6	0	0	906	906	151
NJAMP at Duke Farms (634)	Hillsborough, New Jersey	Y	3	3	0	0	136	0	136	45
Braddock Bay (353)	Hilton, New York	Y	4	3	0	1	284	2	286	72
Meadowood Bird Observatory (560)	Hummelstown, Pennsylvania	-	2	0	2	0	0	29	29	15
Hawk Mountain Sanctuary (109)	Kempton, Pennsylvania	Y	42	39	2	1	4070	298	4368	104
White Memorial Foundation (623)	Litchfield, Connecticut	-	1	1	0	0	9	0	9	9
Chestnut Hill (128)	Litchfield, Connecticut	Y	20	17	0	3	154	5	159	8
Candler Mountain (487)	Lynchburg, Virginia	Y	5	5	0	0	71	0	71	14
Pinnacle Rock (239)	Malden, Massachusetts	Y	2	0	2	0	0	11	11	6
Manchester Ridges (617)	Manchester, Maryland	-	1	1	0	0	2	0	2	2
NJAMP at Chimney Rock (330)	Martinsville, New Jersey	Y	2	2	0	0	141	0	141	71
Turkey Point (278)	Maryland	Y	4	0	0	4	255	20	275	69
Mount Tom, Massachusetts (227)	Massachusetts	-	2	1	0	1	5	1	6	3
Rose Tree Park (105)	Media, Pennsylvania	Y	6	4	0	2	700	113	813	136
Interlakes Elementary School (315)	Meredith, New Hampshire	Y	2	2	0	0	4	0	4	2
Scotts Mountain (342)	Merrill Creek, New Jersey	Y	5	0	0	5	123	326	449	90
Derby Hill Bird Observatory (358)	Mexico, New York	Y	4	0	2	2	82	252	334	84
Montclair Hawk Lookout (334)	Montclair, New Jersey	-	32	29	1	2	2767	57	2824	88
Bear Mountain Farm (351)	Monterey, Virginia	Y	1	0	1	0	0	30	30	30
Kirkridge (638)	Mt. Bethel, Pennsylvania	Y	2	0	2	0	0	11	11	6
Peaked Hill (321)	New Hampshire	-	0	0	0	0	0	0	0	0
East Shore Park (529)	New Haven, Connecticut	Y	23	21	0	2	138	15	153	7
Kittatinny Mountain (332)	New Jersey	-	5	5	0	0	323	0	323	65
Red's Beach Autumn Hawk Watch (106)	New Jersey	-	1	0	1	0	0	23	23	23

Mohonk Preserve (371)	New Paltz, New York	Y	5	4	0	1	122	1	123	25
White Clay Creek State Park (614)	Newark, Delaware	-	1	1	0	0	4		4	4
Plum Island MA (115)	Newburyport, Massachusetts	Y	1	0	1	0		2	2	2
Whippoorwill Hill (166)	Newton, Connecticut	-	20	20	0	0	128		128	6
BroadwingSEPT - Core Creek (406)	Newtown, Pennsylvania	Y	5	1	4	0	11	43	54	11
Pilgrim Heights (113)	North Truro, Massachusetts	Y	5	5	0	0	276		276	55
Franklin Mt. (361)	Oneonta, New York	Y	14	10	0	4	1126	11	1137	81
Maltby Lakes (140)	Orange, Connecticut	-	11	11	0	0	167		167	15
Fort Smallwood Park (272)	Pasadena, Maryland	Y	13	8	1	4	970	13	983	76
Jacks Mountain (104)	Pennsylvania	Y	6	6	0	0	342		342	57
Little Gap (420)	Pennsylvania	Y	5	2	3	0	213	277	490	98
Tuscarora Summit (437)	Pennsylvania	Y	4	4	0	0	337		337	84
Brady's Bend (108)	Pennsylvania	-	2	1	0	1	52	1	53	27
Pack Monadnock Raptor Migration Observatory (320)	Peterborough, New Hampshire	Y	4	4	0	0	138		138	35
BroadwingSEPT - Pipersville (409)	Pipersville, Pennsylvania	Y	5	1	4	0	8	38	46	9
BroadwingSEPT - Pleasant Valley (410)	Pleasant Valley, Pennsylvania	Y	5	1	4	0	7	36	43	9
I-84 Overlook (565)	Port Jervis, New York	-	0	0	0	0			0	
Bald Eagle Mountain (635)	Port Matilda, Pennsylvania	-	1	0	1	0		2	2	2
Bradbury Mountain State Park (616)	Pownal, Maine	Y	3	3	0	0	44		44	15
Mount Wachusett (228)	Princeton, Massachusetts	-	5	3	0	2	43	23	66	13
Putney Mountain VT (506)	Putney, Vermont	-	4	0	4	0		127	127	32
Huntington State Park (452)	Redding, Connecticut	-	4	2	2	0	6	8	14	4
Ripley Hawk Watch (381)	Ripley, New York	Y	4	3	0	1	240	58	298	75
Harvey's Knob (482)	Roanoke, Virginia	Y	2	0	0	2	203	20	223	112
Carvins Cove (645)	Roanoke, Virginia	Y	2	2	0	0	56		56	28
Picatinny Peak (338)	Rockaway Twp, New Jersey	Y	13	13	0	0	1081		1081	83
Hook Mountain (368)	Rockland Lake, New York	-	5	1	0	4	45	197	242	48
Shatterack Mountain (626)	Russell, Massachusetts	-	3	3	0	0	122		122	41
Osborne Hill (145)	Sandy Hook, Connecticut	-	6	0	4	2	3	40	43	7
Sandy Hook Migration Watch (340)	Sandy Hook, New Jersey	-	1	0	0	1	42	20	62	62
Briggs Hill (539)	Sherman, Connecticut	-	4	2	2	0	7	9	16	4
Beelzebub Street (579)	South Windsor, Connecticut	-	12	12	0	0	117		117	10
Flat Hill (132)	Southbury, Connecticut	-	2	2	0	0	21		21	11
Bent of the River (538)	Southbury, Connecticut	-	4	0	4	0		37	37	9
Heritage Village (136)	Southbury, Connecticut	-	2	1	1	0	7	7	14	7
Southbury Training School Farm (156)	Southbury, Connecticut	-	1	0	1	0		3	3	3
Tuttle Hill (530)	Southwick, Massachusetts	-	1	1	0	0	2		2	2
Sparta Migration Watch (546)	Sparta, New Jersey	-	2	0	2	0		33	33	17
Tussey Mountain (438)	State College, Pennsylvania	Y	4	0	3	1	1	242	243	61
Sunrise Mountain (345)	Stokes State Forest, Branchville, New Jersey	-	5	0	5	0		182	182	36 #DIV/0!
Summitville Hawkwatch (624)	Summitville, New York	-	3	3	0	0	81		81	27
Middle School (535)	Torrington, Connecticut	-	7	5	0	2	112	5	117	17
Kiptopeke State Park (484)	Virginia	-	5	1	0	4	344	92	436	87
SHORT HILL Mountain (493)	Virginia	-	0	0	0	0			0	
Hanging Rock Tower (519)	Waiteville, West Virginia	Y	4	4	0	0	195		195	49
Mount Peter (372)	Warwick, New York	Y	6	2	3	1	146	181	327	55
Taft School (651)	Watertown, Connecticut	Y	15	15	0	0	98		98	7
Rockfish Gap Hawk Watch (491)	Waynesboro, Virginia	Y	5	0	5	0		446	446	89
Booth Hill (125)	West Hartland, Connecticut	-	26	23	3	0	65	5	70	3
Little River Lookout (558)	Westfield, Massachusetts	-	2	2	0	0	61		61	31
College Creek (476)	Williamsburg, Virginia	-	3	3	0	0	281		281	94
Good Hill (133)	Woodbury, Connecticut	-	2	0	1	1	1	16	17	9
Lenoir Wildlife Sanctuary (112)	Yonkers, New York	Y	5	5	0	0	238		238	48

Contents of HawkCount.org site database site records

Field name	Field description	Notes
Id	Unique numeric identifier	
Site	Short site name	
Description	Long site name	
site_city	Site location	
site_county	Site location	
site_stateprov	Site location	
site_country	Site location	
org_name	Associated organization	
Tz	Timezone	To be changed to GMT offset
Sighting_period	Preferred data entry period	hawkcount.org data entry behavior control
Url	Site's web page URL	
lat_d	Site location	To be changed to single field
lat_m	Site location	
lat_s	Site location	To be changed to single field
lng_d	Site location	
lng_m	Site location	
lng_s	Site location	
rep_cornell	Report to AHW?	hawkcount.org control: should reports be sent to Autumn Hawk Watch?
rep_birdhawk	Report to BIRDHAWK?	Hawkcount.org control: should reports be sent to the BIRDHAWK mailing list?
Blurb	Site description	
cornell_checklist	Pointer to AHW checklist	Deprecated
cornell_site_name	AHW site name	Deprecated
cornell_site_id	AHW site id code	Deprecated
cornell_period	AHW reporting period	Deprecated
Time1224	Data entry time format	12 hour + AM/PM or 24 hour
Logourl	Site's logo URL	Logo image stored locally or remotely
mrep_iname	Email control	Truncated site name used in email reports
mrep_splunk	Email control	Controls reported breakdown of unknown raptors in email reports
contact1_role	Site contacts	
contact1_email		
contact1_name		
contact1_phone		
contact1_addr		
contact2_role		
Contact2_email		
Contact2_name		
Contact2_phone		
Contact2_addr		
contact3_role		
Contact3_email		
Contact3_name		
Contact3_phone		
Contact3_addr		
Flyway	Flyway indicator	Eastern, central, pacific, etc.
flyway_region	Flyway indicator	Region within flyway such as "great lakes"
HMS_SMI	HMS map indicator	
fall_active	Is this a fall site?	(y/n)
spring_active	Is this a spring site?	(y/n)
hc_active	Is this site active in hawkcount.org?	(y/n)
counters_vol	Are volunteer counters used?	(y/n)
counters_paid	Are paid counters used?	(y/n)

Sheet1

spring_start_m	Spring season start date	
spring_start_d		
spring_end_m	Spring season end date	
spring_end_d		
fall_start_m	Fall season start date	
fall_start_d		
fall_end_m	Fall season end date	
fall_end_d		
hmana_rec_by	Last modification: user name	Used internally by hawkcount.org to record the ID of the last person/date to modify this record
hmana_rec_date	Last modification: date	
public_rd	Data publically visible on web site?	(y/n)
cond_profile	Pointer to weather field layout	Controls weather fields during data entry and display- used internally by hawkcount.org
cust1_name	Custom fields	User-defined additional fields on data entry forms
cust2_name		
cust3_name		
cust4_name		
cust5_name		
cust6_name		
cornell_username	AHW data submission control	
cornell_password		
Directions	Text: directions to the site	
Elevation	Site elevation	
Privateprop	Is the site on private property?	(y/n)
Topography	Text: site topography	
Yearfounded	Year that the site was founded	
Sitehist	Text: Site history	
Howloc	How were the location coordinates obtained?	(GPS / Map)
Hidden	Is this site hidden from site selection lists?	hawkcount.org behavior control: Primarily used with test/demo etc. sites.
DUP_use_category	Data use policy: oversight category	
DUP_perm_hms	Data use policy: HMS publication permission	(y/n)
DUP_perm_birdhawk	Data use policy: BIRDHAWK permission	(y/n)
DUP_perm_rpi	Data use policy: RPI permission	(y/n)
DUP_perm_ebird	Data use policy: ebird data sharing permission	(y/n)
DUP_approved	Data use policy approved	(y/n)
DUP_approved_date	Data use policy approval date	
DUP_approved_by	Data use policy approval: by whom?	
DUP_approved_ver	Data use policy approval: what version of the DUP?	
DUP_extra_ack	Data use policy: extra acknowledgement requirements	
site_image1_url	Site image URL	Stored locally or remotely
site_image2_url	Site image URL	Stored locally or remotely
site_image3_url	Site image URL	Stored locally or remotely
site_image4_url	Site image URL	Stored locally or remotely
site_image1_credit	Site image credits	
site_image2_credit	Site image credits	
site_image3_credit	Site image credits	
site_image4_credit	Site image credits	
protocol_desc	Description of site protocols	
protocol_url	Location of site protocols	Stored locally or remotely
protocol2_desc	Description of site protocols	
protocol2_url	Location of site protocols	Stored locally or remotely
protocol3_desc	Description of site protocols	
protocol3_url	Location of site protocols	Stored locally or remotely
protocol4_desc	Description of site protocols	
protocol4_url	Location of site protocols	Stored locally or remotely