

Lehigh Gap Restoration Project



The Wildlife Information Center has embarked on a far-reaching journey. We are in the process of acquiring nearly 800 acres of land on the Kittatinny Ridge at Lehigh Gap. Some of the land was severely degraded by industrial activity in nearby Palmerton. That land is recovering and we intend to speed up the recovery process. Other parts of the land include forested slopes and some bottomland ponds.

All of this acreage is, or will become, valuable wildlife habitat and will be open to hikers, birders, cross-country skiers, photographers, and others. The Center office and education center will be located on this land.

We need all the support we can get to make this project a success. Please consider a donation to the Wildlife Center's "Lehigh Gap Restoration Project Fund." Send donations to:

**Wildlife Information Center
P.O. Box 198
Slatington, PA 18080**

Thank you!

Bake Oven Knob Autumn Hawk Count Manual



**Wildlife Information Center, Inc.
P.O. Box 198
Slatington, PA 18080**

Bake Oven Knob (BOK) Autumn Hawk Count Manual

by Dan R. Kunkle

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Appendix E Age/Sex Data Sheet 2001 to Present

Date	Time	Weather	Observer	Location	Notes

1933; Poole 1934; Broun 1948; Brett 1991). In 1934, Rosalie Edge raised the money to buy the mountain near Dreherstown, established Hawk Mountain Sanctuary, and hired Maurice Broun to staff the Sanctuary and stop the shooting (Broun 1948). Broun would become the “Father of Hawkwatching” (Heintzelman 2001a).

Eventually, laws were passed in Pennsylvania and Washington, D.C. that protected some of the raptors. In the 1950s, Broun sent some of his young protégés out to other lookouts to monitor the shooting for illegal activity. In 1956, one of those “ridge runners” was Donald S. Heintzelman (1975b) who came to Bake Oven Knob (BOK) and witnessed the slaughter there first hand. Heintzelman began his field studies at Bake Oven Knob the next year when hawk shooting was banned in this part of eastern Pennsylvania (Heintzelman 1975a, 2001a; Bildstein 2001).

Annual autumn hawk counts began at Bake Oven Knob in 1961, and continue to the present. With the help of some dedicated volunteers like Bob and Anne MacClay, Heintzelman directed the count at BOK through 1997. He spent thousands of hours at BOK, and for nearly 40 years compiled and published the data he and his volunteers collected. In 1986, Heintzelman and Ben Sinclair founded the Wildlife Information Center, Inc. which began sponsoring the count. Heintzelman retired as count director after the 1997 season. The count continues under the auspices of the Wildlife Center.

Site Description

Bake Oven Knob is a prominent feature along the Appalachian Trail (AT) on the Kittatinny Ridge (Blue Mountain) in northern Lehigh County, Pennsylvania, near the Carbon County border. There, three major rock outcroppings are used as lookouts, or watchsites, for the annual Bake Oven Knob Hawk Count. The most prominent is the **South Lookout** (see access to site below for directions to all lookouts). One landmark reference mentions the bowl-like depression in the mountain below the South Lookout as the possible source for the name Bake Oven Knob (Miller 1941). The lookouts are on State Game Land 217 which is open to the public. Caution should be used when hiking to the lookouts during hunting seasons. Orange clothing is recommended, and may soon become mandated by state law.

The South Lookout has an elevation of 1,600 feet (Lat. 40° 44' N;

Appendix C Hawk Count Data Sheet 1961-Present

While this site was once a viable alternative for hawk viewing on north wind days, its use is now limited by trees, and is seldom used today. Its viewing angle lies between 30 degrees (northeast) and 270 degrees (west) with a clear view to the north. Counting is done here on north winds when adverse conditions prevent a counter from reaching the North Lookout, or when a counter is physically unable to reach the North Lookout.

The **North Lookout** (called “the Point” in some early Bake Oven Knob publications) is about 200 yards farther along the AT beyond the South and North Side Lookouts. This lookout has an unobstructed view to the northeast along the ridge as does the South Lookout, but it also has a clear view to the north and west. The view to the southwest is obscured by trees. A viewing arc of about 260 degrees allows



the observer to see clearly from 180 degrees (due South) through East and North to 300 degrees (W N W) . This lookout is used on days when winds have northerly components.

In the early years of the count, observers used the far eastern part of the North Lookout (the Point) as a viewing position. By the late 1980s, trees made viewing low-flying birds difficult, so most counters began using the higher rocks toward the back of the lookout.

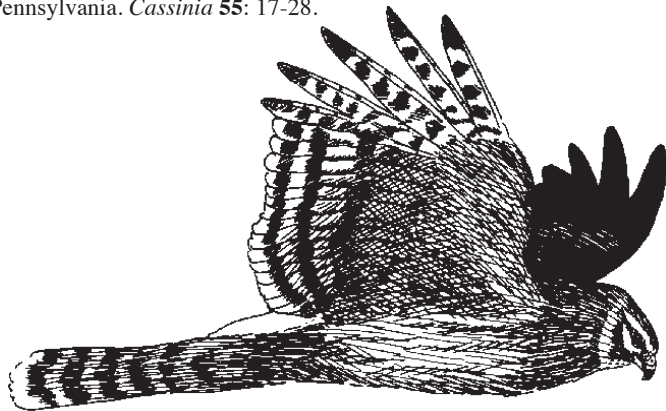
As a result of limited viewing areas at both North and South Lookouts, both are used under different wind conditions, but only one site at any given time is used for data collection. Counters use the North Lookout on days with northerly winds, and the South Lookout on calm days or days with southerly winds. On days when a shift in

Appendix A

Map to Bake Oven Knob, Lehigh & Carbon Counties, PA



- 1990 The 1957-1989 Bake Oven Knob, Pa., Autumn Hawk Migration Field Study: A 30 Year Review and Summary. *American Hawkwatcher* **17**: 1-16.
- 1992a Monitoring the Vital Signs of a Mountain: The Kittatinny Raptor Corridor Project. *Wildlife Activist* **15**: 6-8.
- 1992b Pioneering Raptor Programs at the Bake Oven Knob Hawk Watch and the Wildlife Information Center, Inc. *American Hawkwatcher* **18**:8-13.
- 1993a The 1992 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **19**: 2-3.
- 1993b Kittatinny Raptor Corridor Project. *Wild Earth* **3** (3): 45-47
- 1994 The 1993 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **20**: 2-3.
- 1995 The 1994 and 1995 Autumn Hawk Counts at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **21**: 2-4.
- 1996 The 1996 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **22**: 2-4.
- 1997 The 1997 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **23**: 2-4.
- 2000 Extreme Migration Dates and Maximum Daily Raptor Counts, During Autumn at Bake Oven Knob, Lehigh County, Pennsylvania, USA. *International Hawkwatcher* **1**:19-21
- 2001a Maurice Broun: The Father of Hawkwatching. Northwestern Press, July 30.
- 2001b The Conservation Importance of Securing Standardized, Long-term Migration Count Data for Black Vultures and Turkey Vultures in North America. *International Hawkwatcher* **3**:6-9
- 2001c Hawk Fest Has them Flocking to Bake Oven Knob Celebration. Northwestern Press, October 29.
- Heintzelman, Donald S. and Thomas V. Armentano
1965 Autumn Bird Migration at Bake Oven Knob, PA. *Cassinia* **48**: 2-18.
- Heintzelman, Donald S., and Robert MacClay
1972 The 1970 and 1971 Autumn Hawk Counts at Bake Oven Knob, Pennsylvania. *Cassinia* **53**: 3-23.
- 1973 The 1972 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *Cassinia* **54**: 3-9.
- 1975 The 1973 and 1974 Autumn Hawk Counts at Bake Oven Knob, Pennsylvania. *Cassinia* **55**: 17-28.



wind direction occurs, observers sometimes change lookouts. One observer moves first to the other lookout and assumes the count at a designated time. At that designated time, the observer who remained behind leaves the lookout to join the observer who moved first.

This protocol has been applied consistently since the inception of the count. The only exception has been on days when an observer is not physically able to reach the North Lookout and instead counts from the South Lookout. This is always noted on the data sheets since observers always record the lookout used and wind direction.

Access to Site

Bake Oven Knob lookouts can be reached by walking in from the parking lot along Bake Oven Road, at the crest of the Blue Mountain, or Kittatinny Ridge. (See map in Appendix A)

Directions to Parking Lot: From the intersection of Rts. 22 and 309, near Allentown, take 309 north for 14.5 miles to Mountain Rd. (After passing through Schnecksville, take the left fork at the "Y," staying on 309.) Turn right on Mountain Rd. (SR4024), continue for just over 2 miles, then turn left onto Ulrich Rd. (T808). Continue straight on Ulrich when it turns to an unpaved road, then merges with Bake Oven Road as it ascends the Kittatinny Ridge. At the crest of the ridge turn into the parking lot on the right.

From north of the Kittatinny Ridge on Route 309, travel south over the ridge, and make the first left turn at the base of the mountain onto Mountain Road and proceed as above.

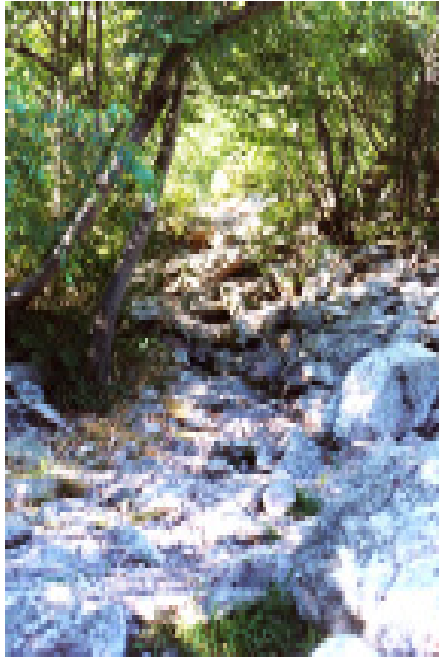
From the intersection of Rts. 22 and 145 (MacArthur Rd.), near Allentown, follow 145 north for 14.5 miles to its junction with Rt. 248. Turn left onto 248 and stay in the left lane. Turn left at the traffic light, and cross the bridge over the Lehigh River. Bear right at the west end of the bridge up the steep hill which is Mountain Rd. (SR4024). Drive west on Mountain Rd. for 6.2 miles, then turn right onto Church Rd. (SR4014). At 0.2 miles, Church Rd. bears hard to the left with a farm road continuing straight ahead -- bear left on Church Rd. After 0.2 more miles, turn right onto the unpaved road

and ascend the mountain. Park in the parking lot on the right upon reaching the crest of the ridge.

From U.S. 209 and Rt. 248 intersection near Lehigh, travel south on Rt. 248 to Bowmanstown and turn west onto Rt. 895. Travel 4.5 miles to Germans Road and turn left. Follow Germans road for 1.1 miles and turn left again onto Bake Oven Road, which becomes unpaved. Follow Bake Oven Road to the crest of the mountain and park on the parking lot on your left (east side of road).

Trail to the Lookouts: The trail enters the forest at the southeast corner of the parking lot. Walk along the AT (marked with white blazes, or paint marks, on the trees and rocks) for 0.4 miles to reach the first of the lookouts. This very rocky trail climbs steadily as it follows the ridge top through an oak dominated, mixed hardwood forest. When the trail becomes quite steep next to a rock slide, then levels off at what is obviously the highest point on the ridge, you will see an old concrete foundation of an abandoned beacon tower for airplanes. To your left is the North Side Lookout, a jumble of boulders with a view of the ridge and valley province to the north. To your right, about 25 yards away, is the dramatic South Lookout, offering a panoramic view of the Lehigh Valley.

To reach the North Lookout, continue straight past the concrete foundation 0.1 mile along a very rocky, downhill trail. At about 0.1 mile, the trail drops over several very large boulders to a flat, grassy spot. The North Lookout is the pile of boulders just East through the trees. Scramble over the top of the boulders to the front of the lookout, or skirt the lookout to the north following the AT blazes on the rocks for about 50 feet, then climb up the side of the North Lookout on your right. From here, you



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1979 The 1976, 1977, and 1978 Autumn Hawk Counts at Bake Oven Knob, Pennsylvania. *Cassinia* **57**: 19-20.

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2000 The 2000 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **26**: 2-10.

2001 The 2001 Autumn Hawk Count at Bake Oven Knob, Lehigh County, Pa. *American Hawkwatcher* **27**: 2-10.

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1968 Bake Oven Knob Autumn Hawk Migration Observations, 1966 and 1967. *Cassinia* **50**: 26-27.
1969 Autumn Birds of Bake Oven Knob. *Cassinia* **51**: 11-32.
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1975b Autumn Hawk Flights: The Migrations in Eastern North America. Rutgers University Press, New Brunswick, NJ.
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1984a The 1984 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *American Hawkwatcher* **9**: 1-5.
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1985 The 1985 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *American Hawkwatcher* **10**: 1-4.
1986 The Migrations of Hawks. Indiana University Press, Bloomington, IN.
1987 The 1986 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *American Hawkwatcher* **11**: 1-2.
1988 The 1987 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *American Hawkwatcher* **12**: 1-2.
1989 The 1988 Autumn Hawk Count at Bake Oven Knob, Pennsylvania. *American Hawkwatcher* **13**: 1-2.

will be able to see both sides of the ridge, but cannot look directly down on the forest canopy below as at the South Lookout.

Dates, Times, and Weather

The official daily count at Bake Oven Knob begins on 15 August and ends on the Sunday after Thanksgiving each year. The site is on Pennsylvania State Game Lands, and deer hunting makes hiking to and from the lookouts, and presence on the lookouts, risky when deer hunting is occurring. Deer season traditionally begins on the Monday after Thanksgiving, and the migration has usually slowed considerably by that time, so we officially end the count on that Sunday. Orange clothing or an orange hat is recommended for observers walking to the lookout during any hunting season.

Observation times have varied through the years, depending on observers and weather conditions. Since hourly counts are recorded, any analysis can standardize the counts by including only certain hours, and by reporting hawks seen per hour. The count each day should extend from at least 8:30 a.m. to 4:30 p.m. EST (Heintzelman 1975b). Additional hours from sunrise to sunset may be included, and are especially important early in the season. Late in the season the count day may be compressed to between 9:00 a.m. and 4:00 p.m. All data are recorded with times in Eastern Standard Time, not Daylight Saving Time. Thus, in September, for example, a clock time of 11:00 a.m. DST is actually 10:00 a.m. EST.



Heidelberg Township from the South Lookout

Observation is generally halted during rain, although a flight of Broad-winged Hawks was reported in the rain in 1989 (Kunkle 1989). Counters are expected to remain in shelter on the parking lot or nearby during rain, and proceed to the lookout as the weather clears. In the case of an all-day rain, no observations are made. Counters on the lookout should be prepared for brief showers, remaining on the lookout during these events. If thunder storms are approaching, the counters are advised to seek shelter in their cars as quickly as possible, returning to the lookouts as the weather allows.

Fog can also create adverse viewing conditions. Fog can be very patchy and deceptive, and it is difficult to assess fog conditions at the lookouts from the parking lot. Counters are expected to be on the lookout during fog conditions.

Data Collection and Reporting

Weather

Although we can standardize data collection methods to reduce variability, one variable over which we have no control is weather. Collecting weather data is essential for rigorous analysis of data. It is also interesting for observers to try to determine which kinds of weather patterns produce large flights of raptors (Heintzelman 1975b). The following weather data are collected hourly and recorded on the Hawk Count Data Sheet (Appendix C):

Maximum Visibility (in miles). The landmarks below can be seen clearly at the distances indicated and should be used in estimating maximum visibility. When recording visibility, record in miles up to 20 miles. If you can see clearly beyond the distance to South Mountain, “unlimited” may be used.

Lehigh Furnace Gap -- 3 miles
Troxell’s Farm (North Lookout only) -- 4 miles
Towers -- 5.5 miles
Slatington -- 7 miles
Lehigh Gap -- 7.5 miles
Little Gap -- 11 miles
South Mountain at Allentown -- 20 miles
Martin’s Creek Power Plant -- 30 miles

Education has long been an important part of the Bake Oven Knob Hawk Count. Teachers from elementary school through college have brought students to the Knob in Autumn for over 25 years (Heintzelman 1982d) and Heintzelman has used hawk watching at Bake Oven Knob as the impetus for government proclamations concerning the Kittatinny Raptor Migration Corridor and hawk watching (Heintzelman 1984c, 1992b, 2001c).

In 1992, the Wildlife Information Center launched the *Kittatinny Raptor Corridor Project* to “monitor the vital signs” of the ridge and adjacent lands, and to raise public awareness of the importance of the corridor to migrating raptors and other wildlife (Heintzelman 1992a, 1993b). The Center published three installments of the *Kittatinny Raptor Corridor Educational Handbook* during the 1990s.

Educating members of the public who visit Bake Oven Knob

Acknowledgments

I thank Donald S. Heintzelman for extensive help in preparing this manual, and for nearly four decades of dedicated hawk migration research at Bake Oven Knob. I thank Laurie Goodrich and Keith Bildstein of Hawk Mountain Sanctuary for their excellent suggestions and detailed editorial advice. I also thank the many volunteer hawk counters who have made the BOK count possible. Finally, I thank White Christmas Tree Farm for sponsoring this manual.

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Count Team

Two-person teams are assigned whenever possible for each count day. Data recording duties may be shared, or one person can fill out all data sheets for the day. Be sure to print clearly. The two members of the team should coordinate their times on the lookout to achieve maximum hours of coverage. One counter may cover the earliest hour or two with the other counter staying later. On occasions when there are many hawks in the sky at one time, the two should divide the sky to maximize counting effectiveness while insuring that no double counting occurs. Beginning in 1999, a student intern has been a member of the count team, primarily on weekdays.

Sometimes other qualified observers are on the lookout with the official counters. These observers can be assigned duties such as watching a particular area or a particular bird. They may also help counting, as with kettles of Broad-wings. In addition, they may be consulted about puzzling identifications, but the official counters should make final judgment on the identification of any particular bird. *Don't forget that there is an unidentified raptor category -- never hesitate to use it.*

Educational Role of Counters

during autumn is a high priority for the Center. People who learn about raptors and their migrations may become advocates for protection of raptors, their habitats, and the Kittatinny Raptor Corridor. In addition, the Wildlife Center depends heavily on memberships for our operations. Hawk count volunteers can play an important role in outreach to the public by engaging visitors in conversations about the hawk count and raptor migration. These members of the public should be given BOK and WIC brochures and invited to join the Center. A count board can be displayed to stimulate public interest in the count.

While engaging visitors at the lookouts is important, it should never compromise the accuracy and integrity of the count. The count comes first and visitors second. Other WIC hawk count volunteers not acting as official counters can be especially useful in this role of engaging the public. It is very helpful to carry an extra pair of binoculars to share with interested individuals who may become interested in the migration and the Wildlife Center.

Air Temperature (degrees Fahrenheit in a shaded location). The official counter must bring a thermometer to the lookout each day and place it in a shaded location to obtain temperature readings. In the event the observer has a Celsius thermometer, here are some conversions:

Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit
0	32	12	53	24	75
1	34	13	55	25	77
2	36	14	57	26	79
3	37	15	59	27	81
4	39	16	61	28	82
5	41	17	63	29	84
6	43	18	65	30	86
7	45	19	67	31	87
8	47	20	68	32	89
9	48	21	70	33	91
10	50	22	72	34	92
11	52	23	73	35	94

Wind Speed (in miles per hour [mph]). This can be measured with a pocket wind meter or estimated using the scale below:

- 1-3 mph -- smoke drifts slowly in direction of wind
- 4-7 mph -- leaves rustle, breeze felt on face
- 8-12 mph -- small twigs and leaves in constant motion
- 13-18 mph -- smaller branches in motion
- 19-24 mph -- smaller trees with leaves sway
- 25-31 mph -- larger branches in motion
- 32-38 mph -- whole trees in motion
- 39-46 mph -- small branches and twigs breaking off trees
- >47 mph -- get off the mountain!

Wind Direction. Note that wind is recorded as the direction from which the wind is coming. A North wind is blowing from the North to the South. Use a compass to determine directions, or use the following landmarks:

South Lookout

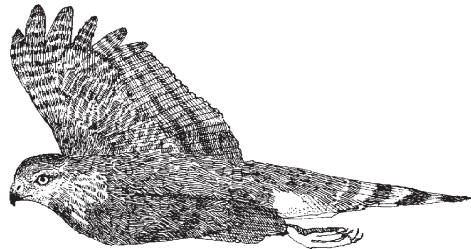
- Slatington -- 10 degrees south of E
- Kittatinny Ridge -- ENE
- Red and White (Checkerboard) Tower -- NE
- Air Strip/Pig Farm -- SE
- PP&L Building -- SE
- Macungie Tank Farm -- SSE

Northwestern High School -- SSW
Carbon County Communication Tower -- NNE

North Lookout

Troxell's Farm (silo) -- 10 degrees E of N
Middle of Slope of #1 -- E
Red and White (Checkerboard) Tower -- NE

Cloud Cover (%). Estimate the percentage of sky obscured by clouds.



Hawks

Data for each hour are tallied on a worksheet, or hand tally counters for each species, then transferred to the Hawk Count Data Sheet (Appendix C) on an hourly basis. Totals are calculated at the end of the day. The following raptors are tallied at Bake Oven Knob:

- Turkey Vulture (*Cathartes aura*)
- Black Vulture (*Coragyps atratus*)
- Osprey (*Pandion haliaetus*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Northern Harrier (*Circus cyaneus*)
- Sharp-shinned Hawk (*Accipiter striatus*)
- Cooper's Hawk (*Accipiter cooperi*)
- Northern Goshawk (*Accipiter gentilis*)
- Red-shouldered Hawk (*Buteo lineatus*)
- Broad-winged Hawk (*Buteo platypterus*)
- Red-tailed Hawk (*Buteo jamaicensis*)
- Rough-legged Hawk (*Buteo lagopus*)
- Golden Eagle (*Aquila chryseatos*)
- American Kestrel (*Falco sparverius*)
- Merlin (*Falco columbarius*)
- Peregrine Falcon (*Falco peregrinus*)
- Accidentals/Rare raptor species
 - Swainson's Hawk (*Buteo swainsonii*)
 - Gyr Falcon (*Falco rusticolus*)

Late in the season, it may be necessary to count Turkey Vultures cumulatively if large numbers of them are streaming past the lookouts, and not returning. This method should be used judiciously. When this method is used, it must be documented on the data sheet, and the maximum daily count should be recorded as well.

NOTE: All data sheets and reports should be returned to the Center within two days via U.S. Mail or hand delivered. Data should be faxed, emailed, or telephoned to the Center the day of the count and followed up with mailing or delivery of the official records.

Scanning Techniques and Optical Equipment

Visual observation is the standard method used in hawk counts at Bake Oven Knob (Heintzelman 1975b, 1979a, 1986). Observers should scan all parts of the sky, being especially careful to check directly overhead, particularly when thermals are forming, or on days with clear blue skies. A bird overhead is far more visible than when it was some distance away (Kerlinger 1989: 209).

In addition to naked-eye scanning, observers should scan with binoculars of 7X to 10X magnification. Scanning with binoculars can be done in a horizontal or vertical pattern that covers an entire area of the sky.

Scanning should not be done with spotting scopes, radar equipment or other devices as that would change the long-standing protocol and corrupt the data. Spotting scopes and higher powered binoculars should be used only for identification of distant birds already detected with the unaided eye or binoculars as described above.

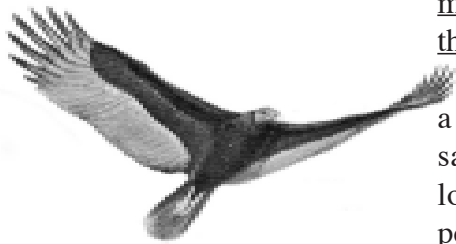
One more note about detecting migrants. Sometimes an eagle or other interesting bird will take several minutes to pass the lookout. Be sure to look away from this "special" bird to scan for other migrants, then return to the bird for more observation. No one knows how many migrants slip past hawk watchers when they are riveted to a spectacular bird! Be careful not to lose the original bird if it has not yet been identified and aged -- coordinate with other members of the count team so someone stays on the original bird while another counter scans for other migrants.

Criteria for Counting Raptors as Migrants

Most raptors seen at Bake Oven Knob appear on the horizon to the northeast and eventually pass the lookout heading southwest. Generally, these birds are migrants. However, especially early in the season, various species (e.g. Red-tailed Hawks and often Sharp-shinned Hawks) sometimes hunt locally and are not migrating. The criterion for counting a raptor as a migrant is that the bird must appear to the north, northeast, or east of the lookout and pass by the lookout or cross the ridge heading south, southwest, or west. (Vultures are an exception to this rule as described below.) Birds that stop short of the lookout and/or roost in the forest are not counted, nor are birds that approach the lookout and return to the north or east. Red-tailed Hawks slowly hunting their way down ridge are not considered migrants.

Counting Vultures

Both Turkey and Black Vultures are seen regularly at the lookouts and determining which are migrants is problematic. Heintzelman (2001b; Heintzelman and MacClay 1972) developed a method for counting vultures that has been used at Bake Oven Knob since the inception of the count. It is extremely important that this method be followed to maintain the consistency of the data base.



Vultures are not counted in a cumulative fashion because the same individuals may pass the lookout several or many times per day. Instead, the maximum number of vultures seen at any one time is recorded. For each hour,

the maximum number seen at one time is recorded. The total count for the day for each of the two vulture species is simply the largest maximum hourly count (or the maximum number seen during that day at one time).

Examples: In one hour, 2 Black Vultures are seen, then later 4, then near the end of the hour, 3 more are sighted. Count for the hour = 4 BV.

In one day, the hourly counts for six hours of observation are

Comments

The following are recorded in the comments section of the Hawk Count Data Sheet:

Special plumages such as dark morphs or albinos or other unusual looking raptors.

Daily totals for:

Ravens

Monarch Butterflies

Great Blue Herons

Canada Geese (record by flock size)

Ruby-throated Hummingbirds

Double-crested Cormorants (record by flock size)

Any other migratory species seen (Heintzelman and

Armentano 1965; Heintzelman 1969, 1982c, 1984b)

Age/Sex Data Sheet

Whenever possible, ages and sex of raptors are identified and tallied on the Age/Sex Data Sheet (Appendix E). Tally marks are used throughout the day with totals written in the rectangular boxes for each species. In addition, times of passage of Bald and Golden Eagles, Peregrine Falcons, and Rough-legged Hawks are recorded on this sheet. The Age/Sex Data Sheet shown in Appendix D was used from 1961 through 2000. The sheet in Appendix E was field tested and used in part in 2001 and will be used exclusively beginning in 2002.

Field Notes Observations

Each year we publish a number of “Short Field Notes” from observations made at Bake Oven Knob during the autumn hawk count in *American Hawkwatcher*. These are natural history observations that involve raptors. (Non-raptor observations should also be reported and may be included in the “Wildlife Notes” section of *Wildlife Activist*.) Take photographs or videotape when possible, and record notes on the observation (draw sketches where appropriate) immediately after the incident occurs. Upon arriving home, type the entry as soon as possible (seeking help for references from the Wildlife Center library if needed). Submit the entry to the Center office as soon as possible. Hand written accounts are acceptable, however emailed accounts (in

body of message or as a Microsoft Word or Appleworks attachment) are preferred. The editor will decide whether or not to include the account and reserves the right to edit the entry. The editor may also suggest references to the observer.

Rare Species Report

In the event that a locally rare bird is seen on the Lookouts or trails at Bake Oven Knob, it is important to document the sighting carefully. If you are fortunate enough to be able to document the bird with a photograph or videotape, a copy should be submitted to the Wildlife Center with your written report. Extralimital raptor species that have been seen at Bake Oven Knob include Swainson's Hawk and Gyrfalcon. Non-raptor birds might include seabirds and wading birds moved out of their normal range by hurricanes, or vagrant mid-western or western migrants such as Sandhill Cranes and Yellow-headed Blackbirds (Heintzelman 1969, 1984b).

To document an unusual bird, first watch the bird as long as possible and note as many field marks and behaviors as possible. Next, record observation notes immediately after observing the bird, before looking at guides. Finally, consult field guides to positively identify the species. If it cannot be positively identified, report the sighting as possible or probable. Record the following information:

Species

Number seen

Date, time, and weather conditions

Equipment used and length of sighting

Location of sighting (as precise as possible -- start with state and county)

Habitat

Description (include size, plumage, field marks, voice, etc.)

Behavior

Explanation of your identification call and identification skills

Additional observers

Photograph or video taken

Your name, address, phone, email

Identification Criteria for Raptors

Identification criteria for raptors seen at Bake Oven Knob are set forth in *A Guide to Hawk Watching in North America* (Heintzelman 1979a). Later works that may help clarify observations include:

The Mountain and the Migration (Brett 1991)

Hawks in Flight (Dunne, et al, 1988)

A Photographic Guide to North American Raptors (Wheeler and Clark 1995)

A Field Guide to Hawks: North America (Clark and Wheeler 2001)

Counters are encouraged to read current hawk identification articles and review the published ID criteria each autumn.

Counting Techniques

Counting Raptors

In most cases, raptors tend to pass the lookouts individually or in small groups. These are easily tallied on a hand counter, or a worksheet, for later transfer to the official data sheets. Sometimes a counter is lucky enough to witness large or multiple kettles (flocks) of Broad-winged Hawks (Bildstein 1999).

In the case of a single kettle, the observer may simply watch until the birds begin gliding out of the top of the kettle, then click off birds individually as they leave the thermal. If birds leaving a kettle overlap an hour change, a second hand tally counter can be used for the second hour. Sometimes a kettle drifts out of view or rises so high the observer can no longer see them. Therefore, it is valuable for the observer to have estimated the approximate number of birds in the kettle. Practice doing this, then click off the birds when they leave visibly from kettles to gain experience in estimating numbers. Be conservative when recording estimates -- do not overestimate.

In the event that multiple kettles appear simultaneously, counters and other qualified volunteers should carefully share responsibility for counting different kettles with numbers added together. Avoid counting out loud as it may confuse other counters.

