

THE 1973 AND 1974 AUTUMN
HAWK COUNTS AT BAKE OVEN KNOB, PENNSYLVANIA

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INTRODUCTION

The 1973 autumn hawk count at Bake Oven Knob, Lehigh County, Pennsylvania, began on 4 August and ended on 7 December, with 89 days of observation being achieved between those dates. The season's count was 17,100 diurnal raptors. Table one summarizes the species counts by month whereas tables three through six provide the daily species counts. In 1974, 87 days of observation were achieved beginning on 10 August and ending on 29 November. The season's count was 22,441 raptors—the highest ever recorded at Bake Oven Knob. Broad-winged Hawks represented more than one-half of this total. Table two summarizes the species counts by month whereas tables seven through ten present the daily species counts.

BLACK VULTURE

At 1415 hours on 27 September 1974, Fred Mears observed a Black Vulture from the South Lookout. This is the first record for this species for Bake Oven Knob although Black Vultures have appeared during recent years downridge at nearby Hawk Mountain Sanctuary.

GOSHAWK ECHO FLIGHT

Of considerable interest in 1973 was a strong Goshawk echo flight following the spectacular 1972 Goshawk invasion (see Heintzelman and MacClay, 1973). Ages were determined for 99 of the 244 Goshawks seen. Of these, 35 birds (35.4 percent) were immature whereas 64 (64.6 percent) were adult. The 1973 flight therefore seemed to contain somewhat more immature birds than occurred in the 1972 invasion. In 1974, however, Goshawk counts returned to more normal numbers.

SHARP-SHINNED HAWK

In 1973, and particularly in 1974, Sharp-shin counts increased considerably over previous years. The count of 648 on 6 October 1974 was particularly outstanding, for example, and several smaller daily counts were also of interest. The reason for these higher counts is unknown but reduced use of hard pesticides in the environment might be a possible factor.

BROAD-WINGED HAWK

Although the 1973 Broad-wing count was more or less average, 1974's count was spectacular—the highest on record for the Knob. The bulk of the birds passed during the five day period between 15 and 19 September, with the season's peak count (5,552 birds) occurring on 17 September. Vast numbers of Broad-wings also were observed at many other eastern hawk lookouts during September of 1974 suggesting a high overall population for the species.

TABLE 1
BAKE OVEN KNOB
1973 AUTUMN HAWK COUNT

Species	Aug.	Sept.	Oct.	Nov.	Dec.*	Total
Turkey Vulture (<i>Cathartes aura</i>)	113	211	124	16	1	465
Goshawk (<i>Accipiter gentilis</i>)	0	13	41	184	6	244
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	2	517	2805	44	0	3368
Cooper's Hawk (<i>Accipiter cooperii</i>)	1	23	70	5	0	99
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	9	101	869	1801	12	2792
Red-shouldered Hawk (<i>Buteo lineatus</i>)	0	5	153	112	1	271
Broad-winged Hawk (<i>Buteo platypterus</i>)	45	8624	10	0	0	8679
Rough-legged Hawk (<i>Buteo lagopus</i>)	0	2	3	7	0	12
Golden Eagle (<i>Aquila chrysaetos</i>)	0	0	14	30	1	45
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	5	16	1	1	0	23
Marsh Hawk (<i>Circus cyaneus</i>)	5	59	150	91	0	305
Osprey (<i>Pandion haliaetus</i>)	17	307	74	1	0	399
Peregrine Falcon (<i>Falco peregrinus</i>)	0	0	5	0	0	5
Merlin (<i>Falco columbarius</i>)	0	0	18	0	0	18
American Kestrel (<i>Falco sparverius</i>)	20	71	110	0	0	201
Unidentified Hawks	4	29	102	38	1	174
Total	221	9978	4549	2330	22	17,100
No. Observation Days	11	26	30	20	2	89

* Dec. 1; NW at 8-20 MPH.
Dec. 7; NW at 0-15 MPH.

TABLE 2
BAKE OVEN KNOB
1974 AUTUMN HAWK COUNT

Species	Aug.	Sept.	Oct.	Nov.	Total
Turkey Vulture (<i>Cathartes aura</i>)	48	161	86	0	295
Black Vulture (<i>Coragyps atratus</i>)	0	1	0	0	1
Goshawk (<i>Accipiter gentilis</i>)	0	14	49	30	93
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	1	1282	2655	50	3988
Cooper's Hawk (<i>Accipiter cooperii</i>)	0	35	46	2	83
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	3	117	1351	1666	3137
Red-shouldered Hawk (<i>Buteo lineatus</i>)	0	10	168	68	246
Broad-winged Hawk (<i>Buteo platypterus</i>)	22	13,591	25	0	13,638
Rough-legged Hawk (<i>Buteo lagopus</i>)	0	1	11	5	17
Golden Eagle (<i>Aquila chrysaetos</i>)	0	0	12	10	22
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	0	9	1	1	11
Marsh Hawk (<i>Circus cyaneus</i>)	1	75	191	32	299
Osprey (<i>Pandion haliaetus</i>)	3	167	53	0	223
Peregrine Falcon (<i>Falco peregrinus</i>)	0	2	5	0	7
Merlin (<i>Falco columbarius</i>)	0	1	4	0	5
American Kestrel (<i>Falco sparverius</i>)	6	143	59	0	208
Unidentified Hawks	1	64	75	28	168
Total	85	15,673	4791	1892	22,441
No. Observation Days	10	29	24	24	87

TABLE 3
BAKE OVEN KNOB HAWK COUNT
AUGUST 1973

A U C	WEATHER Wind Speed	Turkey Vulture	Gos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS
4	NW 0-5	8						1			1							10
5	NW 0-7	6				1		1								2		10
6	No coverage																	
17																		
18	E 3-7	4				1		6									1	12
19	No coverage																	
20																		
21	E 5-25	17			1			4			2					2	1	27
22	NW 0-30	7						6								3	1	17
23	Var. 0-10	20						2								1		23
24	S 0-5	3														1		4
25	W 0-5	20				3		8			2	1	4			1		28
26	W 2-8	6		1		3		8			2	2	3			1		24
27	No coverage																	
28	NW 5-25	16		1		1		5				1	6			9	1	40
29	No coverage																	
30	WNW 5-7	6						4				1	4			1		16
	TOTALS	113	0	2	1	9	0	45	0	0	5	5	17	0	0	20	4	221

TABLE 4
BAKE OVEN KNOB HAWK COUNT
SEPTEMBER 1973

S E P T	WEATHER Wind Speed	Turkey Vulture	Cos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Owls	Peri- orine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS	
1	No data	8						3			1					2		9	
2	N 1-10	9		1		1										3		17	
3	N 0-8	4		1		1		1								3		10	
4	Var. 0-5	4														1		6	
5	No coverage																		
6	W 2-10	7	1		1	4		11				1				9	2	47	
7	W 3-20	6		2		3		18			5	5	11			4	3	62	
8	W 0-10	31	1	2		4		133	2		2	2	16			4	2	186	
9	W 3-8	18	1			5		852			2	3	8			2	1	887	
10	W 5-15	10	1	1		1		419			1	5	6			2	1	450	
11	NW 6-15	5	1	6		6		146			1	2	8			10	1	179	
12	W 0-3	9		6		3		1247			1	1	9			2	1	1279	
13	W 2-10	21		11		2		201			1	7	6			1		250	
14	NW 4-12	9		23		11		169			1	3	30			8	2	256	
15	ENE 5-18	8	1	8	3	2		794			1	4	36			1		857	
16	NW 0-10	2		7		1		338			1	2	17			1		368	
17	Var. 0-5	4	1	8	1	5		2514			1	1	3			2		2561	
18	SW 0-10	4		24		5		782			1	3	14			3	1	837	
19	E 1-3	6	1	7	1	4		516			1	6	6			1		563	
20	SE 3-15	10		27	2	12		40			1	16	8			12		76	
21	NW 3-15	10		142	2	311		311			1	1	3			3		506	
22	U 0-1	9		4	1	1						1						22	
23	No coverage	4		37	3	4		61				9	43				2	163	
24	SE 0-10	6		72	2	2	1	11			1	5	37				4	140	
25	NW 2-6	4	6	14	4	11	3	34					10			1	3	90	
26	No coverage																		
27	Var. 0-10	12	13	120	5	13	1	22	2	0	16	59	307	0	0	71	6	9978	
28	TOTALS	211	13	517	23	101	5	8624	2	0	16	59	307	0	0	71	29	9978	

TABLE 5
BAKE OVEN KNOB HAWK COUNT
OCTOBER 1973

O C T	WEATHER Wind Speed	Turkey Vulture	Cos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS		
1	SF 3-15	3		124	3	7	1	3					4			6	2	161		
2	Rain	4		20	1	3						1	2		1			32		
3	SM 0-3	4		64	6	7	1					1	3		1	6	1	118		
4	W 2-6	7		297	10	18	1	2				1	5		2	41	2	390		
5	NW 0-25	5		43	6	1						1	1		1		5	62		
6	NW 0-10	2		278	3	13	3	1				13	21		1	3	6	360		
7	F 4-12	14	1	45	2	9	3					7	9		1	1	9	110		
8	SF 0-3	8	2	87	2	3						6	6		1		5	116		
9	Var. 0-2	6	4	47	2	43	17		1			1	5		11		5	144		
10	NW 4-14	13		51	1	18	12					3	1		1		7	144		
11	NW 0-10	8	1	137	1	19	2					1	1				1	171		
12	ESH 2-8	8	1	124	1	23	1					1	1				1	169		
13	SM 0-15	6	1	216	6	22	4			1		12	3		2		3	291		
14	NW 5-20	5	2	58	6	22	4					3	4		4	19	3	472		
15	NW 4-12	4	2	283	8	57	6	1				5	2		1	1	2	390		
16	W 5-20	3	2	282	9	43	7			5		12	2		2	11	12	390		
17	NW 3-13	2	3	197	4	107	15	2	1	2	1	8	2		1		7	352		
18	NW 0-2			53		6	4					1					10	74		
19	NW 0-10	1		53		17	8					1	1				10	91		
20	Var. 0-15	4	3	123	1	72	7			2		12	4			3	2	235		
21	NW 0-13	2	2	11	3	32	25			1		2	2		1		10	91		
22	No coverage																			
23	Var. 3-12	4	4	82	1	67	13					16	1				3	191		
24	Var. 2-12	2		8		5	3					2				1	1	22		
25	Var. 0-5	2	1	1	1	9	7										1	22		
26	NW 0-5	2	1	3	1	13			1								1	22		
27	W No data	1	1	10	1	109	8			1		1				3	1	152		
28	F 10-30	3	5	1	1	114	5					14	1		1		5	149		
29	Rain	1				1												3		
30	SE 1-8	4	1	11		29				2		1						47		
31	Var. 1-5																			
	TOTALS	124	41	2805	70	869	153	10	3	14	1	150	74	5	18	110	102	4549		

TABLE 6
BAKE OVEN KNOB HAWK COUNT
NOVEMBER 1973

N O V	WEATHER Wind Speed	Turkey Vulture	Cos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer- Kestrel	Unid- Hawks	TOTALS	
1	Var. 5-20					5												5	
2	SW 0-15	5	2	22		65	8			3		15					2	142	
3	W 3-25		13	7	2	29	6			1		12					4	291	
4	No data		29	3		22	32		1	1		8					4	301	
5	NW 0-15		6	1		23	20		1	2		4					1	270	
6	N 5-15		18	2		207	3		1	10		3					6	250	
7	NW 5-15		14	1		144	5			5		2					1	172	
8	SE 3-10	1	4	1	1	16	4			1		6					3	73	
9	NW 0-15		15	2	1	83	3			2		6					5	114	
10	NW 3-15		18		1	232	7			3		1	1				2	267	
11	WNW 3-10		7	1	1	23	1					1					2	37	
12-14	No coverage																		
15	SW 0-8		6			28	1					2					9	49	
16	NW 3-30	3	7			36	1					1					2	45	
17	W No data	5	18			97	3					5					2	130	
18	S 0-2		1			13	4			1		20					1	40	
19	NW 6-25		15			56	10					7					2	91	
20-21	No coverage																		
22	NW 4-10		5	2		22	2				1	3						36	
23	Var. 0-5	2	4	1		18	2					1						28	
24	Rain																		
25-29	No coverage																		
30	W 2-15		2			33	2			1		1						39	
TOTALS		16	184	44	5	1801	112	0	7	30	1	91	1	0	0	0	38	2330	

TABLE 7
BAKE OVEN KNOB HAWK COUNT
AUGUST 1974

A U G	WEATHER Wind Speed	Turkey Vulture	Cos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS
10	E 3-8	6						1								1		8
11	SE 3-7	3														1		4
12-14	No coverage	8				1		3										12
16-17	No coverage	13		1		1		11								1	1*	28
19-23	No coverage	1																1
24	SW 1-7	5				1		3								2		11
25	E 6-11	7						1										1
27-28	No coverage	1						2										9
29	Var. 0-7	4						1				1	3			1		10
30	Var. 0-10																	
31	SW 0-10			1	0	3	0	22	0	0	0	1	3	0	0	6	1	85
	TOTALS	48	0	1	0	3	0	22	0	0	0	1	3	0	0	6	1	85

* Unidentified Eagle

TABLE 8
BAKE OVEN KNOB HAWK COUNT
SEPTEMBER 1974

S E P T	WEATHER Wind Speed	Turkey Vulture	Gos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Mareh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS
1	Var. 0-15	7		1		4	1	20			1	1	4			3		42
2	NNW 10-20	2		1		1		4				1	1			4		14
3	Rain																	
4	NNW 5-20	3		2		1		15			3		4			2		30
5	Var. 0-5	3				2		3								1		9
6	No coverage																	
7	Rain																	
8	Var. 2-8	9	1	8		8		136				1	6			2	1	172
9	Var. 0-3	6						26			4	1	4			4	4	41
10	W 0-2	5		4		4		26			2		2			1	303	
11	S 0-5	6		3		3		258			4	4	3			7	1	246
12	S-SSW 0-5	20		3		3		44		1	1	2	4			6	6	113
13	Var. 0-5	6		10		1		21			2	4	3			3	1	60
14	NW 3-20	10		13		7		202		2	2	4	18			32	3	291
15	NNW 0-3	8		7		7		1234			1	3	16			16	15	1794
16	NW 0-8	6		16		1		582		1	1	3	26			19	2	642
17	SW 0-4	7		22		12	1	552				10	26			26	4	5634
18	NW 3-10	2		40		15		2367			5	8	13			13	4	2438
19	E-SE 3-8	5	5	40		9		2196			9	9	15			5	2	2237
20	SW 0-5	8		28		3		126				2	4			4	2	175
21	Rain																	
22	NW 0-10	6		34		1		222			1	3	9			9	2	290
23	NW 8-20	2	7	20		19	6	71				1	8			6	9	152
24	SE 5-12	3		8				1								1	1	14
25	SW 0-15	6		88		4		113				7	3			1	1	252
26	W 0-5	5		115		1		8				2	2			1	7	122
27	SW-S 0-15	23		316		3		111				7	16			1	3	481
28	Rain																	
29	Rain																	
30	W 12-15	3	1	503		8	2	1	1	0	9	4	7			28	64	579
	TOTALS	161	14	1282	35	117	10	13591	1	0	9	75	167	2	1	143	64	15673*

* Includes 1 Black Vulture

TABLE 10
BAKE OVEN KNOB HAWK COUNT
NOVEMBER 1974

N O V	WEATHER Wind Speed	Turkey Vulture	Cos- hawk	Sharp- shinned Hawk	Coop- er's Hawk	Red- tailed Hawk	Red- should- ered Hawk	Broad- winged Hawk	Rough- legged Hawk	Golden Eagle	Bald Eagle	Marsh Hawk	Osprey	Pere- grine Falcon	Merlin	Amer. Kestrel	Unid. Hawks	TOTALS
1	F-NW 0-15		1	9		11	3			1		8					1	33
2	WSW Light			11		37	11			1							2	63
3	Var. 0-6			2		34	5			1		4						46
4	N 2-8																	
5	Rain			13		95	4			2		4					9	127
6	N 2-15			1		71	3					1						76
7	NW 5-20			3	1	358	2			2		4					3	375
8	NW 5-25		2			245	12					2						270
9	NW 8-25		10	1		25	12			1								39
10	SE 0-12			1														
11	No Coverage																	
12	Rain																	
13	NW 5-10					14												14
14	SW 0-15			1		8						4						9
15	H 0-10		1	4	1	48	6		1	1		4					6	54
16	NW 5-15		4	3		127	1					3					6	152
17	S-NW 4-20					95	1										6	105
18	H 4-15					5											5	5
19	S 0-10			1		53	2										1	57
20	Rain																	
21	No coverage																	
22	NW 5-30		7			328	3		3	1		2						344
23	No coverage																	
24	S-SW 4-15		2			34												36
25	Rain & Snow																	
26	No coverage																	
27	No coverage																	
28	NW 8-15					29												29
29	NW 2-15		3			49	4		1		1							58
30	No coverage																	
	TOTALS	0	30	50	2	1666	68	0	5	10	1	32	0	0	0	0	28	1892

EAGLES

Eagles always are spectacular components of the raptor flights passing Bake Oven Knob, and intensive efforts again were made to determine the approximate ages of Golden Eagles and Bald Eagles.

Of the 45 Golden Eagles counted in 1973, 19 (42.2 percent) were immature or subadult whereas 26 (57.8 percent) were adult. These data compare favorably with Golden Eagle age ratios reported from Bake Oven Knob in the past (see Heintzelman and MacClay, 1972, 1973). The Bald Eagle count, however, reflected the endangered status of this species south of Alaska. Of 23 birds seen, 6 (26.2 percent) were immature and 17 (73.8 percent) were adult.

In contrast to 1973, the eagle counts at Bake Oven Knob in 1974 dropped markedly. Only 22 Golden Eagles were seen of which 8 (36.3 percent) were adult and 14 (63.7 percent) were subadult or immature. Of the 11 Bald Eagles counted in 1974, 8 (72.7 percent) were adult and 3 (27.3 percent) were subadult or immature. Thus the age ratios of Bald Eagles passing the Knob clearly are markedly less favorable than are our Golden Eagle age ratio data.

It is important to remember, however, that no single lookout along the Kittatinny Ridge records all of the eagles of either species migrating through the region. In fact, as demonstrated in *Autumn Hawk Flights* (Heintzelman, 1975), substantially more eagles migrate through eastern Pennsylvania than are included either in the Bake Oven Knob or the Hawk Mountain counts. Frey (1940) previously demonstrated that a similar phenomenon also occurs along the Kittatinny Ridge west of the Susquehanna River.

PEREGRINE FALCON

The Peregrine Falcon continued to appear at the Knob in 1973 in meager numbers even when one considers that the Kittatinny Ridge is not a major falcon flyway. Only 5 Peregrines were seen. Three were adult birds; ages, unfortunately, could not be determined for the others. In 1974, we counted 7 Peregrines of which 4 were adult birds, 2 were immature, and 1 could not be aged.

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LITERATURE CITED

Frey, E. S.

1940 Hawk Notes from Sterrett's Gap, Pennsylvania. *Auk*, 57: 247-250.

Heintzelman, D. S.

1975 Autumn Hawk Flights: The Migrations in Eastern North America. Rutgers University Press, New Brunswick, N. J.

Heintzelman, D. S. and R. 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.

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AMERICAN ORNITHOLOGISTS' UNION MEETING

The annual meeting of the American Ornithologists' Union is to be held in 1976 at Haverford College from August 9 through August 13. The Delaware Valley Ornithological Club is pleased to act as co-host.

The A.O.U. last met in Philadelphia in 1942. The 1976 meeting will be the eleventh in Pennsylvania.