

SOME OBSERVATIONS ON THE HAWK MIGRATION AT DERBY HILL

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The tendency for hawks to follow certain flyways during their migration has been known for some time. Many of the earliest discoveries and studies of migration flyways in North America occurred along the Atlantic Coast or along near-by mountain ridges at such places as the southern shore of Connecticut (Trowbridge, 1895), Fisher's Island, New York (Ferguson and Ferguson, 1922), Cape May, New Jersey (Allen and Peterson, 1936), and Hawk Mountain, Pennsylvania (Poole, 1934). Similar discoveries soon followed at such places as Point Pelee, Ontario; Cedar Grove, Wisconsin; Duluth, Minnesota; Detroit, Michigan; Hawk Cliff (near Port Stanley, Ontario); Toronto, Ontario; the mountains of Tennessee; and along the southern shores of Lake Superior and Lake Ontario.

The majority of these locations are observation points for fall hawk migrations. The exceptions are Cedar Grove, Duluth, and along the southern shores of Lake Ontario and Lake Superior. The spring movements of hawks at Cedar Grove and Duluth are small in comparison to the flights there in the fall (personal communication). The movement along the southern shore of Lake Ontario is the largest known spring movement of hawks north of Central America (little information is available on the spring flyway along Lake Superior).

Eaton (1904) was among the first to indicate the possibility of a major hawk migration route along the southern shore of Lake Ontario, especially in the Rochester area. He states:

"First regarding the yearly migration of hawks, it has been confirmed that an incredible number of these birds pass each spring along the southern shore of Lake Ontario, and move toward the east over the country south of the lake, evidently making their way around its eastern end, toward the north. The height of the migration occurs during the latter part of April and the first week in May. The birds are mostly Sharp-shinned and Broad-winged Hawks. A sprinkling of Marsh and Pigeon Hawks is always present, but surprisingly few of the Cooper's Hawk when its general abundance in many parts of the State is considered. It also seems unusual, at a time when Red-tailed and Red-shouldered Hawks are nesting in western New York, to see many of these species also, soaring high in the air and wheeling toward the east."

Aware of Eaton's observations and the existence of locations for observing the hawk flight further west, in 1955 F. G. Scheider and H. Van

Beurden located a point for observing this migration on the southeastern corner of the lake. This location is known as Derby Hill.

Realizing the value of Derby Hill as a study area for this migration, and that the area was rapidly being lost, as summer homes and cottages were constructed, in 1964 Syracuse University, in conjunction with the Nature Conservancy, purchased much of the remaining land on the hill as well as a wooded area lying to the east of the hill.

Derby Hill is a ridge which extends southward from the corner of the lake in a direction slightly east of south. The northern end of the ridge is a bluff which overlooks the southeastern corner of the lake as well as the surrounding lowlands to the west and east. The view to the south along the crest of the hill is moderately good, but a series of hedgerows sometimes obstructs the view of low-flying birds.

Birds approach Derby Hill from the west and are usually first observed as they loft over a low ridge which parallels Derby Hill but which is lower and does not extend to the lake (see Fig. 1). West of this second ridge the lake plain stretches unbroken for many miles; therefore, approaching birds do not have to rise to fly over hills until they encounter the ridge west of Derby. Hawks frequently pause in this area and soar to gain altitude. For this reason they are often in sight for several minutes before they actually pass over Derby Hill.

Although Derby Hill is especially well known for its hawk flights, many other birds also migrate along the shore in this area. Large numbers of Icterids, Swallows, Crows, Blue Jays, Robins, White-breasted Nuthatches, Black-capped Chickadees, Yellow-shafted Flickers and Starlings (as well as other species in lesser numbers) are seen during the spring migration period.

Hawks advancing as a wave from the southwest to the northeast, through Ohio, Pennsylvania and Western New York, encounter the southern shore of Lake Erie and the western part of Lake Ontario which form somewhat of a natural barrier to these birds for they are reluctant to cross large bodies of water where air currents are usually unfavorable. Instead they move easterly along the southern shores of these lakes. As this flight continues eastward, the number of migrants increases as additional birds moving northward through Central New York encounter Lake Ontario and join the flight. The advantage of observing the hawk flight at Derby Hill is therefore obvious, for here at the eastern end of the southern shore the number of migrants is greatest.

The hawk migration at Derby Hill was studied by the author during the springs of 1963 and 1964. The following discussions are based mainly on data obtained during those periods. Less intensive observations were made in 1965, but since they were not made by the author, these observations are not considered in the discussion below. However, data from all three years are included in the table at the end of this paper.

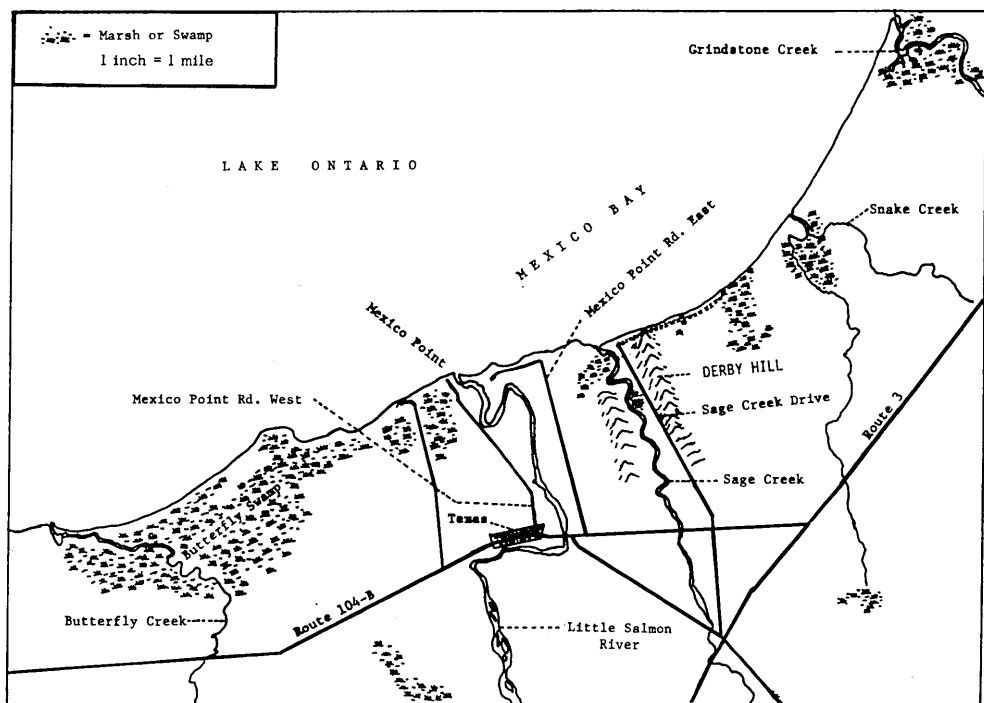


FIGURE 1

Map of the Derby Hill area. Notice the location of Derby Hill near the corner of the lake, the hill paralleling Derby Hill to the west, and the lack of any other hills along the lake shore in the area. (See text). (Redrawn from U. S. Geological Survey topographic map).

Observations were made on forty-five days in 1963, mainly on Tuesdays, Thursdays, Saturdays, and Sundays between March 7 and May 14. In 1964 observations were made on sixty-six days between February 25 and May 15, and, once the hawks began to migrate, the only days not covered were those on which inclement weather conditions, such as snow, rain, or high adverse winds, probably prevented the hawks from flying. Notes were kept not only on the species composing the flights, but also on the characteristic patterns of flight exhibited by different birds, direction and speed of wind, temperature, cloud cover, and barometric pressure.

This paper considers the characteristic patterns of flight employed by various species and discusses some aspects of their behavior during migration. Tables giving the actual counts of hawks made during 1963,

1964, and 1965 are also included. The times of migration and effects of the various weather phenomena on the migration will be considered elsewhere (*Wilson Bulletin*, in Press).

Falconiformes of 16 different species were observed during the study. Listed in order, starting with the species occurring in greatest numbers, they were: Broad-winged Hawk (*Buteo platypterus*), Sharp-shinned Hawk (*Accipiter striatus*), Red-tailed Hawk (*Buteo jamaicensis*), Red-shouldered Hawk (*Buteo lineatus*), American Kestrel (*Falco sparverius*), Harrier (*Circus cyaneus*), Rough-legged Hawk (*Buteo lagopus*), Osprey (*Pandion haliaetus*), Cooper's Hawk (*Accipiter cooperii*), Goshawk (*Accipiter gentilis*), Turkey Vulture (*Cathartes aura*), Merlin (*Falco columbarius*), Bald Eagle (*Haliaeetus leucocephalus*), Golden Eagle (*Aquila chrysaetos*), Peregrine (*Falco peregrinus*), and Gyrfalcon (*Falco rusticolus*).

The migration at Derby Hill begins with Red-tailed Hawks, Red-shouldered Hawks, and Goshawks in early March and is essentially over by the end of May when occasionally a few immature Broad-winged Hawks may still pass.

Characteristic Types of Flight During Spring Migration

Accipitrine Hawks (Goshawk, Cooper's Hawk, and Sharp-shinned Hawk) usually are thought to employ a flight style consisting of several flaps followed by a short glide. This type of flight is usually utilized by these birds as they migrate around the corner of the lake. Frequently they fly very low. When moderate southerly winds tend to push them toward the lake, the Accipiters often fly over the hill only a few feet (and sometimes less than a foot) above the grass.

Although they generally employ a flapping flight, Accipiters are not uncommonly observed soaring on rising currents of air much the same as Buteos. This is especially true in April and May on days when surface winds are relatively light and the earth's surface is warmed sufficiently by the sun to create thermal activity. On such days the flapping flight of the hawks in the morning migration is abandoned as the ground warms. Individuals are observed soaring and occasionally flapping while circling over the woods to the west and ascending on rising air. Sometimes after gaining sufficient altitude, they may begin a more typical flapping flight along the shore of the lake, gradually descending, until another thermal can be found and utilized.

At times Goshawks (and occasionally Cooper's Hawks) may employ a steady "pumping" flight with deep wing beats. This type of flight has usually been observed late in the afternoon or when the daily migration was about over. It almost seems as if these birds are anxious to migrate as far as possible before they are forced to stop for the night.

Falcons are usually more direct in their flight as they approach from the west. Steadily flapping, they follow the shore rather closely and deviate little from this flight path even when northerly winds tend to push other species inland. Sometimes, however, Falcons move out over the lake as they approach the corner, more or less taking a short cut rather than following the slightly longer route along the beach. Occasionally Rough-legged Hawks also take this short cut over the corner of the lake.

Buteos, Ospreys, Eagles, Harriers, and Vultures are all more dependent on soaring during migration than are Falcons and Accipiters. At times they have been observed to fly over a mile without ever flapping their wings as they appear in the west, pass over the hill, and disappear in the east. However in March or at other times early in the day when the ground is still cold and there are few rising air currents, these "soaring birds" have all been observed to flap rather steadily as they fly along the shore of the lake. This flapping flight is especially prominent in Red-shouldered Hawks, which migrate in large numbers during the latter half of March when snow frequently still covers the ground. During days when much flapping flight is required, it is not uncommon to observe Red-shouldered Hawks and Red-tailed Hawks landing in trees for short lengths of time before continuing their flight.

With winds from a southerly direction, Harriers frequently turn south and fly along the ridge which parallels Derby Hill to the west. At such times they are flying into the wind but seem to be utilizing updrafts which are created along this ridge by the wind. After flying a mile or so inland, they may allow themselves to drift with the wind, thus moving in a northeasterly direction toward the corner of the lake. In general, Harriers seem to be weaker flying birds than the other species and more often take advantage of air currents created by topographical features.

Buteos have frequently been observed to use a gliding flight, either exclusively or in combination with soaring and flapping. After gaining altitude on a rising air current they often glide in an easterly direction, sometimes with wings partially folded, until again beginning to soar on another rising mass of air.

Cold fronts advancing rapidly from the west sometimes create conditions which enable Buteos to partially fold their wings and glide as they are pushed toward the east by strong westerly winds in back of the front while at the same time being held aloft by rising air currents in the warm air immediately in advance of the front. Large numbers of hawks frequently fly in this narrow zone of "push and lift", all of them, of course, being at the same altitude and gliding in the same way, much as a group of surf board specialists ride an advancing ocean wave. Only soaring species of hawks such as Buteos have been observed to glide in front of a cold front in this way.

Gregarious Behavior in Migrating Hawks

It is generally known that Broad-winged Hawks tend to be gregarious during migration, to migrate in flocks sometimes numbering several hundred individuals. This behavior among other hawks is not so obvious. Nevertheless, at Derby Hill it has been noted that whenever a Sharp-shinned Hawk is seen approaching the hill, careful observation often reveals several other hawks of this species approaching. Unlike the Broad-winged Hawks, which are usually closely grouped, Sharp-shinned Hawks tend to spread out laterally so as to all pass over the hill at about the same time but at various distances from the lake. Three to six birds most commonly are involved in these groups. The distance separating individuals varies considerably, but probably averages between 50 and 100 feet.

Other species of hawks also exhibit some evidence of gregarious behavior during migration. This seems to be true of Kestrels, but to a lesser extent than with Sharp-shinned Hawks. Among soaring species, in addition to Broad-winged Hawks, Turkey Vultures are also gregarious. There also seems to be a tendency for Eagles to associate together during migration. Several times when two or three Eagles were observed in one day, all appeared within a minute or two of each other. These birds need not be of the same species; there may be any combination of Bald Eagles and Golden Eagles, either immature or adult. When an Eagle is observed during migration it is always a good idea to search quickly in other directions, for often another Eagle may be passing a few hundred feet away. Other soaring hawks seem to exhibit gregariousness, but further investigation is needed for the more important factor here may be a favorable air current which several hawks have found individually, and therefore they may be associated together simply as a matter of convenience. As many as six different species of hawks have been observed soaring together on a favorable air current. Such a group may be composed of any combination of the commoner hawks which migrate past the hill.

In contrast to soaring flight which enables Falcons, Accipiters, and typically soaring species to fly together, flapping flight tends to limit association of different hawks during migration. Thus, although Cooper's Hawks may be observed flying with Sharp-shinned Hawks, and Red-shouldered Hawks flying with Red-tailed Hawks, Sharp-shinned Hawks and Cooper's Hawks do not associate with Red-tailed Hawks and Red-shouldered Hawks when flapping flight is being utilized to migrate. The explanation is obvious, for under such conditions Accipiters and Buteos travel at different speeds and Buteos often pause to soar briefly between periods of flapping.

Although there is considerable interspecific and intraspecific association during migration, little aggressive behavior has been observed among migrating hawks. Apparently territoriality is either weakly developed at this time or is largely suppressed by the migratory urge. Occasionally

hawks of the same species or hawks of different species have been observed to stop in the same tree. At such times these birds seem largely to ignore each other.

Summary

In summary, observations made during the springs of 1963 and 1964 enable certain conclusions to be drawn regarding the behavior of hawks during migration:

(1) Although certain species of hawks generally seem to employ a particular type of flight, during migration both soaring and flapping flight are at times used by all species. Accipiters and Falcons depend more on flapping flight while other species more often are observed soaring.

(2) Gliding flight is sometimes used by soaring species, especially Buteos. This type of flight is observed most frequently as hawks move from one thermal to another or when hawks are riding the leading edge of a cold front.

(3) Broad-winged Hawks, Turkey Vultures, and Sharp-shinned Hawks are intraspecifically gregarious during migration. Eagles show obvious gregariousness which may be intraspecific or interspecific. Although other species show signs of intraspecific gregariousness, additional investigation is needed before definite conclusions can be reached.

(4) All common species of hawks have at times been observed to show interspecific association while using soaring flight to migrate. To what extent this is gregarious behavior is not known. It may largely be a matter of convenience, wherein many hawks utilize a particularly favorable air current. Flapping flight limits the interspecific association of some species, probably chiefly because of different speeds of forward movement.

(5) Hawks show little aggressive behavior during spring migration.

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TABLE I
HAWK COUNTS AT DERBY HILL IN 1963, 1964, and 1965

Symbols:	Totals:		
	1963	1964	1965
C — Cooper's Hawk.....	116	133	70
SS — Sharp-shinned Hawk.....	1,335	2,289	1,409
G — Goshawk.....	81	53	42
P — Peregrine.....	0	4	4
M — Merlin.....	3	19	5
K — Kestrel.....	226	511	165
O — Osprey.....	53	224	101
H — Harrier.....	235	370	191
RS — Red-shouldered Hawk.....	867	492	309
RT — Red-tailed Hawk.....	971	1,133	789
RL — Rough-legged Hawk.....	193	118	116
BW — Broad-winged Hawk.....	7,289	21,542	7,154
GE — Golden Eagle.....	2	9	3
BE — Bald Eagle.....	2	11	7
TV — Turkey Vulture.....	30	77	40
UID — Unidentified Hawks.....	346*	264	126
Grand Totals:.....	11,749*	27,249	10,531

* Includes one Gyrfalcon

1963 HAWK COUNTS DERBY HILL

	Date	C	SS	G	P	M	K	O	H	RT	RS	RL	BW	GE	BE	TV	UID	Daily Total
13	March	16	11	2	8	0	0	11	0	7	73	22	11	0	0	0	0	145
		17	12	3	10	0	0	10	0	22	126	174	31	0	0	1	0	389
		19	4	0	2	0	0	2	0	4	21	34	5	0	0	0	14	86
		21	0	0	1	0	0	0	0	4	2	1	4	0	1	0	1	14
		23	0	0	1	0	0	3	0	7	9	16	6	0	0	0	6	48
		24	4	0	9	0	0	14	0	13	36	97	32	0	0	0	0	205
		25	3	7	1	0	0	5	0	7	3	75	6	0	0	0	2	109
		26	13	47	8	0	0	38	0	26	115	203	9	0	0	1	0	482
		27	0	0	4	0	0	3	0	8	65	65	8	0	0	0	39	192
		28	0	4	4	0	0	0	0	2	28	50	5	0	0	0	15	108
		29	5	51	4	0	0	45	1	15	53	99	13	0	0	0	8	294
		30	2	7	1	0	0	11	0	9	11	1	5	0	0	0	2	49
		31	0	4	1	0	0	1	0	3	4	4	2	0	0	0	1	24
	April	2	4	2	2	0	0	6	0	7	13	2	0	0	0	0	2	38
		4	1	1	1	0	0	0	0	0	3	0	0	0	0	0	1	7
		6	9	6	7	0	0	6	0	5	48	1	4	1	0	0	14	110
		7	2	9	6	0	1	4	0	3	19	3	9	0	0	1	9*	66
		9	1	6	0	0	0	5	0	4	0	0	0	0	0	0	0	16
		12	2	12	0	0	0	7	1	3	7	2	1	0	0	0	3	38
		13	1	21	0	0	0	3	2	9	15	4	13	0	0	1	5	74
		14	2	20	0	0	0	7	0	5	45	0	1	0	0	2	0	82
		16	0	16	3	0	0	7	2	5	79	0	6	1	0	1	57	177
		17	13	232	5	0	1	21	0	4	120	1	4	52	0	7	112	572
		19	0	2	0	0	0	2	0	3	10	2	1	6	0	2	1	29
		20	3	60	0	0	0	4	8	1	7	0	2	474	0	0	14	587
		21	5	191	2	0	0	1	4	16	11	7	3	1651	0	0	3	1896
		25	7	126	0	0	1	1	5	8	22	3	4	644	0	0	3	824
		26	0	52	0	0	0	3	5	4	12	0	0	144	1	0	2	223
		27	2	32	0	0	0	2	3	2	2	0	1	135	0	0	4	183
		28	1	42	0	0	0	3	1	0	1	0	0	10	0	0	0	58
		29	0	48	0	0	0	0	6	2	6	0	0	1050	0	0	3	1117
		30	4	288	1	0	0	0	4	3	0	0	3	2878	0	0	2	3183

	Date	C	SS	G	P	M	K	O	H	RT	RS	RL	BW	GE	BE	TV	UID	Daily Total
May	2	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	3	0	0	0	0	0	0	1	1	0	0	0	12	0	0	0	0	14
	4	3	20	0	0	0	1	7	4	0	0	0	212	1	0	0	0	248
	5	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
	8	1	3	0	0	0	0	3	4	0	0	0	12	0	0	0	0	23
	14	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7

* One gyrfalcon included.

NOTE: One golden eagle questionable.

Six bald eagles observed. Probably only four birds as two may have been observed twice.

Days with 5 or less hawks total: March—7(2): 1H, 1RL; 9(0); 10(4): 3RT, 1RL; 12(1): 1 RT; 14(0). April—3(1): 1RS; 11(2): 1RT, 1RL

1964 HAWK COUNTS DERBY HILL

	Date	C	SS	G	P	M	K	O	H	RT	RS	RL	BW	GE	BE	TV	UID	Daily Total
March	3	0	0	7	0	0	0	0	0	4	1	2	0	0	0	0	0	14
	4	0	0	2	0	0	0	0	1	4	0	2	0	0	0	0	0	9
	5	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	0	4
	7	1	2	6	0	0	1	0	1	35	2	15	0	0	1*	0	15	79
	13	0	0	2	0	0	0	0	0	8	6	2	0	0	0	0	0	18
	14	1	0	3	0	0	8	0	1	2	2	7	0	0	0	0	0	24
	15	0	0	3	0	0	1	0	0	13	2	2	0	0	0	0	5	26
	20	2	0	0	0	0	1	0	0	3	3	2	0	0	0	0	0	11
	21	8	1	0	0	0	13	0	16	10	43	7	0	0	0	0	2	100
	22	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	11
	23	1	0	1	0	0	3	0	0	8	2	1	0	0	0	0	1	17
	24	13	21	3	0	0	16	0	19	93	130	6	0	1	0	0	3	305
	26	0	1	1	0	0	11	0	3	6	10	1	0	0	0	0	0	33
	28	27	22	0	0	0	36	0	59	44	198	16	0	0	0	0	3	405
	29	3	0	1	0	0	2	0	11	7	10	1	0	0	0	0	6	41

Date	C	SS	G	P	M	K	O	H	RT	RS	RL	BW	GE	BE	TV	UID	Daily Total
April	1	1	0	0	0	0	0	0	1	3	1	0	0	0	0	1	7
	2	6	28	5	1	42	0	24	76	42	5	0	1	1	1	0	232
	5	4	2	0	1	2	0	3	9	5	5	0	0	0	1	6	38
	6	0	0	0	0	32	0	11	3	0	2	0	0	0	0	0	48
	7	6	95	3	0	117	1	71	117	6	9	0	0	2	3	0	433
	8	0	1	0	0	8	0	2	43	1	0	0	0	1	1	12	69
	10	2	5	1	0	2	0	7	32	0	1	20	0	0	12	22	105
	11	5	1	1	0	5	1	5	25	2	3	24	0	0	0	41	114
	12	10	400	3	0	63	10	20	205	3	5	1	0	0	2	0	715
	13	4	363	1	0	66	2	27	167	2	6	2	0	0	15	8	672
	14	1	54	3	0	1	1	0	3	0	1	0	0	0	2	35	101
	15	0	8	0	0	0	0	0	0	0	0	2	0	0	1	0	11
	16	1	7	0	0	0	0	0	13	1	0	3	0	0	0	2	27
	17	2	59	1	0	1	9	1	54	3	2	61	0	0	2	14	210
	18	0	8	0	0	1	0	1	0	0	0	0	0	0	0	0	10
	19	1	35	0	0	1	2	1	1	0	1	0	0	0	1	5	49
	21	4	161	3	0	12	9	9	11	0	0	14	0	0	1	0	227
	22	4	150	0	0	6	3	9	8	1	1	177	0	0	1	0	362
	23	4	70	0	0	1	1	5	14	1	1	8097	1	1	13	0	8237
	24	4	45	0	0	3	9	1	3	0	0	141	0	0	1	0	208
	25	1	33	0	0	4	10	10	7	0	0	6711	0	1	6	0	6783
	26	8	191	0	2	21	37	22	43	2	1	978	1	1	5	0	1314
	27	2	170	0	1	6	12	9	13	1	2	855	2	0	5	13	1091
	28	0	24	0	0	3	1	0	0	0	0	78	0	0	0	60	166
	29	0	21	0	0	0	0	0	0	0	0	56	0	0	0	0	77
	30	0	12	0	0	1	0	0	1	0	0	11	0	0	0	0	25
May	2	5	103	0	0	3	24	0	19	0	0	2275	1	1	1	0	2432
	3	1	10	0	0	0	49	0	1	0	0	1757	0	0	1	0	1819
	4	0	152	0	0	4	9	11	3	0	0	124	0	0	2	4	309
	6	1	30	0	0	5	14	2	8	3	0	150	2	1	0	0	216
	15	0	3	0	0	0	1	5	0	0	0	5	0	0	0	0	14

* Observed at Oswego, New York.

Days with 5 or less hawks total: February—25(5); 1G, 4RT; 28(1); 1G; 29(0). March—1(1); 1RL; 2(0); 8(1); 1H; 9(1); 1BE; 10(0); 11(3); 2RT, 1RL; 12(2); 2RL; 16(0); 17(4); 2H, 1RT, 1RS; 18(0); 19(2); 1RS, 1RL, 30(3); 3RT; 31(4); 1RS, 3UID. April—3(0); 4(3); 1K, 1RT, 1RL; 19(0). May—1(1); 1SS.

1965 HAWK COUNTS AT DERBY HILL

	Date	C	SS	G	P	M	K	O	H	RT	RS	RL	BW	GE	BE	TV	UID	Daily Total
16	March	2	0	0	3	0	0	0	0	5	0	1	0	0	0	0	1	10
		4	0	0	1	0	0	0	0	8	0	1	0	0	0	0	0	10
		6	0	0	1	0	0	0	0	11	0	3	0	0	0	0	0	15
		17	0	0	2	0	0	0	0	7	3	3	0	0	0	0	1	16
		18	0	0	3	0	0	4	0	21	2	0	0	1	0	0	0	31
		28	0	0	6	0	0	3	0	9	3	8	4	0	0	0	1	34
		31	0	0	4	0	0	3	0	4	4	3	0	0	0	0	0	18
	April	1	20	3	4	0	0	4	0	10	64	84	8	0	0	0	15	212
		4	0	0	1	0	0	2	0	2	30	10	0	0	0	0	0	45
		7	11	191	1	0	0	60	1	74	86	63	26	0	0	6	4	523
		8	9	39	2	0	0	22	0	25	133	98	17	1	0	1	4	367
		10	0	10	4	0	0	3	2	2	49	3	2	0	0	0	2	94
		14	3	41	3	0	1	2	1	3	55	4	1	0	0	3	0	117
		15	1	175	0	0	0	10	0	6	11	10	6	0	0	1	0	220
		20	1	110	1	0	2	11	5	10	87	1	3	281	0	1	0	529
		21	2	328	0	0	0	19	9	1	66	1	3	1129	1	2	4	1577
		25	5	185	3	2	2	8	15	15	66	4	14	2282	0	1	6	2608
		26	3	86	0	0	0	2	4	7	0	0	5	547	0	0	0	670
		28	0	4	0	0	0	0	0	0	0	0	111	0	0	0	0	115
		29	10	46	0	1	0	3	12	7	54	9	13	1544	1	0	10	1710
		30	0	19	1	0	0	2	7	5	4	0	0	267	0	0	0	309
May		1	3	19	0	0	0	1	11	4	6	0	2	708	0	0	0	759
		2	0	30	0	0	0	3	2	1	5	0	0	1	0	0	0	47
		3	2	64	1	1	0	2	21	2	2	2	0	170	0	0	2	279
		5	0	12	0	0	0	0	3	4	3	0	0	23	0	0	0	45
		6	0	7	0	0	0	0	0	0	0	0	0	0	1	1	0	9
		8	0	38	0	0	0	0	1	1	1	0	1	31	0	0	1	77
		27	0	1	0	0	0	1	5	2	1	3	0	59	0	1	0	73

Days with 5 or less hawks total: March—9(0); 11(5): 1G, 4RT; 13(0); 16(1): 1H. April—16(5): 1SS, 1 Osprey, 3RT; 27 (1): 1 Osprey