

FALL HAWK MIGRATION

1971

DONALD A. HOPKINS  
GERALD S. MERSEREAU

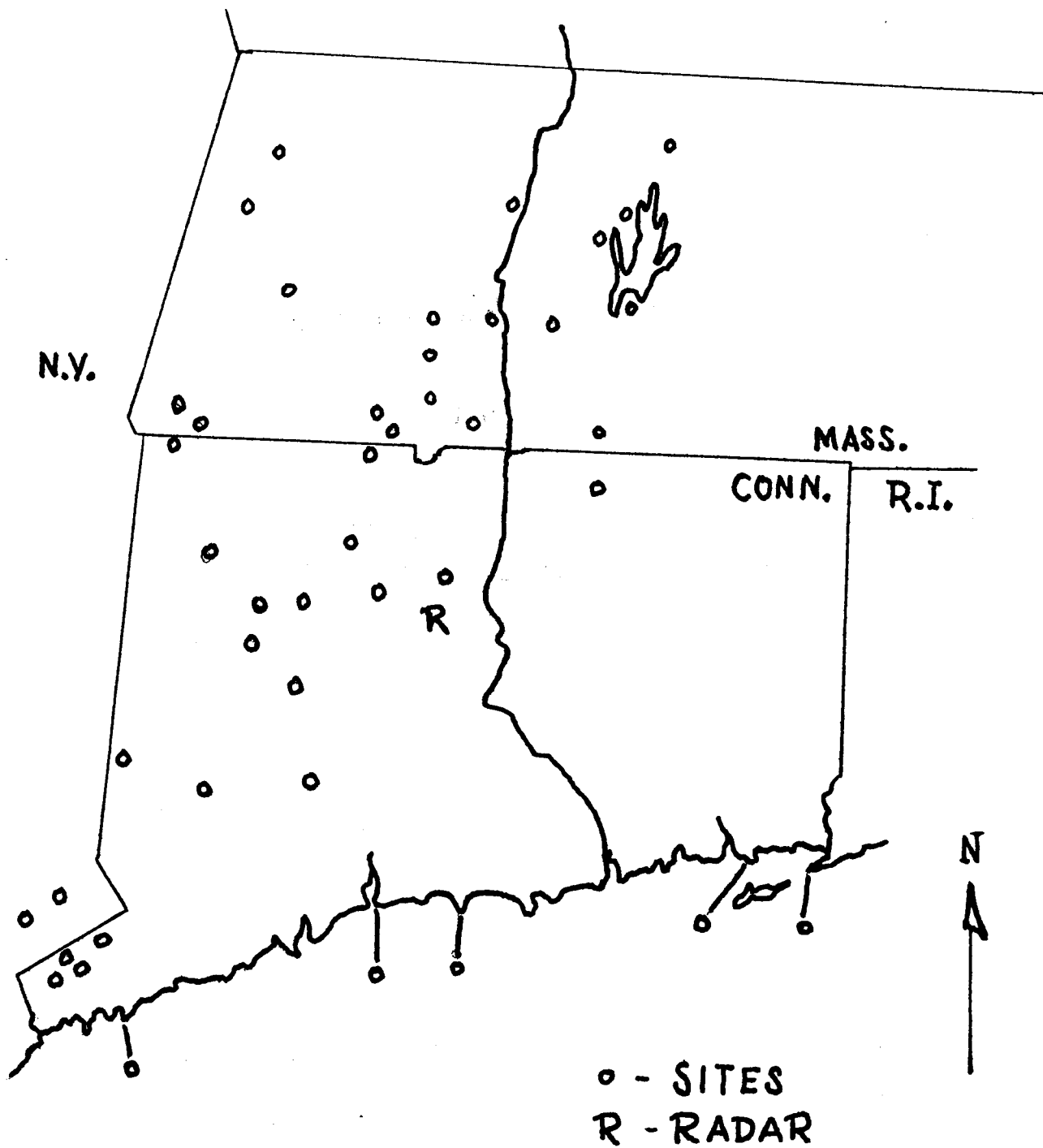


FIGURE 1

The map shows the location of sites used in September and October.

## HAWK WATCH REPORT

The idea of a hawk watch has become fairly common in the past decade. At known points of concentration such as Hawk Mountain, Hook Mountain, Upper Montclair, Duluth, and others, daily observations are carried on during the Fall migration of hawks. In the New England area, Mount Tom is a concentration point for migrating hawks and is also subject to an informal hawk watch. An excellent description of the area and migration has been given by Hagar.<sup>3</sup> To better understand the concentration and movement of migrating hawks in this area, the authors initiated and carried out a hawk watch which was unique. This project parallels the plea for a New England Hawk Watch which was made by Bagg in 1947.<sup>1</sup> The distinguishing feature of this project is that it was carried out over an area of approximately 7000 square miles at multiple sites during a period of two weekends. The choice of area was determined by conferring with the local birders and a search of the literature in which the works of Bagg and Eliot<sup>2</sup> were particularly helpful. In designated areas, sites were chosen by local bird club members who volunteered to act as observers. The location of these sites are shown by the map in Figure 1. To cover the peak period of Broadwing migration the weekend of September 18 and 19 was selected and for the Redtailed migration, the weekend of October 23 and 24. Here we relied upon Broun<sup>4</sup> for the dates.

With weather an important factor in any migration study it was hoped that one of the two days of the weekend would be suitable, if not ideal. As the weekend of September 18-19 approached the weather appeared very threatening. A weak cold front had moved over New England on the 15th and by the 16th the western end of this front was being blocked by the flow of hot humid air arriving from the South. This front stalled across the Mid-Atlantic States while light showers moved across from the Ohio Valley on the 17th and early on the 18th. The wind flow for the 18th and 19th over most of the area was warm air coming out of the North Northeast. Sunday, the 19th, winds freshened slightly, swinging around to the Northwest. Weatherwise, neither day appeared to be good for migration.



Despite the ominous look of the sky on Saturday morning in most cases those observers who stuck to their posts were rewarded in the afternoon with a good flight of Broadwings. The line of sites slanting southwest from Westhampton produced the most Broadwings. The sequence of sightings failed to yield any significant conclusions as to the route of movement, rather the birds appeared to be distributed through the area. The totals are included in Table #1 and considering that the weather did not clear until late, are quite impressive.

In the center of the area Traveler's Weather Service, Inc. has a newly installed Weather radar set which they generously allowed us to monitor during Saturday's watch. Working with photographic equipment loaned by Aetna Life and Casualty Company, recordings were made of angels which appeared on the PPI scope. Most angels appeared in areas not covered by observers. With one exception most of the angels disappeared within a few minutes. A typical angel appears in Figure 2. Late in the afternoon a rather impressive echo appeared northeast of Ashley Falls. As it approached the Ashley Falls-Mount Everett line it was lost for a few minutes only to appear again west of this area. Unfortunately the site at Ashley Falls was closed down minutes before. The rate of movement would appear to indicate birds, but as yet it has not been confirmed by ground sightings. It was the impression of one of the authors who monitored the radar that location and capability of this set makes it ideal for studying Broadwing migration in the Southern New England area.

With the improving weather on Sunday, more observers and more birds appeared. Early in the morning the birds started to move. The most impressive movement started in the Quabbin area, and by 9 a.m. a flight of Broadwings were moving through the area in a 22 mile front. By 10 this flight had progressed to the Mount Tom and Westhampton-Westfield line which was 12 miles long. It reached the Mount Everett-Ashley Falls-Mohawk Mountain line at 11:30 a.m. This line was 18 miles long and was backed up by Bald Peak to the west. The movement of these birds are shown in Table #2. This same

TABLE 1

TOTALS FOR WEEKENDS

Saturday, September 18

Totals	Reports	SS	C	RT	RS	BW	BE	M	O	KES.	MER.	PF	GH	RL	UNIDENTS.
3836	25	31	32	19	4	3390	0	27	120	207	10	1	1	1	97

Sunday, September 19

24,077	42	316	100	105	27	22218	6	56	251	499	14	7	2	1	829
--------	----	-----	-----	-----	----	-------	---	----	-----	-----	----	---	---	---	-----

Saturday, October 23

Totals	Reports	SS	C	RT	RS	BW	BE	M	O	KES.	MER.	PF	GH	RL	UNIDENTS
377	33	61	13	86	13	3	0	7	5	39	3	1	1	4	40

Sunday, October 24

Rained out.

flight was reported passing Poughkeepsie, New York, at 1:20 p.m. by the Waterman Bird Club and a portion of the flight was picked up by one of our observers driving along Route 84 in the Fishkill area at 2:30 p.m. The Broadwing reports for the above sites which are given in Table 2 will be discussed later.

The September totals which are shown in Table 1 provide an interesting comparison in that most reports for Saturday are inland reports because the weather had closed down the coastal sites. The ratio of species sighted on each day is interesting, if not significant.

The weather which plagued us in September was to be worse in October. Again a weak cold front stalled to our west. As the weekend neared warm air was again being fed into the area from the south. On Saturday the dense fog that blanketed most of the area was the result of a temperature inversion. Gradually light winds picked up from the northwest slowly swinging to the north as the day progressed. The results of October 23 were discouraging. The totals are given in Table 2. Sunday the 24th was to be worse as the day started with a heavy overcast and limited visibility which was followed by rain. Although discouraged by the October results, the data for September proved to be most interesting.

The significant contribution of this project is the recording of the large Broadwing flight on September 19. This flight had all the aspects of a "wave". By referring to Table 2 you will see that this flight took an hour and a half to pass, which at an average speed of 30 miles per hour would mean the hawks extended over 45 miles. The sites which lay across the path of this flight show consistent peaks. This leads us to believe that these hawks move in a definite "wave" which has a length, width, and crest. By referring to Figure 3 the extent of this "wave" could be estimated. In each line one end appears to be at the edge of the "wave". It is conceivable that the width of the "wave" in its most dense portion could be of the order of 10 miles. Having conceived the idea of a "wave", it is necessary to estimate the distribution of hawks that it contains.

BROADWING FLIGHT  
OF  
SEPTEMBER 19, 1971

TABLE 11

TIME (EDST)	ATHOL	SHUTESBURY	NEW SALEM	QUABBEIN	WESTHAMPTON	MT. TOM	MONTGOMERY	WESTFIELD	MT. EVERETT	BALD PEAK	ASHLEY FALLS	MOHAWK MT.
8	3											
8:30	9	12	3	234		11	17	42				
9	50	105	247	709		988		115			7	
9:30		69	106	402	58	67	3	64	62		138	
10		32	2	5	805	1015	910	160	99		43	
10:30		21	1	78	545	167		40	38	71		9
11		450		8	370	31			73	130	248	43
11:30						51		11	1103	1843	2000	101
12				6		3		24	2	5	949	29
12:30	1			3	101	1			2			14
1		1		1	92	11			8		491	10
1:30					3	12					361	
2					25	3			516		87	
2:30	2			3		2			56			
3						6			32		62	
3:30					3	2						
4												
4:30						1						

*Some birds*

65 690 356 1449 2005 2370 930 456



To pursue this we make the assumption of having located the most dense portion of the "wave" at Quabbin, Mount Tom, and Ashley Falls. Having demonstrated a distribution we make the further assumption that it is symmetrical. Graphically this is shown in Figure 3. This yields a peak half hour total for the Quabbin line of 2500, Westhampton line of 3000, and Mount Everett line of 6000. (The increase in "wave" peak as it moved across may be the result of site location and/or the gregarious habit of the Broadwing hawks). If you accept this as an order of magnitude and compare it with the peak readings in Table 2, we can then say that at Quabbin, Mount Tom, and Ashley Falls, only 1/3 of the passing hawks were seen. The significance of this is not the factor of 1/3 but rather that those sites which are known points of concentration and have been used for hawk watches may be counting a small portion of the Broadwing hawks passing. The concept of "wave" movement of Broadwings should not be difficult to adopt as this specie is one of the true migrants and as such would react to some extent the same as the passerines which move in "waves".

A number of points of interest appear in the data on which the authors will reserve comment until more information can be gathered. One of the most gratifying aspects is the interest in raptor migration this project has kindled among both neophytes and veteran field observers. We feel that this interest will carry over to next year when again we conduct a hawk watch. The authors are deeply appreciative of the help provided by the over 150 volunteer observers and the endorsement of this project by the bird clubs in this area.

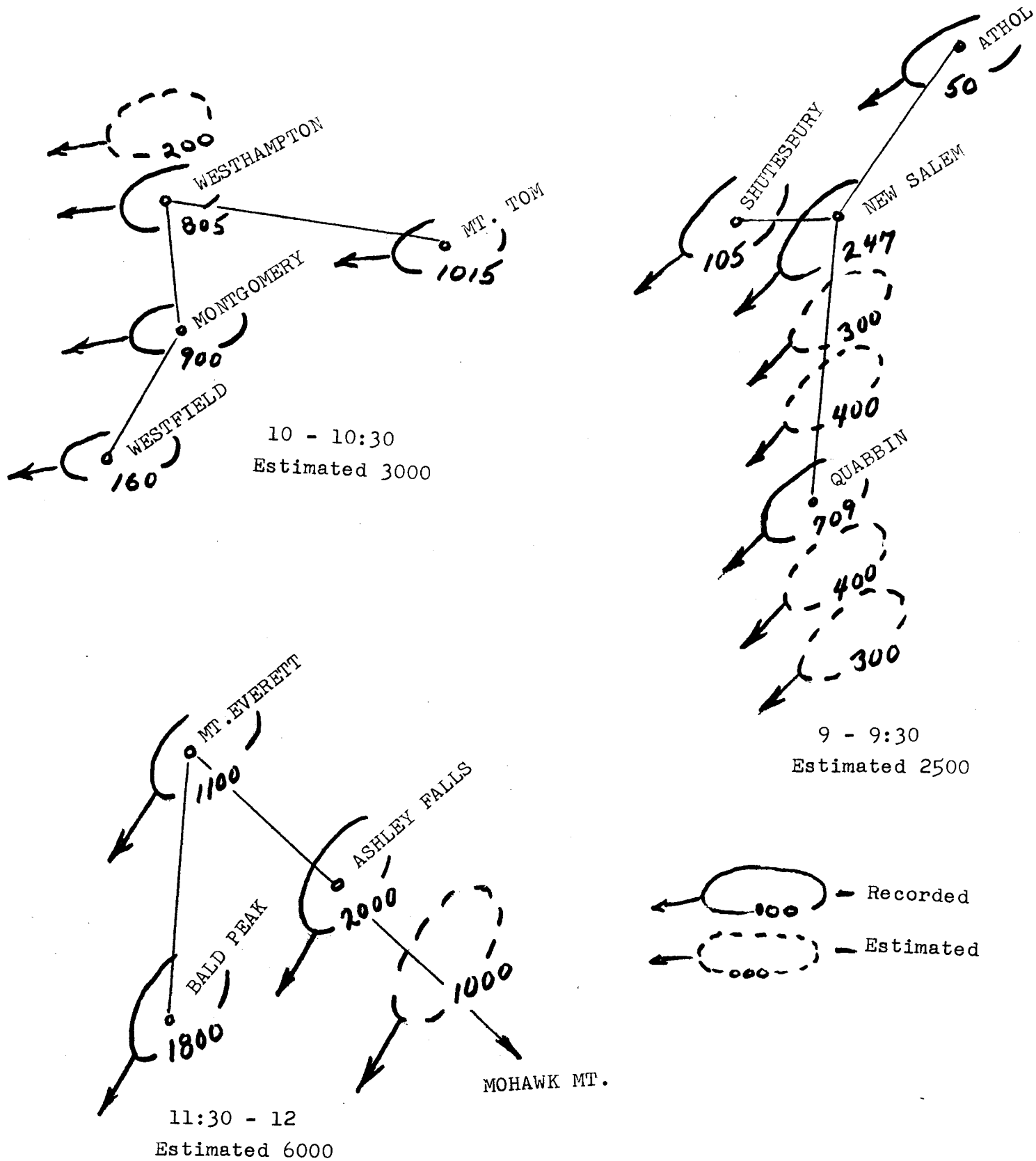


FIGURE 3

Peak Broadwing flight, September 19, with a schematic diagram of an assumed distribution at three locations.

REFERENCE

1. Bagg, Aaron M.- Massachusetts Audubon Society Bulletin,  
Volume 31, Number 2 (81-82).

Massachusetts Audubon Society Bulletin,  
Volume 33, Number 4 (135 - 137).

2. Bagg, Aaron Clark and Eliot, Samuel Atkins, - Birds of the  
Connecticut Valley in Massachusetts,  
The Hampshire Bookshop, 1939  
Northampton, Massachusetts

3. Hagar, Joseph A.- Massachusetts Audubon Society Bulletin.  
Volume 21, Number 3 (5 - 8).

4. Broun, Maurice - Hawks Aloft, Dodd, Mead Company 1949 New York.