

## SPRING HAWK MIGRATION IN MASSACHUSETTS

by Paul M. Roberts

Think back to only twelve years ago. When no one thought that a conservative candidate like Ronald Reagan could ever win the Presidency of the United States. When no baseball player "earned" a million dollars a year. When acronyms like PC and FAX were not in our lexicon. And when we believed that no more than a few hawks ever migrated east of Mt. Tom.

Twelve years ago I wrote an article titled "The Spring Hawk Migration: Toward Understanding an Enigma" [*Bird Observer* 6(1): 11-22, February 1978] that described what was known about the subject at the time, based on the work of a small number of people in Texas, New York, New Jersey, and Michigan. I then "plugged in" what was known about hawk migration times and large species counts reported in Massachusetts, based on published records. This article updates the species accounts of twelve years ago, including the dates, sites, and numbers of maximum spring counts of migrants for each species at a variety of locations throughout the state. A cursory examination reveals how much we have observed, and learned about, spring hawk migration in the Commonwealth over the past twelve years.

The totals for many species are considerably larger than those reported earlier. This should not be construed to suggest that there are more hawks migrating now than earlier, although that may be true for several species such as Turkey Vulture, Osprey, Bald Eagle, and Peregrine Falcon. Rather, it demonstrates that when people begin to look more systematically for regular migrants, they are more likely to find them! I know that is true, because what I learned in preparing that article twelve years ago prompted me to go hawkwatching earlier in the spring than I ever had before. I was amply rewarded with one of the most spectacular hawk flights I have ever seen—the flight of 339+ kestrels on April 13, 1978. I have since learned that early May hawkwatching can be equally exciting, rivaling in thrills—and, for some species, in numbers—anything seen in the fall. I hope this article will help you get more out of spring hawkwatching.

### Spring Migration Overview

Spring migration for many, if not most, species begins in late February and early March. Larger species tend to migrate earlier than smaller species and the adults before the immatures, the reverse of the fall migration for most species. It is believed that adults tend to pursue the most direct routes to their breeding grounds; i.e., they migrate inland. Immatures and other nonbreeders tend to migrate later and in a less direct manner, often concentrating on or near the

coast. This seems especially true for accipiters and falcons.

Far fewer hawks are seen in spring than in fall. There are several ways to account for this. First, there are simply fewer hawks; migration and winter mortality are high. Second, birds may travel different routes in spring than in fall. Many of the best fall sites reported few birds in spring whereas the only good known spring sites north of Texas reported few hawks in fall. This encouraged speculation that many hawks may pursue an elliptical migration pattern, down the Appalachian Ridge or the Atlantic Coast in the fall and up the interior, west of the Appalachians, in the spring. Eventually many of these converge in ever increasing numbers on the southern shores of the Great Lakes as they move eastward.

Third, whether or not hawks pursue the same migration route in spring and fall, migrants may be more difficult to see in the spring. This may be because people select poor observation sites. Productive fall hawkwatch sites may feature topography that funnels birds flying from north to south into those locations. Similar topographical features may not exist to the south/southwest of the fall lookouts. Thus, northbound birds will use different topographical features, follow different tracks, or fly over different sites in the spring.

Beyond that, with the exception of leading lines such as the Great Lakes, the widespread nature of warm fronts in the spring and the powerful lift provided on a broad front may allow the spring flight to be quite diffuse. That is, migrants are not "coerced" into relying on a few widely distributed thermals or distinct topographical features like the Appalachian Ridge. The powerful warm fronts may also enable migrants to achieve such altitude that they become invisible to ground-based observers.

Each of these speculations has merit. Much more research is required before we know the relative importance of each. Historically, the first two explanations have had the most support. Few hawks were reported in spring except for two regions. The first was southeastern Texas, where enormous numbers of Turkey Vultures, kites, and Broad-winged and Swainson's hawks pass through on their return from Central and South American wintering grounds.

Few hawks were ever reported north of Texas, except for two locations in New York: Braddock Bay and Derby Hill, near the cities of Rochester and Mexico, respectively. There, each March through May thousands of hawks of many species were seen as they worked their way north. Vultures, eagles, harriers, accipiters, and buteos that are reluctant to fly long distances over water worked their way northeast along the southern shores of Lakes Erie and Ontario, seeking a land bridge around or over the water barrier presented by the Great Lakes. To a lesser extent Whitefish Point in Michigan functioned similarly for hawks seeking a western route.

The elliptical hypothesis has lost a little credence over the past fifteen years, however, as consecutive-day hawkwatches were established at a surprising number of locations, including Vera Cruz, Mexico; the Sandia Mountains, New Mexico; Baton Rouge Louisiana; Washington Monument, Maryland; Morgan's Hill, Pennsylvania; Sandy Hook and Montclair, New Jersey; and Hook Mountain, New York. Without exception, these sites have reported impressive numbers of spring migrants, more than any previous field reports suggested.

Increased, though intermittent, coverage by the Eastern Massachusetts Hawk Watch and the New England Hawk Watch has had much the same results. Systematic observation has produced significantly larger daily records for most species in Massachusetts. A majority of the new daily records published here

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### SPRING 1987 HAWK MIGRATION TOTALS AT FOUR NORTHEAST SITES

The data in this table are presented to provide a rough idea of what has been seen at several of the major consecutive-day spring hawkwatch sites in the Northeast in one season. In 1987 Braddock Bay, New York, located on the southern shore of Lake Ontario, recorded the largest spring hawk flight ever reported in North America north of Texas. Sandy Hook, New Jersey, an Atlantic barrier beach site, experienced a below-average season. Montclair, New Jersey, an inland ridge site, had an above-average flight. Hook Mountain, New York, an interior mountain site, reported a below-average spring.

	<u>Braddock Bay, NY</u>	<u>Sandy Hook, NJ</u>	<u>Montclair, NJ</u>	<u>Hook Mtn., NY</u>
HOURS	838	550	250	115
Turkey Vulture	5779	135	322	103
Osprey	485	116	190	93
Bald Eagle	45	4	3	0
Northern Harrier	1095	249	52	22
Sharp-shinned Hawk	18953	3283	654	229
Cooper's Hawk	1474	185	17	17
Northern Goshawk	53	1	1	1
Red-shouldered Hawk	1282	93	45	41
Broad-winged Hawk	65420	382	1721	1715
Red-tailed Hawk	10593	149	195	24
Rough-legged Hawk	434	0	0	0
Golden Eagle	13	0	0	0
American Kestrel	953	1124	297	79
Merlin	15	388	10	3
Peregrine Falcon	6	6	6	3
Unidentified Raptor	39	45	39	188
TOTAL	106639	6160	3552	2518

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were reported by members of these two groups systematically counting migrant hawks at specific sites for limited periods of time. The clear inference is that if people hawkwatch more methodically, they will see many more hawks and get a much better picture of the nature and magnitude of the spring migration through the state.

The species accounts and peak daily records presented in this paper under the section on migrants are intended to give a reasonable idea of when and where to look for migrant hawks. A general spring migration period, when you are most likely to see numbers of that species, is indicated for each species. Experience suggests larger numbers of adults may be seen inland earlier, especially along leading lines such as ridges. Larger numbers of immatures tend to be seen later in the migration period, especially along the coast. The migration periods presented here are extrapolated from data gathered at Sandy Hook in New Jersey and Braddock Bay and Derby Hill in New York, as well as from casual and systematic observations within Massachusetts.

It should be noted that for many species, such as Turkey Vulture, Northern Harrier, and Rough-legged Hawk, it can be difficult to differentiate residents from migrants. Indeed, most published sources, with the exception of the hawkwatch reports, do not differentiate between the two. Data published here have been edited to indicate maximum numbers of migrants or likely migrants.

I have provided only minimal information regarding migration weather. We have come to assume that most movement in the fall occurs when the wind has a northerly component, especially northeast or northwest. Tradition has it that most spring movement is observed on southwest winds, which provide a tail wind to birds moving northeast. Tradition can be misleading, because the largest kestrel and some of the largest buteo counts have been on a northwest wind, and some of the best Merlin and Peregrine counts have been on an easterly wind! Thus, knowing as little as we do about spring hawk migration in Massachusetts, it ill behoves us to bias all observers by suggesting the best weather is southwest winds. Also consider that spring weather is often local and ephemeral. Under such conditions we have had some coastal sites report significant movement, whereas sites only a few miles away reported different winds and little or no movement. The sudden development of a sea breeze might drive migrants higher or, more likely, inland where the land breeze still dominates.

More systematic observation of spring migration would be very informative. It would also be beneficial, where possible, to age and sex migrants, because spring banding recoveries have been very limited for most species. Caution should be used, however, when attempting to age or sex Bald Eagles, Ospreys, Rough-legged Hawks, Golden Eagles, and Gyrfalcons. Published criteria generally used to determine age and sex of these species in

flight are not sufficiently reliable, except for identifying first-year Osprey. It is better, where possible, to record specific plumages for these species than to record hypothetical and possibly inaccurate age or sex.

### Migrants

For each species the first record on the list is believed to be the daily state record for apparent spring migrants of that species at a single site, based on published resources. Some of the lower totals for several species have been edited to reflect early or late totals of significance or other major sites. Listings include number of birds, date, and location. (Pilgrim Hts., N. Truro = Pilgrim Heights, N. Truro; Pilgrim Spg., N. Truro = Pilgrim Spring, N. Truro; Highland Lt., N. Truro = Highland Light, N. Truro.)

**Turkey Vultures** (*Cathartes aura*) have become increasingly common during the past two decades, establishing breeding populations throughout New England and into Canada. It can be difficult to differentiate migrants from local residents; flocks of 55 to 75 have been reported in the Quabbin area. Migrant vultures begin to appear in late February and March. Peak flights have been reported in late March and the first half of April, with significant numbers seen moving on Cape Cod throughout May.

41	4/19/87	Granville	17	5/12/87	Provincetown
22	3/27/88	Harvard	8	5/29/80	Wellfleet
17	4/6/80	Wachusett Mtn.			

The **Osprey** (*Pandion haliaetus*) migration is fairly compact. Breeding birds in southern Massachusetts usually return to nest sites in late March and early April. Migrant Ospreys are reported throughout April, with the largest flights clustered in the last half of the month. Data from New Jersey and New York suggest there may be significant movement during May that goes unreported because there are few systematic local hawkwatches then.

51	4/19/75	Mt. Tom	28	4/18/83	Wachusett Mtn.
31	4/30/56	Mt. Tom	27	4/24/64	Mt. Tom
29	4/17/88	Ashburnham	27	4/27/87	Granville

The **Bald Eagle** (*Haliaeetus leucocephalus*) is reported throughout the year due to the movement of immature and subadult birds and to the different migration schedule for southern and northern breeders. In March and April migration occurs on a fairly broad front, with scattered reports of birds inland and along the coast. Eagles are a possibility at any thawing body of water during this period. Movement continues in May but is apparently focused along the coast, especially outer Cape Cod.

4	5/19/64	W. Harwich	2	3/6/82	Salisbury
3	3/3/81	GMNWR, Concord	2	3/30/79	GMNWR, Concord
3	4/30/56	Mt. Tom	2	5/2/87	N. Truro
3	5/29/89	Truro			

**Northern Harrier** (*Circus cyaneus*) migration occurs from March through May. Regrettably, most local field reports fail to differentiate between wintering and migrant birds. At many coastal sites it is often difficult to distinguish between the two. Peak reported movement of immatures and subadults occurs along the coast from mid-to-late April. New York reports suggest that inland migration may continue throughout May, but there is little evidence of this along the coast.

30	4/16/88	Plum Island	19	4/23/88	Pilgrim Hts., N. Truro
30	4/17/88	Plum Island	18	5/4/88	Plum Island
23	4/26/81	Plum Island	14	5/2/87	Plum Island
22	4/19/54	Plum Island	8	4/23/84	Wachusett Mtn.

The **Sharp-shinned Hawk** (*Accipiter striatus*) is by far the most common and easily observed accipiter. Sharpie migration begins in March but is primarily an April-May phenomenon. Adults tend to migrate earlier and inland; immatures and subadults migrate later and tend to concentrate along the coast. Prior to 1976, the largest inland flight reported was 70 at Mt. Tom in mid-April, and the largest coastal flight was 52 seen at Plum Island in late April. Expanded coverage in late April and early May has revealed much larger Sharpie flights than previously supposed, especially in the first ten days of May. These are some of the most exciting hawk flights to watch, especially along the coast where these pugnacious predators often come zooming in at or below eye level. Along the coast, Sharpie flights tend to occur on moderate southwest winds.

289	5/2/87	Plum Island	134	5/8/83	Pilgrim Spg., N. Truro
212	5/1/87	Plum Island	132	5/4/86	Nantasket Beach, Hull
166	5/6/84	Pilgrim Hts., N. Truro	125	4/26/81	Plum Island
153	5/4/89	N. Truro			

**Cooper's Hawks** (*Accipiter cooperii*) are seen in small numbers in Massachusetts. Their migration is from mid-March to early May. Recently, good flights, presumably of immatures, have been seen on outer Cape Cod in late April to early May. Cooper's Hawk, however, remains an identification problem for many observers.

22	4/22/50	Mt. Tom	7	4/21/36	Mt. Tom
11	4/30/56	Mt. Tom	5	4/15/60	Plum Island
10	4/15/76	Mt. Tom	5	4/18/75	Granville
10	5/1/87	Pilgrim Hts., N. Truro	5	5/1/86	Highland Lt., N. Truro
9	4/21/56	Mt. Tom	4	4/21/79	Ashburnham
8	4/6/56	Mt. Tom	4	5/4/85	Pilgrim Hts., N. Truro

Relatively few **Northern Goshawks** (*Accipiter gentilis*) migrate except during irruption years. The migrants are usually isolated individuals, who make limited use of thermals. Adults move from late February to early April, when there are few observers in the field to note their passage. Immatures tend to migrate in April. Spring Goshawk reports rarely distinguish resident birds from

migrants.

5	4/30/56	Mt. Tom	3	4/18/75	Mt. Tom
4	4/1/75	Mt. Tom	2	3/8/87	South Wellfleet
3	3/20/76	Mt. Tom	2	4/7/84	Wachusett Mtn.
3	4/1/84	Ashburnham			

**Red-shouldered Hawks** (*Buteo lineatus*) are early migrants. The peak adult migration is from mid-March to early April, with immatures moving throughout April. Recent Massachusetts counts are far below those of several decades earlier. Other evidence confirms a significant population decline for this species; however, it is also clear that few people hawkwatch during the most concentrated Red-shoulder migration period (for adults). Immature Red-shoulders are seen in small numbers on outer Cape Cod in mid-to-late April. However, care should be taken to differentiate between immature Shoulders and immature Broad-winged Hawks.

267	3/28/50	Mt. Tom	41	3/25/75	Mt. Tom
114	3/22/29	Mt. Tom	39	4/6/56	Mt. Tom
78	4/21/36	Mt. Tom	15	4/25/79	Wellfleet
53	3/20/76	Mt. Tom	12	3/27/88	Harvard

**Broad-winged Hawks** (*Buteo platyterus*) arrive en masse in the second half of April although isolated individuals may be reported from the beginning of the month. Migration continues heavily in May, though generally unreported, and late flights of immatures have been noted into June, especially on outer Cape Cod. Passerines and *platyterus* often move on southwest winds in May. If you suffer from warbler's neck a few hours after dawn birding, lie supine and scan overhead for migrant Broad-wings as thermals develop. Note that major spring flights have also been reported on northwest winds.

1300	4/27/44	Mt. Tom	305	4/26/66	Mt. Tom
1104	4/20/86	Granville	300	4/29/66	Mt. Tom
712	4/25/64	Mt. Tom	299	4/23/88	Wachusett Mtn.
549	4/24/45	Mt. Tom	293	4/26/88	Ashburnham
528	4/29/45	Mt. Tom	288	5/1/87	Pilgrim Hts., N. Truro
506	4/26/88	Mt. Holyoke	155	5/29/89	Truro
416	4/22/53	Mt. Tom	70	6/9/76	Provincetown
383	4/20/86	Mt. Holyoke			

**Red-tailed Hawk** (*Buteo jamaicensis*) adults peak in March, with immatures continuing throughout April and well into May. Migrants can be easily confused with local birds. The flight is apparently quite diffuse, small numbers moving over a broad front, but occasionally surprising concentrations may be seen in only an hour or two.

54	3/17/85	Granville	18	3/23/86	Wachusett Mtn.
54	3/29/50	Mt. Tom	18	4/18/84	Wachusett Mtn.
48	4/21/36	Mt. Tom	14	3/20/76	Mt. Tom
35	3/26/89	Essex	14	4/20/80	Canton

The **Rough-legged Hawk** (*Buteo lagopus*) migration is small and variable. Migrants may be seen from March through mid-May, and June sightings are possible. Field reports fail to distinguish between wintering and clearly migrating Rough-legs. The peak reports of likely migrants are as follows.

4	4/20/68	Mt. Tom	2	5/1/87	Pilgrim Hts., N. Truro
3	4/23/36	Mt. Tom	2	5/16/87	Provincetown
2	4/18/82	Fort Hill, Eastham	1	5/21/78	Marshfield

Migrant **Golden Eagles** (*Aquila chrysaetos*) are reported from early March through early May. In Massachusetts most reports have been from mid-March to mid-April and during the first week of May. Immatures and subadults may occur at almost any time of year anywhere in the state. Apart from wintering birds at Quabbin, the most sightings of migrants have been from the Newbury/West Newbury vicinity, a heavily birded area.

3	4/21/36	Mt. Tom	1	5/9/75	Natick
2	4/19/56	Mt. Tom	1	6/13/75	Martha's Vineyard

The **American Kestrel** (*Falco sparverius*) remains one of our most spectacular but generally unappreciated migrants. Many kestrel reports appear to be drawn from brief, sporadic observations, while birders pause in looking for the sparse early April passerines. Systematic hawkwatching along the coast during the past twelve years has revealed spring kestrel flights much larger than suggested by previous reports. The migration begins in mid-to-late March, peaks in April, and then concludes in early May. There may be two peaks in April, usually around the midpoint and at the end of the month. Contrary to some expectations, the largest coastal kestrel flights seem to occur on days with gusty, northwest winds. Maximum coastal flights of kestrels and Sharpies tend to occur on different days under different winds.

339	4/13/78	Plum Island	174	5/3/89	Plum Island
250	4/27/89	Plum Island	172	4/18/82	Plum Island
213	5/4/88	Plum Island	95	4/18/82	Marconi Station,
191	4/11/80	Plum Island			Wellfleet

The **Merlin** (*Falco columbarius*) migration is very light in March, somewhat heavier during the first two weeks of April, and at its peak during the last two weeks of April and the first ten days of May. Concentrated movement is seen only along the coast; very few are reported from inland locales. In the past twelve years we have considerably increased our observations of this blue or brown bullet. Published reports of 47 and 25 Merlins at Plum Island (4/30/44 and 5/1/78, respectively) should be noted, but both are difficult to accept. I believe good observers probably confused Sharp-shinned Hawks and Merlins. The two species are approximately the same size, and the immatures have similar plumage. In stiff winds Sharpies may easily be confused with Merlins. Careful observation is critical.



20	4/25/70	Plum Island	8	4/12/78	Plum Island
14	4/26/81	Plum Island	7	4/27/89	Plum Island
12	4/29/78	Plum Island	7	4/29/84	The Glades, Scituate
11	4/7/73	Plum Island	7	4/30/87	Plum Island
10	4/28/85	Pilgrim Hts., N. Truro	7	5/4/88	Plum Island
9	4/23/78	Plum Island	7	5/5/88	Plum Island

The **Peregrine Falcon** (*Falco peregrinus*) is one of the few species whose status has improved considerably since 1978. Daily count records have not been set in spring, but there is little doubt that the absolute number of individuals has increased due to the prohibition of DDT and other hard pesticides and to the reintroduction programs in Canada and the United States. Reports of single individuals at inland locations appear much more common in the preceding decade than earlier, but sightings of two or more migrants in one day are much more likely along the coast. With such uncommon species, it is important that the coastal observer does not overcount, i.e., add a bird each time an individual makes a pass over a flock of shorebirds. A single individual in transit may be seen many times throughout the day at an excellent feeding station.

9	4/25/69	Scituate	3	4/20/80	N. Scituate
7	4/22/50	Mt. Tom	3	4/27/89	Plum Island
6	4/15/60	Plum Island	3	5/2/87	Plum Island
3	4/1/67	Newburyport	3	5/6/84	Eastham
3	4/9/60	Plum Island			

### Rarities

Many spring migrations produce unusual raptors. Familiarizing yourself with the vagrants or uncommon migrants seen in Massachusetts could prove quite rewarding.

**Black Vultures** (*Coragyps atratus*) are working their way into Massachusetts more frequently as they extend their breeding range northward. Individual birds are reported primarily from mid-April through the third week of May, with one June and one July report. Two individuals were reported from Montague on March 20, 1965. Four out of five reports for the past twelve years have come from Cape Cod from the last week of April through the first week of June. Provincetown has reported individuals on May 21, 1983, and June 8, 1980.

**American Swallow-tailed Kites** (*Elanoides forficatus*) have been observed with increasing frequency in Massachusetts. Most are believed to be subadults and are seen in May or the first half of June. Ten out of seventeen recent reports are from Cape Cod, and Memorial Day weekend appears to be when birders on the Cape are most likely to find them.

**Mississippi Kites** (*Ictinia mississippiensis*) are becoming an almost annual spring occurrence in the Commonwealth. Eleven have been reported in the past twelve years, all but three during the month of May. With the exception of birds reported from Amherst on May 13, 1979, and Granville on April 27, 1987, all

reports have come from eastern Massachusetts, primarily Cape Cod. Chatham and Truro have each had three reported in the past decade. Most reports have not aged the birds, believed to be primarily subadults. As many birders, including hawkwatchers, are not familiar with this species, its occurrence is likely underreported. Birders are advised to review their field guides carefully.

**Swainson's Hawk** (*Buteo swainsoni*) may be a bigger challenge than Mississippi Kite. Over the past three decades, Swainson's Hawks have been reported at Ipswich on February 21, 1960; Newbury, March 4, 1975; Byfield, March 16, 1975; Lynnfield, April 12, 1967; Mt. Tom, April 21, 1967; Mt. Tom, April 22, 1975; and Plum Island, May 16, 1960. Since 1978 only one spring migrant has been positively identified at Plum Island on April 15, 1988. A possible Swainson's was reported from Lexington in March 1988. Two questions are obvious. Are there fewer Swainson's Hawks in the state in recent springs, or are we better at field identification? Birders should keep in mind that the Swainson's Hawk winters in Central and South America, with a very small, primarily immature population wintering in Florida. This winter distribution is very similar to that of the Broad-winged Hawk. Their migration schedule is also very similar, so that February and March reports of Swainson's Hawk are difficult to credit. April and May reports, however, are more likely. Spring reports from New Jersey and New York strongly suggest we should be on the lookout for more Swainson's in Massachusetts.

The **Gyr Falcon** (*Falco rusticolus*) is a rare migrant. Wintering Gyrs are notoriously random in their movements, so individuals may be seen at any time during the winter or early spring. Ten "spring" Gyrs have been reported over the past fifteen years, mainly along the coast. Seven have been reported in the first half of March, one in late March, one in mid-April, and a dead bird was found on Muskeget Island on May 5, 1987. A Gyr occasionally winters on South Monomoy. Monomoy and Newburyport have each had two March Gyrs reported.

#### Acknowledgments and References

I would like to thank the many hawkwatchers who have contributed literally thousands of field reports and without whose efforts this article would not have been possible. I also would like to thank the field report compilers and editors of *Bird Observer* for the extensive information regularly incorporated within their monthly field reports. Individuals interested in reading more on spring hawk migration are advised to refer to the following organizations. The Eastern Massachusetts Hawk Watch publishes a spring report the following fall. This contains the most detailed local information available. For a continental perspective, refer to *Hawk Migration Studies*, published by the Hawk Migration Association of North America. Each spring it publishes an extensive report on the previous spring's migration, region by region, across North America. Of

special note is the *Braddock Bay Raptor Research Report*, published annually by Braddock Bay Raptor Research. Though currently two years behind schedule, this report on spring migration at this New York hawkwatch site is the most informative and thought-provoking report published by any hawkwatch group. It is invaluable for anyone interested in spring hawk migration anywhere.

The following published field records were used with reference to Massachusetts. (Other references used in the preparation of this article are available from the author upon request.)

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### EASTERN MASSACHUSETTS SPRING HAWK WATCH

The Eastern Massachusetts Hawk Watch will hold three coordinated weekend hawkwatches this spring. Coastal and inland watches will be held on April 21-22, April 28-29, and the second annual Cape Cod blitz will be held on May 5-6. Volunteers are needed for all dates. Whether beginning birder or avid hawkwatcher, if you would like to participate or receive additional information, call Paul Roberts at 617-483-4263 after 8:00 P.M., or write him at 254 Arlington Street, Medford, MA 02155.

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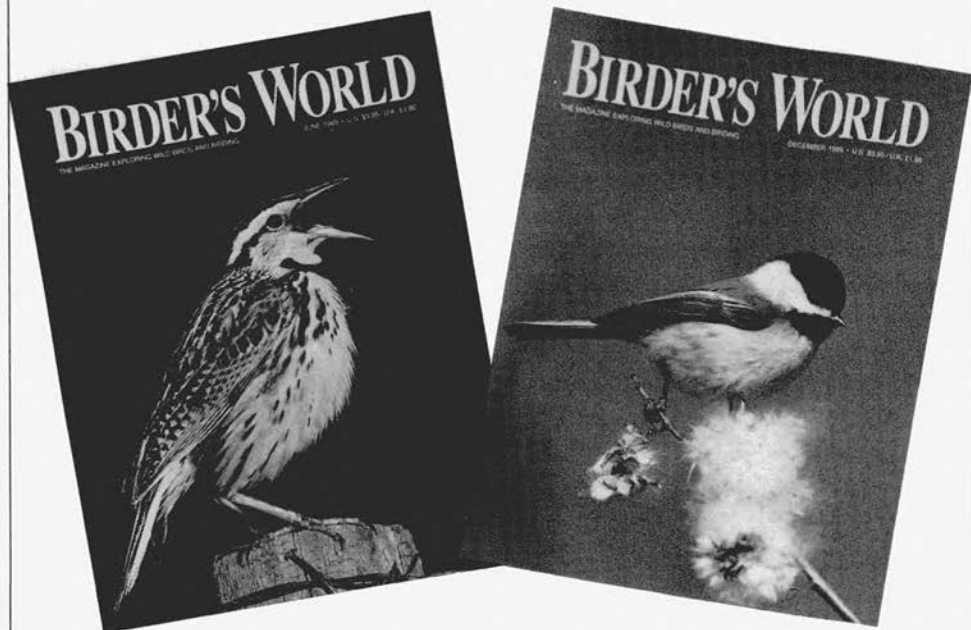
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The joint meeting of AFO/WOS will feature two symposia: *The Role of the Amateur in Ornithology* and *American Avian Zoogeography*. Workshops, presentations on original research, a poster session, and field trips will also be offered. For preregistration materials, please contact: John C. Kricher, Biology Department, Wheaton College, Norton, MA 02766.

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