

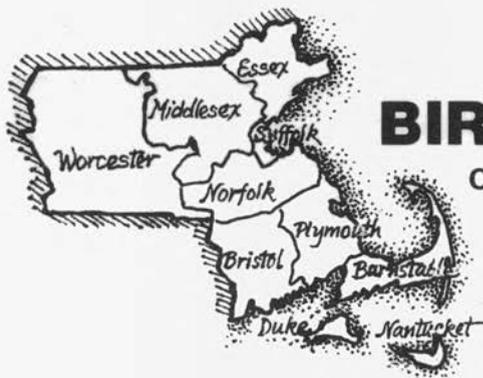
BIRD OBSERVER

OF EASTERN MASSACHUSETTS



JUNE, 1981

VOL. 9 NO. 3



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EDITOR'S NOTE

We would like to draw your attention to the following changes and improvements in Bird Observer:

1. Articles are now typed in "courier" font and are easier to read.
2. Field records have returned to monthly reports rather than the seasonal summaries of the past few years. Records will be more timely with this procedure, and more records can be included.
3. Brief biographies of authors and illustrators are included with the articles.

TAKE A SECOND LOOK: SUMMER FIELD TRIPS

Two mid-summer field trips to estuaries and rivers within the Boston area have been scheduled by TASL:

July 19: "Salt Marsh Ecology - Belle Isle, East Boston"
Leader: Soheil Zendehe (628-8990)

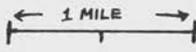
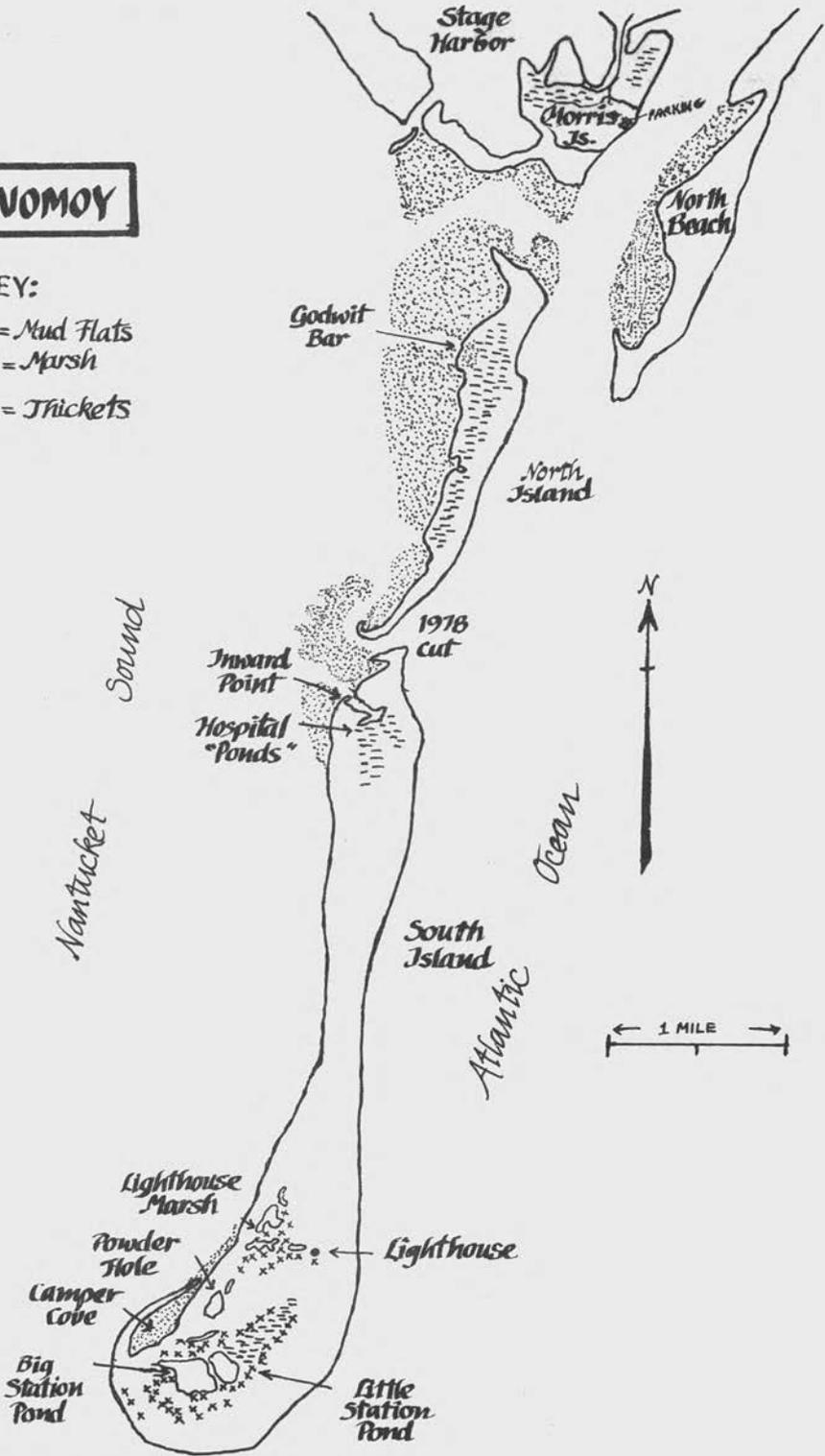
August 9: "Investigating the Neponset River System"
Leader: Dave Brown (328-3533)

TASL's Boston Harbor winter bird censuses will resume in November. To keep up-to-date on TASL activities, you may wish to subscribe to TASL News. Please send a check for \$2.00 to: TASL News, 462 Trapelo Road, Belmont, MA 02178.

MONOMOY

KEY:

-  = Mud Flats
-  = Marsh
-  = Thickets



MONOMOY

by Blair Nikula, Chatham

...A young Peregrine Falcon appears from nowhere to pluck a migrating Red Eat in midair with awesome grace.

...The full moon illuminates myriads of chattering shorebirds feeding on an ebbing tide as veils of fog waft across the flats on an eerie late summer's evening.

...Preparatory to their owl-induced night desertion of the colony, thousands of nesting terns begin the seemingly orchestrated, incredibly silent dusk "panic" flights. Upon return to the colony at dawn, these same terns raise a deafening chorus as they reassert their territories and scream defiance at all who pass.

...Monomoy images. Anyone who has visited this pristine area brings back images; the above are but a few of mine.



Located in the town of Chatham, at the elbow of Cape Cod, Monomoy is the northeasterly-most of a series of islands that

fringe New England's south shore. Unlike the other islands, which are glacial formations resulting from the Pleistocene ice sheet, Monomoy is entirely a creation of the sea - composed of sand washed southward from Cape Cod's eroding eastern shore. As such, it is a classic barrier beach, comprised on its eastern shore of surf-battered dunes that gradually flatten out to saltmarsh, and mud flats on its western shore. The ocean is continually reshaping Monomoy's approximately 2,500 acres, and at various points in its history it has been a peninsula, an island, or a series of islands. For the first half of this century, Monomoy was a peninsula connected to the Chatham mainland at Morris Island and was accessible by beach-buggy, a circumstance that Ludlow Griscom frequently took advantage of. In 1958, an April storm "islandized" the peninsula by breaching the beach just below Morris Island and creating the cut-through that still exists today. Local rumor has it that this April storm was aided and abetted by a few shovel-wielding local fishermen eager for a quicker route from Nantucket Sound to the ocean! Twenty years later, in February of 1978, a severe northeaster combined with an extreme tide, "bi-islandized" Monomoy, creating a second cut-through just north of Inward Point, about 1½ miles south of the first cut. As a result, Monomoy now (March 1981) consists of two islands: a shrinking, unstable north island of approximately 1½ miles length, and a more stable and enlarging south island of approximately 6 miles length. (Distances and measurements have little meaning out here as they can, and do, change literally overnight.)

For most of the eighteenth and nineteenth centuries, Monomoy was inhabited by the citizens of a small but active fishing village located along the perimeter of what is now called the Powder Hole - then a rather sizable harbor. During the last part of the nineteenth century, the harbor began to sand in, and by the turn of the century few year-round inhabitants remained. In 1944 Monomoy became a National Wildlife Refuge, and in 1970 was afforded even more extensive protection with its designation as a National Wilderness Area. Since the government gained control of the island, it has slowly but steadily been dismantling the old buildings so that now only the lighthouse and three or four dilapidated shacks remain standing.

Monomoy's ornithological history began during the era of the "sportsman-naturalists" in the late 1800s. The hordes of migrating waterfowl and shorebirds attracted many of these gentlemen gunners which resulted in the formation of the Monomoy Brant Club in 1862. Though most of these men were primarily interested in hunting, there were some fine naturalists among them, and their records as well as the many specimens secured during this period have provided us with considerable information on at least a portion of the bird-life at that time.

Much more complete information on the area's birdlife resulted

from Ludlow Griscom's interest in the area. Griscom was the first to exploit Monomoy's potential as one of the most exciting birding locations on the east coast and during his lifetime made over 300 trips down the (then) peninsula. It seems a strange twist of fate that Monomoy became separated from the mainland just a few months before Griscom's death in 1959.

It was during the 1960's that the ornithological coverage of Monomoy reached its pinnacle. In 1960 the Massachusetts Audubon Society, under the cooperative agreement with the U. S. Department of Fish and Wildlife, began conducting beach-buggy wildlife tours of the island. Led by a series of guides with insatiable avian appetites, these tours quickly became very popular and at times were being run almost daily during the peak summer season. During the last few years of the sixties, a banding operation under the direction of James Baird was conducted on the south end, based in the old lighthouse, which had been purchased by Massachusetts Audubon in 1964. Consequently, for a few years, Monomoy was subject to a level of coverage that is not likely ever to be matched again. The designation of Monomoy as a National Wilderness Area limited vehicle access, and, combined with changes in the physical structure of the island as well as the surrounding waters, made the tours increasingly difficult to operate, and they were eventually terminated after the 1975 season. Although the north island is still reasonably accessible and remains a popular birding spot, the south island is now visited only irregularly by a fortunate few, and undoubtedly many an avian stray passes through undetected. (For a more detailed history of Monomoy, refer to Monomoy Wilderness (1972), a delightful booklet published by Massachusetts Audubon, unfortunately now out-of-print.)

Birding on Monomoy differs considerably depending upon which of the two islands you visit. The north island is best visited from May through September when large numbers of shorebirds and terns are present, while the south island is better from August through November when migrant landbirds, raptors, and waterfowl as well as some of the scarcer shorebird species can be found.

North island: The north island is comprised entirely of dunes, saltmarsh, and mud flats, and attracts hordes of migrating and nesting terns, gulls, and shorebirds. The largest concentrations of birds are generally found at high tide along the edge of the flats and marsh in a $\frac{1}{4}$ -mile stretch extending from the extreme north end south to Godwit Bar (see map). However, during periods of extreme high tides, the birds are often forced farther down the island as well as to the outer beach.

Common, Roseate, Artic, and Least Terns all nest in varying numbers, and the largest tern colony in the state is located among the northernmost $\frac{1}{4}$ mile of dunes. However, this area is currently undergoing severe erosion along its eastern side and seems doomed - along with the tern colony - to become yet

another victim of the sea in the very near future (one of the striking examples of the fast-paced dynamics of the barrier beach ecosystem). An additional six species of terns occur more or less regularly, and Black Skimmers are often seen in the late summer and have nested on occasion.

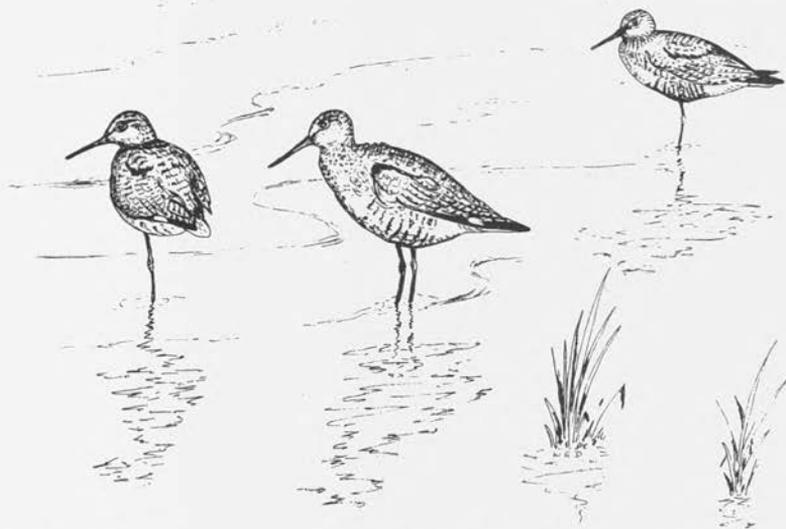
The only Laughing Gull colony in the state is located among and adjacent to the tern colony and has been thriving recently with a population that is rapidly approaching 1,000 pairs. Nesting Great Black-backed and Herring Gulls have overrun the remainder of the north island as well as most of the south island; in 1980 the total gull population was estimated at 18,000-20,000 pairs. Although the tern and Laughing Gull colony is strictly off limits, the observer is free to explore the gull colony, and this can be an interesting diversion when the birding is slow.

Among the shorebirds, Spotted Sandpiper and Piping Plover are fairly common nesters, and in the 1970's both American Oystercatcher and Willet established themselves as nesters and are currently thriving with 4-5 pairs of each present on the north island. Two recent, unexpected nesting occurrences involved the discovery of a dead Least Sandpiper chick in the summer of 1979 and the discovery of a Wilson's Phalarope nest with eggs in 1980. Although Wilson's Phalaropes have been expanding eastward in recent years and their nesting on Monomoy is perhaps not too surprising, the nesting of Least Sandpiper is best treated as an "accident." However, the odd and unforeseen are routine on Monomoy.

Certainly the most spectacular avian event of the area is the shorebird migration which peaks in late May and again in August, during which 15,000-20,000 birds may be present. Even more impressive than the numbers is the variety, which is greatest from late August to mid-September. An incredible 46 species of shorebirds, from every corner of the globe, have been recorded on Monomoy, including such spicy specialties as Eurasian Curlew (2nd North American record), Little Stint (6th North American record), Wandering Tattler (1st east coast record), Rufous-necked Sandpiper (1st state record), Long-billed Curlew, and Bar-tailed Godwit, along with the more routine Avocet, Wilson's Plover, Curlew Sandpiper, and Ruff - truly a shorebirders' paradise! The very local Hudsonian Godwit is another shorebird feature, and in recent years high counts during the August peak have averaged 125-150 individuals. Buff-breasted and Baird's Sandpipers can also be found on occasion, though they are more regular on the south island.

Hérons are commonly seen in the marsh, and although Snowy Egrets and Black-crowned Night Herons predominate, all of the regularly occurring northeast herons are seen from time to time. The only Massachusetts record for Reddish Egret was from here in May, 1958.

Although the waterbirds provide the main attraction on the north island, there are a few other species worth looking for. Sharp-tailed Sparrows are common nesters throughout the marsh, and in recent years Seaside Sparrows have established a small colony of 3-4 pairs along the outer (western) edge of the marsh inside Godwit Bar and have been quite easily found. Horned Larks and Savannah Sparrows are common nesters in the dunes, and also among the dunes the observer might flush a Short-eared Owl at any season, although the fall is the most likely time. Also in the fall, one should constantly be on the lookout for passing falcons and accipiters, and occasionally a few landbird migrants can be kicked up out of the grass.



South island: Most of the south island is comprised of scantily vegetated dunes, and the birdlife, with the exception of nesting gulls, Horned Larks, a small colony of Black-crowned Night Herons and Song and Savannah Sparrows, is sparse indeed. Toward its northern terminus there is a small area of salt-marsh, the so-called "Hospital Ponds," just inside of Inward Point, which has nesting Sharp-tailed Sparrows and possibly Willets. At least 2-3 pairs of Oystercatchers are nesting along the edge of the beach here. Formerly one of the finest landbird thickets on the island, "Wildcat Swamp," was located on what is now the northeast corner of the south island, but this wet swale, which provided the only cover for a couple of miles in any direction, has now been claimed by the sea, leaving only a few dead and dying shrubs and pines.

The south end of the south island with its freshwater ponds and marshes and dense, wet thickets of bayberry, beach plum, and poison ivy (everywhere!), provides the primary attraction

to those with ornithological inclinations. During the fall migration when conditions are right, this area offers some of the most exciting (and challenging!) birding on the east coast. The hub of the avian activity here is the station ponds that lie approximately ½-mile south and southwest of the lighthouse: Big Station Pond to the west and the smaller, more marshy Little Station Pond to the east. Numbers of ducks, herons, and shorebirds frequent these ponds, and the numerous dense thickets ringing their perimeters attract hordes of migrant passerines on good days. Just to the west of the lighthouse is the "Lighthouse marsh," actually a group of very small, shallow ponds interspersed among more dense thickets and a few scrub pines - the only "trees" on the south end. These ponds are also good for ducks and herons and the thickets for migrant land-birds. To the north of the lighthouse are extensive Hudsonia moors that in early fall are worth checking for Buff-breasted and Baird's Sandpipers. Southwest of the lighthouse lies the "Powder Hole," which usually has a few shorebirds, particularly in years when there is some tidal flow. Adjacent to the Powder Hole on the southwest corner of the island is "Camper Cove," a good spot for terns and shorebirds. This cove has been tidal, but sand washing around the point is on the verge of closing it off, if indeed it has not already done so at the time of this writing. The station ponds were formed by this same process. South and southwest of Big Station Pond are a series of thickets, many of which border small, damp sedge flats.

An attempt to list all of the species that one can expect on the south end on a good day would be tedious and serve little purpose; suffice it to say that most of the typical northeast fall migrants can be found, and on a good day a list of 100+ species is quite possible. A few species, however, which are regular or even common as close as Stage and Morris Islands are scarce or absent from Monomoy. This group consists primarily of those species that are very reluctant to cross water and are rather sedentary or both. Black-capped Chickadee, Blue Jay, Cardinal, House Finch, White-breasted Nuthatch, Hairy Woodpecker, and the buteos are all very rare at best, and Tufted Titmouse has yet to be recorded. English Sparrows are, happily, absent as well!

It is, of course, the rare and unexpected - the vagrants - that excite most birders, and the south end of Monomoy has a vagrant track record that is unsurpassed, despite very limited coverage. Among the more spectacular have been the following: Whistling Swan, Purple Gallinule, Wandering Tattler, Lesser Black-backed Gull, Sooty Tern, Bridled Tern, Burrowing Owl, Cassin's Kingbird, Say's Phoebe, Western Wood Pewee, Bewick's Wren, Sedge Wren, Painted Bunting, Lark Bunting, LeConte's Sparrow, and Henslow's Sparrow. Some of the more typical fall vagrants: Red-headed Woodpecker, Western Kingbird, Loggerhead Shrike, Yellow-headed Blackbird, Blue Grosbeak, Lark Sparrow, and Clay-colored Sparrow are all more or less regular.

In any coastal migrant landbird trap, the weather is critical.

to any observer's success, and nowhere is this more evident than on the south end of Monomoy. When the weather is favorable - clear skies and light northwest winds - the birding can be unbeatable, but on a poor day it can be as dull as anywhere. Unlike many other coastal traps, there is a distinct lack of landbird habitats here, resulting in a quick exodus of most of the individuals that may be present immediately after the passage of a cold front. Fortunately, the waterbird habitats are more consistently productive, and some decent birding can often be salvaged on even the poorest of days.

If you are fortunate enough to get to the south end on a good day, you'll have no problem occupying an entire day. Check all of the thickets slowly, those around the station ponds, to the east of Little Station Pond, around the Lighthouse Marsh, between the Powder Hole and Big Station Pond and especially those on the extreme southwest corner of the island. It seems that many southbound birds tend to build up in these last thickets before leaving the island, and there is a constant turnover here. Keep one eye on the sky as accipiters, falcons, and harriers pass through in some numbers during the fall, as do many other diurnal migrants. Short-eared Owls are regular throughout the year and might be flushed almost anywhere. The west end of Big Station Pond and the south and east sides of Little Station Pond are the best spots for shorebirds, especially during dry years. Buff-breasted and Baird's Sandpipers can often be found here in season as well as Wilson's Phalaropes and Stilt and Pectoral Sandpipers. Pelagics can occasionally be seen off the south point.

Although the birds are the primary attraction on Monomoy, the observer who visits and sees only birds has experienced no more than a portion of this unique and fascinating natural community. Several species of mammals are present on the islands, most as year-round residents. White-tailed Deer are common and conspicuous on the south end (and, unfortunately, vulnerable to occasional poaching) and seem to be thriving. From November to May Harbor Seals are present, and in recent years the wintering population here has averaged approximately 200 individuals. Muskrats are common around the ponds and are even present on the north island where freshwater is lacking! Meadow Voles are abundant and are usually easily found by turning over pieces of driftwood along the edge of the dunes. Butterflies are conspicuous in the late summer and early fall, and it's possible to record several species in a day. For the botanist, over 160 species of plants have been identified, most around the freshwater habitats on the south end.

Access: Undoubtedly, the greatest obstacle to birding on Monomoy is simply getting there, which is, perhaps, as it should be since this tends to limit access to those with a sincere desire to experience this still remote area.

For those not fortunate enough to own their own boat, Art Gould's ferry service is presently the only means of reaching

the island. Art is turning the business over to his nephew this year, John McGrath of Chatham, who plans on operating much as in the past. 1981 rates to the north end of the north island will be \$14.00 per person from Andrew Hardings Lane (where the boats are moored) or \$13.00/person from the beach at Morris Island. Rates to the south island have not been determined at the time of this writing. John plans on being available at Andrew Hardings Lane from 7 A.M. to 4 P.M., seven days a week throughout the season. To reach Andrew Hardings Lane, follow Main Street through the center of Chatham. At the end of Main Street, turn right and Andrew Hardings Lane will be the second left. Parking is available at the end of the road.

For those with a boat of their own, the nearest public boat ramp is located on the north side of Stage Harbor on Bridge Street, across from the Stage Harbor Marina. From the rotary in the center of Chatham, turn south on Stage Harbor Road for approximately one mile to Bridge Street on the left. Anchoring for the north island is possible at Godwit Bar (high tide only) or in the channel along the east side of the island (any tide). Do not attempt to anchor anywhere along the eastern shore except along the extreme northern-most $\frac{1}{4}$ mile or so where North Beach provides protection from the ocean surf. Anchoring for the south island is best along the beach due west of the Powder Hole. (This information is based on the 1980 conditions and may have changed somewhat in the interim.)

An increasingly popular means of reaching the north island is by canoe from the beach below the public government parking lot on Morris Island. Canoeing can be reasonably safe but should be attempted only by experienced canoeists and only when the weather is very favorable, i.e. little or no wind. When beaching your canoe on the island, be certain that it is well above the high tide line! A floatable, waterproof container for your optics is also advisable.

Anyone attempting to take his own craft to Monomoy should be an experienced boatsman, familiar with the local waters and weather conditions, and constantly alert for changes in the weather. The weather in the area is very unpredictable and can change suddenly and dramatically. Fog is especially prevalent during the warmer months and can develop literally in a matter of minutes. Do not attempt to take a small boat around the south point as there are treacherous rips here. Reaching Monomoy always involves some adventure - occasionally more than one would like - but this only serves to heighten the "wilderness experience"!

Visits to the north island should be scheduled to coincide with high tide when the shorebirds and terns are concentrated. The tide has little effect on the birdlife of the south island.

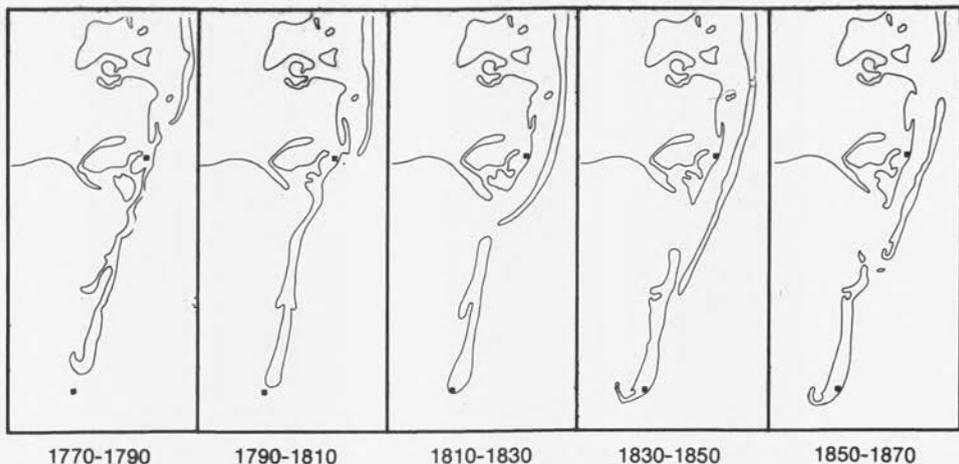
Whichever island you visit, bring something to drink and some sort of protection from the sun, and be prepared to wade to and from the boat. On the south island, poison ivy is virtually everywhere, growing in loose prostrate carpets throughout the dunes to 5-6 foot high bushes in the thickets. It is impossible to effectively bird the area without considerable contact with the sinister weed. Washing exposed portions of the skin with salt water prior to leaving can be an effective preventive measure. Ticks and mosquitos can, on occasion, be a nuisance on the south island also. On the north island, man-eating greenhead flies are a problem in July and August - short pants are not recommended!

If you are fortunate enough to visit Monomoy some day, take a few moments to reflect upon this dynamic, unspoiled natural community. There is much more to be found here than just a few checks on your list. Every trip is a voyage of discovery, for not only the avifauna but the island itself changes continuously. This is a land of many changes and contrasts, whether it be the dramatic creation of a new break through the island or a subtle change in the soft contours of the summer berm, the sudden, energy-packed arrival of thousands of resident terns in the spring or their subdued, almost imperceptible departure in the fall. This is truly a place where "one can stand and put the world behind him," a world where events still follow a natural and rational course. In our increasingly insane, irrational world it is no small comfort to know that a few - precious few - such pristine areas still exist.

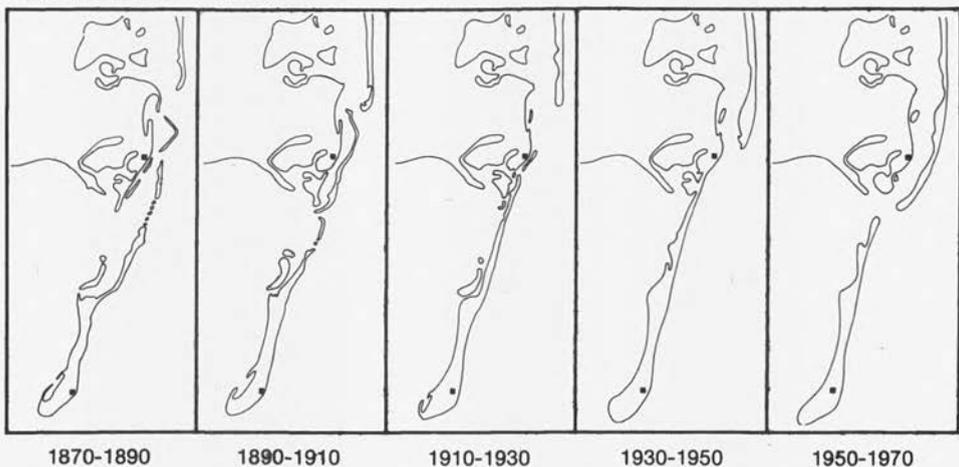
BLAIR NIKULA, lifelong resident of the Cape and Vice President of the Cape Cod Bird Club, is the author of "Checklist of the Birds of Cape Cod," as well as several previous BOEM articles. He is the office manager and technician at Cape Cod Wind and Weather Indicators, Harwich, and formerly led wildlife tours at Mass. Audubon's Wellfleet Bay Wildlife Sanctuary.

WILLIAM E. DAVIS, JR., whose illustrations accompany this article, is an Associate Professor of Science in the College of Basic Studies at Boston University and is a research associate of Manomet Bird Observatory. A resident of Foxborough, Mr. Davis is a frequent contributor of drawings and articles to Bird Observer.

FOR SALE: A Star-D D-28 Professional Camera Tripod and birding 'scope stand. The round, twist-lock legs extend to 6 feet and are lined with mylar sheaths. There are three horizontal/vertical controls, and the center column can be inverted for photography. Brand new. \$60.00. Call Paul M. Roberts, 776-8566, after 8 pm.

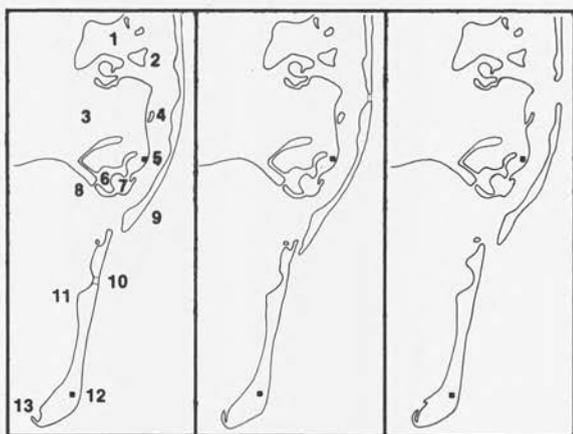


• Chatham Light; Monomoy Light



The ten diagrams above illustrate the major shoreline features during the period 1770 to 1970.

1. Pleasant Bay
2. Strong Island
3. Chatham
4. Tern Island
5. Chatham Light
6. Stage Harbor
7. Morris Island
8. Harding Beach
9. Nauset Beach
10. 1978 Break
11. Inward Point
12. Monomoy Light
13. Monomoy Point



Predictions of future shoreline development.

Chatham Barrier Beaches

Maps prepared by Graham Giese.

THE BARRIER BEACHES OF CHATHAM

Graham S. Giese, Provincetown

As other articles in this issue of Bird Observer make clear, the Monomoy "system" is in a state of constant flux: fishing villages and tern colonies come and go. Monomoy is first an island, then a peninsula, yet again an island, then two islands. This article will provide the geological underpinnings for an understanding of the Monomoy process.

S.Z.

The Chatham coast consists of two basically different types of land forms: a relatively stable inner coast formed chiefly by submergence of Pleistocene glacial deposits but modified in part by wave action; and an extremely dynamic outer coast consisting of unconsolidated deposits formed and continually modified by wave, tidal and wind action.

Most of the outer coastline features formed in this way are technically known as "barrier beaches." A barrier beach is an elongate coastal feature generally consisting of beaches, dunes, and tidal flats, together forming a narrow low-lying strip of land composed of unconsolidated sediment and extending roughly parallel to the trend of the coast. It is separated from the mainland by a body of fresh, brackish or saline water, or a marsh system. A barrier beach may be joined to the mainland at both ends, or at one end, in which case it is known as a "barrier spit," or, as in the case of a "barrier island," it may not be attached at all.

The eastern outer coast of Chatham--Nauset Beach and Monomoy--comprises the southern part of a series of barrier beaches, islands, and spits which are formed of sediments eroded by wave action from the sea cliffs of Eastham and Wellfleet and carried southward by littoral drifting. The southern outer coast of Chatham--Forest Beach, Ridgevale Beach and Harding Beach--is similarly made up of barrier beaches, islands and spits which consist of materials eroded and carried eastward from the exposed glacial deposits of the Nantucket Sound coast west of Chatham.

During the past 200 years, a large amount of information has been gathered concerning the form and changes of form of the Chatham barrier beaches. A study of this information was undertaken for the Conservation Commission of Chatham, with the following objectives: first, to determine the patterns of change undergone by the Chatham barrier beaches over the past 200 years; second, to deduce the processes controlling the observed patterns of change; and third, to predict the patterns of change which may be expected in the future. The

results of this study are summarized below.

Patterns of Past Changes

Once the primary data sources (reports, historical accounts, studies, maps and charts) for the 200-year study period (1770-1970) had been collected, pertinent information was divided chronologically into 20-year periods. For each 20-year period a generalized diagram representing the major shoreline features of that time period was prepared. The ten resulting shoreline diagrams are the first of the thirteen diagrams shown together in this article. It should be emphasized that each of these ten diagrams represents a composite of all the data available for that time period and therefore may differ from the coastal form at any one time during that period. Furthermore, diagrams are not maps--that is, they were not constructed according to a constant-scale relationship with the actual land forms. Therefore, while they are useful in indicating relative shoreline changes, they cannot be used to determine absolute changes or rates of changes.

Some portions of the barrier beach complex have changed relatively little over the entire 200-year period. On the south coast, Harding Beach, which joins the mainland at West Chatham and extends southeastward, forcing a right-angle bend in the Oyster River, has maintained a fairly constant form. It has slowly increased in width and in length. On the east coast, the part of Nauset Beach north of Strong Island has maintained a fairly constant form without permanent breaks (most of this part of Nauset Beach lies above the diagrams). Also, the part of Monomoy from Inward Point south to Monomoy Point has been stable over the entire period. The northern end of this part of Monomoy has narrowed somewhat due to erosion along the eastern coast, but the southern end has widened, growing southeastward approximately one-half mile between 1887 and 1964.

However, the barrier beaches on the east coast between Strong Island and Inward Point have undergone major changes. Two centuries ago the barrier beach extending southward from Nauset Inlet was a barrier spit which ended approximately opposite the present location of Tern Island. The Chatham coast southward was not protected. The barrier began again at Morris Island and continued without interruption to Monomoy Point. The northern barrier gradually grew southward, until by 1820 it reached south of Morris Island and overlapped the southern barrier, which then separated from the island. After this separation, the south end of the northern barrier continued to grow southward and the north end of the southern barrier continued to retreat southward.

In 1846 a new inlet formed through the northern barrier opposite Ministers Point (Allen Point). As this inlet rapidly grew wider, the barrier beach south of it gradually disintegrated, and migrated in remnants westward into the Chatham

mainland. The barrier beach north of the inlet grew gradually southward once more, and the barrier south of Morris Island regained a continuous form and became reattached to the island, so that by about 1940 the general form of 1800 had returned.

After 1940, the post-1800 pattern was repeated: continued southward growth of the northern barrier until it reached south of Morris Island; separation of the southern barrier from the island; continued southward growth of the northern barrier and southward retreat of the north end of the southern barrier. In summary, the east-coast barrier beaches between Strong Island and Inward Point undergo a cyclical pattern of changes with a period of approximately 150 years.

Processes Controlling Change

The Chatham barrier beaches owe their existence to, and change form in response to, processes driven by a number of different natural forces, including coastal erosion, wave energy, tidal flow, winds and storms. Coastal erosion west of Chatham provides sand for Chatham's south coast barrier beaches, while coastal erosion north of Chatham provides sand for Chatham's east coast barrier beaches. Along the south coast, eastward-directed net wave energy transports sand to the barriers on that coast. Along the east coast, southward-directed net wave energy transports sand to the east coast barriers.

Easterly winds, storm waves and storm tides transport sand westward across the east coast barrier beaches in the form of dune movement, overwash and overwash fans, and breakthroughs and flood-tidal deltas. As a result, the barrier moves westward at a rate of between 5 and 10 feet per year. In doing so, it causes the inner channel to become ever more constricting to tidal flow from Pleasant Bay and Chatham Harbor to the Atlantic Ocean. Eventually, the constriction becomes so great that when, as a result of storm-elevated sea levels, a breakthrough occurs through the northern part of the barrier, Pleasant Bay tidal water flows through the breakthrough instead of through the inner channel, and the breakthrough becomes an inlet.

The southward moving sand supplied by littoral drifting is intercepted at the new inlet. Some sediment is carried in and added to the flood-tidal delta, and some is carried out and added to the ebb-tidal delta. Because of the reduction in the volume of sand supplied to it, the barrier south of the new inlet is "starved." It gradually breaks down and is moved landward.

Eventually, the inlet is no longer an inlet but rather marks the southern end of a barrier spit which grows southward with the addition of sediment supplied by littoral drifting. The previous barrier, south of the "new" spit, moves onto the Chatham mainland, forming the "peninsula" of Monomoy. At this stage, the attachment of Monomoy to the southern Chatham main-

land is secured by rapid littoral drifting along this shoreline resulting from its open exposure to waves.

When the "new" barrier spit grows far enough southward to overlap the southern barrier, and when this southern barrier becomes breached in the ordinary manner, the breach remains open because the littoral drifting required to close it is no longer available. Thus the northern end of the southern barrier retreats as the southern end of the northern barrier advances. The cycle is reinitiated when the northern barrier is once again squeezed against the mainland of southern Chatham.

Patterns of Future Changes

Assuming that the cyclical changes continue without interruption, the future form of the shoreline can be predicted. The last three diagrams shown in this article represent present and future shoreline development for the periods indicated.

However, the 150-year cycles of change are superimposed upon a very long-term trend toward a different pattern. Eventually, after two or three more cycles have run their course, the northern portion of the barrier will be sufficiently westward of its present location that it will no longer overlap the mainland of Chatham. Rather, the barrier beach system will stop at North Chatham, the coast from North Chatham to Morris Island will be exposed to ocean waves, and an ever-widening Monomoy spit will extend southward from Morris Island.

GRAHAM GIESE, of North Truro, is a coastal oceanographer and director of the Provincetown Center for Coastal Studies. The present article is based on his report, The Barrier Beaches of Chatham, Massachusetts, prepared for the Chatham Conservation Commission and published as a special supplement to the Cape Cod Chronicle, June 1, 1978.

ANNOUNCEMENT: PARKER RIVER REFUGE PLANNING

Alternatives for the management of the Parker River National Wildlife Refuge, Newburyport, will be the subject of a number of workshops to be held in August. The alternatives have been formed in part from ideas and comments received from the public last fall. If you would like to learn of the date and location of the workshops and receive advance information, call Parker River at 465-5753 or the Regional Refuge Planning Team at 965-5100, extension 278. Persons and groups on the mailing list for The Refuge Planner will automatically receive this information.

RE-ESTABLISHING MUSKEGET ISLAND
AS AN ALTERNATE NESTING SITE FOR MONOMOY TERNS

By Richard A. Forster, Framingham

Monomoy National Wildlife Refuge is unexcelled as a stopover area for migrant shorebirds. It is also a nesting place for terns and gulls. The 1980 figures for terns included 3400 pairs of Common, 400 pairs of Roseate, 5 pairs of Arctic, and about 750 pairs of Laughing Gulls. Also in 1980 the U.S. Fish and Wildlife Service conducted a careful census of Great Black-backed and Herring Gulls and determined that there were about 18,500 pairs of gulls, of which about 80% were Herring Gulls.

Only recently has Monomoy become a favored nesting area for gulls and terns. Monomoy Island was connected to the mainland until 1958 when a severe storm separated Monomoy from the mainland at a point just south of Morris Island. In the mid-1960's Common Terns became established in a colony on the southern end of Monomoy. These birds represented terns displaced by the burgeoning gull population from Tern Island in Chatham.

The first Herring Gulls nested on Monomoy in 1966. Since that time the Monomoy gull population has increased to the extent that it is one of the largest gull colonies, if not the largest, in the eastern United States. The Monomoy tern colony is now located on the northern end of the island at a point that is now subject to severe erosion. The gulls are nesting right up to the periphery of the tern colony, and a few even attempt to nest in the colony itself. Because of these extreme conditions, it is imperative to establish an alternate nesting site in the event that the present tern colony is destroyed by erosion.

Muskeget Island has had a history similar to Monomoy. Muskeget had long been a favored tern nesting area and numbers were probably at a peak, 20,000 pairs, about 1920. Since 1935 the terns steadily decreased and from 1950 on only sporadic nesting attempts have been recorded. In 1950 about 20,000 pairs of Herring and Great Black-backed Gulls were nesting on Muskeget and had displaced the terns. A census of gulls in June, 1980 indicated that about 800 pairs of gulls were nesting on Muskeget, a substantial drop from the 1950 figures. Many of the gulls that formerly nested on Muskeget may have relocated to Monomoy or other locations.

In 1981 the Massachusetts Audubon Society placed a man and a dog on Muskeget in an attempt to drive the remaining nesting gulls from the island and restore it as a potential tern nesting site.

The Monomoy colony is not only threatened by erosion and the expanding gull population but is also subject to extensive predation by Great Horned Owl and Black-crowned Night Heron. It is a simple matter for the horned owl to commute from the

mainland. Muskeget Island is sufficiently distant from adjacent mainland areas that predation would not be a major factor limiting tern productivity. Thus, re-establishing Muskeget Island as a potential tern nesting area is an attractive proposition.

The existing tern colony adds to the attractiveness of Monomoy as a birdwatchers' paradise. It is one of relatively few locations where Roseate Tern is a guaranteed sight. However, it may be to the ultimate benefit of the terns if they abandon the Monomoy colony for a more secure location. Even if the terns were to leave, Monomoy would remain an excellent birdwatching hot spot.

RICHARD A. FORSTER, Assistant Director of Natural History Services at Massachusetts Audubon Society, is in charge of the plan to drive gulls off Muskeget Island.



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REPORT ON THE TERN POPULATION
NANTUCKET ISLAND, MASSACHUSETTS, 1980

by Nan Jenks-Jay
Williamstown, Massachusetts

Introduction

In 1978, the Trustees of Reservations initiated the first Tern Management Program on their Nantucket Coskata-Coatue Wildlife Refuge. The following year, 1979, the terns failed to nest on this property. Faced with this situation, the Tern Chief made a decision to broaden the scope of the project to include other tern nesting sites. Sanctioned by the Trustees of Reservations, the Nantucket Conservation Foundation and private landowners, the Tern Management Program encompassed the entire island. The results proved to be quite beneficial. A complete picture of Nantucket's total nesting tern population evolved.

The 1980 Nantucket Tern Management Program encompassed seven tern colonies on the island. These colonies were located at Great Point, Coatue Point, Quaise Point, Low Beach, Siasconset, Surfside, and Quidnet. The species observed were Least Tern (*Sterna albifrons*), Common Tern (*Sterna hirundo*), Arctic Tern (*Sterna paradisaea*), and Roseate Tern (*Sterna dougallii*). Only two of these species actually nested on Nantucket: Least and Arctic.

Method

The three main objectives of the Tern Management Program were: to census the tern population, to provide protection to nesting terns, and to increase public awareness through interpretation and education.

Census: The census method employed was that of direct count. After the colonies were established, the censusing commenced. A census was made during regular colony visitation. With routine visits, the nesting activity was monitored. Nests were numbered and plotted on a corresponding map. Information regarding breeding pairs, nests, eggs, chicks and fledglings was recorded. Most observations were made from outside the colony, either using a vehicle as a blind, as suggested by Blodget (1978), or using a spotting scope from a distant vantage point in order to create less disturbance. Colonies were not entered in the mid-day heat nor when cold or damp weather conditions prevailed.

The comparative data that the census provided exhibited local trends in nesting. When compiled with the census data collected by other tern programs, it showed the fluctuations in state and coastal tern populations.

Protection: Protective measures were taken in an effort to decrease the disturbances and dangers that nesting terns are exposed to under normal conditions. The goals of such intervention were to see an increase in the fledgling survival rate and eventually in the total population.

The tern colonies were protected from human disturbance by posting signs, erecting fencing and patrolling the area to reduce intrusion. A survey early in the season determined the location of seven tern colonies on Nantucket. Protective measures varied in accordance with the specific needs of each individual colony. Colonies in areas of unrestricted and frequent Off-Road Vehicle (ORV) use required more physical barriers. At Coskata-Coatue Wildlife Refuge the tern colony was fenced with cedar posts strung with telephone cables. Strips of reflector tape were tied on the cable between posts to alert approaching vehicles. Driftwood was placed between posts at the ends of the colony which faced oncoming ORV traffic. Three-inch plastic reflectors on each post forewarned night drivers. "Bird Nesting" signs alerted and informed beach visitors. As recommended by Buckley (1976), buffer zones were left between nests and the posts when possible. The narrowing of some beaches prohibited the allowance of a buffer zone where sufficient space had to be reserved for passage of ORV during high tides. Vehicles were encouraged to use a single, well-established track which directed them safely around the colony. Signs reading "Caution - Baby Birds in Tracks" were posted when chick-hatching dates arrived. Other more undisturbed colonies required only the posting of signs. Shingles with reflector tape were placed between the signs to make the size and shape of the colony more apparent to occasional beach visitors.

Regular visits to the colonies by the Tern Chief and volunteers discouraged human intrusion and disturbance. During this patrolling, interaction with beach visitors helped to increase public awareness and establish good public relations.

In addition to providing protection from human disturbances, measures were taken this season to provide protection from predators as well. For two consecutive years avian predation has posed serious problems to Nantucket's Least Tern populations. In 1978 a pair of kestrels (Falco sparverius) decimated the tern colony on Siasconset Beach.

Feeding their own 5 nestlings, the pair picked up a tern chick approximately every 15 minutes until not a chick remained (Study and Census of Terns, Nantucket, 1978). In 1979 a female Northern Harrier (Circus cyaneus) considerably reduced the success of the Tom Nevers Colony. Of 80 chicks only 4 fledglings were able to escape the keen eye of the harrier (Study and Census of Terns, Nantucket Island, 1979). The hawks began to hunt over the colonies after the first 3-day-old chick left the nest and the protective incubation of its parents.

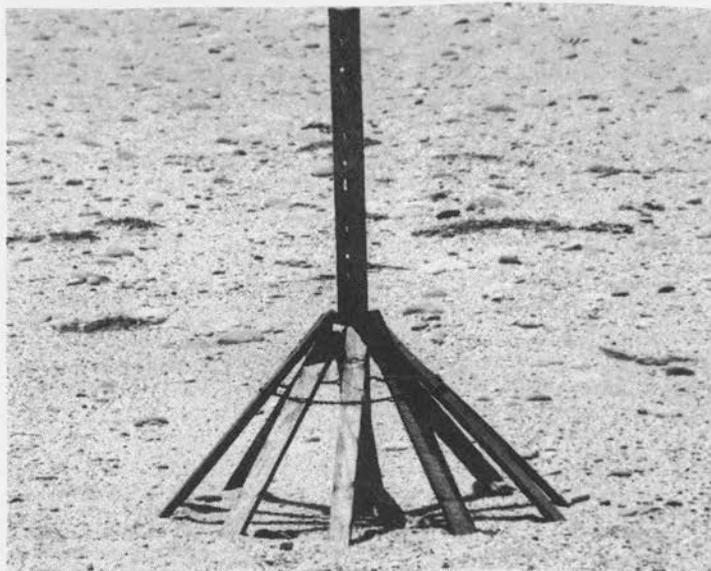
Traditionally, Least Terns nest on the sandy beaches close to the high tide mark, which is sparsely vegetated. Least Terns on Nantucket are no exception. These areas provide little or no shelter for tern chicks once they leave the nest. With only an occasional piece of beach debris or Sea Rocket (Cakile edentula) to crouch beside, the tern chicks become easy prey for avian predators. Out of necessity and sheer frustration came the conception of the Least Tern Shelter.

It was critical to have an understanding of the tern chicks' behavior. After the chicks are a few days old, they run randomly throughout the colony. These periods coincide with the sudden appearance of avian predators. Therefore, it is assumed that this activity attracts the hawks to the nesting sites. Adult terns have not fallen prey to the hawks, nor do the predators force adult terns off their nests. It is only when the chicks begin to wander that they become prey to hawks. It was also imperative to know that the Least Tern chicks seek shelter from the intense summer sun, whether in the shade of a tire track or in the shadow provided by small vegetation.

Because of these behavioral patterns, the Tern Shelter was designed to provide shade for chicks, thereby reducing the amount of random running in the colony. This reduction of chick activity and visibility failed to attract the hawks to the colony even when they were sighted in the vicinity. At the same time that the shelters provided shade from the sun, they provided protection from the talons of hunting hawks.

The Tern Shelters are constructed out of discarded snowfencing. There are two benefits to recycling old snowfencing. First and foremost, it is free. Second, it is in large supply following the winter season. Damaged sections can be acquired from the local Department of Public Works, the State Highway Department or community landfills.

Essentially the snowfence is taken apart, modified and reassembled into a Tern Shelter. (See photo.) Slats are removed from their wire supports, cut and drilled, and returned to the wire supports, now in the shape of a cone. The cone shape and open design allow sand and beach litter to blow through the shelter without build-up. The open feature which characterized the shelter discouraged mammals such as mice and rabbits from nesting in the shelters. Another favorable aspect of the open design was that it enabled the chicks to spot and hear respective parents arriving with food. Previous observation noted that hungry chicks would run to a parent which had arrived with a fish. Surprisingly, when shelters were placed in colonies, the reverse was found to be true. Many chicks remained inside them when the adult brought food. The parent spotted the chick, walked into the shelters, fed the chick and left.



Least Tern Chicks Crouch in the Shade
Provided by Tern Chick Shelter
Photo by Nan Jenks-Jay

This reduced the great amount of running-about which had been characteristic in the colony before the chicks were fledged. The shelter's cone-shape design provided shade from one slat or another throughout the day. The center posts varied in height. Those that extended beyond the top of the shelters were not used as perches by avian predators. The only example of center post perching was exhibited by one of the 3 Arctic Terns. Some posts were attached to the shelters; others were not. It appeared to make little difference, for even an unattached post, which was the same height as the shelter, was sufficient to secure it in high winds. Throughout the entire season no shelters were damaged or lost.

Tern Shelters were placed at random throughout the colonies. The first observation of shelter use was in the Great Point Colony. Three chicks from a 3-egg clutch found their way to a shelter on the first day that they left the protection of the nest. The three traveled approximately 20 yards to the shelter.

The shelters were not defended by adults as was the territory of nest sites. Chicks of all ages were observed in the shelters. Even fledged birds stood in the shade provided by the slats of the cone. Up to 5 chicks were observed utilizing a shelter at one point. Data showed that the greatest amount of usage occurred when temperatures were the highest. Increased shelter usage coincided with increases in daily and seasonal temperatures. Shelter use was less in the early morning hours and on overcast days.

In regard to visibility on the beach, the Tern Shelters were moderately unobtrusive. The recycled snowfence cone did not look terribly out of place on Nantucket beaches which are strewn with snow fencing used in efforts to control erosion.

The positive public reaction to the Tern Shelters was unpredicted. The nature of repeated visitor comments was that they now knew something was actually going on in the colony. Untrained observers had great difficulty seeing nests, eggs, or chicks. If adults were in the air, beach visitors had some disbelief when reading posted signs which warned of a nesting area. Even if their function was not understood, the shelters were found to provide visitors with something visible. They were often able to spot chicks inside the shelters. In this way the shelters helped to increase public awareness of our efforts to protect the terns.

In conclusion, the Tern Shelters are constructed with a minimal expenditure of time, effort and money. They should endure for several seasons since replacement due to wind loss or damage is low. They are lightweight and easily transported. With the center post removed, the shelters stack for convenient storing. The shelters provide necessary protective shade for tern chicks. By the end of this season, chicks sought refuge in the shelters in instances of human, dog or vehicle disturbances. Many factors may have influenced the lack of hawk activity in the tern colonies, but it should be noted that no avian predation occurred in the seven tern colonies on Nantucket following the distribution of Tern Shelters.

Results and Discussion

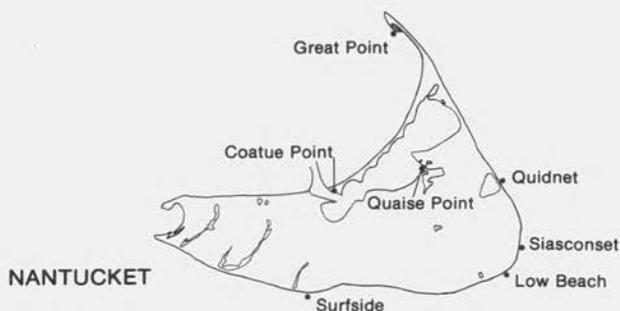
The census for the past two consecutive years has shown very little change in the Least Tern population (1979--210 pair, 1980--213 pair). Little fluctuation has occurred in the productivity of these colonies over this two-year period (1979--63 fledglings, 1980--66 fledglings). Therefore, it should be noted that in 1979 and 1980 the Least Tern population on Nantucket has remained stable.

Likewise, the number of Arctic Terns has remained the same, one pair and one nest helper at Quidnet.

The number of Common Terns nesting on Nantucket Island has decreased in a three-year period. In 1978, 12 pair nested at Great Point. In 1979, only 2 pair nested on Nantucket, again at Great Point. The Great Point lagoon was the site of many loafing and unmated Common Terns in 1980, but no Common Terns were observed nesting on Nantucket this year.

Seven colonies were established by nesting Least Terns in both 1979 and 1980. Many of the 1979 nesting sites were reused in 1980 with the exception of some shifting along the southeastern shore. Of the seven 1980 colonies, five were considered to be productive: Great Point, Surfside, Quaise

Point, Siasconset and Low Beach. Great Point saw the return of nesting Least Terns after a season of absence. However, ORV disturbance disrupted the Great Point colony, which only fledged 6 chicks. Quaise Point produced only 13 fledglings due to a late July storm washout. Low Beach produced 6 fledglings. Siasconset, a colony settled late in the season, produced only 4 fledglings as a result of high tide and storm water damage. Surfside proved to be the most productive colony again this year as it was in 1979. With a total of 37, Surfside successfully fledged more chicks than any other Nantucket colony.



The remaining two, Coatue Point and Quidnet, produced no fledglings. Coatue Point was abandoned early in the season. The Quidnet nesting was disrupted by ORV destruction on two fatal occasions.

Conclusion

An official Tern Management Program encompassing the entire Island is relatively new on Nantucket. Therefore, it is difficult to determine the long-range effects of the program over such a short period of time. However, for two consecutive years the Least Tern population has remained relatively stable. Fledgling rate has been consistent also. Enrichment programs continue to increase public awareness, but more attention is required in the area of ORV's to discourage abuse of the beaches and colonies. Regardless of the number of individuals who have become more aware of the terns due to the many outreach programs, it still only takes one vehicle to destroy an entire tern colony.

The Tern Shelters were designed in response to the need to discourage avian predation. With the use of Tern Shelters, hawk predation did not occur on Nantucket this season.

The Trustees of Reservations receive acknowledgement for initiating and continuing the Tern Management Program on Nantucket. Again, my sincere gratitude and admiration goes to author-naturalist, John Hay, who as a Standing Committee

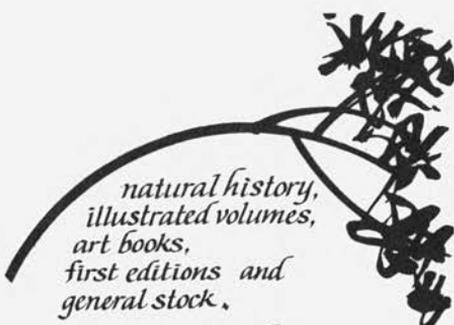
Member of the Trustees of Reservations generously provides funding for this project. It is his dream that we all share: to see the preservation of not only the terns and Nantucket, but also our environment.

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Blodget, Bradford G. 1978. "The Effects of Off-Road-Vehicles on Least Terns and Other Shorebirds." University of Massachusetts and National Park Service Cooperative Research Unit, Report Number 26.

Buckley, P.A. and Buckley, F.G. 1976. Guidelines for Protection and Management of Colonially Nesting Waterbirds. National Park Service. Boston, Massachusetts.

NAN JENKS-JAY will be the Assistant to the Director of the Center for Environmental Studies Program at Williams College in fall, 1981. She has been an Instructor of Ecology at Berkshire Community College, and has conducted the Tern Management Protection Program at the Coskata-Coatue Wildlife Refuge for four summers.



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Field Records: March 1981



by George W. Gove, Robert H. Stymeist, Lee E. Taylor

March 1981 was very dry and on the mild side. The temperature averaged 39.1° , 1.0° above normal and 2.2° warmer than March 1980. The 70° high on the 31st tied the record for that date set in 1936. Temperatures reached into the low eighties away from the coast on the last three days. The first half of the month was on the moderately warm side and then followed by a rather cold week, but the final three days averaged 17° above normal. The month's high was 77° on the 29th; the low reading was 13° on the 19th.

After an extremely wet February, the precipitation pattern returned to the very dry conditions of last December and January. The total was but 0.62 inch, 3.39 inches less than normal. This was the driest March in 111 years of official record. Snow totaled only 0.5 inch, 7.5 inches less than average and 3.1 inches less than last March. The seasonal snowfall total now stands at 22.3 inches, 18.8 inches less than average but 9.4 inches more than a year ago. There were no thunderstorms, so this March was more lamblike than lionlike.

LOONS THROUGH IBIS

Red-necked Grebe numbers were increasing with 150+ at Nantucket and 55+ at Dennis. The TASL count found 87 Horned Grebes in Boston Harbor on March 8 and 726 Great Cormorants. The early reported date for Double-crested Cormorants was also on the TASL count. Early Great Blue Herons were also reported on the 8th by TASL and from Eastham. A Great Egret was seen at GMNWR on the 28th and Snowy Egrets were also reported on the 28th and an inland American Bittern was reported from Carver on the 15th. Glossy Ibis were first reported on the 30th with one seen at P.I. G.W.G.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Common Loon:			
1,15	Nant.	45, 20	BBC, J.Grugan
15,30	Manomet, P.I.	6, 1	SSBC, R.Energy
Red-throated Loon:			
1	Nantucket	2	BBC
22,28	Brant Rock, Marshfield	1, 1	G.d'Entremont, SSBC
Red-necked Grebe:			
1,4	Plymouth, MBO	1, 17+	S.Higginbotham, MBO staff
12,16;15	Nantucket	12, 150+; 3	E.Andrews; J.Grugan
15,22,28	Manomet, N.Scituate, Marshfield	3, 5, 9	SSBC, G.d'Entremont, SSBC
20,30	Dennis, P.I.	55+, 1	B.Nikula, D.Alexander
Horned Grebe:			
8,12,16	Nantucket	22, 2, 28	E.Andrews
8	Boston Harbor	87	TASL
14,28	P.I.	4, 14	BBC
Pied-billed Grebe:			
4,15	Worcester, Plymouth	2, 1	L.Babbitt, SSBC
Gannet:			
8,14	P'town, Nant.	4, 20	M.Lynch, J.Grugan
28,30	Marshfield, Salisbury	3, 10	SSBC, D.Alexander
Great Cormorant:			
8	Boston Harbor	726	TASL
Double-crested Cormorant:			
8,28	Winthrop, P.I.	2 imm., 2	TASL, BBC
29,30	S.Hanson, Squantum	20, 7+ 30 migr.	W.Petersen, D.Brown

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Great Blue Heron:			
8,15,19	Eastham,Lakeville,Westboro	3, 1, 1	M.Lynch, BBC, H.Russell
8,30	Hingham, Milton	1, 4	TASL, D.Brown
28,29	P.I.; Rowley	5, 10; 3	BBC,C.+D.Ewer; R.Emery
29,30	Wayland	1, 2	R.Forster
Great Egret:			
28	GMNWR	1	D.Lange#
Snowy Egret:			
28	P.I., Marshfield, Chatham	1, 2, 2	M.Reinstein#, SSBC, CCBC
29	Westport, Salisbury	1, 1	G.Gove#, J.Carter
30,31	Squantum; Cohasset	1, 3; 1	D.Brown,S.Higginbotham;W.Hanley
Black-crowned Night Heron:			
8,25	Eastham, Danvers	9, 5	M.Lynch, R.Heil
28,29	Belmont, P.I.	1, max. 10	BBC, v.o.
American Bittern:			
1,15	Nantucket, Carver	1, 1	BBC, R.Turner
Glossy Ibis:			
30	P.I.	1	R.Emery#

WATERFOWL

Mute Swan numbers were largest in southeastern Massachusetts and a maximum of 103 was reported from Westport. A nesting pair was observed on the 29th in Ipswich. A Whistling Swan, seen by many observers, was first reported from the Fitchburg area on the 26th. Brant were reported from an encouraging number of locations with 2247 on the TASL count. Snow Geese are continuing to make appearances on the coast in addition to the inland locations and up to three "Blue" Geese accompanied them at Plum Island.

Mute Swan:			
1,15	Nantucket, Plymouth	50, max. 39	BBC, v.o.
28,29	Westport	max. 103	v.o.
29	Ipswich	nesting pr.	D.Alexander
Whistling Swan:			
26,31	Fitchburg	1	W.Klunk + v.o.
Canada Goose:			
1	Newburyport	2800+	R.Heil
Brant:			
5,8	Newbypt, Boston	100, 2247	D.Alexander, TASL
10,15	Scituate, Plymouth	350, 200	G.Tyler, SSBC
14,15	Ipswich	67	J.Berry
28	Salisbury, Marshfield	295, 45	BBC, SSBC
Snow Goose:			
21-31	P.I.	32-500+	v.o.
29	S.Hanson, Needham; Concord, Sudbury	300, 100; 157, 660	W.Petersen, J.Barton; R.Walton, R.Forster
"Blue" Goose:			
22-30	Newbypt	2-3	v.o.
Black Duck:			
1,29	E.Middleboro, S.Hanson	75, 300+	K.Anderson, W.Petersen
Gadwall:			
1,5	Newbypt; P.I., Plymouth	2; 8, 20	BBC; D.Alexander, K.Anderson
14,15	P.I., Plymouth	20, 19	BBC, SSBC
22	P.I.	25	W.Petersen
Pintail:			
1,13	Plymouth, S.Hanson	2, 6	S.Higginbotham, W.Petersen
8-14	Concord	2-7	R.Walton
thr.	P.I.	max. 30	v.o.
"Common" Teal:			
14-31	P.I.	1 m.	v.o.
Green-winged Teal:			
1	Nantucket, P.I.	1, 2	BBC
8	Wayland, Milton	1, 3	C.Ewer, TASL
14	Sudbury R. Valley, P.I.	21, 24	R.Walton, BBC
28,29	P.I.	max. 200	v.o.
Blue-winged Teal:			
22,29	S.Hanson, Lakeville	4, 1 m.	S.Higginbotham, G.Gove
21,28	S.Peabody, Marshfield	pr., 5	R.Heil, SSBC
27;29	Nantucket; P.I., Wayland	2; 10, 1	J.Andrews; C.+D.Ewer, R.Forster

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
European Wigeon:			
1-17	Nantucket	1 m.	v.o.
American Wigeon:			
7,14	Gloucester, P.I.	4, 5	BBC
14,15	Wayland, Plymouth	2, 6	R.Walton, SSBC
Northern Shoveler:			
28	GMNWR	2 pr.	G.Gove#
29	P.I.	7 m., 1 f.	R.Emery#
Wood Duck:			
7,14	Wayland, Carver	pr., 2	R.Walton, W.Petersen
21,31	GMNWR, Woburn	3 pr., 2 pr.	G.Gove
29	IRWS, Hamilton; Bridgewater	20, 6; 10	R.Heil; W.Petersen
28	GMNWR	8	R.Walton
Redhead:			
1,13	Nantucket	135, 75	BBC, J.Grugan
Ring-necked Duck:			
8,15	Eastham, Carver	4, 94	M.Lynch, BBC
13,14	S.Hanson, Carver	200 (85% m.), 125	W.Petersen
22	IRWS, Quabbin	22, 30+	R.Heil, BBC
26;27	Braintree; Woburn	20; 5 m., 3 f. (One male with entirely white face.)	R.Campbell; G.Gove
Canvasback:			
1;8	Nantucket; Quincy, Eastham	70; 4, 25	BBC; TASL, M.Lynch
15;21	Lakeville; Cambridge	25; 3 m., 2 f.	BBC
Greater Scaup:			
1,8	Nantucket, Boston Harbor	350, 2663	BBC, TASL
14,21	Newburyport	max. 800	v.o.
30	Salisbury	150	D.Alexander#
Lesser Scaup:			
1,15	Nantucket, Lakeville	4, 190	BBC
21;30	Cambridge; Randolph	3 m., 1 f.; 13	BBC, D.Brown
Common Goldeneye:			
1	Nantucket	305	BBC
1-15	Newburyport	max. 400	v.o.
22,28	S.Hanson, Marshfield	54, 26	S.Higginbotham, SSBC
Barrow's Goldeneye:			
thr.	Newburyport	max. 2 pr.	v.o.
7;8	Gloucester; Quincy	2; 2 m., 1 f.	BBC; TASL
8	Plymouth	1 m.	B.Sorrie#
Bufflehead:			
7;8	Cape Ann; Boston, Lincoln	55; 1215, 10	BBC; TASL, C.Ewer
14	Halifax, Wayland, Newbypt	20, 3, 200	K.Anderson, R.Walton#, BBC
15	Lakeville	46	BBC
29,31	Newbypt, Lynnfield	2000, 12	C.+D.Ewer, M.Sharpe
Oldsquaw:			
1,8	Nantucket, Boston Harbor	3000+, 8	BBC, TASL
14-29	Newburyport	200	v.o.
28	Nantucket	25,000-50,000	E.+J.Andrews
Harlequin Duck:			
8-15	Manomet	1 m., 2 f.	B.Sorrie#
Common Eider:			
8	Boston Harbor	10,130+	TASL
15	Plymouth Harbor	5000	W.Petersen
White-winged Scoter:			
1,8	Nantucket, Boston Harbor	300, 114	BBC, TASL
Surf Scoter:			
1	Nantucket, Plymouth	75, 30	BBC, S.Higginbotham
Black Scoter:			
1,28	Nantucket, Marshfield	50, 1	BBC, SSBC
Ruddy Duck:			
30	P.I., Randolph	2, 1	D.Alexander#, D.Brown
Hooded Merganser:			
7	Winchester, Wellesley	2, 1	BBC, C.Ewer
8	Lincoln, Eastham	2, 2	C.Ewer, M.Lynch
14	Halifax, Braintree	3 pr., 5	K.Anderson, G.d'Entremont
15	Lakeville	5	BBC
22;30	E.Bridgewater; Randolph	6 m., 3 f.; 4	S.Higginbotham; D.Brown

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Common Merganser:			
1,7	Plymouth, Winchester	12, 14	S.Higginbotham, BBC
8,15	Boston Harbor, Lincoln	17, 97	TASL, R.Stymeist
thr.	Newburyport	max. 50	v.o.
15,22	Lakeville, Quabbin	21, 15+	BBC
30	Milton, Randolph	81, 94	D.Brown
Red-breasted Merganser:			
1,8	Nantucket, Boston Harbor	550, 1522	BBC, TASL
28	Westport	380+	R.Heil

RAPTORS THROUGH WOODPECKERS

Turkey Vultures were reported as early as March 1 although the very first report this year came February 28. The bulk arrived after the 20th of the month with as many as 17 reported from the Quabbin area. Encouraging is the report of 10 Red-shouldered Hawks from scattered locations during the month. There was a fair migration of Rough-legged Hawks after the 10th, mostly from coastal locations and along the Sudbury River Valley. Bald Eagles were reported from six different locations and included 2 adults, 1 sub-adult, and 6 immatures, and 3 were seen at Great Meadows in Concord. Ospreys returned to their nesting areas in the Westport vicinity towards the end of the month. A Peregrine at Nantucket was the only one reported for March.

Oystercatchers returned early to Muskeget on March 10 and to Nantucket and Chatham on March 12; last year the early date was March 16. Woodcocks were reported in courtship flight in several locations by month's end with 8 noted at Ipswich River sanctuary on the 28th. The TASL survey of Boston Harbor recorded 310 Purple Sandpipers with 225 in Nahant. The first Pectoral Sandpipers arrived on the 29th and 15 were noted on Plum Island on March 30-31. A Long-billed Dowitcher in basic plumage was found at Nantucket on the 15th.

Iceland Gulls were reported in good numbers especially at the north end of Plum Island where as many as 120 were noted. A Lesser Black-backed Gull was found at the usual Nantucket site. Eight Black-headed Gulls were noted during the month with 2 each from Chatham, East Boston, Newburyport, and Milton. From the Nantucket ferry, 2100+ Black-legged Kittiwakes were observed.

Only two species of alcid were noted during the month with high concentrations of Razorbills on Nantucket and good counts of Black Guillemots from N. Scituate and Nantucket.

Snowy Owls continued in the Plum Island area throughout the month and eight others were reported from other locations. The Long-eared Owls in Lexington were down to 3 individuals on the 8th from a high of 22 in January. Great Horned, Screech, and Barred owls were reported at nesting sites.

An early Yellow-bellied Sapsucker was reported from Medford on the 9th. A Red-bellied Woodpecker was reported from Eastham and a Black-backed Three-toed Woodpecker was seen and photographed in Baldwinville on the 11th. R.H.S.

Turkey Vulture:

1	Somewhere on the Mass. Pike	1	K.Powers
5,15	P.I.; Wayland, Lincoln	1; 1, 1	D.Alexander#; R.Forster#
20,22	Westboro, Quabbin	1, 17	R.Forster, M.Lynch#
22,28	Mt.Wachusett, GMNWR	2-3, 1	P.Roberts#, R.Walton
29,30	Sudbury, GMNWR	2, 2	R.Forster#, A.Katz
31	Littleton, Boston	1, 2	V.Sprong, B.Cassie
Goshawk:			
13,21	Framingham, Lynn	1, 1 imm.	R.Forster, R.Heil
22,28	Mt.Wachusett, Wayland	1 ad., 1 ad.	P.Roberts#, R.Forster
Sharp-shinned Hawk:			
thr.	7 loc.	10 ind.	v.o.
Cooper's Hawk:			
28,29	Framingham, S.Hanson	1, 1 imm.	E.Morrier, W.Petersen
Red-tailed Hawk:			
1	E.Middleboro, Nantucket	3, 12	K.Anderson, BBC
15	Bridgewater, Sudbury Valley	7, 11	BBC, F.Hamlen#
22	Rowley to W.Newbury	16	R.Heil

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Red-shouldered Hawk:			
3,15	Wayland	1 mig., 1 mig.	R.Forster
8	Truro, Ipswich	1, 1 ad.	M.Lynch, J.Berry
14,22	Braintree, W.Newbury	1, 1 ad.	G.d'Entremont, R.Heil
22,23	Mt.Wachusett, Plympton	1 ad., 1	P.Roberts#, K.Anderson#
29	S.Hanson	2 (1 sub-ad. mig.)	W.Petersen
Rough-legged Hawk:			
thr.early March	P.I.-Newbypt area	3-4	v.o.
6,8	Nantucket, Boston Harbor	1, 2	E.Andrews, TASL
14-15,28	Sudbury Valley, Wayland	5, 2	R.Forster#
14,28	Newbypt	6, 5	G.Gove#, R.Stymeist#
Bald Eagle:			
1	Newbypt, Salisbury	1 imm., 1 imm.	R.Heil
2-3,8	GMNWR, Concord	1-3 imm., 1 imm.	L.Taylor#, C.Ewer
22,29	Quabbin, Mt.Wachusett	2 ad., 1 sub-ad.	M.Lynch#, L.Taylor
Northern Harrier (Marsh Hawk):			
thr.	11 loc.	40+ ind. Mostly migrants.	v.o.
Osprey:			
22	Mt.Wachusett	1	B.Morrison
28,29	Westport	7, 18	R.Heil#, G.Gove#
Peregrine Falcon:			
29	Nantucket	1	E.Andrews#
Merlin:			
14,18	N.Scituate, Mt.A.	1, 1	K.Anderson#, F.Bouchard
28	Newton, Newbypt	1, 2	O.+N.Komar, BBC
American Kestrel:			
29	P.I.	18 mig.	C.+D.Ewer
Ruffed Grouse:			
8	Ipswich, <u>Chestnut Hill</u>	3(1 drumming), 1 dead	J.Berry, O.Komar#
American Coot:			
15,29	Plymouth, S.Hanson	17, 2	SSBC, W.Petersen
American Oystercatcher:			
10	Muskeget	1	V.+P.Schurman
12,22,29	Nantucket	2, 2, 1	J.Grugan, fide E.Andrews
12	Chatham (Morris I.)	2	K.Groh
Killdeer:			
1,8	P.I., Lexington	2, 1	BBC, O.+N.Komar
14;20	Wayland; Concord, Millis	1; 3, 5	R.Walton#; A.Correny, B.Cassie
28	Westport area, Newbypt area	15, 7	R.Heil, BBC
28	Cambridge, Newton	1, 1	L.Taylor#, O.+N.Komar
29,30	Dedham, Woburn	2, 2	C.Jackson#, G.Gove
Black-bellied Plover:			
12	Chatham (Morris I.)	10	K.Groh
Ruddy Turnstone:			
21	P.I.	1	P.Roberts
American Woodcock:			
13,15	Scituate, Middleboro	1, 2	G.Bartlett, D.Briggs#
16,17	Ipswich, Brookline	1, 1	J.Berry, C.+N.Hubbard
25,28	Millis, IRWS	2, 8	B.Cassie, R.Stymeist#
Common Snipe:			
14,29	Marshfield, P.I.	5, 15	W.Petersen#, C.+D.Ewer
30	Rowley	7	D.Alexander, R.Emery
Greater Yellowlegs:			
28,31	P.I.	2-7	R.Stymeist#, D.Alexander
28,29	Dartmouth, Rowley	5, 3	R.Heil
30,31	Squantum, Milton	3, 1	D.Brown
Purple Sandpiper:			
7,8	Gloucester, Marshfield	9, 45	J.Clancy#, L.Malloy
8	Nahant, Winthrop, Quincy	225, 70, 15	TASL
14,28	N.Scituate, Marshfield	60, 50	K.Anderson, SSBC
Pectoral Sandpiper:			
29	IRWS, Rowley	1, 2	R.Heil
30,31	P.I.	15	R.Alexander#
Dunlin:			
8	Nahant	100	O.+N.Komar

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
dowitcher species:			
31	P.I.	1	M.Baird
<u>Long-billed Dowitcher:</u>			
15	Nantucket	1	S.Perkins
Sanderling:			
8,29	Boston Harbor, P.I.	90, 5	TASL, C.+D.Ewer
Glaucous Gull:			
1;2+5	P.I.; Worcester	4; 1	R.Heil, L.Babbitt
5,8	Nantucket, Boston Harbor	1, 2	E.+C.Andrews, TASL
9,29	S.Peabody, P.I.	1 ad., 1	R.Heil, C.+D.Ewer
Iceland Gull:			
1,10	P.I.	120, 75+	R.Veit, R.Heil
5,7	Nantucket, Gloucester	22, 60	E.+C.Andrews, BBC
8,22	Boston Harbor, Worcester	3, 1	TASL, L.Babbitt
<u>Lesser Black-backed Gull:</u>			
1	Nantucket	1	BBC (C.Jackson)
Ring-billed Gull:			
1,thr.	Newburyport, Worcester	700+, 25	R.Heil, L.Babbitt
thr.,8	Brookline, Cambridge	45+, 30	R.Stymeist, O.+N.Komar
Black-headed Gull:			
thr.,8	Chatham, Boston Harbor	max. 2, 2	v.o., TASL
29,30	Newbypt, Milton	2, 2	D.Alexander#, D.Brown
Bonaparte's Gull:			
7,8	Gloucester, Boston Harbor	6, 2	BBC, TASL
14,29	Newbypt	4, 2	G.Gove#, R.Emery#
Little Gull:			
28,29	P.I.-Newbypt	5	M.Argue + v.o.
Black-legged Kittiwake:			
1	Nantucket	2100+	BBC (C.Jackson)
Razorbill:			
1;14,15	Nantucket	5; 330, 177	C.Jackson; S.Perkins
Black Guillemot:			
7,8	Rockport, P'town	1, 4	BBC, B.Nikula#
14	Nantucket, N.Scituate	30, 10	S.Perkins, W.Petersen
Screech Owl:			
8	Middleboro, Newton	5, 3	W.Petersen#, O.+N.Komar
Great Horned Owl:			
thr.	5 loc.	7 ind.	v.o.
Snowy Owl:			
thr.	P.I.	max. 3 (3/21)	v.o.
1,4-17	Nantucket, Hull	1, 1	BBC, McKinnon + v.o.
4-27	Cambridge (Kendall Square)	1	S.Certusi + v.o.
5;8	Brant Rock; Winthrop, Hingham	1; 1, 1	C.Phillips; TASL
10+11,22	Scituate, Medford	1, 1	G.Tyler, J.Toczydlowski
Barred Owl:			
8	Nahant, Lakeville	1, 1-2	N.+O.Komar, W.Petersen
22	Boxford	1 on nest	W.Petersen#
Long-eared Owl:			
8,30	Lexington, Squantum	3, 1	BBC, D.Brown
Short-eared Owl:			
1,8+28	Nantucket, P.I.	5, 3 + 2	BBC, J.Paputseanos+v.o.
15,21	Squantum, Newbypt	1, 6	G.Gove#, P.Roberts#
22	Marshfield	2	G.d'Entremont#
Saw-whet Owl:			
8,13	E.Middleboro, Brookline	1, 1	W.Petersen, H.Wiggin
Common Flicker:			
8,30	Eastham, Squantum	9, 12	M.Lynch, D.Brown
Pileated Woodpecker:			
thr.	5 loc.	6 ind.	v.o.
<u>Red-bellied Woodpecker:</u>			
8	Eastham	1 ad.	M.Lynch
Yellow-bellied Sapsucker:			
9	Medford	1 ad.	B.Schlinger
<u>Black-backed Three-toed Woodpecker:</u>			
11	Baldwinville	1 ph.	J.O'Regan

FLYCATCHERS THROUGH BUNTINGS

The first major influx of some early spring migrants, including Eastern Phoebe, Tree Swallow, Eastern Bluebird, and Fox Sparrow, occurred along with the phenomenally warm weather on the last three days of the month. The phoebes were about two weeks late, while the other three arrivals happened with about the expected timing. A report of 18 Fox Sparrows on the 30th at a localized area in Squantum was certainly noteworthy.

Last departures are generally less reported than arrivals, but comings and goings of some of the winter rarities were carefully monitored. The Boreal Chickadees at Webster and Ware stayed until the 10th and 12th, respectively, while the Walpole Black-headed Grosbeak remained through March 20. Pine Grosbeaks, which occurred in good numbers during the winter, were last observed on March 8. The Hoary Redpoll, originally discovered in a flock of about 100 Common Redpolls at Plum Island, held on until the third week of the month.

The infamous "freeze-up" in January pretty well depleted numbers of quite a few passerine species. In particular, warbler and sparrow reports remained unusually low through March. Also, the trend of January and February continued, with no reports of Northern Shrike for the month. The only notably high count for the period was of an impressive 4500 Common Grackles in Randolph on the 30th.

The month was not totally without rarities, most of which were reported from southeastern Massachusetts. A Prothonotary Warbler was observed and photographed at a feeder in Dennis on the remarkably early date of March 31. At the Manomet Bird Observatory, an "Oregon" Junco spent the month. Finally, the White-crowned Sparrow, first reported from Nantucket in February, remained through March. L.E.T.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Eastern Phoebe:			
12,15	Scituate, Westport	1, 1	F.King, D.Cosman
16,28	Kingston, P.I.	1, 1	B.Sorrie, BBC
29-30	12 loc.	26 ind.	v.o.
Horned Lark:			
1,8	P.I., Nahant	5, 3	BBC
21	P.I., Salisbury	50, 40	P.Roberts#
28,30	P.I., Salisbury	12, 2	BBC, R.Emery#
Tree Swallow:			
15	GMNWR	3	T.Raymond, F.Hamlen
27,28	Wayland, GMNWR	2, 28	R.Forster, G.Gove#
28	P.I., Stow	2, 18	BBC, L.Taylor
29	Halifax, Topsfield	100, 5	W.Petersen, BBC
Common Crow:			
thr.	E.Middleboro	100-200	K.Anderson
15,22	Bridgewater, Sharon	257, 34	BBC, F.Bouchard
Fish Crow:			
15,30	Plymouth, Milton	1, 2	SSBC, D.Brown
Boreal Chickadee:			
from Dec.-3/10	Webster	1	J.Mason
from Jan.-3/12	Ware	1	L.Marland
Red-breasted Nuthatch:			
8	Ipswich, Lexington	9, 1	J.Berry, BBC
17,22	Norwell, Cambridge	2, 1	B.Litchfield, F.Bouchard
22,26	Saugus, Kingston	2, 1	C.Jackson, B.Sorrie#
29	Topsfield, Newburyport	4, 1	BBC, R.Stymeist#
Brown Creeper:			
22,30	Quabbin, P.I.	9, 4	BBC, S.Ingalls#
Carolina Wren:			
13,28	Norwell, Acoaxet	1, 2	B.Litchfield, R.Heil
28,30	Marshfield, Kingston	1, 1	SSBC, B.Sorrie
Gray Catbird:			
5,28	Harwich, Acoaxet	1, 1	B.Nikula, R.Heil
Brown Thrasher:			
15	Winchester, Wayland	2, 1	G.Gove#, E.Morrier
17	Westwood	1	R.Sanford
American Robin:			
1,5	E.Middleboro, IRWS	40, 100+	K.Anderson, R.Heil

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Eastern Bluebird:			
29,30	Sudbury, Tyngsboro	1, 5	R.Forster, L.Files
Golden-crowned Kinglet:			
8,21	Ipswich, P.I.	4, 2	J.Berry, BBC
Water Pipit:			
29	S.Hanson, Dedham	1, 5	W.Petersen, N.+O.Komar#
Cedar Waxwing:			
8,14	Wellesley, Concord	5, 45	C.Ewer, R.Walton#
28,29	Marshfield, Dedham	10, 20	SSBC,N.+O.Komar
<u>Prothonotary Warbler:</u>			
31	Dennis	1 (ph. at feeder)	Stenberg fide B.Nikula
Yellow-rumped Warbler:			
1,8	P.I., Eastham	2, 3	BBC, M.Lynch
Eastern Meadowlark:			
14,18	P.I., Scituate	1, 2	BBC, B.Litchfield
29	Needham, IRWS	3, 2	J.Barton#, BBC
Red-winged Blackbird:			
1,15	P.I., Bridgewater.	45, 225	BBC
20,28	Norwell, P.I.	150+, 240	B.Litchfield, BBC
Rusty Blackbird:			
7,26	Sudbury, Millis	7, 108	R.Walton#, B.Cassie
29,31	Halifax, Lynnfield	20, 15	W.Petersen, M.Sharpe
Common Grackle:			
1,21	Newbypt, P.I.	15, 265	BBC
30	Randolph	<u>4500</u>	D.Brown
Brown-headed Cowbird:			
22,26	Middleboro, Millis	75, 80	Higginbothams#, B.Cassie
<u>Black-headed Grosbeak:</u>			
from Dec.-3/20	Walpole	1 ad. m.	Mrs.Colburn fide R.Langley
Evening Grosbeak:			
1,8	Newbypt, Hamilton	2, 8	BBC, J.Berry
22,29	Princeton, Needham	80, 14	P.Roberts#, J.Barton#
Purple Finch:			
5	IRWS	<u>35</u>	R.Heil
Pine Grosbeak:			
5;8	IRWS, DFWS; Concord	1, 3; 5	R.Heil, K.Leahy; C.Ewer
<u>Hoary Redpoll:</u>			
from Feb.-3/21	P.I.	1	v.o.
Common Redpoll:			
1-21	P.I.	100 max.	v.o.
1,20	Bedford, Scituate	50, 17	P.Wade, B.Harrigan
Pine Siskin:			
5,15	IRWS, Winchester	22, 3	R.Heil, G.Gove#
17,18	Westwood, Mt.A.	15, 3	B.Wicks, F.Bouchard
Rufous-sided Towhee:			
from Jan.-3/6,24	Nantucket, Newton	1 m., 1 f.	F.Reed, N.+O.Komar
<u>"Oregon" Junco:</u>			
thr.	MBO	1	MBO staff
Tree Sparrow:			
7,20	Woburn, E.Middleboro	5, 20	BBC, K.Anderson
26	Millis	70	B.Cassie
Field Sparrow:			
26;29	Millis; P.I., Dedham	1; 1, 1	B.Cassie; S.Perkins, J.Barton
<u>White-crowned Sparrow:</u>			
Feb.thr.Mar.	Nantucket	1	E.Andrews
Fox Sparrow:			
14,16	Braintree, MBO	1, 3	G.d'Entremont, MBO staff
27-30	12 locations	49 ind.	v.o.
30	Squantum	<u>18</u>	D.Brown#
Swamp Sparrow:			
30	Squantum	1	D.Brown#
Song Sparrow:			
28	P.I., Marshfield	37, 16	BBC, SSBC
28,29	Belmont, Sudbury R. Valley	20, 45	BBC, R.Forster
Snow Bunting:			
15,21	Wayland, Salisbury	15, 18	R.Walton#, P.Roberts#



Field Records: April 1981

by George W. Gove, Robert H. Stymeist, Lee E. Taylor

April 1981 was warm; the temperature averaged 51.7°, 3.1° above normal. This was the fourth warmest April in 111 years of record and the warmest since 1976. The highest temperature was 78° on the 18th and the lowest was 31° on the 16th. The last freeze of the season came on the 22nd at 32°, 14 days past the average date. April's warmth was primarily due to exceptional heat early in the month. The first 11 days, along with the last 3 days of March, made a two week period averaging 11° above normal.

Rain totaled 3.14 inches. The most in any 24 hour period was 0.85 inch on the 23rd-24th. No snow fell; this was the first snowless April since 1968. A thunderstorm on the 29th brought damaging winds to some local areas and a short period of heavy rain.

LOONS THROUGH HERONS

One hundred and twenty-five Common Loons were seen in Cape Cod Bay on the 18th, and a Red-throated Loon was noted at Plum Island on the 3rd. The usual concentration of Red-necked Grebes was present at Manomet, and many breeding-plumaged Horned Grebes were noted with 81 counted in the Boston Harbor area on the 5th. Great Cormorants were on the wane and Double-crested Cormorants were increasing; 250 were seen at Plum Island on the 19th. Great Blue Herons were relatively scarce, particularly along the coast. An active rookery, where 11 Great Blues were noted, was observed in Westboro. Sixteen Little Blue Herons were reported with 6 seen in Marshfield on the 27th. Single Cattle Egrets were reported from four locations and 8 Great Egrets were seen in Marshfield on the 26th. Snowy Egrets were observed in the Saugus-Revere marshes throughout the month with a maximum of 30 noted. Two individual Louisiana Herons were reported and Glossy Ibis were present all month in the Plum Island area. G.W.G.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Common Loon:			
5,18	Nahant, Cape Cod Bay	6, <u>125</u>	TASL, B.Nikula
19,23,26	Wayland,Lakeville,E.Middleboro	2, 1, 2	R.Forster,W.Petersen,K.Anderson
23,25	Millis, Stellwagen Bank	1, 6	B.Cassie, W.Petersen
Red-throated Loon:			
3	P.I.	1	H.Ellis
Red-necked Grebe:			
5;12	Nahant, Quincy; N.Scituate	1, 2; 11	TASL; W.Petersen
8,18	Dennis	30+, 20	B.Nikula, C.Smith
14	Manomet	90	MBO staff
18,25	Nantucket Sound, M.V.	1, 6	R.Heil, V.Laux
Horned Grebe:			
3,4	P.I., Ipswich	55, 5 (br.pl.)	R.Heil, J.Berry
5	Boston Harbor	81	TASL
12,19	N.Scituate	15, 1	W.Petersen
Pied-billed Grebe:			
4-10,10	Worcester, S.Hanson	2, 1	L.Babbitt, W.Petersen
5,28	Quincy, P.I.	1, 1	TASL, BBC
Gannet:			
4	Ipswich	50+	J.Berry
18	C.Cod Bay, P.I., Nant.Sound	300, 30, 50+	B.Nikula,L.Jodrey#R.Heil
25,26	P'town, Stellw. B.	11, 100	M.Lynch#, W.Petersen#
26	N.Scituate	9	S.Higginbotham

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Great Cormorant:			
11;26	P.I.; Essex, N.Scituate	6; 260, 12	P.Campbell;J.Nove,W.Petersen#
Double-crested Cormorant:			
3,4	P.I., Squantum	3, 6	R.Heil,S.Higginbotham
11,12	Mt.Wachusett, Weymouth	7, 8	SSBC, BBC
18;19;23	P.I.; Norton; Millis	250; 62; 46	P.Roberts; B.Cassie
30	Marshfield	150	F.Bouchard
Great Blue Heron:			
3,4;5	P.I.; Boston Harbor, Rowley	7, 5; 7, 3	R.Heil,BBC;TASL, J.Berry
11,14	Mt.Wachusett, Sharon	1, 4	SSBC, D.Clapp
22,25	Lexington;Saugus,Westboro	2; 3, 11 (active nests)	C.Jackson,R.Stymeist#
26,27,28	Essex, Marshfield, P.I.	6, 1, 1	BBC, J.Clancy#, BBC
Green Heron:			
17,23	Cambridge, S.Peabody	1, 1	F.Bouchard, R.Heil
28,29,30	P.I.,Waltham,Littleton	1, 1, 1	BBC,L.Taylor,J.Baird
Little Blue Heron:			
3,4,5	Cohasset, P.I., E.Boston	1, 3, 1 ad.	W.Hanley, BBC, TASL
18;27,30	Manchester; Marshfield	1; 6, 3	BBC;J.Clancy#,M.Litchfield
25-27	Squantum	1 ad.	D.Brown#
Cattle Egret:			
3-4	W.Brookfield	1	R.Shepardson
26	Ipswich, M.V.	1, 1	L.Jodrey, V.Laux
29-30	Marshfield	1	v.o.
Great Egret			
1;11	Cohasset; Rowley, P.I.	1; 1, 1	W.Hanley; R.Heil#
12,26	Marshfield	1, 8	W.Petersen, SSBC
18,22	Nantucket, Duxbury	1, 1	R.Heil#
25,26	Squantum, N.Scituate	1, 1	D.Brown, W.Petersen#
Snowy Egret:			
thr.	Saugus-Revere	max. 30	J.Berry
3	Cohasset	3	W.Hanley
4	Revere, Rowley, P.I.	12, 10, 10	R.Heil,R.Alexander, BBC
5	Revere,E.Boston,Hingham,Quincy	3, 3, 2, 7	TASL
12	E.Boston, Weymouth	8, 9	S.Zendeh, BBC
18	Manchester, P.I.	1, 10	G.Hotz, L.Jodrey#
25;26	Squantum; Essex, Marshfield	7; 8, 14	S.Higginbotham; BBC,SSBC
30	Marshfield	23	M.Litchfield
Louisiana Heron:			
18,27	Nantucket, Marshfield	1, 1	R.Heil#, J.Clancy#
Black-crowned Night Heron:			
5	E.Boston	20	TASL
25,28	Saugus, Squantum	4, 7	C.Jackson,N.+O.Komar#
29;30	Cambridge,Belmont;Marshfield	4, 4	BBC,L.Taylor;F.Bouchard
American Bittern:			
10,27,28	P.I.	1, 1, 1	R.Forster,O.+N.Komar,BBC
Glossy Ibis:			
thr.	P.I.	max. 50	v.o.
12-30	Marshfield	max. 15	v.o.
11;12,23	E.Boston; Rowley	7; 42, 31	J.Barton;J.Berry,R.+D.Alexander
5-25	Squantum	max. 12	v.o.
16	Cambridge	17	R.Stymeist#
9,16	Bridgewater	10	S.Higginbotham
23,26	Nantucket, Essex	20, 77	J.Berthoud, BBC-J.Nove
29;30	Concord; Revere, Ipswich	9; 12, 20	R.Heil#; J.Berry, BBC

WATERFOWL

On Martha's Vineyard, 350 Mute Swans were noted on the 12th, and the Whistling Swan was seen through the 11th in Fitchburg. Up to 600 Brant were seen in several coastal locations with two dyed individuals in the flock at Plum Island.. Three "Blue" Geese were with the Snow Geese at Plum Island on the 12th, and the latter were present through the 20th with a maximum count of 550. Fresh water ducks were arriving throughout the month and a "Common" Teal was noted on Nantucket on the 19th. A female Wood Duck was on eggs in Middleboro on the 30th. A pair of Barrow's Goldeneye was last reported from Newburyport on the 3rd and two were reported from Quincy on the 5th. A pair of Harlequin Ducks was last seen on the 2nd in Rockport and three were present through the 17th in Manomet. Large numbers of scoters were reported from Martha's

Vineyard and Nantucket Sound with 6000 White-winged, 2000 Surf, and 8000 Black scoters. A Common Merganser was observed soaring and circling with three Broad-winged Hawks in Harvard. G.W.G.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Mute Swan:			
4,18	Carver, Manchester	3, 2	SSBC, BBC
12	M.V.	<u>350</u>	V.Laux
<u>Whistling Swan:</u>			
thr. 11	Fitchburg	1	v.o.
Brant:			
6-19	P.I.	max. 430	v.o.
4-27	Squantum	max. 415	v.o.
18-26	Duxbury	max. 600	SSBC#
Snow Goose:			
3-20	P.I.-Newburyport	max. 550	v.o.
6	Worcester, Auburn, Sturbridge	85, 25, 90	J.Baird
4,11	Sudbury, Concord	170, 50+	R.Walton#
6	Worcester	30 flying over	L.Babbitt
"Blue" Goose:			
12	P.I.	3	G.Gove
Gadwall:			
thr.	P.I.	max. 12	v.o.
Pintail:			
1-18	P.I.	max. 14	v.o.
Green-winged Teal:			
thr.	P.I.	max. 450	v.o.
5	Boston Harbor	14	TASL
19	Wayland, Bolton	42, 7	R.Forster, S.Carroll#
9;12	Bridgewater	30, 65; 40	S.Higginbotham;W.Petersen#
Blue-winged Teal:			
9,19	Worcester, Bolton	4, 2	L.Babbitt, BBC
19,26	Wayland, Marshfield	10, 3	R.Forster, M.Litchfield
28	P.I.	8	BBC
"Common" Teal:			
19	Nantucket	1	C.Jackson
American Wigeon:			
4,18,28	Ipswich, Manchester, P.I.	3, 2, 3	J.Berry, G.Hotz, BBC
Northern Shoveler:			
thr.	P.I.	max. 5	v.o.
9,25	W.Bridgewater, M.V.	1 pr., 2	S.Higginbotham, V.Laux
Wood Duck:			
9,19	Bolton	2, 6	M.Lynch#, BBC
11,26	GMNWR, Harvard	5, 14	R.Stymeist#
30	E.Middleboro	f. on eggs	K.Anderson
Ring-necked Duck:			
4,11;12	P.I.; Braintree	1, 2; 4	BBC; S.Higginbotham
4,18,23	Carver, S.Hanson, Lakeville	27, 4, 4	SSBC, W.Petersen
Greater Scaup:			
4,5,12	Newbypt, Quincy, Braintree	50, 145, 15	BBC,TASL,S.Higginbotham
Common Goldeneye			
4	Carver	2	SSBC
Barrow's Goldeneye:			
3,5	Newbypt, Quincy	pr., 2	R.Heil, TASL
Bufflehead:			
4	Lakeville and Carver	24	SSBC
23,26	Lakeville, Squantum	60, 35	W.Petersen#
Oldsquaw:			
4,18	Newbypt, Nantucket Sound	50, 1000+	BBC, R.Heil
Harlequin Duck:			
2(last date)	Rockport	pr.	V.Albee
1-17	Manomet	3	MBO staff
Common Eider:			
5	Winthrop	490	TASL
25	P'town	3	M.Lynch#
White-winged Scoter:			
5	Boston Harbor	112	TASL
12,18	M.V., Nantucket Sound	<u>6000</u> , 600	V.Laux, R.Heil

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
White-winged Scoter, continued:			
25	P'town	40+	M.Lynch#
Surf Scoter:			
12	N.Scituate, M.V.	150, <u>2000</u>	W.Petersen#, V.Laux
25	P'town	76+	M.Lynch#
Black Scoter:			
12,18	M.V., Nantucket Sound	<u>8000</u> , 100	V.Laux, R.Heil
25	P.I., P'town	3, 9	BBC, M.Lynch#
Ruddy Duck:			
11-25	P.I.	max. 6	v.o.
Hooded Merganser:			
4,5	Carver, Quincy	3, 2	SSBC, TASL
Common Merganser:			
12,23	Braintree, Lakeville	3, 3	S.Higginbotham, W.Petersen
26	Harvard	1 f.	R.Stymeist#
	Seen circling and soaring with 3 Broad-winged Hawks.		
Red-breasted Merganser:			
4;5	Ipswich, Rowley; Boston Harbor	50, 22; 520	J.Berry; TASL
18	Nantucket	<u>1800</u>	R.Heil

RAPTORS

Turkey Vultures continue to increase in eastern Massachusetts with a total of 52 being reported including 7 and 8 in single day periods on the outer Cape Cod. The pair of Boxford Goshawks was observed on territory on the 18th and single individuals were seen in four other locations. Sharp-shinned Hawks were seen migrating in numbers from mid-month with 126 noted on Plum Island on the 26th. Six individual Cooper's Hawks were reported and Red-tails were seen migrating also with six in one hour in Millis. A pair was nesting in Marshfield. A total of 17 Red-shouldered Hawks were reported from 13 locations. The Broad-winged Hawk migration was apparently disappointing from a quantitative viewpoint, as it was last April. An adult Bald Eagle was seen in Quincy on the 5th and a total of 50 Northern Harriers were noted migrating late in the month with three adult males seen on the 19th and a high of 21 birds at Plum Island on the 26th. Ospreys were also seen migrating and a pair was observed at a nest in Lakeville. Three Peregrine Falcons were observed and a total of 48 Merlins was reported with a maximum of 14 seen at Plum Island on the 26th. One was observed harassing the Pectoral Sandpipers in Newburyport Harbor and another was seen on the 24th making a successful kill of a robin in the field across from the airport. A high of 110 kestrels was also seen at Plum Island on the 26th.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Turkey Vulture:			
7	Wellesley	1	K.Winkler
8	Plymouth, Worcester, Newton	2, 2, 1	M.Weinstein, L.Babbitt, T.Flackett
11	Sudbury, P.I., Truro, Newbypt	2, 1, 2, 1	R.Forster#, BBC, B.Nikula, H.Wiggin#
12,13	Lynn, Quincy, Milton	1, 1, 1	R.Heil, R.Campbell, K.Anderson
16	Concord, Marshfield	1, 1	C.+K.Leahy, B.Litchfield
18	Boxford, Bridgewater, Medfield	1, 1, 1	L.Jodrey#, W.Petersen, B.Cassie
19	Hopkinton, Lexington	1, 1	D.White, J.Andrews
19	E.Middleboro, outer C.Cod	2, 8	K.Anderson, B.Nikula
20,22	Essex, Plymouth	1, 1	H.Wiggin#, R.Heil
20,22,27	Millis	4, 1, 1	B.Cassie
24;26	WBWS; P'town, E.Orleans	7; 1, 1	W.Bailey
26,28	Newbury, Braintree	2, 1	L.Jodrey#, O.+N.Komar#
Goshawk:			
18,19	Boxford	2 on territory	v.o.
8,11	Millis, P.I.	1, 1	B.Cassie, BBC
26,30	Harvard, Canton	1, 1	R.Stymeist#, R.Veit
Sharp-shinned Hawk:			
10;11	Melrose; P.I., Mt.Wachusett	1, 1, 1	C.Jackson; BBC, SSBC
18,19	P.I.	8 (3 ad.), 21	G.Gove, P.Roberts
18,19,26	Bridgewater; N.Scituate	2; 25(4 hrs), 24(4 hrs)	W.Petersen#
19	Mt.Wachusett	19 (5 hrs)	G.Gove#
26	Essex, Concord	4, 2	BBC, R.Forster#
26,28	P.I.	<u>126</u> , 36	P.Roberts#, BBC

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Sharp-shinned Hawk, continued:			
30	Eastham	12	B.Nikula#
Cooper's Hawk:			
5,11	Baldwinville, Rowley	1, 1	J.O'Regan,N.King#
19,26	Mt.Wachusett, Harvard	1, 1	L.Taylor#
27,28	Winchester, P.I.	1, 1	G.Gove, BBC
Red-tailed Hawk:			
8,11	Millis, Mt.Wachusett	10(6 in 1 hr.), 3	B.Cassie, SSBC
12	Needham, Marshfield	4, pr. nesting	K.Anderson, W.Petersen
18;19	Mt.Wachusett;Harvard;Bolton	2; 4, 1	P.Roberts; BBC
22,30	Whitman, Marshfield	2, pr. nesting	F.Bouchard, W.Petersen
Red-shouldered Hawk:			
3;7,30	Truro, W.Newbury; Millis	3,1: 1, 1	B.Nikula,R.Heil;B.Cassie
11-13,12	E.Middleboro, Lynn	1, 1 imm.	K.Anderson, R.Heil#
17-18	Worcester; Boxford, P'town	1; 1, 2	K.Anderson;R.Stymeist,B.Nikula
14	Boxford	1	I.Giriunas
10,19	E.Bridgewater, Harvard	1, 1	W.Petersen, BBC
23,26	Lakeville, Marshfield	1 imm., 1	W.Petersen, SSBC
Broad-winged Hawk:			
11;26	Sudbury; Concord	1, 1, 37	R.Forster#
18	Harvard, Middleboro	16, 4	BBC, W.Petersen#
18	W.Newbury, Mt.Wachusett	1, 28	BBC, P.Roberts
19	Mt. Wachusett, Cambridge	36, 2	D.Lange#, C.Ewer
19	E.Middleboro	3	K.Anderson
20,26	Wellesley, Essex	3, 1	C.Ewer, BBC
26,28	E.Middleboro, P.I.	3, 2	K.Anderson, BBC
Rough-legged Hawk:			
3	Newburyport	4 (1 dk.)	R.Heil
3-7	Millis	1 dk.	B.Cassie
11,12	Newbypt, Lexington	1, 1	BBC, W.Petersen#
Bald Eagle:			
5	Quincy	1 ad.	TASL
Northern Harrier: (migrants)			
3,4,18,19,25,26	Plum Island	1, 2, 1, 6(3 m.), 2, 21	v.o.
7,27	Millis	1, 3	B.Cassie
18,27	Sudbury, Concord	2, 1	R.Forster#, R.Walton
18,26	Marshfield	2, 2	W.Petersen#, SSBC
11,19,23	Duxbury,N.Scituate,Bridgewater	1, 3, 2	W.Petersen#
Osprey:			
3,4	Concord, Lincoln	1, 1	R.Walton, R.Forster
4	Royalston, Lakeville	1, 1 on nest	J.O'Regan, R.Heil
8,22	Millis	1, 1	B.Cassie#
11,12,15	P.I., GMNWR, Wayland	1, 1, 1	BBC,R.Walton,D.White
18;19	Mt.Wachusett,P.I.,Boxford	1, 3, 1	P.Roberts,BBC,R.Stymeist
19,23	N.Scituate, Lakeville	1, pr. at nest	W.Petersen
26	P.I., Concord	5, 1	P.Roberts#, R.Forster#
28,30	P.I., Marshfield	1, 1	BBC, F.Bouchard
Peregrine Falcon:			
22	Millis, Manomet	1, 1	B.Cassie#, MBO
26	P.I.	1 imm. f.	P.Roberts#
Merlin:			
5	E.Boston	1	TASL
9	Milton	1 m.	S.Higginbotham
11,18;19,20	P.I.	1, 4; 6, 1 ad. m.	BBC; P.Roberts#
24,25,26		2 (1 m.,f.); 1, 14	G.Gove#, BBC, P.Roberts#
18;19,26	Duxbury; N.Scituate	1; 4 in 4 hrs., 6 in 2 hrs.	W.Petersen#
19,20	Bolton,Newbypt	1, 1+	BBC, R.Heil
26	Marshfield, Wellfleet	1, 1	SSBC, B.Nikula
30	Cambridge, Chatham	1, 1	BBC, B.Nikula
American Kestrel:			
11,18	P.I.	4, 15 (8 m.,7 f.)	BBC, G.Gove
19,26;28	P.I.	60, 110; 2	P.Roberts; BBC
4,5	Ipswich	3, 1	J.Berry
4	Carver	2	SSBC
19,26;26	N.Scituate; Harvard	26, 23; 2	W.Petersen#; BBC
30	Marshfield	2	F.Bouchard

GALLIFORMES AND RAILS

Ruffed Grouse were heard drumming in two locations and two Bobwhite, possibly released birds, were seen in Quincy. A King Rail was seen at the observation blind at Hellcat, Virginia Rails were reported from two locations, and Common Gallinules appeared toward the end of the month.

Ruffed Grouse:			
4,12	Hamilton, Ipswich	1 drumming	J.Berry
6,14	E.Middleboro, Sharon	4, 4	K.Anderson, D.Clapp
11,19	W.Gloucester, Weston	1, 1	V.Albee, L.Robinson
26	Boxford	1 drumming	H.Wiggin#
Bobwhite:			
26	Squantum	2	M.Lynch#
King Rail:			
24,26	P.I.	1, 1	G.Gove#, W.Drummond
Virginia Rail:			
12	S.Peabody	1	R.Heil
20,25	P.I.	2, 1	M.Lynch#, BBC
Sora Rail:			
18	Wayland	1	R.Forster
Common Gallinule:			
25,30	P.I., Marshfield	3, 1	BBC, M.Litchfield
American Coot:			
10	Worcester	1	L.Babbitt
12	Marshfield, Braintree	1, 4	W.Petersen,S.Higginbotham

SHOREBIRDS THROUGH ALCIDS

Unprecedented numbers of Pectoral Sandpipers were observed during the month with a very high count of over 1000 in Newburyport Harbor. In Marshfield over 200 were counted and high counts were recorded from Topsfield and Concord. The previous spring high total for this species in Massachusetts was just 92. Strong and warm westerly winds during the month may have been the reason for this explosion. Also note the large numbers of Common Snipe reported from many locations with the highest counts during mid-month. A Solitary Sandpiper was found at Newburyport on the very early date of April 3. Lingered Purple Sandpipers were in good numbers along the Lynn-Nahant shore throughout the month. Palearctic shorebirds this spring included a basic-plumaged Bar-tailed Godwit at Point of Pines, Revere, and two Ruffs at E. Boston and two in the Newburyport area.

Glaucous Gulls were reported from Quincy and Newburyport during the month. In Newburyport Harbor as many as six adult Little Gulls were present most of the month, some of which were noted to have a distinct rosy blush. A Thayer's Gull in first winter plumage was studied and photographed at the northern end of Stellwagen Bank on the 25th. Caspian Terns were reported from four locations and Common and Least terns returned at month's end.

A report of a Ross' Gull at Newburyport Harbor on April 26 was received and despite a very thorough search by many observers that afternoon and during the next two days, it was not seen again.

Alcid reports included a Common Murre, 8 Razorbills, and a number of Black Guillemots from N. Scituate (10), Boston Harbor (5), and Provincetown (1). R.H.S.

American Oystercatcher:			
12,18	M.V., Madaket	6, 8	V.Laux, R.Heil#
Killdeer:			
3	Topsfield, P.I.	10, 28	R.Heil
4,5	Medford, Rowley	4, 10+	C.Jackson, J.Berry
Golden Plover:			
29-30	M.V.	1	V.Laux
Black-bellied Plover:			
18,21	Duxbury, Squantum	100+, 8-10	W.Petersen#,G.Wilson
Ruddy Turnstone:			
18	Duxbury	2	W.Petersen#
American Woodcock:			
4,11	Hamilton, 2 loc.	2-3, 8-12	J.Berry
9,20	Bolton, Belmont	6, 7	M.Lynch, BBC

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Common Snipe:			
3	Rowley, Newbypt	18, 22	R.Heil
4,5	Medford, Quincy	4, 6	C.Jackson, TASL
9,11	Bolton Flats, Newbypt (Turkey Hill)	9, 54	M.Lynch, R.Heil#
10+18	W.Bridgewater	20, 65	W.Petersen#
12+27	Marshfield	20, 40	W.Petersen, J.Clancy#
27	Millis	22	B.Cassie
Upland Sandpiper:			
25,26;27	M.V.; Lincoln	3, 6; 2	V.Laux; B.Byrne
28,30	Newbypt, Marshfield	4, 2	W.Drummond#, F.Bouchard#
Spotted Sandpiper:			
24,26	Mt.A., Harvard (Oxbow)	1, 5	M.Greenwald, R.Stymeist#
28,30	Squantum, S.Peabody	3, 2	O.+N.Komar#, R.Heil
Solitary Sandpiper:			
3-11,27	Newbypt, Millis	1, 1	R.Heil, B.Cassie
29,30	Concord, Marshfield	1, 2	R.Forster#, F.Bouchard#
Willet:			
23,25	Dennis, Winthrop	3, 1	B.Nikula, M.Sharpe
29	Gloucester	1	fide L.Jodrey
Greater Yellowlegs:			
1,4,5	Cohasset, P.I., E.Boston	7, 6, 15	W.Hanley, BBC, TASL
26,27	Marshfield, Concord	25, 5	SSBC, R.Walton
Lesser Yellowlegs:			
4,5	P.I., Boston Harbor	10, 8	BBC, TASL
10,27	W.Bridgewater, Concord	2, 2	W.Petersen, R.Walton
Purple Sandpiper:			
5	Nahant, Winthrop	190, 275	TASL
Pectoral Sandpiper:			
3,11,18,20,30	Newburyport	15, 250 + 600, <u>1000+</u> , 800+	R.Heil, G.Gove + v.o.
12,18,30	Marshfield	200+, 60, 11	W.Petersen, F.Bouchard+v.o.
11,12+27	Topsfield, Concord	43, 58 + 68	R.Heil, R.Walton
Least Sandpiper:			
11,27	Newbypt, Squantum	1, 1	v.o., O.+N.Komar
Dunlin:			
18,27	Duxbury, Newbypt	300+, 20	W.Petersen#, O.+N.Komar#
Short-billed Dowitcher:			
25,28	P.I.	1, 4	BBC
Long-billed Dowitcher:			
19	Newburyport	1	S.Perkins
Bar-tailed Godwit:			
12	Revere	1	S.Zendeh
	Full, convincing details on file.		
Ruff:			
5,12	E.Boston	1, 1	TASL, S.Zendeh
11-30	Newbypt	2-1	R.Heil, B.Shockey + v.o.
Wilson's Phalarope:			
30	Plymouth	1 f.	MBO staff
jaeger, sp.			
27	Stellwagen Bank	1	R.Prescott
Glaucous Gull:			
5,17	Quincy, Newbypt	1, 1	TASL, S+R.Higginbotham
Iceland Gull:			
2,3+20	Framingham, P.I.	1, 3 + 1	E.Morrier, R.Heil
25	Stellwagen Bank, P'town	3, 4	W.Petersen, M.Lynch#
Thayer's Gull:			
25	Stellwagen Bank	1 (1W, ph)	W.Petersen, K.Powers, E.Baccus
	Full details on file.		
Black-headed Gull:			
7,17	Chatham, Newbypt	2, 1	B.Nikula, S.Higginbotham
Little Gull:			
3 on	Newburyport	max. 6 ad.	R.Heil# + v.o.
Black-legged Kittiwake:			
25	Stellwagen Bank	3	W.Petersen#
Ross' Gull: (?)			
26	Newburyport	1	N.Nash#
Common Tern:			
28-30,28	Squantum, Yarmouth	2, 12	R.Sanford#, R.Scott

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Least Tern: 25	M.V.	2	V.Laux
Caspian Tern: 23+24,28	P.I., Squantum	1, 1	fide L.Jodrey#, W.Cornwell#
30	Marshfield, Duxbury	1, 1	M.Litchfield, D.+V.Crompton
Razorbill: 18	off Hyannis, Nant. Harbor	7, 1	R.Heil
<u>Common Murre:</u> 18	Cape Cod Bay	1	B.Nikula
Black Guillemot 11+19	N.Scituate	10	R.Veit + W.Petersen
25	Boston Harbor, P'town	5, 1	W.Petersen#, M.Lynch#

CUCKOOS THROUGH WAXWINGS

Snowy Owls were reported from the Newburyport-Plum Island area through April 13 and another was observed at Nahant on April 19. Three singing Saw-whet Owls were present in Rutland State Park while others were seen in Topsfield and on Plum Island.

Ruby-throated Hummingbirds were reported from three locations with one on Nantucket flying into a house; last year the first hummingbird was not reported until May 5. A Red-bellied Woodpecker was found in Wellesley and three Red-headed Woodpeckers were noted. Sapsuckers were reported from five locations with two being seen on the very early date of April 4.

The highlight of the month was a Scissor-tailed Flycatcher at Dwyer Farm in Marshfield. The bird was photographed by many and observed to have a complete right tail streamer, but the left one was apparently missing one or two of its longest feathers.

There was an unprecedented spring movement of Black-capped Chickadees at Manomet where 149 were banded during the month. A Boreal Chickadee was found on Plum Island on the 18th and 19th. A total of 31 Red-breasted Nuthatches were reported this April, a big increase over last year when only 8 were reported for the spring season. R.H.S.

Yellow-billed Cuckoo: 30	Marshfield	1	B.Klunk
Screech Owl: 18	P.I.	1	BBC (S.+E.Wilson)
Great Horned Owl: 11,25	Bedford, Westboro	Each at nest w/ 2 yg.	SSBC, R.Stymeist#
Snowy Owl: 1-13	Newbypt, P.I.	2	v.o.
19	Nahant (East Pt.)	1	T.Walas
Barred Owl: 18,20	Boxford, Dover	1 f.on nest, 1	R.Stymeist#, F.Hamlen
21	E.Middleboro	1	K.Anderson
Long-eared Owl: 22	P.I.	1	v.o.
Short-eared Owl: 17,25	Newbypt, P.I.	1, 1	W.Harris, BBC
Saw-whet Owl: 3-10	Worcester (Rutland State Pk.)	max. 3	M.Lynch, S.Carroll
4,7	P.I., IRWS	1, 1	BBC, D.Skiel
Whip-poor-will: 25, 28	Mt.A., MBO	1, 1 calling	J.Paputseanos, MBO staff
Common Nighthawk: 26	Nantucket	1	J.Stroup#
Chimney Swift: 23, 28	Lynn, P.I.	1, 1	R.Heil, BBC
29	Dover, Lincoln	1, 1	F.Hamlen, R.Forster
30	Quincy, S.Peabody	6, 12	W.Cornwell, R.Heil
Ruby-throated Hummingbird: 19,20	Mt.A., Marshfield	1, 1	L.Crofoot#, C.Tilden
24	Nantucket	1 (flew in house)	G.Andrews
Common Flicker: 18,19	Manchester, Bolton	10, 12	BBC
24,27	Mt.A.	10, 12	BBC

SPECIES/DATE	LOCATION	NUMBER	OBSERVERS
Pileated Woodpecker:			
7	IRWS, Andover	1, 1	D.Skiel, S.Carter
9,29	Lincoln, S.Natick	1, 1	E.Dorsey, G.Hopkins
Red-bellied Woodpecker:			
1-12	Wellesley	1	K.Winkler
Red-headed Woodpecker:			
thr.	Rowley, Westboro	1, 1	v.o., v.o.
27	Nantucket	1	P.Nask#
Yellow-bellied Sapsucker:			
4	Fitchburg, Chelmsford	1, 1	G.Gove, W.Harris
10-30	Mt.A.	7 ind.	v.o.
10,21	Melrose, Millis	1, 1	C.Jackson, B.Cassie
Eastern Kingbird:			
26,29	M.V., MBO	1, 1	V.Laux, MBO staff
Scissor-tailed Flycatcher:			
26-30	Marshfield	1 ph.	W.Petersen + v.o.
Great-crested Flycatcher:			
30	Mt.A., Marshfield, P'town	1, 1, 1	BBC, F.Bouchard, B.Nikula#
Eastern Phoebe:			
thr.	Small numbers reported from many locations.		
4,20	Saugus, Boxford	6, 4	C.Jackson, H.Wiggin#
Tree Swallow:			
thr.	P.I.	max. 200 4/11	v.o.
	Small numbers reported from many locations.		
Bank Swallow:			
20	Wayland	5	R.Forster
Rough-winged Swallow:			
8,10	Millis, Wellesley	1, 1	B.Cassie, C.Quinlan
11,12	Milton, S.Peabody	1, 1	R.Campbell, R.Heil
12,13	GMNWR, Horn Pond	1, 2	R.Walton, G.Gove
18,27	Wayland, MNWS	2, 2	R.Forster, R.Heil
Barn Swallow:			
5; 8	Nahant; MBO, Millis	1; 1, 1	G.Gove; MBO staff, B.Cassie
11,29	Wayland, S.Peabody	3, 10	R.Walton#, R.Heil
Cliff Swallow:			
26,27	Marshfield, Millis	1, 1	SSBC, B.Cassie
Purple Martin:			
19,20 on	E.Middleboro, P.I.	1, 3-8	K.Anderson, R.Heil + v.o.
Blue Jay			
28	Squantum	25	W.Cornwell
Fish Crow:			
thr.	Mt.A.	2 pr. (nest-building 4/10)	R.Stymeist + v.o.
4/19	Framingham	pr. w/ nesting material	
Black-capped Chickadee:			
thr.	Manomet	149 b.	MBO staff
	"Unprecedented spring movement for MBO."		
Boreal Chickadee:			
18,19	P.I.	1	BBC (S.+E.Wilson) + v.o.
Red-breasted Nuthatch:			
thr.	9 loc.	21 ind.	v.o.
26	M.V.	10	V.Laux
Brown Creeper:			
6,18	P.I., P'town	8-10, 10+	v.o., B.Nikula
House Wren:			
16,18	Manomet, Newbypt	1, 1	MBO, BBC
Winter Wren:			
11+18	Mt.Wachusett	1, 2	W.Petersen#, P.Roberts#
18+29	MNWS	1, 1	M.Lynch#, R.Heil
26	WBWS, Boxford	1, 1	B.Nikula#, H.Wiggin#
Carolina Wren:			
26,30	Marshfield, Canton	1, 1	SSBC, R.Veit
Marsh Wren (Long-billed Marsh Wren):			
20,25	P.I., Westboro	1, 1	M.Lynch#, R.Stymeist
27-29	Marshfield	1	J.Clancy# + v.o.
Gray Catbird:			
12,29	Hingham, Mt.A.	1, 1	MBO, BBC
30	S.Peabody, Newton	1, 1	R.Heil, O.+N.Komar

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Gray Catbird (continued):			
30	Manomet, Canton	4 (2 b.), 1	MBO, R.Veit
Brown Thrasher:			
17,29	Woburn, Brookline	1, 2	G.Gove, R.Stymeist
29,30	Belmont, S.Natick	1, 1	L.Taylor, F.Hamlen
30	Quincy, Mt.A., MBO	1, 1, 2 b.	W.Cornwell, BBC, MBO
American Robin:			
21,23	Sharon, Mt.A.	52, 35	D.Clapp, BBC
Hermit Thrush:			
4	P.I., Hamilton	2, 1	BBC, J.Berry
9,10	Milton, Woburn	1, 1	S.Higginbotham, G.Gove
10-30	Mt.A.	max. 17 4/17	R.Stymeist, L.Taylor
29,30	MNWS, Quincy	3, 3	R.Heil, W.Cornwell
Eastern Bluebird:			
4,6	Sudbury, Middleboro	1, 2	R.Forster#, fide R.Turner
7,9	IRWS, Tyngsboro	1, pr. nesting	BBC, L.Files
11	Milton, Rockport	2, 1	R.Campbell, R.Norris
12,13,27	Boxford, Lexington, P.I.	1-2, 2, 1	J.Berry, D.Boroson, M.Murphy
Blue-gray Gnatcatcher:			
10-30,12	Mt.A., Lynn	1-3, 1	A.Scott# + v.o., R.Heil
12,18	Ipswich, Bridgewater	1, 1	J.Berry, W.Petersen#
19,23	N.Scituate, Lakeville	2, 1	W.Petersen#
24,26	Millis, Marshfield	1, 5	B.Cassie, SSBC
30	Canton (F.M.), P'town, Wayland	3, 5, 1	R.Veit, B.Nikula#, R.Forster
Golden-crowned Kinglet:			
10,11	Braintree, Mt.A.	2, 2	R.Campbell, L.Taylor
Ruby-crowned Kinglet:			
4	Dover, P.I., GMINWR	1, 8, 1	P.Hallowell, BBC, E.Rogers
8-30	Mt.A.	max. 44 4/26	v.o.
10,12	Melrose, MBO	2, 1 b.	C.Jackson, MBO staff
18,25	Manchester, M.V.	21, 40	BBC, V.Laux
28,30	P.I., P'town	22, 15+	BBC, B.Nikula
Water Pipit:			
4,5+27	Millis	17, 14	B.Cassie
26	Newburyport	1	W.Harris
Cedar Waxwing:			
3,12	W.Newbury, Concord	25+, 13	R.Heil, W.Wyman

VIREOS THROUGH BUNTINGS

Timing for the early part of this spring's migration was almost certainly affected by the weather. During April, two especially noteworthy weather episodes occurred. The first eleven days averaged 10° above normal, with winds generally from the west and of above average intensity. Numerous migrant species made their first appearance and winter residents departed during this period.

On April 11 the wind shifted from northwest to southwest, and finally to a migration-inhibiting easterly on the 12th. The last five days of April saw temperatures 6° above the norm, with westerly winds again, this time preceded by strong east winds on the 25th. The easterly-to-westerly wind direction shift, along with the temperatures, brought another surge of migrants. The early warm weather also affected area trees, with first foliage appearing at least a week ahead of schedule. Maple flowers were blooming in profusion by the 10th.

Several fringillid species came in during the period April 10-12. Included were Rose-breasted Grosbeak, Rufous-sided Towhee and Lincoln's Sparrow. With the exception of a Northern Waterthrush on the 10th, warblers waited for the second spell of favorable weather. Both Bay-breasted and Wilson's warblers appeared on the 25th. Also on that date, tanagers appeared on the islands, a Scarlet on the Vineyard and a Summer on Nantucket, the latter a nice rarity. One has to wonder if these birds moved in the same small weather cell. One male Indigo Bunting reached Nantucket April 29.

Tree Sparrows were not reported beyond the first week of the month, a somewhat early departure. Reports of Rusty Blackbird also tailed off a bit early, with last significant numbers seen on the 25th. The weather probably moved the blackbirds along. The last Snow Buntings were seen on April 11.

With few exceptions, individual counts were close to the expected values. Notable highs included the April 19 count of 100 Pine Siskins in Weston and the more than 200 White-throated Sparrows seen April 30, in Provincetown. Fox Sparrow records for the season were extremely low, with only one individual reported for the whole month of April. March had seen one good single day count of eighteen.

Rarities for the month included the Prothonotary Warbler, which just barely stayed on from March through April 1. Among many arrivals brought by the weather on the 25th was a Western Meadowlark observed singing beautifully and distinctively in Squantum for three days.

The Pine Siskins which were reported in Sharon throughout the month were observed carrying nesting materials during the second week. Early breeding for this species has occurred during other invasion years, with the birds subsequently moving north for a second breeding attempt.

The records indicated a possibly interesting migration path this year. Manomet Bird Observatory, an area which is intensively covered due to the banding operations, reported first arrivals for a number of species later than some other sites to the north. This would suggest that the bulk of migrants, or at least the pioneer individuals in the migration, were following an inland route, bypassing the southeastern part of the state. L.E.T.

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
<u>Solitary Vireo:</u>			
17,18	MBO, MNWR	1 b., 1	MBO staff, M.Lynch+S.Carroll
23,28	Mt.A., P.I.	3, 1	BBC, BBC
30	Mt.A., Quincy	2, 2	BBC, W.Cornwell
<u>Black-and-white Warbler:</u>			
18,23	Nantucket, MBO	1 m., 1 m.	R.Heil#, MBO staff
23,24	Millis, Mt.A.	1 m., 15	B.Cassie, BBC (Greenwalt)
29,30	Waltham, S.Peabody	2, 3	L.Taylor, R.Heil
30	Canton, P'town	2, 3	R.Veit, B.Nikula
<u>Prothonotary Warbler:</u>			
from Mar.-4/1 Dennis		1 at feeder, ph.	fide D.Reynolds
<u>Blue-winged Warbler:</u>			
30	Canton	1	R.Veit
<u>Nashville Warbler:</u>			
26,30	Wellesley, Canton	1, 1	D.Ewer, R.Veit
30	Millis	1 m.	B.Cassie
<u>Parula Warbler:</u>			
29,30	Mt.A., Quincy	1, 1	BBC, W.Cornwell
30	P'town	1	B.Nikula
<u>Yellow Warbler:</u>			
29	Belmont, Chatham	2, 1	L.Taylor#, A.Channing
30	Canton	2	R.Veit
<u>Magnolia Warbler:</u>			
28,29	Winchester, Manchester	1, 1	G.Gove, fide L.Jodrey
<u>Black-throated Blue Warbler</u>			
25	Newton	1	O.Komar
<u>Yellow-rumped Warbler:</u>			
8,11	Mt.A., Wayland	1, 9	P.Taylor, R.Walton#
17,18	Lynn, Nantucket	11, 250+	R.Heil
23,24	Worcester, MBO	80+, 4	R.Heil, MBO staff
28	Mt.A., P.I.	40, 26	BBC
29	Waltham, MNWS	40, 5	L.Taylor, R.Heil
30	Wayland, Canton	65+, 25	R.Forster, R.Veit
<u>Black-throated Green Warbler:</u>			
18-30	Boxford	max. 4	R.Stymeist#
26,29	E.Middleboro, MNWS	1, 1	K.Anderson, R.Heil
<u>Blackburnian Warbler:</u>			
29	Mt.A.	1	BBC
<u>Bay-breasted Warbler:</u>			
25	Newton	2	O.Komar
<u>Pine Warbler:</u>			
4	3 loc.	5 ind.	v.o.
11,17	Mt.A., Lynn	3, 3	R.Stymeist, R.Heil
18,19	P'town, Weston	10, 7	B.Nikula, L.Robinson

SPECIES/DATE	LOCATION	NUMBER	SPECIES
Pine Warbler (continued):			
25,26	P'town, Harvard	5, 3	M.Lynch#, L.Taylor#
Prairie Warbler:			
28,30	MBO, P'town	1 b. "first", 1	MBO staff, B.Nikula
Palm Warbler:			
4	P.I., Ipswich	1, 1	BBC, J.Berry
5,10	Wayland, Lynn	3, 7	R.Forster#, R.Heil
10-30	Mt.A.	14 max.	v.o.
17,20	Lynn, Concord	30+, 5	R.Heil, A.Correnty
18,30	P'town, Canton	8, 6	B.Nikula, R.Veit
Ovenbird:			
28	MBO	1 b. "first"	MBO staff
Northern Waterthrush:			
10, 27-30	Brookline, Mt.A.	1, 3 max.	D.Arvidson, v.o.
30	MBO, WBWS	1 b. "first", 1	MBO staff, B.Nikula
30	Canton, P'town	2, 3	R.Veit, B.Nikula
Louisiana Waterthrush			
18-26	Boxford	3 max.	v.o.
19	Framingham, Holden	1, 1	R.Forster, S.Carroll#
20,30	Dover, Canton	1, 1	F.Hamlen, R.Veit
Common Yellowthroat:			
28,29	MBO, Waltham	1 m. b. "first", 1	MBO staff, L.Taylor
30	S.Peabody, Anton	2, 1	R.Heil, R.Veit
Wilson's Warbler:			
25	Newton	1	O.Komar
Bobolink:			
18	Nahant	1 f.	M.Lynch + S. Carroll
Eastern Meadowlark:			
4,19	P.I., Bolton Flats	2, 3	BBC
22,26	Lexington, Essex	2, 10	BBC
30	Squantum	6	W.Cornwell
Western Meadowlark:			
25-27	Squantum	1 singing	D.Brown#
Red-winged Blackbird:			
4	P.I., Lakeville	200, 56	BBC, SSBC
19,26	Bolton Flats, Essex	200+, 42	S.Carroll#, BBC
Orchard Oriole:			
24	Nantucket	1	E.Andrews#
Northern Oriole:			
30	Scituate, Canton	1 m., 1	H.Simmen, R.Veit
Rusty Blackbird:			
thr., 4	Millis, Newbypt	95 max., 15	B.Cassie, BBC
16,18	Bridgewater, Wayland	4, 35	S.+R.Higginbotham, R.Forster
23,25	Lakeville, Ipswich	15, 10-20	W.Petersen#, BBC
30	S.Peabody	1	R.Heil
Common Grackle:			
4	Saugus, P.I., Carver	50, 400, 32	C.Jackson, BBC, SSBC
16,19	Mt.A., Bolton Flats	22, 500+	BBC
Brown-headed Cowbird:			
4	Saugus, Carver	6, 4	C.Jackson, SSBC
14,16	Mt.A., W.Bridgewater	10, 100+	BBC, S.+R.Higginbotham
18,26	P.I., Essex	10, 11	BBC
28	Mt.A.	22	BBC
Scarlet Tanager:			
25	M.V.	1	V.Laux
Summer Tanager:			
25	Nant.(Sconset)	1 imm. m.	E.Andrews
Cardinal:			
30	Mt.A.	11	BBC
Rose-breasted Grosbeak:			
10,23	Middleboro, Nantucket	1, 1 m.	K.Anderson, V.Reed
30	Nantucket, GMNWR	3, 1 m.	E.Andrews, L.Taylor#
Indigo Bunting			
29	Nantucket (Madaket)	1 m.	E.Andrews
Evening Grosbeak:			
thr., 4	Mt.A., Ipswich	2-7, 6	v.o., J.Berry
6,20	Wayland, E.Middleboro	30, 20	H.Parker, K.Anderson

<u>SPECIES/DATE</u>	<u>LOCATION</u>	<u>NUMBER</u>	<u>OBSERVERS</u>
Evening Grosbeak, continued:			
27,29	Lexington, N.Abington	30, 50	D.Boroson, M.Byrne
Purple Finch:			
thr.,18	P.I., Manchester	3 max., 1	BBC
House Finch:			
16,18	Mt.A., Manchester	2, 21	BBC
Pine Siskin:			
6,18	Wayland, Boxford	1, 2	H.Parker, R.Stymeist
19	Weston, E.Middleboro	100+, 2+	L.Robinson, K.Anderson
23-28	Mt.A.	2 max.	R.Stymeist#
20,26	Sharon, Winchester	6, 4	D.Clapp, G.Gove
American Goldfinch:			
4,18	P.I., Manchester	3, 30	BBC
Rufous-sided Towhee:			
10,14	Lynn, MBO	3, 1 "first"	R.Heil, MBO staff
18,20	Manchester, E.Middleboro	3, 1	BBC, K.Anderson
21-30	Mt.A.	1-5	v.o.
25,28	Milton, P.I.	1, 4	S.+R.Higginbotham, BBC
Savannah Sparrow:			
9,26	Bolton Flats, Essex	11, 40	M.Lynch, BBC
27,29	MBO, Newton	1 b. "first", 14	MBO staff, N.+O.Komar
Vesper Sparrow:			
9,12	Lincoln, Natick	1, 1	R.Forster, F.Hamlen
11-15,25	Newton, Wellfleet	2, 7+	N.+O.Komar, M.Lynch#
26	Essex, Marshfield	3, 2	BBC, SSBC
Dark-eyed Junco:			
5,10	Ipswich, Lynn	16, 60	J.Berry, R.Heil
16-29,18	Mt.A., Manchester	22 max., 6	v.o., BBC
25,26	Saugus, Essex	3, 4	C.Jackson, BBC
Tree Sparrow:			
4,5	P.I., Belmont	6, 4	BBC, L.Taylor
7	Topsfield	1	BBC
Chipping Sparrow:			
10,12	Framingham, Mt.A.	2, 2	R.Forster, L.Taylor
18,23	Manchester, MBO	6, 1 m. singing	BBC, MBO staff
26,27	Boxford, Mt.A.	4, 4	M.Argue#, BBC
Field Sparrow:			
4	P.I., Rowley	1, 1	BBC, D.Alexander
12,19	Lynn, Mt.A.	12, 10	R.Heil, C.Ewer
27,30	MBO, Squantum	1 b. "first", 1	MBO staff, W.Cornwell
White-crowned Sparrow:			
25	Needham	2	O.Komar
29,30	Stoneham, MBO	3, 1 b. "first"	Martinique, MBO staff
White-throated Sparrow:			
10,14	Melrose, Mt.A.	8, 15	C.Jackson, BBC
12	MBO, Lynn	2 b., 22	MBO staff, R.Heil
24-30,28	Mt.A., P.I.	74 max., 35	v.o., BBC
29,30	MNWS, P'town	20, 250+	R.Heil, B.Nikula#
Fox Sparrow:			
10	Lynn	1	R.Heil
	Unusually low numbers reported.		
Lincoln's Sparrow:			
12,18	Peabody, Nahant	1, 1	R.Heil#, S.Carroll#
25	Needham	2	O.Komar
Swamp Sparrow:			
4,18	Medford, Manchester	1, 3	C.Jackson, BBC
20,28	P.I., MBO	6, 2 b. "first"	M. Lynch#, MBO staff
Song Sparrow:			
3,26	W.Newbury, Essex	150, 11	R.Heil, BBC
Snow Bunting:			
11	Princeton	12	L.Robinson

List of Abbreviations

ad.	adult	F.M.	Fowl Meadow, Milton
alt.	alternate (plumage)	Gr.	greater as in Gr. Boston area
b.	banded	I.	Island
br.	breeding	M.V.	Martha's Vineyard
dk.	dark (phase)	Mt.A.	Mt. Auburn Cemetery, Cambridge
f.	female	Nant.	Nantucket
fl.	fledge	Newbypt	Newburyport
imm.	immature	ONWR	Oxbow National Wildlife Refuge
ind.	individuals	P.I.	Plum Island
loc.	locations	P'town	Provincetown
lt.	light (phase)	R.P.	Race Point, Provincetown
m.	male	S.N.	Sandy Neck, Barnstable
max.	maximum	Stellw.	Stellwagen (Bank)
migr.	migrating	ABC	Allen Bird Club
ph.	photographed	BBC	Brookline Bird Club
pl.	plumage	BOEM	Bird Observer of Eastern Massachusetts
pr.	pair	CEC	Christmas Bird Count
thr.	throughout	DFWS	Drumlin Farm Wildlife Sanctuary
v.o.	various observers	FBC	Forbush Bird Club
W	winter (2W = second winter)	GBBEC	Greater Boston Breeding Bird Census
w/	with	GMNWR	Great Meadows National Wildlife Refuge
yg.	young	IRWS	Ipswich River Wildlife Sanctuary
#	additional observers	MAS	Massachusetts Audubon Society
A.A.	Arnold Arboretum	MBO	Manomet Bird Observatgry
A.P.	Andrews Point, Rockport	MNWS	Marblehead Neck Wildlife Sanctuary
Buzz.	Buzzards (Bay)	NBBC	Newburyport Breeding Bird Census
C.Cod	Cape Cod	SSBC	South Shore Bird Club
E.P.	Eastern Point, Gloucester	TASL	Take a Second Look (Boston Harbor)
F.E.	First Encounter Beach, Eastham	WBWS	Wellfleet Bay Wildlife Sanctuary
F.H.	Fort Hill, Eastham	WMWS	Wachusett Meadows Wildlife Sanctuary



NEWBURYPORT BIRDING WORKSHOP

August 26-28, 1981

Workshops were developed because we felt that with relatively small amounts of instruction, it was possible to increase sharply most birders' field skills and to demonstrate ways of looking at birds that accelerate the pace at which additional competence can be acquired.

Based near Newburyport, the Workshop will focus on shorebirds, among which are some of the most difficult to identify species in North America. Instructors will be Kenn Kaufman and Will Russell of the WINGS staff. For information on this Workshop or any of our 65 tours, weekends or workshops, please write or call:

WINGS, Inc.
Box 287
Seal Harbor, ME 04675
Toll free 800-341-7398
In Maine and Canada 207-276-5077

TIDE CHART

Tide Table For Boston Harbor
(Add one hour for Daylight Savings Time)

1981			JUNE - JULY			1981			1981			JULY			1981			
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	
High 7.30 Low 1.30 Height -0.6 Sunrise 4.10	SUNDAY 28	High 8.04 Height 11.0 Low -0.4 Sunrise 7.25	High 1.24 Height 11.0 Low 7.43 Sunrise 4.12	SUNDAY 5	High 2.01 Low 7.98 Height 0.1 Sunrise 7.22	High 7.34 Low 1.28 Height 1.0 Sunrise 4.20	SUNDAY 12	High 7.54 Height 9.2 Low 1.37 Sunrise 7.19	High 9.2 Height 10.4 Low 0.30 Sunrise 4.26	High 12.34 Height 10.4 Low -0.7 Sunrise 4.26	SUNDAY 19	High 8.42 Height 12.60 Low 10.4 Sunrise 4.25	MONDAY 20	High 9.27 Height 10.4 Low 1.43 Sunrise 4.25	High 1.43 Height 10.4 Low 8.03 Sunrise 4.26	TUESDAY 21	High 2.32 Height 10.2 Low -0.4 Sunrise 4.26	WEDNESDAY 22
High 8.28 Low 2.29 Height -1.1 Sunrise 4.11	MONDAY 29	High 8.68 Height 11.4 Low 2.49 Sunrise 7.25	High 2.15 Height 10.5 Low 8.33 Sunrise 4.15	MONDAY 6	High 2.81 Low 8.91 Height 0.4 Sunrise 7.22	High 8.26 Height 8.2 Low 2.16 Sunrise 4.20	MONDAY 13	High 8.26 Height 9.6 Low 3.08 Sunrise 4.21	TUESDAY 14	High 9.14 Height 9.6 Low 3.03 Sunrise 4.20	TUESDAY 14	High 10.99 Height 9.9 Low 3.11 Sunrise 4.21	WEDNESDAY 15	High 9.27 Height 9.6 Low 3.11 Sunrise 4.20	High 1.43 Height 10.4 Low 8.03 Sunrise 4.26	TUESDAY 21	High 2.32 Height 10.2 Low -0.4 Sunrise 4.26	WEDNESDAY 22
High 10.32 Low 4.18 Height -1.8 Sunrise 4.11	WEDNESDAY 1	High 10.47 Height 11.8 Low 4.31 Sunrise 7.24	High 4.00 Height 9.3 Low 10.11 Sunrise 4.17	WEDNESDAY 8	High 4.32 Height 9.1 Low 10.29 Sunrise 7.20	High 9.59 Height 8.5 Low 2.48 Sunrise 4.21	WEDNESDAY 15	High 10.99 Height 9.9 Low 3.09 Sunrise 4.21	THURSDAY 16	High 10.41 Height 10.1 Low 4.31 Sunrise 4.21	THURSDAY 16	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	High 3.23 Height 10.1 Low 4.38 Sunrise 4.28	THURSDAY 23	High 3.23 Height 10.1 Low 4.38 Sunrise 4.28	FRIDAY 24
High 11.26 Low 5.12 Height -1.9 Sunrise 4.13	THURSDAY 2	High 11.41 Height 11.7 Low 5.24 Sunrise 7.24	High 4.53 Height 8.8 Low 11.04 Sunrise 4.17	THURSDAY 9	High 5.26 Height 9.0 Low 11.37 Sunrise 7.20	High 10.41 Height 10.1 Low 4.31 Sunrise 4.21	THURSDAY 16	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 24	High 4.19 Height 9.7 Low -0.4 Sunrise 4.28	SATURDAY 25	High 4.19 Height 9.7 Low -0.4 Sunrise 4.28	SATURDAY 25	High 4.90 Height 10.2 Low -0.1 Sunrise 7.12
High 11.59 Low 5.44 Height -1.8 Sunrise 4.10	FRIDAY 3	High 12.18 Height 10.1 Low 5.47 Sunrise 7.24	High 5.48 Height 11.56 Low 11.0 Sunrise 4.19	FRIDAY 10	High 6.18 Height 9.0 Low 11.56 Sunrise 7.20	High 11.23 Height 8.9 Low 5.13 Sunrise 4.23	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 17	High 11.32 Height 10.3 Low 4.19 Sunrise 4.21	FRIDAY 24	High 4.19 Height 9.7 Low -0.4 Sunrise 4.28	SATURDAY 25	High 4.19 Height 9.7 Low -0.4 Sunrise 4.28	SATURDAY 25	High 4.90 Height 10.2 Low -0.1 Sunrise 7.12
High 12.13 Low 6.52 Height -1.6 Sunrise 4.13	SATURDAY 4	High 10.10 Height 10.0 Low 7.06 Sunrise 7.23	High 1.10 Height 8.2 Low 12.32 Sunrise 4.19	SATURDAY 11	High 9.1 Low 12.48 Height 0.5 Sunrise 7.20	High 5.94 Height 8.2 Low 7.16 Sunrise 4.23	SATURDAY 18	High 12.04 Height 9.1 Low 6.03 Sunrise 4.29	SATURDAY 18	High 12.04 Height 9.1 Low 6.03 Sunrise 4.29	SATURDAY 18	High 12.04 Height 9.1 Low 6.03 Sunrise 4.29	SATURDAY 18	High 11.30 Height 9.4 Low 11.30 Sunrise 4.29	SATURDAY 25	High 11.30 Height 9.4 Low 11.30 Sunrise 4.29	SATURDAY 25	High 4.90 Height 10.2 Low -0.1 Sunrise 7.11

1981			JULY - AUG.			1981			1981			AUGUST			1981			
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	
High 6.19 Low 9.3 Height -0.2 Sunrise 4.30	SUNDAY 26	High 6.48 Height 10.6 Low 6.31 Sunrise 7.10	High 12.13 Height 11.1 Low 6.31 Sunrise 4.37	SUNDAY 2	High 12.45 Height 9.9 Low 6.48 Sunrise 7.34	High 5.58 Low 8.0 Height -0.3 Sunrise 4.45	SUNDAY 9	High 6.22 Height 12.06 Low 1.5 Sunrise 6.54	High 11.38 Height 9.7 Low 6.26 Sunrise 4.51	SUNDAY 16	High 9.2 Height 10.0 Low 1.5 Sunrise 4.51	MONDAY 23	High 9.2 Height 10.0 Low 1.5 Sunrise 4.51	MONDAY 23	High 11.30 Height 9.4 Low 1.5 Sunrise 4.52	SUNDAY 23	High 11.30 Height 9.4 Low 1.5 Sunrise 4.52	SUNDAY 23
High 7.21 Low 1.12 Height -0.5 Sunrise 4.31	MONDAY 27	High 7.46 Height 10.8 Low 1.28 Sunrise 7.09	High 1.00 Height 11.96 Low 7.16 Sunrise 4.37	MONDAY 3	High 1.32 Height 9.8 Low 7.32 Sunrise 7.03	High 6.54 Low 12.44 Height 1.1 Sunrise 4.46	MONDAY 10	High 6.54 Height 9.0 Low 12.97 Sunrise 6.51	High 7.13 Height 10.2 Low 6.98 Sunrise 4.52	MONDAY 17	High 9.0 Height 10.2 Low 6.98 Sunrise 4.52	MONDAY 17	High 9.0 Height 10.2 Low 6.98 Sunrise 4.52	MONDAY 17	High 9.0 Height 10.2 Low 6.98 Sunrise 4.52	MONDAY 17	High 9.0 Height 10.2 Low 6.98 Sunrise 4.52	MONDAY 17
High 8.22 Low 2.11 Height -0.8 Sunrise 4.31	TUESDAY 28	High 8.43 Height 11.0 Low 2.22 Sunrise 7.08	High 1.48 Height 10.2 Low 8.00 Sunrise 4.38	TUESDAY 4	High 2.17 Height 9.8 Low 8.26 Sunrise 7.02	High 7.46 Low 13.37 Height 0.9 Sunrise 4.47	TUESDAY 11	High 8.06 Height 9.2 Low 1.4 Sunrise 6.57	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	TUESDAY 18	High 9.06 Height 9.2 Low 1.4 Sunrise 6.57	TUESDAY 18	High 9.06 Height 9.2 Low 1.4 Sunrise 6.57	TUESDAY 18	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	TUESDAY 18	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	TUESDAY 18
High 9.22 Low 3.10 Height -1.4 Sunrise 4.32	WEDNESDAY 29	High 9.45 Height 11.2 Low 3.22 Sunrise 7.08	High 2.26 Height 9.7 Low 8.46 Sunrise 4.38	WEDNESDAY 5	High 3.03 Height 9.4 Low 9.09 Sunrise 7.01	High 8.39 Low 2.29 Height 0.6 Sunrise 4.47	WEDNESDAY 12	High 8.53 Height 9.5 Low 2.39 Sunrise 6.50	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	WEDNESDAY 19	High 9.5 Height 10.7 Low 7.36 Sunrise 4.55	WEDNESDAY 19	High 9.5 Height 10.7 Low 7.36 Sunrise 4.55	WEDNESDAY 19	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	WEDNESDAY 19	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	WEDNESDAY 19
High 10.32 Low 4.04 Height -1.4 Sunrise 4.33	THURSDAY 30	High 10.33 Height 11.3 Low 4.17 Sunrise 7.07	High 3.23 Height 9.2 Low 9.32 Sunrise 4.40	THURSDAY 6	High 3.50 Height 9.2 Low 10.06 Sunrise 7.00	High 9.25 Low 3.16 Height 0.3 Sunrise 4.48	THURSDAY 13	High 9.39 Height 9.9 Low 3.24 Sunrise 6.53	High 9.39 Height 9.9 Low 3.24 Sunrise 6.53	THURSDAY 20	High 9.39 Height 9.9 Low 3.24 Sunrise 6.53	THURSDAY 20	High 9.39 Height 9.9 Low 3.24 Sunrise 6.53	THURSDAY 20	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	THURSDAY 20	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	THURSDAY 20
High 11.59 Low 5.44 Height -1.8 Sunrise 4.34	FRIDAY 31	High 11.36 Height 11.3 Low 5.08 Sunrise 7.07	High 4.14 Height 8.7 Low 10.21 Sunrise 4.41	FRIDAY 7	High 4.29 Height 9.0 Low 10.54 Sunrise 6.57	High 10.11 Low 4.01 Height -0.1 Sunrise 4.48	FRIDAY 14	High 10.24 Height 10.3 Low 4.12 Sunrise 6.48	High 10.24 Height 10.3 Low 4.12 Sunrise 6.48	FRIDAY 21	High 10.24 Height 10.3 Low 4.12 Sunrise 6.48	FRIDAY 21	High 10.24 Height 10.3 Low 4.12 Sunrise 6.48	FRIDAY 21	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	FRIDAY 21	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	FRIDAY 21
High 11.80 Low 5.44 Height -1.8 Sunrise 4.34	SATURDAY 1	High 11.36 Height 11.3 Low 5.08 Sunrise 7.07	High 5.04 Height 8.5 Low 11.12 Sunrise 4.42	SATURDAY 8	High 5.29 Height 8.9 Low 11.49 Sunrise 6.56	High 10.54 Height 9.5 Low 4.44 Sunrise 4.50	SATURDAY 15	High 11.07 Height 10.6 Low 4.95 Sunrise 6.46	High 11.07 Height 10.6 Low 4.95 Sunrise 6.46	SATURDAY 22	High 11.07 Height 10.6 Low 4.95 Sunrise 6.46	SATURDAY 22	High 11.07 Height 10.6 Low 4.95 Sunrise 6.46	SATURDAY 22	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	SATURDAY 22	High 12.34 Height 10.8 Low 6.92 Sunrise 4.53	SATURDAY 22

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PACIFIC NORTHWEST	7-20 JULY
COLORADO	1-7 AUG
SOUTHEAST ARIZONA	8-16 AUG
MAINE & NOVA SCOTIA	8-16 AUG
CALIFORNIA EXTRAVAGANZA	10-23 SEPT
UPPER TEXAS COAST	
SEMINARS	2-4, 9-11, 16-18 OCT
GUATEMALA	11-20 OCT
KENYA SAFARI	28 OCT - 19 NOV
YUCATAN	23 OCT - 3 NOV
PALENQUE	3-9 NOV
NATURE PHOTOGRAPHY	12-15 NOV
WESTERN MEXICO	12-23 NOV
HAWAII	24 NOV - 4 DEC
OAXACA	5-13 DEC
EASTERN MEXICO	
NEW YEAR'S TOUR	27 DEC - 11 JAN '82

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