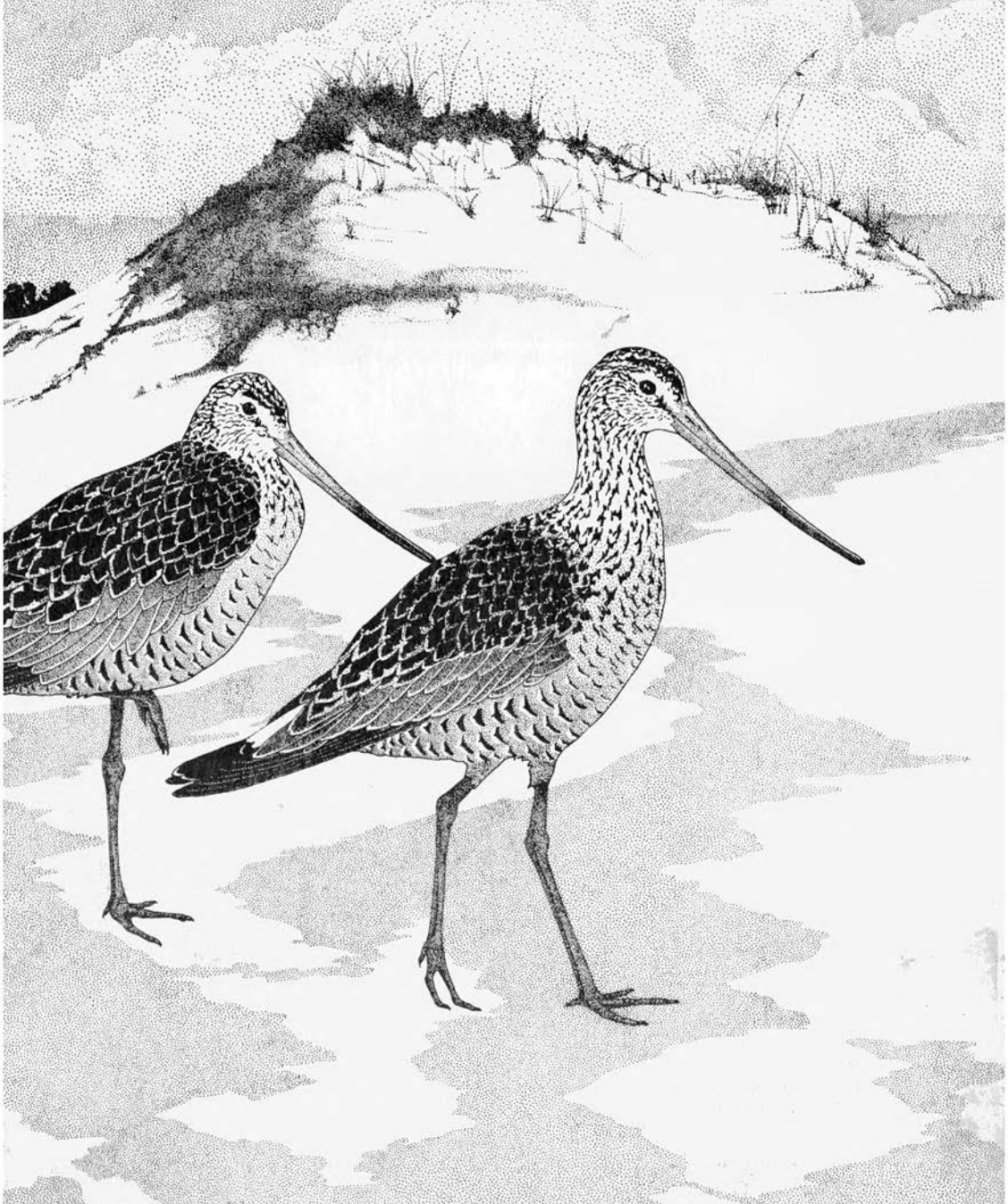
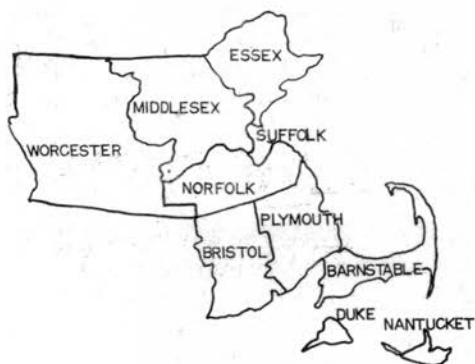


# BIRD OBSERVER

OF EASTERN MASSACHUSETTS



VOLUME 6 NO. 3



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## EDITOR'S PAGE

### RAPTOR INFORMATION NEEDED

Work is in progress on the preparation of a North American hawk watching guide. Persons who can provide color or black and white photographs of diurnal raptors perched or in flight, or who can provide site details on raptor migration lookouts, roosts, wintering areas, or other concentration areas are asked to contact Donald S. Heintzelman, 629 Green Street, Allentown, Penn. 18102.

### 1978 FALL HAWK WATCH

The dates for the 1978 Eastern Massachusetts Fall Hawk Watch have been set. A coordinated watch throughout New England will be held on the weekends of September 9th-10th, 16th-17th, 23rd-24th, September 30th-October 1st, and October 28th-29th. An extra weekend in early September has been added because significant flights have been observed early in that month the past two years. A consecutive day watch will also be conducted on Mount Wachusett in Princeton, from September 9th through October 1st. Volunteers are needed for any and all dates; no experience necessary. Additional information will be published later, but anyone interested in participating in the watch is asked to write:

Paul M. Roberts  
24 Pearson Road  
Somerville, MA.02144  
(617-776-8566)

### PELAGIC TRIPS

This summer and fall the Brookline Bird Club is sponsoring three pelagic birding trips. The first, on August 27th, will depart from Lynn for waters off Provincetown. For details, call Herman Weissberg, 526-4020 (Manchester) or Bill Drummond, 375-0292 (Haverhill). Reservations may be made by sending a non-refundable pre-payment to Mr. Weissberg, P.O. Box 23, Manchester, MA.01944.

On September 24th, a trip to Pollock Rip will leave from Harwichport. For reservations send a non-refundable deposit of \$7.00 (by check) to Mr. Herman D'Entremont, P.O. Box 207, Newton Center, MA.02159. (For further information, call Mr. D'Entremont at his new number, 734-1289.)

The club's final pelagic trip of the season is on October 29th, out of Plymouth. Send a non-refundable deposit of \$7.00 (by check) to Mr. D'Entremont at the address given above.

In all instances, make checks payable to the trip leader.

Some readers may raise an eyebrow at the publication of the following article, which for Bird Observer touches on an unusual aspect of birding--the human aspect. To listers, Fred Hamlen's article may seem of marginal value; to experts, it may seem trite. To this editor, Hamlen's narrative echoes the era of Bent, Chapman, and Forbush, a time when descriptive ornithology was at its height and when observers tried to capture the actions and interactions of birds in language that was personal, original, and literate--though often too anthropomorphic for modern taste.

Yet, today we may be too clinical--a field mark, a breeding record, or a high count seems to constitute an end unto itself. Who looks at birds? Those who are not too jaded enjoy a bird in exceptional plumage; others seek nesting grounds; a few try to understand birds.

In what context do we put all this effort and diversity of goals? Is there an underlying gestalt whose components come to the fore in different eras or through an evolution of concepts? I will not speculate about man's ethic toward birds, the sport of birding, or the science of ornithology--you need only turn to Charlton Ogburn's The Adventure of Birds.

But now you are going on a journey, one not too far. Perhaps you will experience vicariously some strange sights and emotions; perhaps you will gain some new perspectives. There are no "cheery Chickadees" in this story, merely poignant observation and introspective reflection about Nature at its zenith.

L. J. R.

#### A BOREAL ODYSSEY

by Fred Hamlen, Dover

On August 21, 1953, Ludlow Griscom recorded in his 17-volume ornithological journal: "Awake at 3:30 and hear thrushes passing and stay up as it is a great experience. Awaken Ruth Emery at 4:00 a.m. and both stand on porch listening 4:00 a.m. on. At first birds very high at rate of 100+ a minute. An occasional bird much lower--mostly all Olive-backs, at least 20:1 Olive-backs versus Grey-cheeks. Marked falling off at 4:25 ... suddenly resumes with usual intensity, birds much lower, slowing up markedly. At 5:00 a.m. first flush of dawn, last thrush heard at 5:00 a.m."

After coming upon this entry my bones began to yearn for the northern forest, and as my thoughts coalesced it was clear that I must visit it. Long had I entertained vague thoughts of learning about that ecosystem, and long had I wished to get away from rude signs of human presence. In such a habitat I might have some control over what I see: it would be a countryside flooded with birds in migration. Only finding endemic birds

on territory could I express thoughts about a land ethic. Though unspoiled soil is essential, it must have the endemic wildlife to achieve the dynamics required to bring it alive and to flourish in human eyes.

Thus, I found myself taking aim on the Gaspé, and thanks to Jim Baird and Dick Forster my timing was perfect. Jim had advised the third week of June; Dick suggested tenting it all the way.

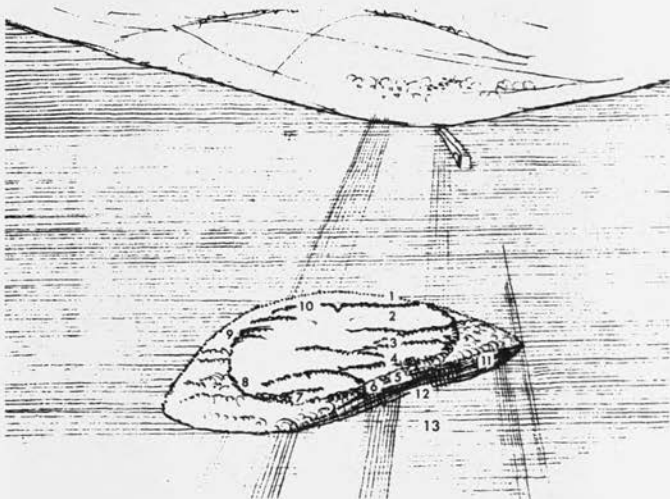
I reached Percé, at the southwest tip of the Gaspé on June 12th. While going north through Maine and New Brunswick I thought continuously about choruses of Fox Sparrows, birds in which Griscom used to take immense delight while afield in Essex County. And in the companionship of Olive-backs and Gray-cheeks--were I to know that my preconceptions would pale by experience and that I would be humbled by that which lay ahead.

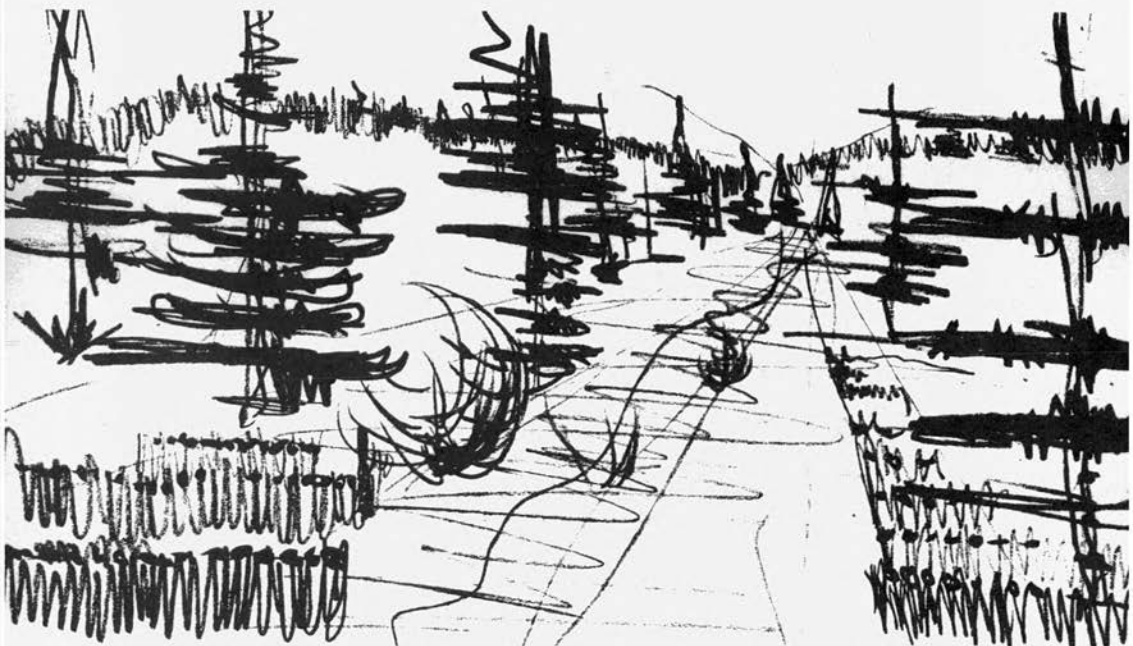
The lesson would be learned on Bonaventure, that island which I scanned across a mile of placid and frigid water. As we drew near the northern and highest end of the island, I found for the first time that the cliffs cannot be described, at least by me! I cannot cope with the dynamics of thousands upon thousands of Gannets on the upper ramparts and the thousands of Black-legged Kittiwakes that dot its middle parts--the all-encompassing bustle defies description. Common Murres--hundreds of them--as well as Guillemots and Razorbills rest closer to the water.

But what happens in the air as the boat approaches is much more awesome; it boggles the mind and squelches the ego.

Gannets leave their cliff tops and return in constant streams. Through them fly the Kittiwakes, careening in all directions--how are mid-air collisions avoided? Alcids in big and small flights buzz past at every angle. And then, a dark patch forward erupts as 150 murres scurry at the last moment to get out of the way before being run down! My God, what action! (Why do people brace the frigid winds at Cape Ann to glimpse merely a token of the real thing?)

1. Dock
2. White-throats
3. Warblers
4. Thrushes and Wrens
5. Gannetry
6. Hawk Owl?
7. Robin and Sharpie
8. Mourning Warblers
9. Grey-cheeks
10. Meadow Birds
11. Kittiwakes
12. Alcids
13. Seabird Rafts





The maelstrom at the cliffs is over, and after a complete circling of the island, those of us who wish to go ashore are let off at the dock. There is a group of abandoned houses at the edge of a broad meadow on the leeward side; beyond is the beginning of the boreal forest.

Ray Geras of the Toronto Ornithological Society and I start up the well-worn trail to the tree line; to the west we see the rugged coastline of the Gaspé peninsula. A gloom sets in as we enter the spruces; the stillness is earsplitting; I cannot even hear my footsteps or Ray's! I feel strangely detached--and then the melancholy and seemingly ventriloquial sounds commence. I think of Green Mansions by W. H. Hudson. In the distance the flutelike sound of a White-throated Sparrow is heard, two of them, three, many, each from a different direction and at a different pitch.

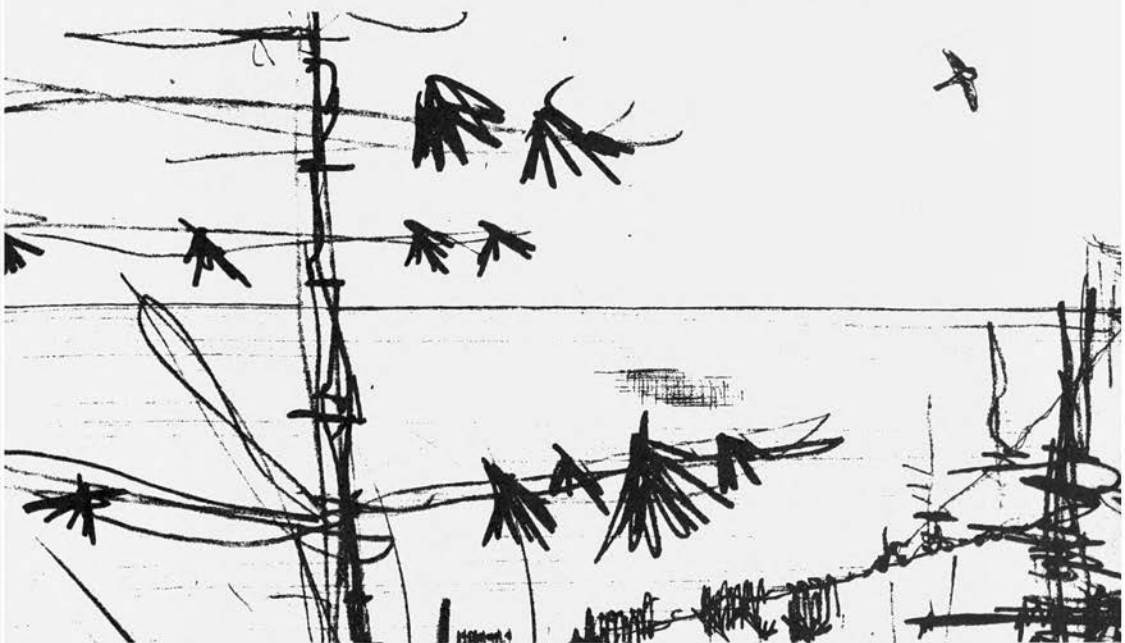
As the spruces thicken and close in around us, these voices are left behind. The path continues gently upward through the ever deepening stillness and gloom. Now the soft-voiced warblers are heard--Blackpoll, Bay-breasted, Cape May, Northern Parula, Yellow-rump, Blackburnian--alternating and repeating, from left and right, from ahead and behind. I also hear the punctuation of Yellow Warbler, Nashville, Northern Yellowthroat, Ovenbird, and Northern Waterthrush. Wilson's Warblers seem to be close by. If I were to wait, this mixture of voices would continue until sundown; they would not evaporate as on a spring morning at Mount Auburn. I listen, mainly because it is hard to see the origins of the sounds. Only occasionally are binoculars used, but eventually each species is observed. However, I am content merely to listen, for the sound of the warblers and the sight of the forest seem perfectly merged. Gradually, I am transformed from an observer to a participant in this subtle action.

As the warbler voices diminish, the clarinet tones of many Fox Sparrows surround me. This outdoes anything I ever heard while with Ludlow Griscom in Essex County; how I wish he could be here at this moment; how I would like to see the broad smile of immense satisfaction spread across his face!

I am grateful that Ray has moved ahead, leaving me alone. This is my day, and it is by no means finished. A Winter Wren explodes! Then a couple of others answer one another, from left and right. The songs are incredibly long--15 seconds (!) with at least one full trill more than I ever heard at home. Except for the Fox Sparrows and the Winter Wrens, it is quieter than ever, not a breath of air. And then--

I hear the quiet "whock" of a thrush, followed by the four ever so faint and constricted rising notes of a Swainson's. I freeze, knowing of the thrush's habit of hopping onto the path ahead. Sure enough, a little olive drab bird plays the role precisely. I see the buffy throat and cheeks, but no eye ring. I am looking at a Gray-cheeked! But as soon as it flies off, its place is taken by the Swainson's. The latter leaves, and presently I hear again the ventriloquial notes, followed by a whining "yea." My thoughts return to Griscom and sounds in the night. He was right; the incisive flight notes of the Swainson's Thrush seem to leave us with a casually spoken promise about a pure land far away. By now my expectations and hopes run high, but the song I really seek has not yet reached my ears.

The scene brightens, the spruces thin out to make way for deciduous growth of maple, aspen, and birch; the air becomes warmer. In concert with it all, I hear a weak "pwee," followed by "zibew." I putter about



the clearing with its Yellow-bellied and Willow Flycatchers, enjoying the sunshine which foils the dark magic of the boreal forest. My sense of time is reacquired; on the downslope my spirits run high and my ego returns; I am in control of myself again.

As the trees give way to a small meadow, a distant clamor strikes my ears, an appalling fish odor my nose. I am at the Gannetry atop the cliffs; nesting birds are within 15 feet! One picture is taken--more?--I nearly throw up on the spot! (To hell with it!) Seeking the windward side of the island, I gaze to the north at a dark blur, a huge raft of alcids resting upon the calm ocean. A smallish raptor makes its rapid way toward the shore--flapping, then gliding, it veers. I see that this is no falcon, and its head is too big and blunt to be that of an accipiter. Excitedly, I sketch quickly, with the idea of looking later into the owl section of Robbins. (When I did, I was stunned by the similarity of what was drawn and what was printed in the book as a Hawk Owl.)

As I continue to windward, the entire aspect is different--cliffs dwindle away to nothing, the boreal forest has been left behind, the faint warbler voices are gone. The magic is long gone!

The trail, which I know about from guides, becomes obscured, a testament to the proclivity of visitors interested only in the Gannetry. I become lost in the dense damp undergrowth shot with fallen timber and the noise of gushing streams of springwater. I become nervous upon remembering my rendezvous with the boat back to Percé. (The skipper's parting words were: "Do not forget, because we will!")

There is a new feeling now;  
Perhaps nature is playing with me.  
But that may be as I want it to be.

Suddenly, a bleating robin desperately twists his way past attempting to thwart a determined Sharp-shinned Hawk. Both birds almost take my head off! I swear, I can see the panic in the robin's eyes--a clatter of branches, a shower of falling feathers, the episode ends somewhere in the brush.

Slipping and falling on the forest floor, and soaking my feet in the bogs, I eventually regain dry and sunny ground. Ahead is a dense thicket, and at its edge two warblers are copulating. I hear a loud, harsh "chirrt" followed by a brief but ebullient song. Again, I freeze. I can easily see the crepe effect of the male's black bib and throat--I could watch these Mourning Warblers forever, but after 10 minutes I reluctantly press on.

Then, totally unexpected, it happens! I learn the BIG reason why I am here in the spruces of the boreal forest. Ahead I hear the brief but incisive "cheer" of a thrush. Then come three weak and constricted falling notes, followed by a barely audible higher one. It is said that the Gray-cheeked sounds Veery-like, but this is not so. The Veery is liquid, free and easy; the Gray-cheeked sounds as though the notes were being squeezed out of him. Again, the immense wild place and fragile



voice blend to perfection. Symbiotic! I think of Aldo Leopold's partridge, which when gone, deprives the woods of its motive force. This boreal forest minus this thrush would mean little to me. Again I recall Griscom's "tremendous experience," when he and Ruth listened to the call of the wild, flight notes that symbolized the awesome force that drives the ecosystem of this lonely island. And I think of his role in the history of American ornithology. Griscom was not the mere statistician he has been accused of being. He was keenly aware of the value of wildness, as his journal attests. But, in the days before World War II, his task was to document the avifauna. Now, with the preservation of wildlife being a paramount issue, we need persons of his talent more than ever. His efforts have put us where we are; at the very least, we owe him a debt for teaching a way to realize our ecological concerns.

The Gray-cheeked Thrush is heard no more--the forest becomes empty. I move ahead, and reach the low southern end of the island. The mid-afternoon is bathed in warm sunshine. While walking 1 1/2 miles north to the dock, I am regaled by troupes of Red-winged Blackbirds, Barn Swallows, Tree Swallows, Bobolinks, Empidonax flycatchers, and warblers of open spaces. No longer spellbound, I find the magic entirely dissolved--a memory only. The essence of Bonaventure was its forest; now I return to reality. The island has done its job!

Someday I will have to ask Ruth how clearly she remembers back 23 1/2 years, to that August night when I was in the middle of the Atlantic en route to Europe. Ornithology had been left behind; in those days I was only interested in Gothic architecture and medieval city design. How could I know then that one day bird study would return to me with vengeance and new meaning--that ornithology and architecture would eventually blend into a quest for methods of architectural planning around a land ethic--or that Griscom's words from the past would send me to the Gaspé for the answers!



Gannets on nest. Photograph by Cynthia Moller  
Courtesy of the Massachusetts Audubon Society

INTERNATIONAL SHOREBIRD SURVEYS 1978  
CANADIAN WILDLIFE SERVICE  
MANOMET BIRD OBSERVATORY

In 1978, the Canadian Wildlife Service and Manomet Bird Observatory will organize the fifth and final year of the International Shorebird Survey scheme. The project involves a network of volunteer participants who census shorebirds regularly in local areas during migration and/or wintering periods. A principal objective of the scheme has been to identify and document areas of major importance to shorebirds in eastern North America. With our estuaries continuing to come under pressure from an increasing number of development proposals, renewed concern must be expressed for this group of birds, and the future preservation of their habitat must be viewed as a matter of some importance.

It is clear that some estuaries are of critical importance in the yearly cycles of many species of shorebirds. Without the feeding and resting areas that such estuaries provide, many shorebirds would be unable to accumulate the large fat reserves required for an overseas journey to the wintering grounds. Owing to the large geographical area involved, one of the only ways of obtaining regular, coordinated information concerning shorebirds has been to request the assistance of volunteer observers, who have adopted a local area which they have surveyed for shorebirds once every two weeks during the southward autumn migration. The results of these surveys have already been most useful and are making a valuable contribution towards the conservation of a very important segment of the bird life of North America.

The survey scheme has been extended to cover as much of the eastern coast of North America as possible, as well as the Caribbean Islands and northern South America. We hope that you may be willing and able to assist in this project. It would involve adopting a good shorebird location or "study area" in which you could count or accurately estimate the numbers of shorebirds once every 10-14 days during autumn (early July until mid-October) or spring migration periods, or at monthly intervals during the winter (November to March). If you are unable to visit an area regularly, occasional counts from other areas, especially during peak migration periods, would be very welcome and worthwhile, e.g., counts from shorebird areas that you might make during the course of a vacation. Areas could be covered on an individual basis or as a group project.

Thank you very much for your consideration. If you are able to assist us, or know of any other competent birders who might, we should be grateful if you could contact one of the following:

- (1) for areas in CANADA:                      (2) for areas in UNITED STATES, CARIBBEAN ISLANDS, and SOUTH AMERICA:

Dr.R.I.G. Morrison  
Canadian Wildlife Service  
2721 Highway 31  
Ottawa, Ontario  
Canada K1G 3Z7

Brian A. Harrington  
Manomet Bird Observatory  
Manomet, Massachusetts  
U.S.A. 02345

## ARE NEW ENGLAND'S LOONS SLIPPING AWAY?

by Philip Martin, Olympia, Washington

The loons are one of the oldest and most primitive of surviving bird families, a fossilized specimen from France dating back 60-70 million years or so. Now there is much concern that this ancient form is having trouble "making it" in the modern world, at least in the northern United States.

The Common Loon (Gavia immer) has probably never been a widespread breeding bird in Massachusetts although it is common as a migrant and winterer. J.A. Allen, in 1864, termed it an occasional breeder in the Springfield region of the Connecticut River valley; Ingalls, in 1889 cited breeding records at two reservoirs in Winchendon (in Bagg and Eliot, 1937). Way back in 1824, Audubon recorded summering birds in the Boston area (in Griscom and Snyder, 1955). However, in the last hundred years at least, the loon has been virtually absent in this state as a nester. Recent discoveries of nesting at Quabbin Reservoir (report vide Massachusetts Audubon Society Breeding Bird Atlas project) are an exciting exception to the historical trend.

Though Massachusetts seems to have been on the southern edge of the Common Loon's breeding range, northern New England has historically supported a large and healthy breeding population. Early records are too scanty to document the decline of loons in these areas, but certainly this species has been feeling the pressure from encroaching civilization for some time. The great ornithologist William Brewster spent much time at Lake Umbagog, on the Maine-New Hampshire border, from 1871-1909, and wrote :

As [Common Loons] offered conspicuous and attractive targets for rifle practice and were wholly unprotected either by law or by popular sentiment, it was customary to shoot at them whenever opportunity offered. Often the progress of the steamer up the Lake was indicated and proclaimed by the frequent popping of guns fired from her decks at Loons and other water-fowl...Curiously enough they often permitted the noisy, smoke-belching steamers to approach them almost within shotgun range, whereas they habitually gave as wide a berth as possible to small boats and canoes, however silently and skillfully paddled...During the first ten or twelve years comparatively few Loons were killed in the Lake--probably never more than two or three in a season and these mostly young birds. But with the advent of improved rifles and the ever-increasing skill of those who used them, the Loons began to suffer more and more seriously. Nevertheless they continued to hold their own fairly well up to almost the close of the last century. Since then they have been growing fewer and fewer year by year until they have almost, if not wholly, ceased to breed in any part of the Lake. While it is beyond question that the gunners have had something to do with this disappearance, I am inclined to attribute it largely to the recent introduction of motor-boats with which the Lake now swarms and which, in my opinion, would alone have brought it to pass.

Brewster closes his account of this species with a plea for the bird's preservation and a condemnation of those who molest it, which ironically (though rather typically) follows his largely remorseless accounts of his own loon-collecting adventures.

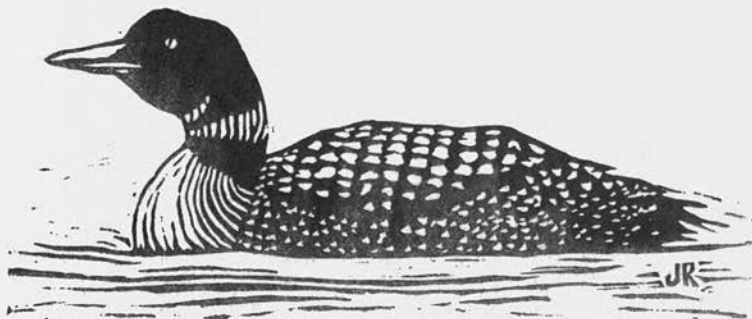
In recent years New Hampshire's loons, at least, have been watched closely. In response to the generally noted decline in that state's nesting loons, the Audubon Society of New Hampshire formed the Loon Preservation Committee to study and protect these birds. (See Hammond and Wood, 1976.) Their research has provided some startling statistics: of the several hundred New Hampshire lakes and ponds with a history of loon inhabitation, only 78 were frequented by loons last summer. Data compiled over the past two years from intensive nest surveys conducted by Loon Preservation Committee volunteers is presented in Table I.

<u>Population Summary</u>	<u>1976</u>	<u>1977</u>
Lakes on Which Loons Occurred	84	78
Lakes With Territorial Pairs	55	45
Active Breeding Territories	91	87
 <u>Population Analysis</u>		
Adults -- Paired	182	174
Adults -- Non-breeding	28	39
Immature	6	4
Chicks (Survived to August 20)	<u>49</u>	<u>38</u>
	265	255
 <u>Breeding Success</u>		
Territorial Pairs	91	87
Nesting Pairs	81*	60
Successful Nestings	39	29
Chicks Hatched	55	43
% of Chicks Hatched Per Territorial Pair	0.60	0.49
Chicks Survived	49	38
% of Chicks Survived Per Territorial Pair	0.54	0.44
*estimate only, not exact figure		

Table I. Summary of Loon Population Surveys in New Hampshire 1976 and 1977 Seasons

The lower production figures for 1977 can be attributed largely to raccoon predation. On the most productive lake, 75% of all nests were destroyed by raccoons. Other chance events may have also contributed to low production last summer; for instance, June rain storms raised the water level on Lake Umbagog to the point where nesting was probably disrupted. It is dangerous to attempt to extrapolate from the results of two years' work. We know loons have been declining, but the picture is far from simple. For instance, if Brewster saw loon nesting cease on Lake Umbagog in the early part of this century, how do we explain the census results of nine pairs found there in 1976, and fourteen pairs in 1977? Perhaps Brewster was simply unable to census as carefully as modern researchers, but it is possible that conditions have improved on that lake--for instance, there is little hunting of loons there now. Far more typical, though, are the instances of drastic decline. Lake Winnepesaukee, in the central part of the state, supported a summering population of 60 to 70 loons only twenty years ago--in 1976 a total of 15 birds produced only one chick.

What factors have contributed to the decline? One prime suspect, pesticide contamination of the eggs has been eliminated as an important factor. In a study sponsored by the Loon Preservation Committee, loon eggs were analyzed for residues of four pesticides (DDT, DDD, DDE, and dieldrin) and PCB's (poly-chlorinated biphenyls), and the eggshell thickness was measured. Correlations were found between high DDT and DDE levels and a reduction in shell thickness. However, the egg-shell thinning compared to pre-pesticide era values was much less than in other bird species which have declined due to pesticide contamination, and most likely not serious enough to affect nesting success.

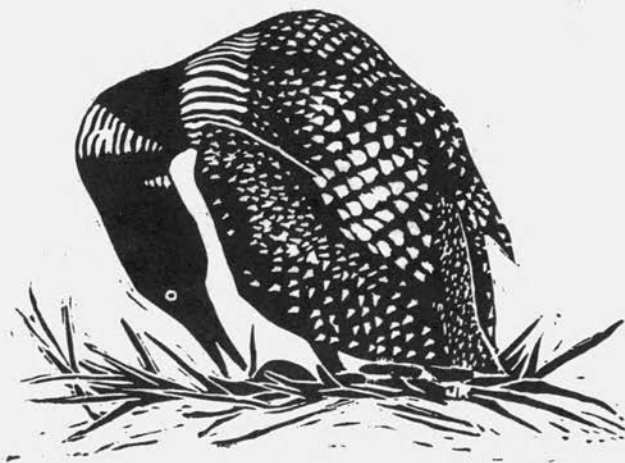


Loss of habitat has certainly been a factor. Shoreline development of lakes and ponds has meant the end of many sheltering marshes and secluded shoreline nesting sites. Also, it is certain that increased public use of the lakes and ponds by fishermen, boaters, and vacationers can have a

deleterious effect on the loon population. Loon behavior patterns can be surprising, though. Just as Brewster noted the loon's tolerance for noisy steamers, loons are known to nest very close to active boat channels and docks. If too closely approached, however, a loon will retreat from the nest and if the intruder does not leave the area soon enough, the eggs or young may perish. More people on the lakes increase the chances of this occurring--even if it is accidental. Other development pressures may continue to take their toll: a diatomite dredging operation proposed for Lake Umbagog (still one of the most productive lakes for loons and one that retains much of its original wilderness character) would threaten four nest sites, according to Scott Sutcliffe, director of the Loon Preservation Committee.

As mentioned earlier, raccoons appear to be major villains in the loss of eggs and young. Raccoons have increased greatly in population around New Hampshire lakes as the influx of humans has provided a source of abundant garbage for them to eat and as natural predators, such as marten, fisher, and weasel have suffered a decline due to human pressure.

Much has been learned about the loon's status and requirements for nesting success, but there are still unsolved mysteries. It is unknown, for instance, why only 60 out of 87 territorial pairs even attempted to breed last summer. Perhaps further research will provide the answers, but meanwhile there are various measures proposed to help preserve New Hampshire's loons. Reduction of the raccoon population through hunting and trapping seems to be a necessity at this point. Floats and posters are being installed to help keep away unwitting human intruders. Artificial nest sites, small floating islands, have been installed in several lakes with one successful nesting. The most important task confronting the Loon Preservation Committee is one of educating and persuading lake-shore residents to take an active interest in protecting this species.



Linocuts by Julie S. Roberts

The future of the Common Loon in our region is uncertain, but perhaps it has enough friends working for it to turn the tide and halt its decline. It would be a sad sign of changing times if the loon, with its wilderness aura and haunting cries, were to vanish from New England.

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- Hammond, David E. and Rawson L. Wood, 1976, The Vanishing Loon: Can it Survive in New Hampshire? Loon Preservation Committee, Centre Harbor, N.H.

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Note: The updated 1977 edition of the Committee's report, unavailable at the time this article was written, can be obtained for a small charge from: The Loon Preservation Committee, Box 502, Center Harbor, N.H. 03226. They can provide further information on the status of the Common Loon across the northern states.

LOON STICKERS AVAILABLE

Sticky-backed loon bumper stickers are available from the Audubon Society of New Hampshire at \$1.25 each. It is hoped wide distribution of the stickers will stimulate interest and support of the Society's loon preservation efforts. The 15-by-4-inch stickers are available from the Audubon Society of New Hampshire, 3 Silk Farm Road, Concord, NH 03301. T.H.A.

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A TAXONOMIC GUIDE TO FEATURE ARTICLES AND SPECIES ACCOUNTS

We like to feel that one of the major benefits of subscribing to Bird Observer is that you accumulate a handy collection of species accounts, field identification articles, and vagrants reports with specific reference to eastern Massachusetts, a collection to which you can refer time and again. To aid readers who regularly refer to back issues in this regard, and to acquaint new subscribers with the contents of previous volumes, we have prepared the following taxonomic index of feature articles and special commentary in Volumes 1-5 inclusive. If you are missing back copies of Bird Observer, individual issues may be obtained for \$1.25, and complete volumes for only \$6.50.

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ENDANGERED SPECIES RECEIVE CRITICAL HABITAT DESIGNATION

The Interior Department's U.S. Fish and Wildlife Service has rules that the living space of the endangered American Peregrine Falcon, the Florida Snail (Everglade) Kite, the Dusky Seaside Sparrow, and the Cape Sable Sparrow is critical to their survival. This ruling requires all Federal agencies to ensure that any actions authorized, funded, or implemented by them do not result in the destruction or adverse modification of the designated critical habitats of these species. The critical habitat designation does not stop any specific project; it merely identifies the living space thought essential for the species' continued existence, enabling Federal agencies to know where the habitat is located so they can plan accordingly.'

T.H.A.

## NORTH AMERICAN SHOREBIRD STUDY GROUP FORMED

by Dr. R.I.G. Morrison, Ottawa, Ontario

We wish to announce the formation of a North American Shorebird Study Group, with the objective of promoting communication between and the dissemination of knowledge amongst persons interested in shorebirds in North America. The North American Shorebird Study Group will comprise a section of the present Wader Study Group, which was formed in Europe in 1970, and which has proven very effective in achieving the above goals in the Old World. The Wader Study Group has many members throughout Europe and Africa, and with increasing membership in North America, we feel that the formation of a partially separate subgroup would be beneficial. The advantages of remaining within the larger group are clear, in that members can be kept in touch with work in progress on both sides of the Atlantic.

The Wader Study Group publishes a Bulletin two to three times a year. We believe the Bulletin provides a very valuable outlet for articles which might not be suitable for a scientific journal but which are more substantial than those intended for a "newsletter." Material currently appearing in the Bulletin includes the following: accounts of field projects and/or expeditions, notes on methods for trapping and for aging and sexing waders, preliminary accounts of biometric and moult data for uncommon species or where work may still be in progress, lists of recent publications on waders, announcements and requests for information, banding totals and recoveries, and addresses of members.

We envisage that the Bulletin will in future have a North American section, which will be edited separately but which will be printed and distributed with the present edition from the U.K. The North American section will be edited initially by R.I.G. Morrison, who was co-opted by the Wader Study Group Committee for that purpose. Contributions on any aspect of wader biology from members or prospective members are requested and should be sent to R.I.G. Morrison, Canadian Wildlife Service, 2721 Highway 31, Ottawa, Ontario, Canada K1G 3Z7. It is not intended that publication in the Bulletin would prevent a later, fuller account of work in a journal, but we hope to attract articles for which the Bulletin might be the most suitable outlet.

For the initial edition of the North American section we plan to include articles on shorebird work by the Canadian Wildlife Service in James Bay by R.I.G. Morrison, an account of recent fieldwork in Tierra del Fuego for the Royal Ontario Museum by Allan Baker and Edward Miller as well as other material that may be submitted in response to this announcement. We also plan to publish a list of North American members with a brief indication of their research interests to facilitate communication between workers in various fields.

Subscription. The annual subscription will be \$2.50 (Canadian or American) and should be sent to the North American Membership Secretary, Dr. E. H. Miller, Department of Biology, York University, Faculty of Science, 4700 Keele Street, Downsview, Ontario, Canada M3J 1P3. Alternatively, members may join the group by sending £1 (sterling) to A.J. Prater, British Trust for Ornithology, Beech Grove, Tring, Herts., England. Checks or money orders should be made payable to the Wader Study Group. Please include a

brief note providing your name, mailing address, and specific information regarding your research interests, including subjects, species and locations. This will enable us to compile an address list and indicate members' fields of interest in future editions of the Bulletin.

We hope very much that you will wish to become a member of the North American section of the Wader Study Group, and that the Bulletin will provide an informative and interesting outlet for news, and articles about shorebird research and for communication between persons interested in shorebirds.

#### CORPORATION FINES \$500 FOR VIOLATION OF MIGRATORY BIRD TREATY ACT

The FMC Corporation, a pesticide manufacturer in Middleport, New York, was convicted on 18 counts for the deaths of 23 birds attracted to the company's 10-acre toxic waste-water pond. The corporation was fined \$100 per count, but the total fine was reduced to \$500 in light of the fact that FMC had spent \$4 million to alleviate the problem. Judge John T. Curtin of the U.S. District Court called the prosecution a public service and remarked on the importance of the case in the area of the environment and conservation.

The conviction resulted from a 3-month investigation with spot checks over a 2-year period by agents of the U.S. Fish and Wildlife Service. In May 1975 agents were advised that extensive bird mortalities were occurring in FMC's lagoon. Agents inspected the area and found 92 dead birds, as well as numerous other carcasses. It is estimated that during the spring migration of 1975, thousands of migratory birds, including sandpipers, Mourning Doves, Killdeer, Canada Geese, and various ducks were killed from the toxins in the waste water. In testimony at the trial it was learned that the toxin level was so high that a normal drink would probably be lethal to most birds, and that mere bathing in the pond would result in the de-oiling of feathers and absorption of poisons through the skin.

During the course of the investigation, agents worked continually with FMC on measures to alleviate the situation, including scare devices, armed guards, and netting. FMC finally eliminated the lagoon and installed a filtration system and a surface water treatment plant.

T.H.A.

#### NEW HAMPSHIRE BREEDING RECORD

A nest containing seven young Barn Owls was discovered on a platform inside a Hollis, New Hampshire, silo, thus possibly establishing the first confirmed breeding record for this species in that state. Since the silo was to be filled, another platform was constructed on the outside. The young birds were measured, banded, and moved to their new quarters; the adults resumed their feeding responsibilities that night.

THA

## THE WINTER SEASON 1978

January was on the cold and cloudy side, but was most remarkable for heavy precipitation and record snowfall. The temperature averaged 28.5°, 5.2° warmer than the bitter cold 1977 January. The highest temperature was 58° on the 9th, quickly followed by the month's low, 10°, on the 10th and 11th. Though there was no prolonged January thaw, there were two short-spanned but dramatic thaws. The first was a warming on the 8th to 53° by midnight and to 58° in the morning of the 9th, before the mercury took a steep dive in the afternoon, reaching 19° by midnight. The second thaw was on the 26th, with near 40° throughout the early hours, until a nearly instantaneous jump to 55° in the morning. The mercury quickly began an almost straight-line decline to 35° by midnight and on to 21° the next morning.

Precipitation totaled 8.12 inches, 4.43 above normal and second only to 9.54 inches in 1958 for the 108-year January record. The most in any 24 hours was 2.09 inches on the 20-21st. Snow totaled 35.9 inches, about 3 times the 12.2 average and a new January record in 107 official years. The old record was 35.7 inches in 1904. Much of this snow fell in a single day, when 21.0 inches broke the record for any previous 24 hours. The month's total snow was second only to 41.3 inches in February, 1969, for any month in 107 years. Prolonged periods of icing from freezing rain and drizzle plagued the area on the 13-15th, with heavy ice accumulation in some south suburban areas.

February's weather will not long be forgotten: the temperatures were on the cold side, and the month was extremely dry and sunny, except for the Great Blizzard. The highest temperature was 44° on the 16th and 17th; the low mark was 3° on the 4th. Every day dipped below 32°.

There was no rain throughout the month, a rare event even in winter; but the Great Blizzard was another story. The storm set several records. The 24-hour total of 23.6 inches topped that set less than 3 weeks earlier: 21.0 inches on January 20, 1978. The storm total of 27.2 inches topped the old mark of 26.3 in February, 1969. The new snow depth mark of 29 inches broke the 26 inches set just in January. The old February depth record had been 23 inches, set in 1899. The blizzard brought high winds with a peak gust of 79 mph from the NE on the 6th; this tied the Sept. 12, 1960, mark from Hurricane Donna for the highest since 100 mph in Hurricane Carol (August 31, 1954). In Chatham the peak gust was registered at 92 mph from the NE. Heavy damage occurred along our coasts with thousands of homes badly torn apart. The storm ripped apart Monomoy Island near Inward Point, and Coast Guard Beach lost the Outermost House. Much of the Boston area had nearly 30 inches of snow, but amounts ranged upwards from 40 inches in some areas south toward Rhode Island. In these areas, totals were probably the highest since the Great Snows of 1717.

## LOONS THROUGH CORMORANTS

The maximum collections of wintering Common Loons reported were 20 at P.I. on January 20 (RS), 35 at Martha's Vineyard Feb. 17-20 (RSa#) and 30 at Nantucket Feb. 18 (CJ). An immature Arctic Loon, in winter plumage, was carefully studied at close range for over an hour at Race

Point, Provincetown Feb.18 (RRV, MJL), It could not be located on a subsequent day, and the species remains to be photographed or otherwise documented in Massachusetts. Forty-three Red-necked Grebes were counted at Cape Ann Jan.29 (MK), and 5 were in Sandwich Jan.17 (RFP) and 4 were at Eastham Feb.11 (WRP); but an influx of migrants in late February was nowhere apparent. A single Red-necked Grebe was picked up in an exhausted condition in a paddock in E.Middleboro Feb.8, following the severe blizzard (fide KSA). Roughly 250 Horned Grebes were reported from scattered coastal localities throughout the month, with the largest concentrations being 125 at Martha's Vineyard Feb.17-20 (RSa#) and 51 at P.I. Feb.20 (PMR). Wintering Pied-billed Grebes included 6 at Orleans Jan.29 (BBC-DB#) and 3 at Plymouth Feb.26 (SSBC-TLL-E#). On Jan.16, 2,500 Northern Fulmars were counted over deep water in the southern Gulf of Maine, in close proximity to two fishing trawlers (RRV); 95% of these were noted to be of the "double-light" phase. During that patrol, as well as one in February, Fulmars were found to be considerably less abundant on Georges Bank and many of the inshore fishing banks than in the deeper, colder waters of the Gulf of Maine. In February, Blair Nikula noted 600+ Northern Fulmars 60 miles NE of Provincetown on the 5th, but was present in Cape Cod Bay during the Great Blizzard and was surprised to see virtually no pelagic species at all. Four or five exhausted Fulmars were picked up along the beaches of Cape Cod following the storm, however. Whether or not these individuals were subspecifically identified is not known. A Sooty Shearwater was observed 75 miles south of Block Island Feb.2 (BN). The only concentration of Gannets noted during the winter was 2,000, 75 miles south of Martha's Vineyard Feb.4 (BN), although 75+ were seen from shore at Eastham Jan.28 (WRP). Two Great Cormorants were observed inland at Whitman Feb.8 (WRP), clearly an artifact of the storm; while 350 were counted off the northwestern shore of Martha's Vineyard Feb.17-20 (RSa), indicating that species' local center of abundance. Two Double-crested Cormorants (one ad. and one imm.) persisted until at least Jan.22 in Plymouth Harbor (WRP#), as did 3 in Provincetown Harbor until the same date (fide BN).

#### HERONS THROUGH WATERFOWL

Some 25 Great Blue Herons were reported during the winter, including one inland at GMNWR that remained until Jan.16; and 8 survived until Feb.26 at E.Orleans (RRV,MJL). Five Cattle Egrets were reported on the extraordinarily late date of Jan.28 in Westport (fide V.Laux). Fifteen Black-crowned Night Herons were found in Hingham Jan.12 (M.Purdy); 26 others were recorded from Cape Cod and the islands, which included 6 individuals seen after the severe weather (3 on Martha's Vineyard Feb.17-20 (RSa) and 3 at Eastham Feb.26 (RRV#)). Single American Bitterns were found in Fairhaven Jan.6-13 (DS) and Eastham Feb.4 (WRP#). Wintering Collections of Brant included 150 at Martha's Vineyard Feb.17-20 (RSa#), 500 at Squantum Feb.24 (GW), 250 at E.Boston Feb.26 (JJC) and 52 at Salem Feb.25 (CB). A single Snow Goose at Martha's Vineyard Feb.7 was almost undoubtedly a local winterer (RSa). Gadwalls were unusually numerous north to Essex County during January and early February; 6 were at Salisbury Jan.5, 12 were at Salem Jan.31 and 19 were at Gloucester Feb.1-4 (RSH#). In addition, 25 were counted on Martha's Vineyard Feb.17-20 (RSa#), and 16 were in Plymouth Feb.26 (WRP). Eighty Pintails were present throughout the month in Yarmouth (BN), and singles were recorded north to Newburyport Feb.5-11 (JWB) and Gloucester Feb.5

(JN). A Blue-winged Teal somehow survived until at least Jan.12 at GMNWR (RKW), and the almost traditional bird was again recorded at Sandwich Feb.18 (RFP). Two European Wigeons were present throughout the winter on Nantucket (EFA), and were unique in the state. Wintering American Wigeons included 78 at Hatchville Jan.12 (AAC) and 300 on Nantucket Feb.19 (CJ). Rather surprising for this winter was the persistence of two Northern Shovelers, one in Clinton and the other in Lancaster, throughout the month of February (HLM). Twenty-five Wood Ducks were counted on Martha's Vineyard Feb.17-20 (RSa#), and on the mainland, 10 were in Framingham Jan.15 (RSH), 4 were in Salem Jan.15 (RSH), and 6 were in Brookline Jan.8 (DTB#). Redheads continue to congregate on Nantucket to the virtual exclusion of other seemingly appropriate wintering ponds; 265 of the 269 individuals noted this winter were at Nantucket Feb.18 (CJ#); the others were 2 at Martha's Vineyard Feb.17-20 (RSa#), and 2 in Plymouth Feb.1 (WRP, KSA). Ring-necked Ducks were found north to Framingham (2 throughout Jan.), Brookline (3 throughout Jan.) and Winchester (1 on Feb.12 (BBC-RC)). Twenty-five were in Falmouth Jan. 15 (BBC-JBr), 20 were at Nantucket Feb.18 (CJ) and 16 were in Plymouth Feb.26 (SSBC-TLL-E). A count of 1,500 Canvasbacks on the Taunton River in Assonet Feb.7 (WRP, KSA, TLL-E) far eclipsed any other Massachusetts total, although between 400-600 were present in the Dennis area throughout Feb. (WRP, SH). A single Lesser Scaup remained in Framingham at least through Jan. (RAF,RSH), 3 were identified on Martha's Vineyard Feb.17-20 (RSa#), and 4 at Falmouth Feb.20 (FRH). The maximum estimate of the wintering Common Goldeneye population in Newburyport Harbor was 1,300 Jan.17 (RSH), and 1,000 were carefully estimated around Martha's Vineyard Feb.23 (WRP). Barrow's Goldeneyes numbered a rather high 23 for the winter, with a maximum count of 2 (8m.,1f.) in Plymouth Harbor Jan.22 (WRP#), Others included 3 in Scituate Jan.1-15 (MFL,BAL), 3 in Newburyport Jan.5-19 (v.o.) and 3 males in Ipswich Feb.12 (JWB,IG). Five hundred Buffleheads were counted in Newburyport Harbor (RSH) and 400 were at Martha's Vineyard Feb.17-20 (RSa#). At least 20,000 Oldsquaw were visible from Nantucket flying into the sound at night Feb.18 (CJ), and the wintering population at Newburyport was estimated at 700 (RSH). Harlequin Ducks were present at most traditional locales throughout the winter: 1 male was at Cohasset Jan.1-5 (MFL,BAL), 5 (3m.,2f.) were present throughout the season at E.Orleans (v.o.), as were 6 (4f., 1 imm.m., 1m.) at Magnolia (v.o.). The higher Common Eider concentrations were 6,500 at Plymouth Feb.4 (BB), 5,000 at Nantucket Feb.18 (CJ), and 10,000 at Martha's Vineyard Feb.17-20 (RSa#). King Eiders included an immature male at E.Orleans throughout the winter (BU#), an immature male in Plymouth Jan.15-28 (WRP & v.o.), 1 m. and 1 f. at Rockport Feb.5 (RRV, MK) and 1 m. at Salisbury Jan.29-Feb.5 (RRV & MJL, MK). Scoters present off Martha's Vineyard Feb.17-20 were comprised of 700 White-wingeds, 40 surfs and 200 Blacks (Rsa#). The largest flock of wintering Hooded Mergansers was 30 at Fairhaven, counted Jan.8 (SSBC-KSA). Of the 50+ other individuals reported, the 2 northernmost were at Framingham throughout Jan. (RAF, RSH). One hundred and fifty Common Mergansers were counted at Fairhaven Jan. 8 (SSBC-KSA); 200+ were at Newburyport Jan.21 (R.Stone), and 250 at Pochet in E.Orleans Feb.18 (RRV, MJL). The only notable concentration of Red-breasted Mergansers was 1,800+ around Martha's Vineyard Feb.23 (WRP#).

## RAPTORS THROUGH SHOREBIRDS

Goshawks continue as a predominant raptor in eastern Massachusetts as is suggested by the occurrence of 13 individuals during the month of January alone (cf. a total of 14 Sharp-shinned recorded during the same period). Reports of Cooper's Hawks include 2 on the Concord CBC, an adult at Eastham (observed catching a Blue Jay) Jan.28 (WRP), 1 of unspecified age at Boxford Feb.4 (MA, AA), 2 at Bridgewater Feb.5 (BBC-DD) and 2 adults seen throughout the month of February in the Eastham area (v.o. fide BN). The Concord CBC recorded a high 56 Red-tailed Hawks, consistent with an apparent increase throughout New England this winter, while 33 other individuals were recorded from 16 other localities, with high counts of 8 and 6 coming from, typically, Martha's Vineyard and Nantucket, respectively (RSa#, CJ). Red-shouldered Hawks include 2 throughout the winter in Bridgewater (LR & v.o.), 1 in Wrentham Jan. 23 (DD), 1 in Hyannis Jan.26 (fide BN), 1 (adult) in Gloucester Jan.29 and Feb.18 (MK#), 1 in Ipswich Feb.9 (JWB), and 1 in Barnstable Feb.18 (VL). Rough-legged Hawks totaled 31+ for the winter, indicating a slight increase from the earlier part of the winter, but still clearly not suggesting a flight year. An immature Bald Eagle was seen in Chatham Jan.17 (WRP), and what may well have been the same individual was seen in Eastham Feb.11 (WRP#). Of 22 Marsh Hawks recorded during the winter, all but 2 (at P.I.) were on the southeast coastal plain. The P.I. birds were noted early in the season, on Jan.1 (HTW). At least 13 Merlins were noted at coastal localities ranging from P.I. to Martha's Vineyard during the course of the winter. A Cyrfalcon, of the gray phase, was noted at Orleans between Feb.11-15 (WRP, DC, PN), and was suspected of possibly being the same individual that wintered at Monomoy for three consecutive winters, 1974-76. Data on American Kestrels is rather scant; 15 individuals were reported from 7 localities in February, a total seemingly much too low to give any meaningful indication of their true abundance.

Four or five Virginia Rails frequented GMNWR from Jan.1-14 (RKW#), and 4-5 were also present in S.Peabody Jan.8-23 (RSH). The latest recorded Virginias were 1 at Westwood Feb.10 (JJC) and 1 at Ipswich Feb.18 (BBC-JWB). Much more surprising was the persistence of 5 Soras at a sewer outlet at GMNWR until Jan.15 (RKW)! Another Sora was present in Ipswich Jan.15-22 (JWB, JN#). A Common Gallinule was seen in Woburn Jan.7 (GWG), while a count of 35 American Coots as far north as Lynn Feb.28 was likewise impressive (RSH). American Coots otherwise totaled 34 from milder areas on the southeastern coastal plain. Five Killdeers lingered at least into January, and 3 into February (2 at Bridgewater Feb. 5 (DD#) and 1 at Orleans Feb.15-20 (FRH#)). Eighty Black-bellied Plovers were present at Nauset Jan.1 (CAG), 1 stubborn individual lingered at Newburyport until at least Jan.29 (RRV, MJL), and 7 were noted at Martha's Vineyard Feb.17-20 (RSa#). The last remaining Ruddy Turnstones were 4 at Salem Feb.15 (RSH) and 25 at N.Scituate Feb.19 (SH, RH). Nineteen Common Snipes were present throughout the winter at scattered localities, while 2 American Woodcocks on Martha's Vineyard Feb.17-20 (RSa) may well have wintered; 2 in Middleboro Feb.28 (DB) were more likely early arrivals from proximate wintering quarters. Astounding and perplexing was the discovery of a Eurasian Curlew at Menemsha Pond on Martha's Vineyard Feb.18 (EMS, RMSa, AK, GGD, CL), where it remained into March. Given the



extreme rarity of the species involved, the unlikely date and the occurrence of a White-rumped Curlew on Long Island, N.Y., late in the fall of 1976, it seems likely that the Vineyard bird and the Monomoy bird (Sept.19-Oct.12, 1976) are one and the same. Wintering Red Knots included 20 at Scituate Feb.19 (SH, RH), 40 at Winthrop the same day (RHS) and 50 at Revere Feb.26 (CJ#). The Winthrop and Revere flocks likely contained many of the same birds. Two impressive counts of Dunlin were 1,000+ between Hull-Scituate Jan.15 (MFL, BAL) and 1,000 at Eastham Feb.11 (WRP#). Although not wholly unexpected, the appearance of Red Phalaropes late into the winter was noted for the first time this winter. One was observed off Provincetown Jan.15 (RRV), and 50 were seen flying by First Encounter Beach following a storm Jan.21 (BN, CAG). On Feb. 5, a single Red Phalarope was seen 60 miles NE off Provincetown(BN).

#### SKUAS THROUGH ALCIDS

Two skuas (sp?) were observed in the southern Gulf of Maine and on Georges Bank, Jan.17 and 18, respectively (RRV). The former bird was thought to be a Northern Skua (Catharacta skua skua) on the basis of plumage and structural characteristics, but positive identification was not made. In addition, 4-6 Skuas were noted 75 miles south of Martha's Vineyard Feb.4 (BN). Glaucous Gulls were present in small numbers during the winter with a maximum of only 3 in Newburyport (R.Stone# & v.o.), at Nauset Light 3+ were noted on Feb.12 (BN, CAG), 2 were found in Sandwich on Jan.29 (JJC), singles were found in several other coastal localities, with inland reports from Wachusett Reservoir Feb.20 (BB), and in Bridgewater on Jan.8 (J.Nichols#). Iceland Gulls continue in good numbers in the Salisbury-Plum Island area with a maximum of 80 individuals there during January. As many as 45 Iceland Gulls were noted during the winter along Cape Ann (v.o.). Seven Iceland Gulls were noted from Eastham on Feb.11 (WRP) where they occur less regularly than north of Boston. The high count for Ring-billed Gulls was 30 at Lynn on Feb.28 (RSH). Only one immature Black-headed Gull was reported during February at Eastham on the 25th (WRP#), during January 1-2 birds were noted at Newburyport (v.o.), and 1-5 birds were noted from the Squantum area (v.o.), another single was noted on Jan.29 (MJK). The maximum count of Bonaparte's Gulls was 150 on Jan.8 in Quincy (BBC-DTB); the reports for February seemed very low, making it difficult to quantify. Black-legged Kittiwakes were reported in good numbers during January when RRV noted 200+ off Martha's Vineyard on the 14th, 300+ off Provincetown on the 15th, and in the Gulf of Maine on the 16th, only 2 immatures were recorded in a flock of 500+. At Provincetown 400 were noted on Jan.22 (BN). On Feb.5, 1,000 were noted 60 miles northeast of Truro (BN). A Little Gull was noted in Newburyport on Jan.21 (R.Stone) and on Jan.28 (HHD'E#).

Richard Veit noted 65 Razorbills off Martha's Vineyard on Jan.14, on the 15th 250+ were noted off Provincetown (RRV). Two Razorbills were noted at Rockport on Jan.14 (MJL). Sixty miles ENE of Truro 5 Razorbills were observed on Feb.5, 15 were noted from Nantucket on Feb.18 (CJ); also on the 18th 2 were seen at Nauset (MJL#), and 2 were noted at Provincetown on Feb.18 (RRV#). A Common Murre was carefully studied at Provincetown on Jan.15 (RRV). Thick-billed Murres were noted at Brant Rock on the Marshfield CBC Jan.1, and 1 was observed in E.Orleans on Feb.25 (WRP).

Ten Dovekies were noted in the Gulf of Maine on Jan.16 (RRV), 50+ were observed 60 miles ENE of Truro on Feb.5 (BN), and 10 were found at Nantucket Shoals on Feb.21 (MBO staff). Throughout the winter 5-6 Black Guillemots were present at Rockport (v.o.), with 3+ seen off and on in Provincetown (RRV & v.o.). Common Puffins were noted Jan.15 off Provincetown when 1 adult was observed (RRV), 2 were seen in the Gulf of Maine on Jan.16 (RRV). In February 6 Puffins were noted in Eastham on the 4th (WRP#), 3 were seen 60 miles ENE of Truro on the 5th (BN), and 5 were seen in Eastham on the 11th (WRP#).

#### OWLS THROUGH WOODPECKERS

Barn Owls were picked up dead on Jan.11 in Rockport (RTN) and in Harwich on the 28th (RRV#). At Squibnocket, Martha's Vineyard, 2-3 Barn Owls were present from Feb.17-26 (RSa# & v.o.). Twenty-five Screech Owls were recorded on the Concord CBC Jan.2; 10 were found in Framingham on Jan.10 (RAF). A Great Horned Owl spent the winter in Mt. Auburn Cemetery (MA & v.o.). In the Newburyport-Plum Island area 1-2 Snowy Owls were present from Jan.6-Feb.26 (RSH & v.o.); the only other Snowy Owl was found in Foxboro on Jan.22 (WS). Single Barred Owls were reported from 6 localities during Jan. and Feb. Two Long-eared Owls were reported throughout January in E.Lexington (WLD# & v.o.), with 3 noted on Jan. 1 in Bridgewater (WRP) and 1-2 during February on Martha's Vineyard. Single Long-eared Owls were noted from P.I. on Jan.8 (MJK), Hyannis on Jan.21 (VL), and Woburn on Jan.24 (T.Anderson). A maximum of 3 Short-eared Owls was present throughout the winter in the P.I.-Salisbury area, in Bridgewater a maximum of 2 was seen during Jan. and Feb. Three Short-eareds were recorded from Squantum on Jan.21 (B.Donovan), singles were noted from Scituate (MFL), Eastham (SH) and Orleans (RRV#). At Plum Island 1-2 Saw-whet Owls were present throughout Jan. and Feb. (JO), 1 was in Middleboro on Jan.22 (WRP), 2 were noted on Martha's Vineyard on Feb.17-20 (RSa#), and 2 were found in Brewster on Feb.25 (WRP#).

Thirteen Common Flickers were noted during January. Thirty were noted on the Vineyard on Feb.17-20 (RSa#), and 40 were counted in Orleans on Feb.26 (JG). Six Pileated Woodpeckers were noted during February from 4 localities, all west of Boston. Red-headed Woodpeckers were reported from Gloucester (v.o.), Hopkinton Feb.16 (WG), in Spencer on Feb.2 (C.Whitcomb), in Dover on Jan.10 and in Harwichport Jan.1 (S.Babb). One to two Red-bellied Woodpeckers were found throughout Jan. in South Natick (EWT & v.o.).

#### HORNED LARK THROUGH SNOW BUNTING

A maximum count of 200+ Horned Larks was noted on Jan.22 (WRP & v.o.) in Bridgewater, and a large flock was present there throughout the winter. In Concord on Jan.7, 84 Horned Larks were noted (RKW) and in Newburyport a high count of 82 was seen on Jan.15 (JN).

In the Greater Boston area three Common Crow roosts have been monitored; in West Roxbury a maximum of 1,414 crows were seen on Jan.3 (RMB); in Waltham, at Prospect Hill, between 5,000-6,000 were estimated on Feb.19 (LJR, RHS); and in Framingham 2,800+ were estimated during February (EWT). All three roosts have an assembly point and at sundown the birds

proceed to the roosting area. Hopefully, after another winter roost watch, an article on these roosts will be forthcoming. The only Fish Crows reported were from the Natick dump where 12+ were observed on Jan.8(RMB).

Ninety Blue Jays were found in the Salem-South Peabody area on Jan.11 (RSH). Single Boreal Chickadees were found in W.Boylston on Jan.2(BB), in Waltham and Clinton on Jan.8 (RHS & HLM), and in February, a bird was seen in Clinton on the 26th (HLM). Red-breasted Nuthatches continued in good numbers with 42 in Weston on Jan.2 (LJR) and 27 there on Feb.26 (LJR). A Winter Wren apparently crept into a building through a crevice in Manomet on Feb.11, where it was banded and released; another Winter Wren was found in Sandwich on Feb.18 (RFP, JJC). A total of 8 Carolina Wrens was found on Martha's Vineyard between Feb.17-20 (RSa#), while the only other reports were from Marion where 2 were seen on Jan.16 (GWG) and 2 were noted in Falmouth on Jan.29 (MFL, BAL). A Long-billed Marsh Wren was found in Harwich on Jan.28 (RRV, MJL).

Gray Catbirds were found in Falmouth on Jan.29 (RMB) and another was seen on Martha's Vineyard on Feb.23 (RSa#). Brown Thrashers fared much better with 13 individuals in January and 10 during February. Good numbers of American Robins were noted during January, and in February 47 were seen in Bridgewater on the 5th (DD), and 70 were noted on Nantucket on the 19th (CJ). A Varied Thrush continued in Melrose at Pine Banks Park (JA & v.o.); the bird was first discovered on the Greater Boston CBC Dec.18. Other Varied Thrush reports came from Wayland on Jan.8 (HP), and sporadically during the first half of February in N. Eastham (WWB & v.o.). Hermit Thrushes were reported from the Arnold Arboretum on Jan.8 (DTB#), 2 were noted from Plympton on Jan.28 (KSA#), and 1 was found in Squantum on Feb.19 (BDM). On Cape Cod, 12 Eastern Bluebirds were present throughout Jan. in Chatham (v.o. fide BN), and in Eastham 7 were present throughout February (v.o. fide BN).

In Bridgewater 3 Water Pipits were found on Jan.1 (RMB) and 1 bird was still there on the 22nd (GWG). A single Golden-crowned Kinglet was noted from Clinton on Feb.26 (HLM) and the only report of Ruby-crowned Kinglets was noted from Sandwich on Feb.18 (RFP, JJC). Flocks of Cedar Waxwings were observed in Framingham on Jan.7th -- 87 individuals (RAF), 25 in Needham on Jan.21 (R.Sommers), and 40 in Cohasset on Jan.27 (J. Bean).

The numbers of Northern Shrikes were fantastic, with 5 on the Concord CBC Jan.2 (PA# & v.o.). Throughout January 4-5 were seen on the outer Cape (v.o. fide BN); in the Newburyport-Salisbury-Plum Island area 4-6 birds were noted; along the South Shore 3-4 individuals were seen; and in the Greater Boston-Worcester area 6-8 were counted. In February 2 additional sightings were recorded. This was the best season since 1973 when 29 were recorded (cf. 13, 17, 15, 19 the last 4 years).

Warbler reports include 40 Yellow-rumped at Chatham on Jan.29 (BBC, D. Baines), 100+ on Martha's Vineyard Feb.17-20 (RSa#); 4-5 Palm Warblers continued all winter in Bridgewater (WRP# & v.o.); a Pine Warbler was noted from Feb.12 on in Bridgewater (GRF# & v.o.). A Yellow-breasted Chat was observed in Falmouth on Jan.28 (HTW#), and Jan.29 (RMB), and another was found at a feeder in Mattapoisett from Feb.8-20 (GBM).

As many as 22 Eastern Meadowlarks were present in Bridgewater through Jan.-Feb,5 (DD# & v.o.); the most northerly report was 3 on P.I. on Jan.15 (RMB#). Eight Red-winged Blackbirds were noted from Lakeville on Jan.7 (WRP#); the first migrants started to arrive around the 25-26th of February from scattered localities. Northern Orioles were noted from Plainville on Jan.19 (B.Armstrong), W.Chatham on Jan.26 (J.Harty), and in Waban from Jan.22-Feb.8 (N.Braash). In S.Peabody 2-8 Rusty Blackbirds were present through January and after the storm 45 were there on Feb.9 (RSH); 75 were noted on Martha's Vineyard Feb. 26 (PA# & v.o.), and other small flocks were recorded during the end of February from scattered localities. An adult male Brewer's Blackbird was noted with Starlings on a farm at Katama, Martha's Vineyard, from Feb.17-26 (RSa#, RHS#); two birds were present there in 1977. In January wintering flocks of Common Grackles totaled 60 in Hanover on Jan.3 (WRP), and 40 in Framingham on Jan.16 (RAF). Migrant Grackles started to arrive on Feb.25-26 when 400+ were counted on Martha's Vineyard (RSa#). A Western Tanager was picked up dead on Jan.2 in Belmont (N. Harris); the specimen was sent to MAS. An adult male Painted Bunting showed up at a feeder in Hyannis on Jan.20, where it remained through Feb.(Mr.Mycocock & v.o.); Mr. Mycocock also had the pleasure of having an adult male Dickcissel throughout Feb. at his feeder. Evening Grosbeaks were reported in exceptionally low numbers all winter, as were Purple Finches with only 8 reported in January and 13 in February. A total of 130 House Finches was counted in Westport on Jan.7 (JJC) and 53 were noted in the Arnold Arboretum,Boston, on Jan.8 (DTB#).

A most fantastic flight of Pine Grosbeaks occurred around January 15, as shown in the following chart:

Pine Grosbeaks:

January 15	Framingham-Concord	390	RAF, KSH
January 15	Concord-Sudbury	177	RKW
January 15	S.Peabody-Salem	70	RSH
January 13	Lincoln, Ayer	40,27	RAF, JI
January 21	Boxford	200+	R.Palmer

In addition, 150 other individuals were reported in smaller flocks from a wide area. During February the numbers were down quite a bit with 50 noted in Acton on the 10th (HWF) and 60 from Beverly on the 22nd (RSH).

Common Redpolls were noted in good numbers during the invasion of Pine Grosbeaks with 70 noted on Jan.15 in the Middlesex Fells (PMR#), and on the same day 30 were counted in Newburyport (RMB); other small flocks totaling 65 individuals were also noted during January. In February a mild invasion occurred at mid-month with many flocks of 20-40+ individuals reported from everywhere. Other large flocks are tabulated below:

Common Redpolls:

February 20	Salem	50+	C.Blaszczak
February 21	Framingham	110	ICTN
February 21	W.Newton	50+	M.Forsyth
February 27	Reading	90-100	C.Brown

A total of 1,258 Pine Siskins was counted on the Concord CBC on Jan.2 (PA# & v.o.). Flocks of 20-50+ individuals were noted in many localities throughout the winter. In Wayland 100 Siskins were at a feeder

on Feb.15 (D.Long) and in Lincoln 500 were present at a feeder on Feb.17 (WWH). A total of 10 Red Crossbills was found on the Concord CBC (PA# & v.o.), 5 were noted from Weston on Jan.2 (LJR), 6 in Scituate on the 15th (BAL#), 7 from Brookline on the 24th (HC), and 5 from Lincoln on Jan.26 (MJL). In February a maximum of 27 was counted in the New Pines, P.I., and 20 were noted on Feb.17-20 on Martha's Vineyard (RSa#). White-winged Crossbills were noted in good-sized flocks of 7-30 individuals throughout January with a maximum of 145 noted from P.I. on Jan.6 (HW# & v.o.) and 120 in the Lynn Woods on the same day (RSH). In February a maximum 218 White-winged Crossbills were reported from P.I. (HP# & v.o.).

In January, 9 Rufous-sided Towhees were reported, the northernmost report came from Newburyport; and 15 were noted Feb.17-20 on Martha's Vineyard (RSa#). Five Savannah Sparrows were found in Bridgewater on Jan.22 (WRP) and 13 were noted from Katama, M.V., on Feb.26 (RHS#). Sharp-tailed Sparrows were noted from Scituate on Jan.15 (WRP#), 5 were seen in Eastham on Jan.29 (GWG) and 1 was carefully identified in E.Orleans on Feb.25 (WRP#). A Lark Sparrow was visiting a feeder in Needham on Jan.21, where it returned after the blizzard and remained throughout February (Mrs. Hottle & v.o.). Over 90 Tree Sparrows were noted on Jan.1 in Bridgewater (RMB#). Throughout February 4-9 Field Sparrows were observed in Middleboro (DB), where an immature White-crowned Sparrow was noted on Jan.22 (WRP, GWG). Seven Swamp Sparrows were noted in Concord on Jan.16 (RAF). Lapland Longspurs were noted in Lancaster on Jan.1 (HLM) and in Concord on Jan.5 (RKW); in the traditional areas, a maximum of 40 was seen on P.I., and a maximum of 15 was counted in Bridgewater in February (WRP & v.o.). Two hundred, fifty-five Snow Buntings were noted from P.I. on Feb.20 (PMR# & v.o.), and inland reports include 3 in Clinton on Jan.1 (HLM) and 57 in Concord on Jan.5 (RKW).

RRV, RHS

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Corrigendum: September, 1977. Page 212. 225 Double-crested Cormorants, not Common Loons, were observed flying over Mt. Wachusett on Sept.18th.

CANADIAN WILDLIFE SERVICE  
SHOREBIRD COLOR-MARKING 1978:  
REQUEST FOR INFORMATION

In 1978, the Canadian Wildlife Service will be continuing an extensive program of banding and color-marking shorebirds in James Bay, with the objective of defining migration routes used by shorebirds on their journeys between the Arctic breeding grounds and wintering areas. During the past three years, over 30,000 shorebirds have been captured in southern James Bay, and have resulted in more than 1,200 "bird days" of sightings of dyed birds, in areas ranging from eastern Canada to South America. Much new information is being obtained on migration routes and strategies, and your assistance in looking out for and reporting color-marked birds would be very much appreciated and would contribute very substantially to the success of the program.

Feather dyes (yellow/orange) and colored leg bands (yellow or light blue) will be used to mark the birds according to age and date and place of capture. If you see a marked shorebird, please record details of: species, place, date, color-marks and, if possible, numbers of other shorebirds present. For color-dyed birds, please record the color and area of the bird that was dyed (e.g., entire breast, upper breast only, belly from legs to tail only, etc.). For color bands and standard metal leg bands please record which leg the bands were on, the colors involved, and the relative position of the bands if more than one was on a leg (e.g., right leg, blue over metal, etc.). A note should also be made whether the bands were below or above the "knee" of the bird.

Thank you very much for your assistance. All reports will be fully acknowledged and should be sent to:

Dr. R.I.G. Morrison  
Canadian Wildlife Service  
2721 Highway 31  
Ottawa, Ontario  
Canada K1G 3Z7

# TIDE CHART

Here is the tide table for Boston Harbor; add one hour for Daylight Savings Time.

1978			JULY TIDES			1978		
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon
High 9:06 Height 8.7 Low 2:53 Height 0.1 Sunrise 4:13	<b>SUNDAY</b> <b>2</b>	High 9:20 Height 9.9 Low 3:03 Height 0.6 Sunrise 7:34	High 1:23 Height 9.8 Low 7:40 Height -0.1 Sunrise 4:17	<b>SUNDAY</b> <b>9</b>	High 1:53 Height 9.1 Low 7:55 Height 0.7 Sunrise 7:30	High 9:54 Height 8.7 Low 3:40 Height 0.0 Sunrise 4:13	<b>MONDAY</b> <b>3</b>	High 10:03 Height 10.0 Low 3:46 Height 0.7 Sunrise 7:36
High 10:36 Height 8.8 Low 4:22 Height -0.1 Sunrise 4:13	<b>TUESDAY</b> <b>4</b>	High 10:44 Height 10.0 Low 4:29 Height 0.7 Sunrise 7:37	High 2:49 Height 9.4 Low 8:22 Height 0.0 Sunrise 4:18	<b>TUESDAY</b> <b>11</b>	High 3:18 Height 9.2 Low 8:39 Height 0.8 Sunrise 7:30	High 11:16 Height 8.0 Low 5:02 Height -0.2 Sunrise 4:13	<b>WEDNESDAY</b> <b>5</b> <small>NEW MOON</small>	High 11:25 Height 10.0 Low 5:10 Height 0.6 Sunrise 7:33
High 12:04 Height 10.0 Low 6:21 Height -0.1 Sunrise 4:16	<b>THURSDAY</b> <b>6</b>	High 12:34 Height 9.0 Low 6:31 Height 0.6 Sunrise 7:32	High 5:19 Height 8.9 Low 11:32 Height -0.2 Sunrise 4:21	<b>FRIDAY</b> <b>14</b>	High 5:47 Height 9.8 Low 11:46 Height -0.2 Sunrise 7:18	High 12:43 Height 9.5 Low 7:00 Height -0.2 Sunrise 4:17	<b>FRIDAY</b> <b>7</b>	High 12:34 Height 9.0 Low 6:31 Height 0.6 Sunrise 7:32
High 12:43 Height 8.9 Low 7:00 Height -0.2 Sunrise 4:17	<b>SATURDAY</b> <b>8</b>	High 1:13 Height 9.6 Low 7:13 Height 0.3 Sunrise 7:30	High 6:16 Height 9.4 Low 12:09 Height 0.3 Sunrise 4:22	<b>SATURDAY</b> <b>15</b>	High 6:41 Height 10.0 Low 12:26 Height 0.4 Sunrise 7:18	BOSTON Eastern Standard Time	<b>JULY</b>	BOSTON Eastern Standard Time

1978			JULY-AUG. TIDES			1978		
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon
High 7:45 Height 8.3 Low 1:34 Height 0.6 Sunrise 4:34	<b>SUNDAY</b> <b>30</b>	High 8:05 Height 9.5 Low 1:43 Height 1.1 Sunrise 7:07	High 12:17 Height 10.0 Low 6:31 Height -0.2 Sunrise 4:40	<b>SUNDAY</b> <b>6</b>	High 12:42 Height 9.4 Low 6:45 Height 0.7 Sunrise 7:07	High 8:58 Height 8.6 Low 2:26 Height 0.3 Sunrise 4:34	<b>MONDAY</b> <b>31</b>	High 8:52 Height 9.0 Low 2:33 Height 1.0 Sunrise 7:07
High 9:24 Height 8.5 Low 3:14 Height 0.3 Sunrise 4:36	<b>TUESDAY</b> <b>1</b>	High 9:38 Height 9.7 Low 3:20 Height 0.9 Sunrise 7:05	High 1:35 Height 9.8 Low 7:50 Height 0.3 Sunrise 4:42	<b>TUESDAY</b> <b>8</b>	High 2:02 Height 9.1 Low 8:11 Height 0.2 Sunrise 6:56	High 10:09 Height 8.7 Low 3:56 Height 0.2 Sunrise 4:37	<b>WEDNESDAY</b> <b>2</b>	High 10:20 Height 9.6 Low 4:04 Height 0.7 Sunrise 7:04
High 10:48 Height 8.9 Low 4:36 Height -0.2 Sunrise 4:37	<b>THURSDAY</b> <b>3</b>	High 11:00 Height 9.9 Low 4:45 Height 0.6 Sunrise 7:03	High 3:05 Height 9.3 Low 9:17 Height 0.2 Sunrise 4:46	<b>THURSDAY</b> <b>10</b>	High 3:31 Height 9.7 Low 9:48 Height 0.3 Sunrise 6:51	High 11:26 Height 9.1 Low 5:15 Height -0.2 Sunrise 4:38	<b>FRIDAY</b> <b>4</b> <small>NEW MOON</small>	High 11:38 Height 10.0 Low 5:25 Height 0.4 Sunrise 7:02
High 12:05 Height 8.9 Low 5:53 Height -0.3 Sunrise 4:38	<b>SATURDAY</b> <b>5</b>	High 12:05 Height 9.2 Low 6:05 Height 0.3 Sunrise 7:01	High 4:50 Height 8.0 Low 10:59 Height 0.5 Sunrise 4:48	<b>SATURDAY</b> <b>12</b>	High 5:10 Height 9.9 Low 11:41 Height 0.2 Sunrise 6:49	BOSTON Eastern Standard Time	<b>JULY-AUG.</b>	BOSTON Eastern Standard Time

1978			JULY TIDES			1978		
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon
High 7:14 Height 9.1 Low 1:07 Height 0.1 Sunrise 4:22	<b>SUNDAY</b> <b>16</b>	High 7:37 Height 10.6 Low 1:23 Height 0.2 Sunrise 4:22	High 1:06 Height 11.7 Low 7:22 Height -1.0 Sunrise 4:28	<b>SUNDAY</b> <b>23</b>	High 1:40 Height 10.9 Low 7:44 Height -1.1 Sunrise 7:13	High 8:11 Height 8.4 Low 2:05 Height -0.6 Sunrise 4:53	<b>MONDAY</b> <b>17</b>	High 8:16 Height 8.14 Low 2:19 Height -0.9 Sunrise 7:17
High 9:10 Height 9.8 Low 3:01 Height -1.2 Sunrise 4:22	<b>TUESDAY</b> <b>18</b>	High 9:30 Height 9.3 Low 3:16 Height -0.5 Sunrise 4:29	High 2:54 Height 10.3 Low 9:05 Height -0.9 Sunrise 4:29	<b>TUESDAY</b> <b>25</b>	High 3:26 Height 10.6 Low 9:37 Height -0.3 Sunrise 7:11	High 10:05 Height 10.2 Low 4:10 Height -1.7 Sunrise 4:24	<b>WEDNESDAY</b> <b>19</b>	High 10:25 Height 11.9 Low 4:10 Height -0.9 Sunrise 7:16
High 11:00 Height 10.5 Low 4:48 Height -2.0 Sunrise 4:22	<b>THURSDAY</b> <b>20</b> <small>FIRST QUARTER</small>	High 11:19 Height 10.0 Low 5:04 Height -1.2 Sunrise 7:15	High 4:37 Height 9.3 Low 10:56 Height 0.3 Sunrise 4:30	<b>THURSDAY</b> <b>27</b>	High 5:17 Height 9.8 Low 11:26 Height 0.4 Sunrise 7:09	High 11:54 Height 10.8 Low 5:40 Height -1.0 Sunrise 4:26	<b>FRIDAY</b> <b>21</b>	High 11:57 Height 11.9 Low 5:57 Height -1.3 Sunrise 7:13
High 12:12 Height 10.0 Low 6:31 Height -3.2 Sunrise 4:26	<b>SATURDAY</b> <b>22</b>	High 12:46 Height 10.9 Low 6:50 Height -1.3 Sunrise 7:13	High 6:47 Height 10.5 Low 12:35 Height 0.6 Sunrise 4:32	<b>SATURDAY</b> <b>29</b>	High 7:10 Height 12.49 Height 1.0 Sunrise 7:08	BOSTON Eastern Standard Time	<b>JULY</b>	BOSTON Eastern Standard Time

1978			AUGUST TIDES			1978		
Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon	Morning	BOSTON	Afternoon
High 5:49 Height 8.9 Low 1:58 Height 0.6 Sunrise 4:48	<b>SUNDAY</b> <b>13</b>	High 6:16 Height 10.2 Low 2:02 Height 0.8 Sunrise 4:48	High 6:09 Height 11.9 Low 7:47 Height -1.8 Sunrise 4:57	<b>SUNDAY</b> <b>20</b>	High 12:24 Height 6.30 Low 1:15 Height -1.5 Sunrise 6:38	High 6:49 Height 9.1 Low 12:41 Height -0.1 Sunrise 4:48	<b>MONDAY</b> <b>14</b>	High 7:15 Height 11.4 Low 12:59 Height 0.3 Sunrise 4:48
High 7:52 Height 9.4 Low 3:14 Height -0.6 Sunrise 4:50	<b>TUESDAY</b> <b>15</b>	High 8:14 Height 10.9 Low 3:54 Height -0.5 Sunrise 4:50	High 1:38 Height 11.8 Low 9:28 Height -1.1 Sunrise 4:57	<b>TUESDAY</b> <b>22</b>	High 2:04 Height 10.8 Low 8:18 Height -0.9 Sunrise 6:38	High 8:50 Height 11.4 Low 2:40 Height -1.0 Sunrise 4:51	<b>WEDNESDAY</b> <b>16</b>	High 9:13 Height 11.4 Low 2:58 Height -0.8 Sunrise 4:57
High 9:48 Height 10.3 Low 4:28 Height -1.5 Sunrise 4:52	<b>THURSDAY</b> <b>17</b>	High 10:09 Height 11.7 Low 3:54 Height -1.0 Sunrise 4:53	High 3:22 Height 9.8 Low 9:28 Height 0.1 Sunrise 5:00	<b>THURSDAY</b> <b>24</b>	High 3:47 Height 10.0 Low 10:03 Height 0.2 Sunrise 6:32	High 10:42 Height 10.7 Low 4:47 Height -1.9 Sunrise 4:53	<b>FRIDAY</b> <b>18</b> <small>FIRST QUARTER</small>	High 11:02 Height 11.8 Low 4:47 Height -1.8 Sunrise 6:41
High 11:34 Height 11.0 Low 5:20 Height -2.0 Sunrise 4:53	<b>SATURDAY</b> <b>19</b>	High 11:55 Height 11.7 Low 5:39 Height -1.1 Sunrise 6:40	High 5:13 Height 11.7 Low 11:17 Height 0.5 Sunrise 5:02	<b>SATURDAY</b> <b>26</b>	High 5:38 Height 9.3 Low 11:59 Height 0.1 Sunrise 6:30	BOSTON Eastern Standard Time	<b>AUGUST</b>	BOSTON Eastern Standard Time

## Tidal differences from Boston High Tide

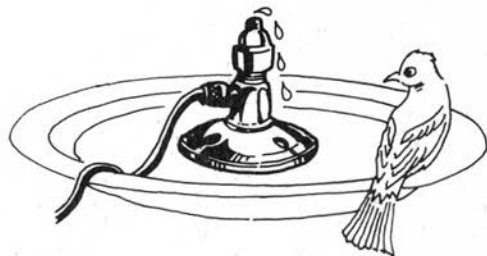
- Newburyport 31 minutes later
- Scituate 5 minutes earlier
- Plymouth 5 minutes later
- Chatham (outside) 30 minutes later
- (inside) (1 hr) 54 minutes later
- New Bedford (3 hrs) 15 minutes earlier

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