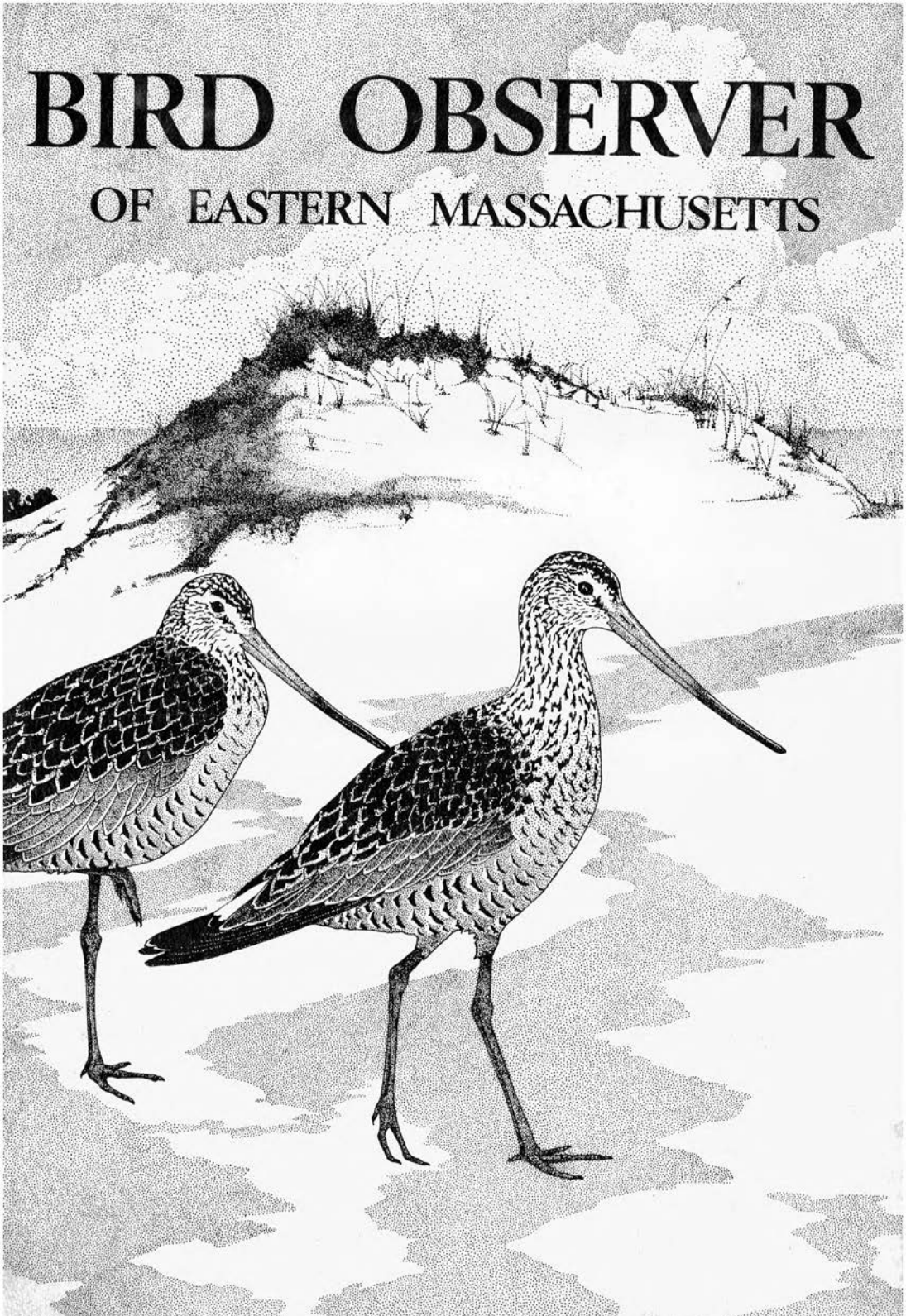
BIRD OBSERVER

OF EASTERN MASSACHUSETTS



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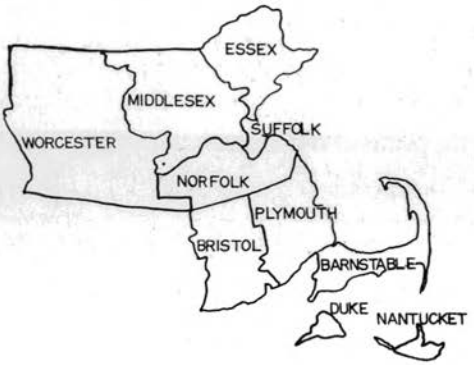

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EDITOR'S PAGE

PROPOSED CHANGES AT PARKER RIVER N.W.R.

This past summer the manager of the Parker River National Wildlife Refuge, Mr. George Gavutis, submitted a report proposing ten significant changes for the refuge. Information regarding these proposals was not widely disseminated; many individuals who regularly visit the refuge are therefore not adequately informed as to the nature and magnitude of the changes contemplated. We have only recently learned of the scope of these proposals through the efforts of Mr. John Grugan, of Boston, who has prepared a 10-page personal evaluation of their environmental impact. Space does not permit us to publish either the complete text of the "planned actions," and the accompanying 39-page environmental assessment prepared by the refuge management, or the response by Mr. Grugan. However, we are able to present our own synopsis of the action planned for the refuge, based on the report submitted by Mr. Gavutis.

1. Headquarters Complex Project (to be located at the present sub-headquarters area, known as the "Warden's.")
   a. Construct 2500 sq. ft. headquarters building, with 30 parking spaces.
   b. Construct 5000 sq. ft. maintenance building, with 20-30 parking spaces.
   c. Construct 5000 sq. ft. visitor contact station, including "open space area" (indoors) to accommodate 250 people, with parking spaces for 75-100 cars and buses.
   d. Construct three-bedroom residence (approximately 1300 sq. ft.).
   e. Paving and landscaping.
2. Road and Dike Projects
   a. Widen main road by 4 ft.
   b. Pave main road and parking lots.
   c. Install concrete wheel stops in parking lots.
   d. Protect and reinforce dike slopes.
   e. Construct water control structures for Stage Island and North Pool dikes.
3. Comfort Station Project
   a. Convert seasonal bathhouse at Parking Lot #1 to all-year comfort station.
4. Gatehouse Project
   a. Construct gatehouse of "adequate size" at refuge entrance.
   b. Construct visitor contact center able to accommodate 6 people at parking lot.
5. Hellcat Trail Projects
   a. Upgrade current primitive sanitary facilities.
   b. Enlarge parking lot to accommodate school buses.
   c. Replace current blind and add a second.
   d. Remove current steel sightseeing tower.
   e. Make additions to boardwalk.
6. &
7. Construct exhibits, interpretive displays, observation blinds, boardwalks, and increase parking capacity at Parking Lots # 10 and # 11.
8. Expand open storage area, east of sub-headquarters, by 50%.
9. Construct 1-1/4-mile boardwalk, toilets, and an observation blind, and

gravel parking lots in area between Parker River and Mud Creek.
10. Construct paved road to, and install, two concrete slab boat ramps 1/4-mile southeast of refuge entrance.

Mr. McAndrews, of the regional U.S. Fish and Wildlife office, has informed us that funding has been obtained for project 1 and 2, and that a funding request has been submitted for project 4. No funding requests have yet been submitted for the other proposals. Mr. McAndrews also indicates that there has been discussion regarding the "downsizing" of the visitor contact center proposed for the new headquarters area, from 5000 to 2000 sq. ft., with space for only 75 people and 35 cars.

We urge everyone to learn more about these proposed changes and to express their opinions to the refuge management and the regional office of the Fish and Wildlife Service. The specific proposals and an accompanying environmental assessment can be examined at the current refuge headquarters at the north end of Plum Island, or a copy may be acquired by writing Mr. Howard Larsen, Regional Director, U.S. Fish and Wildlife Service, 1 Gateway Center, Newton Corner, Mass. 02158.

FOR SALE: H.D. Minot's The Land-Birds and Game-Birds of New England, 1895 (second edition, edited by William Brewster). This classic gives a critical appraisal of bird life at the turn of the century, a must for collectors and serious students of Massachusetts ornithological history. Also, E. H. Forbush's Birds of Massachusetts, Vol. I, 1925. Contact Mrs. Lyman S. Hayes, 19 Gypsy Trail, Weston, MA. 02193. Tel. 894-1470.

FOR SALE: 10 x 50 Bushnell Brookfield Binoculars, including case. Recently cleaned and aligned by Bushnell, there is one year left on the warranty. $50 or best offer. Write Anne Clarke, P.O. Box 212, Rindge, N.H. 03461.

FOR SALE: 8 x 60 Leitz Binoculars, like new. $350. Contact Allen H. Morgan, Executive Vice President, Massachusetts Audubon Society, Lincoln, MA. 01773. Tel. 259-9500.

WATERFOWL BREEDING SUCCESS FOR 1978

An early summer breeding survey of major duck breeding areas by the U.S. Fish and Wildlife Service showed a duck breeding population 8 percent larger than that recorded in 1977.

The higher counts are due, at least in part, to the fact that a larger proportion of the breeding population was located in the prairie pothole region this year. Last year many ducks overflew the prairie pothole breeding areas, which were very dry, and settled in far northern areas where counting is more difficult.

Last fall and winter were generally cold and wet in the prairies, improving the breeding habitat, as evidenced by an increase this year in the number of ponds in the north-central United States and the prairie provinces of Canada. Alberta, Saskatchewan, Manitoba, the Dakotas, Montana and Minnesota normally produce 50 to 75 percent of the continent's annual duck crop.

The breeding population of Mallards, traditionally the most numerous species, is down 7 percent from last year and is 13 percent below the 1955-1977 average. Breeding population estimates for other species show the following changes from 1977: Gadwall, +31 percent; American Wigeon, +42 percent; Green-winged Teal, +53 percent; Blue-winged Teal, -3 percent; Shoveler, +34 percent; Pintail, +14 percent; Redhead, +21 percent; Canvasback, -40 percent; and Scaup, -5 percent. The breeding population for these ten species combined is 8 percent above last year and 3 percent above the long-term average.

The results of a more recent survey on the impact of this year's weather and habitat conditions on actual duck production are not yet available.

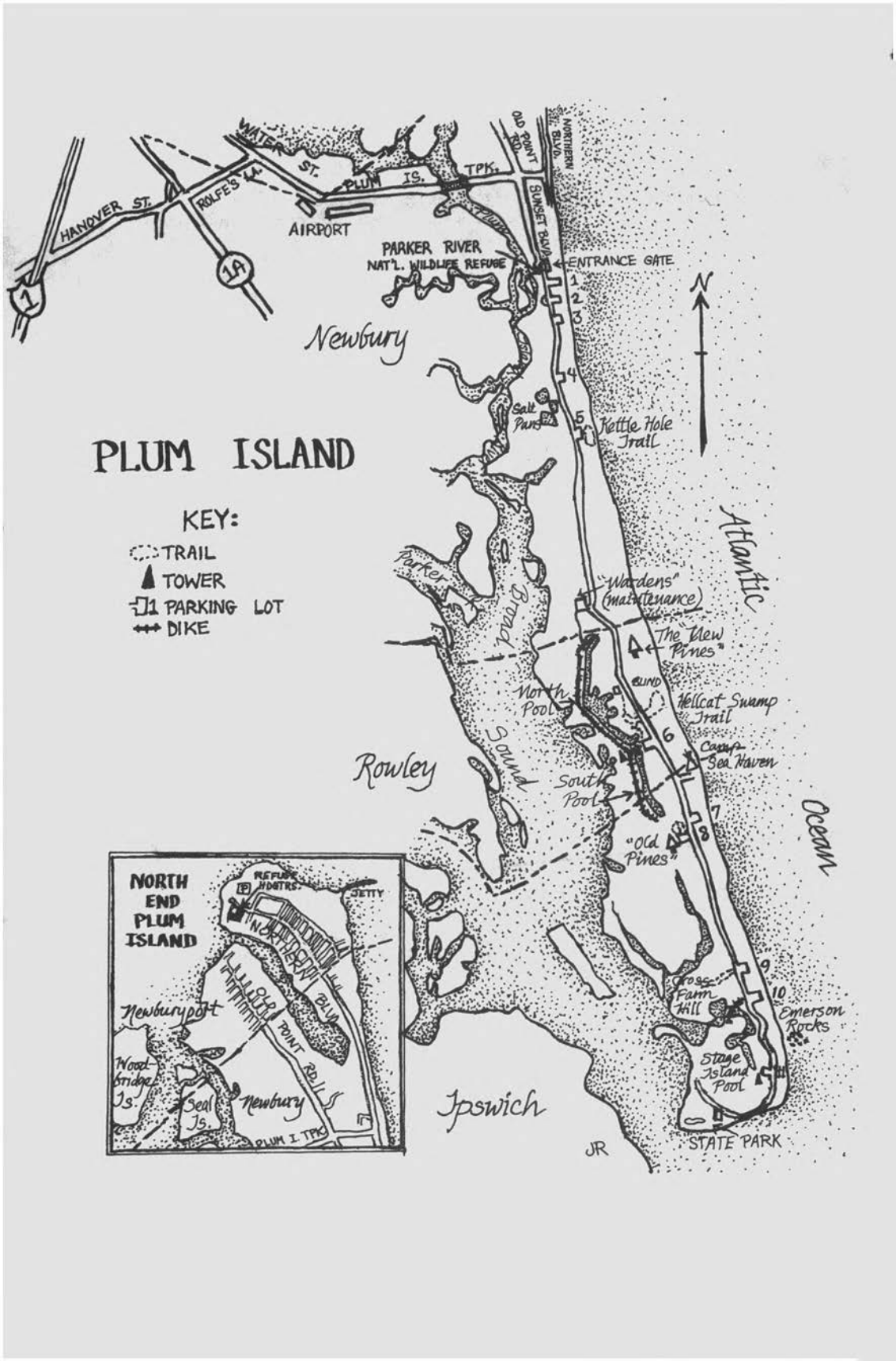
T.H.A.

A BRIEF NOTE CONCERNING CANVASBACKS

By Leif J. Robinson, Wellesley

Since 1970 I have kept a fairly regular watch over the autumn waterfowl at Fresh Pond, Cambridge, The Canvasback, in particular, has shown impressive gains during the past nine years. In 1970 a maximum of eight birds was seen; in 1974 there was a peak of 30. Since then much more dramatic increases have been observed: 196 birds in 1976, 117 in 1977, and 212 in 1978.

Either Fresh Pond is becoming more attractive to this species (for no obvious reason) or the Canvasback has sustained impressive population growth during the past several years. Incidentally, a quick check of the records published in Bird Observer since 1972 supports the idea of a general increase, as it does for two closely allied species, the Redhead and the Ring-necked.


PLUM ISLAND
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TRAIL
TOWER
PARKING LOT
DIKE
WATER ST.
PLUM IS.
TPK.
OLD POINT RD.
NORTHERN BLVD.
SUNSET BLVD.
HANOVER ST.
ROUTE 1A
AIRPORT
PARKER RIVER NAT'L. WILDLIFE REFUGE
ENTRANCE GATE
N
Newbury
Salt Pans
Kettle Hole Trail
Atlantic
Ocean
Parker River
"Wardens" (maintenance)
The "New Pines"
North Pool
Hellcat Swamp Trail
Rowley
Plum Island Sound
South Pool
Camp Sea Haven
"Old Pines"
Gross Farm Hill
Emerson Rocks
Stage Island Pool
STATE PARK
Ipswich
JR
NORTH END PLUM ISLAND
REFUGE HDQTRS.
JETTY
NORTHERN BLVD.
PLUM ISLAND TURNPIKE
POINT ROAD
Newburyport
Wood-bridge Is.
Seal Is.
Newbury
PLUM I. TPK.

THE FOUR SEASONS AT PLUM ISLAND

(PART I - WINTER-SPRING)

by Herman H. D'Entremont, Brookline

and Soheil Zendeh, Somerville

Located 35 miles north of Boston, at the confluence of the Merrimack, Parker, and Ipswich rivers, Plum Island is reached by driving southeastward on Water Street, Newburyport. Geologically, the island is a barrier beach backed by swampy hollows. A salt marsh dominates the western half of the island, and fresh water from the rivers combines with tidal flow to produce a brackish environment full of nutrients. Plants, rodents, crustaceans, and insects thrive and, in turn, attract the migrant and resident birds that make Plum Island so inviting to bird and nature lovers.

The southern two-thirds of the island is part of the Parker River National Wildlife Refuge, managed by the U.S. Department of the Interior. Information, maps, refuge regulations, and bird lists are available from:

1. Parker River N. W. R. Headquarters, Northern Boulevard, Plum Island, Newburyport, Massachusetts 01950 (telephone 617-465-5753). This location is at the north end of the island, at the Coast Guard Lighthouse.

2. The booth at the refuge entrance, which is staffed most of the year during daylight hours.

3. The bulletin board located a quarter mile south of the refuge entrance.

In the near future a new headquarters will be erected at the "Warden's," located about 2 1/2 miles south of the entrance. The refuge is open to the public, without charge, every day on the following schedule: May 1 to October 15, 6 a.m. to 9 p.m.; October 16 to April 30, dawn to dusk.

Part 2 of "The Four Seasons at Plum Island (Summer-Fall)" will appear in a future issue of Bird Observer.

WINTER

The bird-watchers' year begins on Plum Island with searches for alcids at the north end. After crossing the bridge onto the island, continue on Northern Boulevard, which curves to the left, until it ends at a large parking lot by the fire station and the old Coast Guard boat house. By looking across the Merrimack River toward Salisbury Beach, you can often find Common and Red-throated Loon, Horned Grebe, and Common and Red-breasted Merganser. Gulls are often numerous here, for the swift current provides for good feeding. Iceland, Great Black-backed, Herring, Ring-billed, and Bonaparte's Gulls are usually present, together with an occasional Glaucous, Black-headed, or Little Gull as well as Black-legged Kittiwake. Extreme rarities include Ivory, Mew, Sabine's, and the famed Ross' Gull. Harbor seals are also commonly seen here swimming, on the rocks in mid-channel, or on ice floes.

While walking along the beach toward the breakwater, look for alcids in the harbor mouth and on the south side of the breakwater. Razorbill, Thick-billed Murre, and Black Guillemot are also occasionally found. Iceland and Glaucous Gulls sit atop the breakwater, while Purple Sandpipers explore the lower rocks for food. With east or northeast winds, Gannet, Black-legged Kittiwake, and alcids can often be glimpsed at sea. The dunes behind may contain Savannah Sparrow, (including the Ipswich race), Horned Lark, and Snow Bunting.

After returning to your car, retrace your route southward on Northern Avenue. As you approach the marsh, turn left onto Sunset Boulevard, which leads to the Parker River National Wildlife Refuge. Keep an eye on the marshes to your right for Snowy and Short-eared Owls, and Marsh Hawks.

Plum Island's bleakest season is also its most inaccessible. Winter storms occasionally combine with high tides to flood sections of the island and the causeway leading to it. Sunset Boulevard and the refuge road are particularly vulnerable. After the first few snows of the season, no attempt is made to plow the refuge road or to maintain it. This road, over six miles long, can be very rough and possibly impassable, especially if the snow has accumulated. On occasion it will be officially closed, but you may proceed at your own risk. At other times, the road will be plowed a short distance to the main parking lot, but the rest of it will be barred to automobile traffic. Then you have to hike several miles southward to seek the island's winter specialties--shrikes, owls, hawks, and winter finches. Proper clothing, footgear, water, and ample time are prerequisites for such a venture.

Three miles from the main parking lot you will see an erect granite marker in a field to the right that denotes the boundary between the towns of Newbury and Rowley. Park carefully to avoid hindering traffic and walk along the unmarked trail that enters the "New Pines" just east of the marker. (If possible, one should stop at the booth at the entrance and ask for a permit to park at the Warden's, the first cluster of buildings on your right. One can then stop there and walk back along the road to the marker.)

In the New Pines we have found Great Horned, Long-eared, and winter-resident Saw-whet Owl; Black-capped and Boreal Chickadee; Red- and White-breasted Nuthatch; Golden-crowned and Ruby-crowned Kinglet; Pine Grosbeak; Common Redpoll; Pine Siskin; American Goldfinch; Red- and White-winged Crossbill; Dark-eyed Junco; Savannah, Tree, White-throated, and Song Sparrow; and Snow Bunting. Remember to keep a sharp eye skyward for Goshawk and Merlin.

After returning to your car, drive southward to Parking Lot #8, the Pines Nature Trail, commonly known as the "Old Pines." Many of the birds cited for the New Pines may also be found here, especially if little activity had been noted to the north. One can also walk back northward a short distance to a road leading rightward to Camp Sea Haven or the "polio camp." From the shelter of its buildings, scan the sea for loons, grebes, and sea ducks. If the sea in running high and large breakers are hitting the beach, pay careful attention to loons feeding close to the shore; it is sometimes possible to see them swimming (flying?) down the face of a wave!

When the weather has been severe, the refuge road may be open only as far as the Warden's, or perhaps the Old Pines. Beyond, the road can be treacherous even when open. If conditions permit, drive to Parking Lot #11 and walk to the beach where to the north you will see a natural breakwater known as Emerson's Rocks. There you can often find loons, Horned and Red-necked Grebe, Bufflehead, and, rarely, King Eider. Usually present are flocks of Greater Scaup, Common Goldeneye, Common Eider, all three scoters, and Red-breasted Merganser. In good years, alcids may also be found from this vantage point.

SPRING

At Plum Island spring arrives in stages; American Woodcock and blackbirds appear in late February, followed by Tree Swallow and Eastern Phoebe in mid-March. But for many local birders it is the appearance of Snow Geese that truly heralds spring--it is an unforgettable sight to see them showering out of an April cloud to land on the marsh just south of the Plum Island Turnpike. Birders often stop at various points along the first mile of the refuge road to admire these birds and to look for "Blues" among them.

After passing the main parking lot, stop at the two small mounds on the right to look for Mockingbird as well as Savannah, Vesper, White-crowned, Lincoln's, and Song Sparrow. Then drive to the wooden guard-rail at the bulletin board, park to the right of it, and walk to the river's edge to search for Sharp-tailed and Seaside Sparrows. During low tide scan the river bottom for rails. One never knows quite what to expect here. For example, throughout the spring of 1976 a Clapper Rail and another large reddish rail, judged to be a Clapper-King cross, were frequently seen at this spot.

The Salt Pans

After passing Parking Lot #4 you will see a shallow body of water to your right. These "Salt Pans" become flooded at high tide and attract a variety of shorebirds, including: Short-billed Dowitcher; Dunlin; Red Knot; Semipalmated and Black-bellied Plover; Ruff or Reeve; Least, Semipalmated, White-rumped, and Pectoral Sandpiper; and Wilson's Phalarope. Check the back side of the salt pans for Great Blue, Green, Little Blue, and Black-crowned Night Heron. Ring-billed and Herring Gull as well as Common Tern can often be found resting here, while Black Duck, Pintail, Blue-winged and Green-winged Teal, Gadwall, and Northern Shoveler feed in the shallow water. Between the road and the edge of the salt pans Sharp-tailed and Savannah Sparrow may also be found.

The Kettle Hole

Just beyond the salt pans is Parking Lot #5 on the left. First check the ponds across the road and then follow the boardwalk a short distance to a narrow woodchip trail on your left, which leads into a classic kettle hole, a steep-walled hollow where a retreating glacier left a melting chunk of ice.

Now a swampy tangle, the kettle hole forms a migrant trap where one can expect to find all common spring passerines as well as Black-billed and

and Yellow-billed Cuckoo; Ruby-throated Hummingbird; Least and Yellow-bellied Flycatcher; Blue-gray Gnatcatcher; Winter Wren; Philadelphia, Red-eyed, Solitary, and Yellow-throated Vireo; and Yellow-breasted Chat. The pathway is circular and will return you to the parking lot via the wood-chip trail.

The Warden's

As already mentioned, a permit is technically required to stop here. If you do not have one, a short visit is usually safe, provided that you do not walk out of sight of your car. Purple Martin, Barn, Tree, and Cliff Swallow nest in the adjacent field or around the buildings. Looking north, toward the Plum Island River Bridge, you can often see Glossy Ibis, egrets and teal. The small pond just south of the buildings might contain Spotted and Solitary Sandpiper; Greater and Lesser Yellowlegs; and Green and Black-crowned Night Heron. Killdeer, as well as Song and Chipping Sparrow frequent the fields; Canada Geese regularly nest.

The Town Marker Field

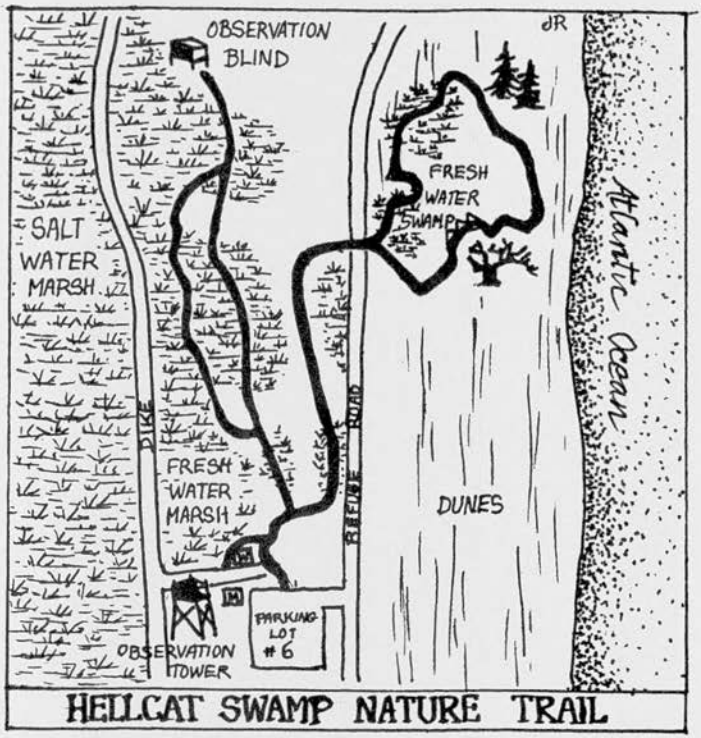
Often partially flooded in early spring, this field allows excellent views of many waterfowl, Killdeer, and occasionally Marsh Hawk.

Hellcat Swamp

Here is one of the most popular birding spots on the island, being bordered by two large freshwater impoundments that attract a wide variety of waterfowl and shorebirds. The swamp itself, located on both sides of the refuge road, is laced with a network of boardwalks and trails that provide excellent vantages for closeup viewing of migrant warblers, vireos, and other species. One of these trails takes you across the road and up one of the largest dunes on the refuge, permitting a spectacular view of the island and the ocean. Hellcat Swamp is also important in having the only year-round restrooms on the island and, in warm months, fresh drinking water.

Upon leaving the parking lot, walk up the dike toward the tower conspicuous to the west. On the right is North Pool where Least and American Bittern, Blue-winged and Green-winged Teal, American Coot, Common Gallinule, and Sora and Virginia Rail either nest or visit frequently. The South Pool, on the left, has large mudflats where shorebirds, waders, ducks, and geese browse and rest. Common Tern nests on platforms set up by refuge personnel. From the top of the tower it is possible to scan the tidal inlets to the west where American Bittern, Black-crowned Night Heron, and occasionally Yellow-crowned Night Heron may be seen stalking fish trapped by the outgoing tide. Canada Geese are found on the dike and in the pools.

Returning eastward along the dike, you'll find the boardwalk trail, which splits into three parts. Shortly after leaving the parking lot, the left fork of the boardwalk will take you to the marsh spur and to the observation blind. While walking toward the latter, check the numerous beach plum and bayberry bushes for warblers and other small migrants.



Where the marsh and observation-blind trails split, listen for Least, Willow, and Alder Flycatcher. Long-billed Marsh Wren as well as Swamp and Song Sparrow will be calling from the cattails that grow at the boardwalk edges. Along the marsh trail King, Sora and Virginia Rails have been called into view. Before reaching the observation blind you will find an open area with a sign stating "Quiet Please." Here you should listen for the calls of all Empidonax flycatchers. At the blind itself it is possible to see Pied-billed Grebe, Canada Goose, Black Duck, Mallard, Gadwall, teal, Pintail, Northern Shoveler, American Coot, Common Gallinule, and Mourning Dove as well as Savannah, Swamp, White-crowned, and Song Sparrows.

After returning to the trail junction near the parking lot, turn left onto the boardwalk which will eventually take you into the swamp across the road to the east. Here kinglets, thrushes, vireos, and warblers may be seen. At a low point on the boardwalk there is a stagnant pool of water shaded by a canopy of trees. It is worth spending some time here, quietly listening for the songs of migrants. Virtually any Eastern, and occasional Western, landbird is a possibility here. The same situation prevails across the road where there is a variety of habitats: wet swamp, some pine woods, and the previously mentioned dunes.

During April and early May virtually any dune on the east side of the refuge road can provide an excellent view of the spring hawk migration. Sharp-shinned Hawk, Merlin, and American Kestrel can often be seen

below eye level, and an occasional Peregrine Falcon may pass by. Few buteos occur, however.

The boardwalk path on the western side of the road is circular. After reaching the road, you can either retrace your steps along the eastern boardwalk or stroll southward down the refuge road to the parking lot. The shrubbery along the road itself can be very productive here and practically anywhere else on the island.

The Old Pines

Driving south from Hellcat Swamp, pause at Camp Sea Haven to search nearby bushes in the field to your right for Vesper Sparrow. (This species has nested at this location.) Stop at Parking Lot #8 to investigate the old pines for migrants. Before leaving, scope the marsh to your left; the pools visible to the west and south attract a variety of ducks, waders, and shorebirds, as well as an occasional Louisiana Heron.

Continuing southward, you'll see Cross Farm Hill on your right. A Purple Martin box is located here, and Upland Sandpiper and Bobolink can often be seen nearby. Don't forget to scan the ponds on either side of the hill.

Stage Island

The southern tip of Plum Island widens considerably and contains two morainal hills, a large marshy pond, and a sandy expanse at the very tip (Plum Island State Park). Leave your car at Parking Lot #10 and walk westward along the dike that leads to Stage Island itself, the larger and northern hill. Shorebirds will be seen at low tide in the creeks north of this path and also on the mudflats of Stage Island Pool, if the water is low enough.

At the outlet of the pool, look for Least Bittern and listen for the rattle of Belted Kingfisher. Bobolink nests on the slopes of the hill, where from various vantage points one can look into the pool to view its breeding inhabitants: Pied-billed Grebe, Least Bittern, Mallard, Black Duck, Gadwall, Green-winged and Blue-winged Teal, Northern Shoveler, Wood Duck, Ruddy Duck, American Coot, Common Gallinule, and Common Tern. Great Black-backed, Herring, Laughing, and Bonaparte's Gull use this pool for bathing and resting. Double-crested Cormorants can often be seen in comical poses as they sit atop the many Wood Duck boxes to dry their wings. Nesting Red-winged Blackbird, Long-billed Marsh Wren, and Yellow Warbler seem to call from every corner of the pool.

Another view of the pool and the surrounding swamp can be had from the observation tower at Parking Lot #11. Nesting passerines in this area include Willow Flycatcher, Gray Catbird, Yellow Warbler, and Common Yellowthroat. Just below and to the north of the tower Least Bittern, Sora, and Virginia Rail are sometimes spotted as they prance about in a small pool. The intermingled calls of Pied-billed Grebe, American Coot, and Common Gallinule make one pause to ascertain from whom and from where they are coming. Even more difficult is attempting to identify a fluffy black ball that is walking or swimming alone. This is a perfect place to get superior views of all the previously mentioned ducks plus American Wigeon and, possibly, Greater and Lesser Scaup and Pintail. From time to

time a couple of Mute Swans will float majestically across the pool, dwarfing all other waterfowl. Some rarities seen here include American Flamingo, American Avocet, and Black-necked Stilt.

Plum Island State Park

This truncated park begins a short distance south of the observation-tower parking lot. Bear right after leaving the refuge and park at the second lot. Then walk eastward to the shore where Sanderling, Semipalmated Plover, and Ruddy Turnstone dodge advancing waves. Walking along the beach to the right brings you close to a small colony of Common, Roseate, and Least Tern. Piping Plover has also nested here. Caspian and Black Tern are possible here in April and May, respectively. Don't forget to scan the feeding terns for a jaeger--probably a Parasitic--in seemingly endless pursuit of a free meal.

ACCOMMODATIONS NEAR NEWBURYPORT

One of the better inexpensive motels in this area, the Susse Chalet, is located on Route 110 west of Route I-95 in Amesbury. To reach it from Newburyport, take Route 1 north to Salisbury center, then turn west on Route 110 and continue until you pass under I-95; the motel will be on your left. Many other motels, some of them open all year, can be found along Route 1A east of its intersection with Routes 1 and 110 in Salisbury.

There are many fine restaurants in the area. The Sportsmen's Lodge on the Plum Island Turnpike is the most convenient and has good food at very reasonable prices. Another inexpensive seafood restaurant, The Riverview, is located on Route 1 in Salisbury, a half mile north of the Merrimack River.

Update on Turkeys

James E. Cardoza of the Division of Fisheries and Game for the Commonwealth of Massachusetts reports the following update on the Wild Turkey situation in Massachusetts.

Birds in the southern Berkshires are doing well, despite last year's hard winter, and are spreading out into adjacent areas of the state. There is also some influx of birds from Connecticut, New York, and Vermont, and there has been one report from Townsend, which may represent either illegally-released pen-reared stock or dispersal from New Hampshire's releases.

Mr. Cardoza beautifully summarized the status of the Wild Turkey in Massachusetts previously in Bird Observer (vol. 5, no. 3, pg. 76).

SOCIALITY, AGONISTIC INTERACTION, AND THE PULSE PHENOMENON IN THE FLIGHT BEHAVIOR OF FALCONIFORMES ALONG THE MAINE COAST

by G. N. Appell, Brandeis University

Introduction

During the months of September, October, and the first week of November there is a significant migration of Falconiformes along the Maine coast. We have been studying these migrations since 1965, with the exception of 1971.

Our observation site is in Casco Bay, toward the end of one of the peninsulas. Though we have not been able to man the station full time, we are there regularly each weekend and frequently a Monday or Friday as well. However, when we believe that a major movement of birds is going to take place because of weather patterns, we make an effort to be on the station. As a result, the station is manned anywhere from approximately one-third to one-half of the time.[1]

In other presentations and papers I have described the size of this movement and the influence of weather conditions on it. I have also speculated on the source of the hawk flights, as there has yet been no systematic observations farther north of us (Apell 1970, 1975, 1977). Therefore, in this article I shall describe certain behavioral observations we have made and discuss their implications.

However, let me briefly indicate the size of the migrations; since 1967 the average number of individuals observed was 2,533. In 1967 we had our lowest count (637) and 1975 we had our largest (7,310)--see Table 1. Our counts have been increasing, which is not reflected in these averages, but I shall discuss this topic shortly.

The rank order of species counted, indicating the usage of the coastal migration route, is shown in Table 2.

In Figure 1 (see also Table 3), I have plotted the seasonal pattern of the migration. Along the horizontal axis are rough weekly divisions throughout the months of September and October (some "weeks" include eight days in order to fit into the monthly division). On the vertical axis are plotted the average count for each species over a 10-year period.

Note that the Broad-winged Hawks peak early and then drop off rapidly, although we do get a few stragglers through in late October and even early November. Osprey also peaks early, but drops off more slowly. The Sharp-shinned Hawks have a rather symmetrical pattern, with the peak of their movements during the first week in October.

The most interesting pattern is that of the American Kestrel. While they pass through in greatest numbers during the first week in October, there is a second peak during the second week in September, about three weeks earlier. We do not know whether this earlier peak represents a distinct

population from somewhere farther north or whether it represents different migration patterns for juveniles and adults.

TABLE 1

TEN-YEAR AVERAGES OF FALCONIFORMES COUNTS,

CASCO BAY (AUTUMN 1967-1977)*

	Average	Maximum	Minimum	S.D.
Goshawk	2.4	9 ('76)	0 ('68,'69,'72)	2.9
Sharp-shinned Hawk	1157.3	3544 ('75)	137 ('67)	1020.2
Cooper's Hawk	13.4	33 ('67)	4 ('68,'70)	9.1
Unidentified Accipiter	6.9			
Red-tailed Hawk	26.8	76 ('67)	5 ('68)	22.6
Red-shouldered Hawk	3.1	10 ('74)	1 ('72,'77)	2.7
Broad-winged Hawk	466.6	1701 ('75)	61 ('67)	524.1
Unidentified Buteo	4.8			
Marsh Hawk	58.4	129 ('75)	7 ('67)	36.0
Osprey	97.5	223 ('73)	23 ('69)	64.6
Peregrine Falcon	4.8	14 ('76)	0 ('72,'74)	5.2
Merlin	52.7	129 ('75)	8 ('68)	40.3
American Kestrel	578.6	1481 ('75)	147 ('67)	381.2
Unidentified Falcon	42.3			
Unidentified Hawk	16.8			
Totals	2533.5	7310 ('75)	637 ('67)	1881.2

* In 1971 the station was not manned.

Average per cent of days on station during migration period: 49%

In Figure 2 (see also Table 3) we have plotted the less frequently occurring species, using a different vertical scale. Note that the Red-tailed Hawk is highly erratic. The Merlin peaks on the same week as the Sharp-shinned Hawk. Both the Cooper's Hawk and the Peregrine seem to increase more slowly but then the peak lasts a week or two longer.

In Figures 3 and 4 (see also Table 4) the trends in our hawk counts are plotted. A linear regression analysis shows that for all hawks, except the Sharp-shinned, our counts are increasing at the rate of 89 individuals per year. This may represent a growth in the population of Falconiformes, or it may indicate developing skills in predicting when to be on station to catch a movement. I suspect the latter.

TABLE 2

RANK ORDER OF SPECIES COUNTS FOR COASTAL MIGRATION ROUTE (1967-1977)*

Sharp-shinned Hawk	44.5%
American Kestrel	25.5%
Broad-winged Hawk	18.8%
Osprey	4.0%
Marsh Hawk	2.4%
Merlin	2.2%
Red-tailed Hawk	1.3%
Cooper's Hawk	.6%
Red-shouldered Hawk	.2%
Peregrine Falcon	.2%
Goshawk	.1%
Rough-legged Hawk	.1%

* Station not manned in 1971.

As for the Sharp-shinned Hawk, there is clearly a trend upward in counts. The slope of this line represents an increase of 193 individuals per year. If we factor out on a proportion basis the increase in counts due to increasing ability to predict flights, which may be causing our counts to increase, we can reach the conclusion that the Sharp-shinned Hawk populations that migrate along the Maine coast have been increasing over the past 10 years at an average rate of roughly 10 percent, or 120 individuals per year.

I have taken the counts from Hawk Mountain, Pennsylvania, for the same period, and using linear regression, I have found that the counts of Sharp-shinned Hawks over the past 10 years have been increasing at an annual rate of 588 individuals or 11 percent. The closeness of these two figures would seem to confirm the supposition that the Sharp-shinned populations are increasing.

I want to draw attention to another interesting point that is suggested by this graph. American Kestrel populations may be characterized by short-term fluctuations with peaks and crashes about five years apart. Though it is much too early to reach any firm conclusions from such limited data, I did test the idea against data from Hawk Mountain; there is no question that there are major short-term cycles in American Kestrel populations. However, at Hawk Mountain, the periodicity of the cycle appears slightly different: the interval between population peaks varies from four to nine years. This cycle of population crashes is somewhat obscured by the steady increase in kestrel counts at Hawk Mountain.

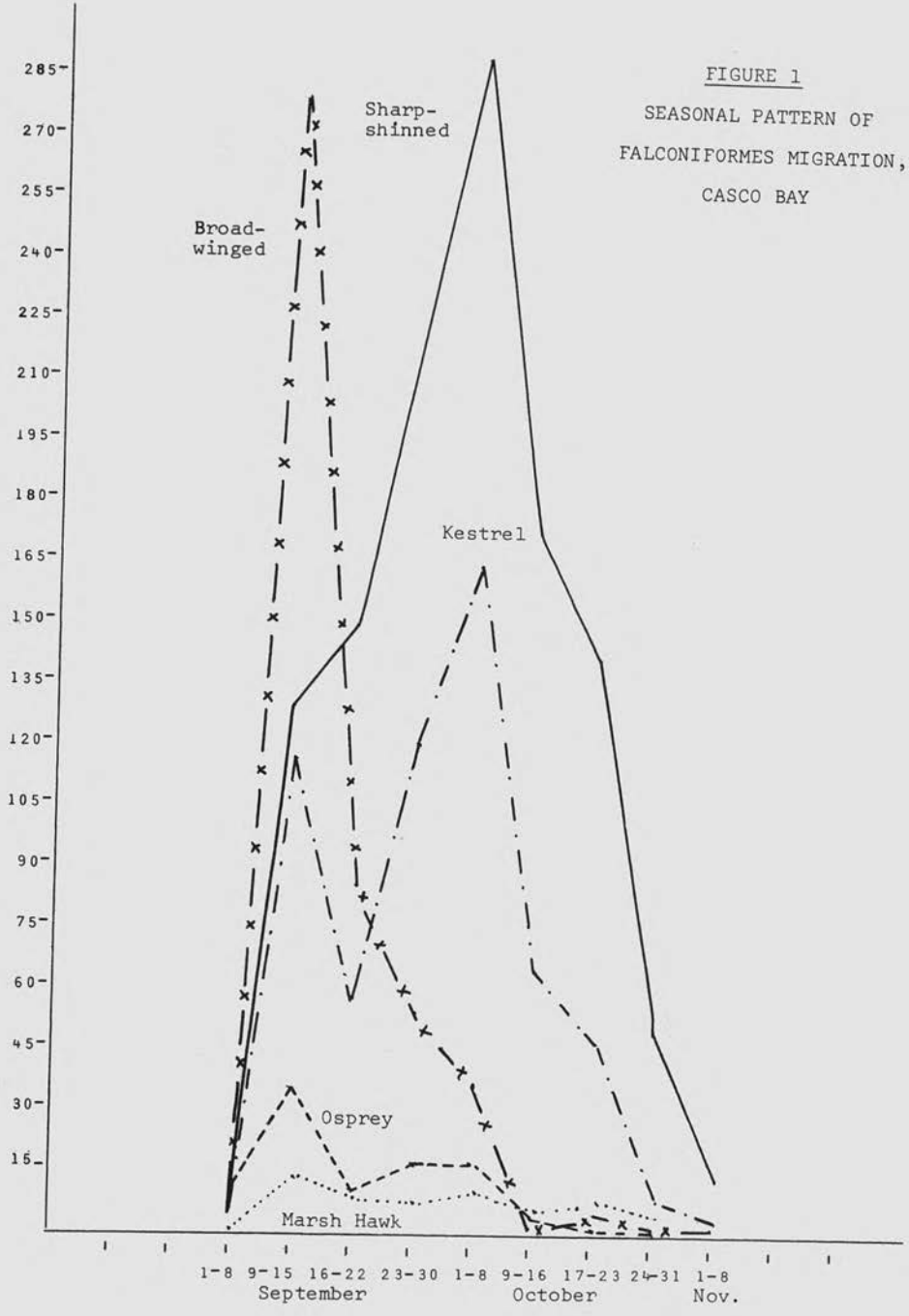


FIGURE 1

SEASONAL PATTERN OF FALCONIFORMES MIGRATION, CASCO BAY

FIGURE 2

SEASONAL PATTERN OF

FALCONIFORMES MIGRATION,

CASCO BAY

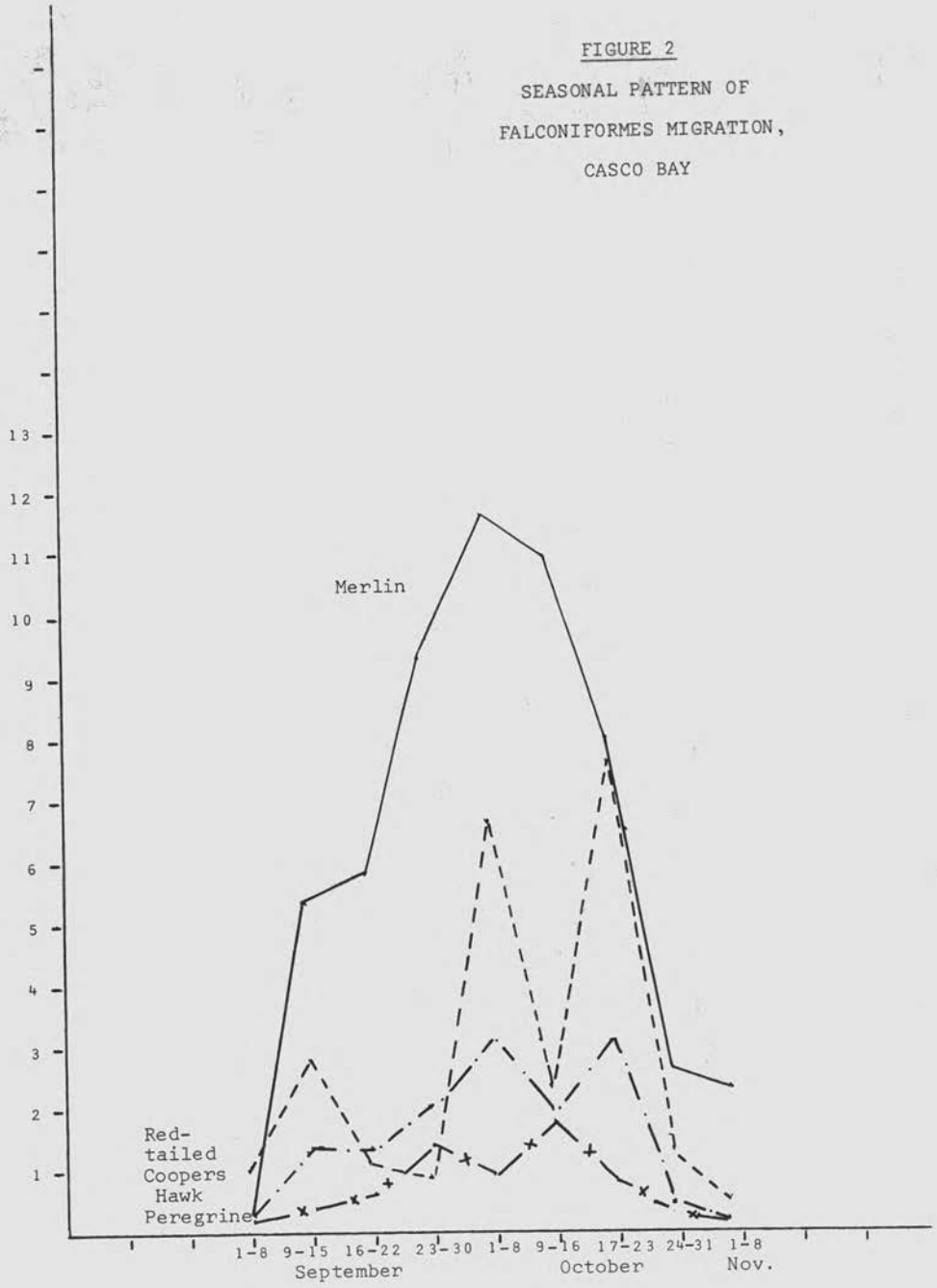


TABLE 3

SEASONAL PATTERN OF FALCONIFORMES MIGRATION, CASCO BAY

	September				October				Nov.
	1-8	9-15	16-22	23-30	1-8	9-16	17-23	24-31	1-8
Goshawk	.1	.4	.0	.1	.1	.4	.5	.5	.3
Sharp-shinned Hawk	6.4	130.4	149.9	204.5	289.4	173.9	141.7	48.2	12.4
Cooper's Hawk	.3	1.3	1.3	1.9	3.0	1.9	3.0	.4	0.0
Unident. Accipiter	.1	.8	.7	.5	2.1	.5	1.8	.3	.1
Red-tailed Hawk	.9	2.7	1.0	.8	6.6	2.2	7.6	2.6	2.2
Red-shouldered Hawk	0.0	.3	.5	.2	1.5	.3	.1	0.0	0.0
Broad-winged Hawk	5.2	279.2	85.7	53.5	35.5	.7	3.4	.9	.1
Rough-legged Hawk	0.0	0.0	0.0	0.0	0.0	0.0	.4	.5	.2
Unident. Buteo	.1	.3	.1	.9	1.5	.4	.9	.5	.1
Marsh Hawk	1.6	12.7	8.6	8.3	9.1	5.4	6.3	3.6	2.4
Osprey	9.8	35.1	11.7	17.7	17.3	3.6	1.4	.3	0.0
Peregrine Falcon	0.0	.2	.4	1.1	.7	1.6	.6	.2	0.0
Merlin	.2	5.3	5.8	9.3	11.7	11.0	8.0	1.3	.3
American Kestrel	6.9	114.0	55.6	120.4	162.2	63.2	44.6	8.5	1.9
Unident. Falcon	.2	5.1	4.2	5.8	14.8	3.5	7.3	1.3	.1
Unident. Hawk	.2	2.3	1.9	2.6	7.7	1.0	.6	.4	.1
Totals	32.0	590.1	327.4	427.6	563.2	269.6	228.2	69.5	20.2

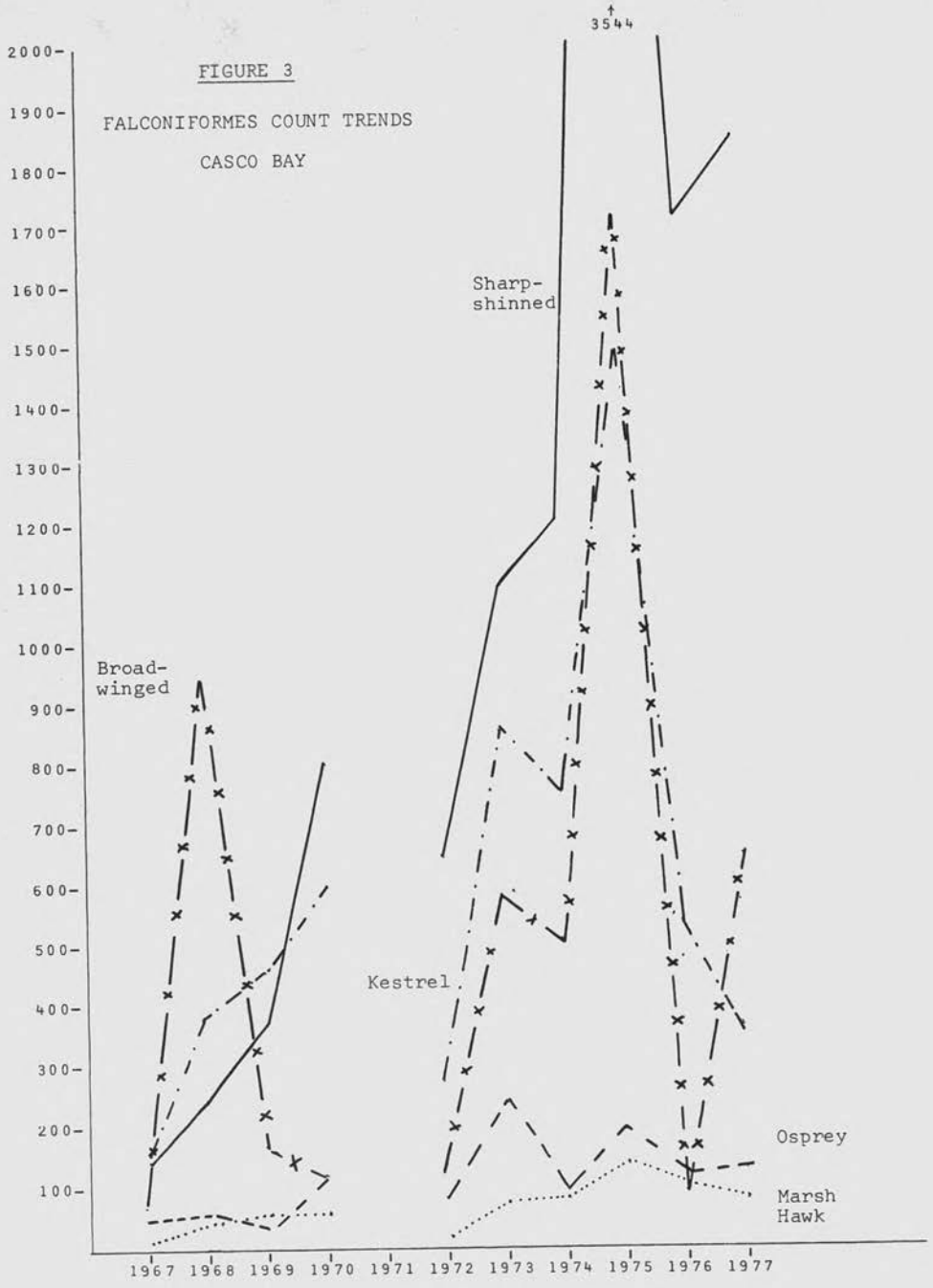


FIGURE 3
FALCONIFORMES COUNT TRENDS
CASCO BAY
3544
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
Sharp-shinned
Broad-winged
Kestrel
Osprey
Marsh Hawk
1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977

TABLE 4

FALCONIFORMES COUNT TRENDS, CASCO BAY*

	1967	1968	1969	1970	1972	1973	1974	1975	1976	1977
Goshawk	1	0	0	1	0	1	3	5	9	4
Sharp-shinned Hawk	137	241	368	803	640	1090	1203	3544	1708	1839
Cooper's Hawk	33	4	13	4	14	10	5	11	21	19
Unident. Accipiter	22	7	16	4	2	1	5	3	6	3
Red-tailed Hawk	76	5	17	13	22	13	16	14	36	56
Red-shouldered Hawk	4	2	2	2	1	5	10	2	2	1
Broad-winged Hawk	61	936	158	105	124	566	295	1701	79	641
Rough-legged Hawk	0	0	0	0	0	1	1	2	3	4
Unident. Buteo	11	4	12	2	2	3	3	4	7	0
Marsh Hawk	7	38	45	54	13	66	79	129	87	66
Ospey	31	43	23	111	64	223	80	180	103	117
Peregrine Falcon	2	1	2	4	0	4	0	13	14	8
Merlin	22	8	19	52	25	54	30	129	93	95
American Kestrel	147	367	450	591	273	846	744	1481	535	352
Unident. Falcon	66	34	60	64	22	35	42	51	23	26
Unidentified Hawk	17	7	28	10	2	8	16	41	15	24
Totals	637	1697	1213	1820	1204	2926	2532	7310	2741	3255

* Based on observations from 1967-1977 (1971 station not manned).

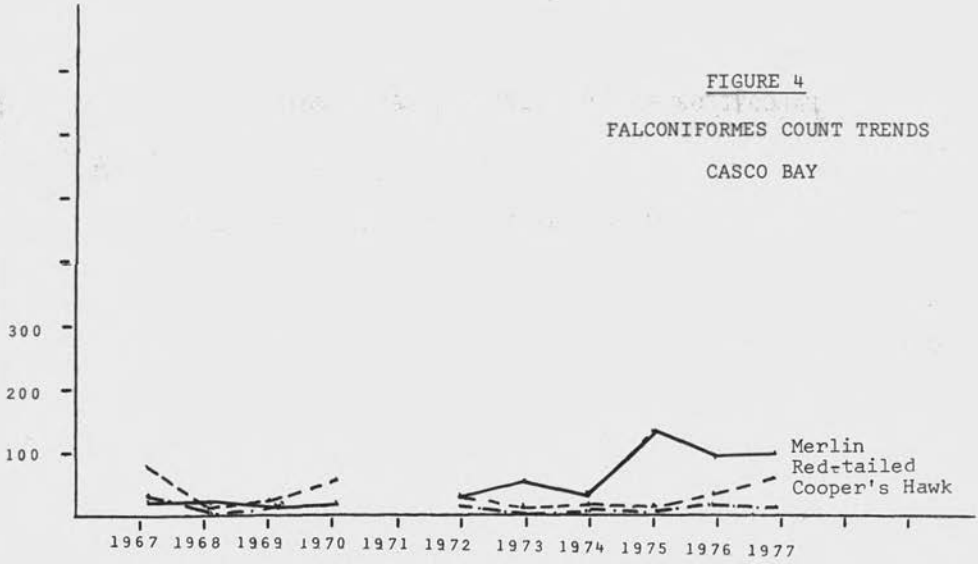


FIGURE 4

FALCONIFORMES COUNT TRENDS

CASCO BAY

Sociality in Migrating Falconiformes

One of the obvious characteristics of the Casco Bay hawk migrations is the formation of groupings, both conspecific and interspecific, as they pass over. We have been collecting data on these groupings in order to determine to what degree there is a preference for sociality among the various hawk species.

I tested for the degree of sociality by comparing the number of hawks passing in groups of their own species, or in groups associated with other species, to those passing singly. This gives us a measure for the preference for sociality (see Table 5). Please note that this figure is very conservative. We have not included Column B, since this might not indicate sociality so much as aggression or hunger. Our observational methodology is also very conservative. Though this is not the place for an extended discussion, it is obvious that the hawks themselves are in a much better position to see other hawks and adjust their flight patterns to them than are ground observers. We also do not yet have any but the most rudimentary way of selecting for behavioral acts that indicate sociality. For example, I doubt the Peregrine Falcon data. Last year we saw a Peregrine followed within a minute by another; though I suspect they were traveling in company, we entered them as two singles.

However, it is worth noting that the Merlin seems to be least social, the Broad-winged Hawk most social, and the Sharp-shinned Hawk and American Kestrel in between.

In Table 6 are listed the largest observed groupings of particular species.

TABLE 5

SOCIALITY IN MIGRATING FALCONIFORMES*

	A	B	C	D	
	Passing Singly	Passing as Individuals Associated With Other Species	Passing in Groups of Own Species	Passing in Groups With Other Species	Preference for Sociality**
Goshawk	23	1	-	-	-
Sharp-shinned Hawk	6377	197	3837	299	39%
Cooper's Hawk	110	10	12	2	11%
Red-tailed Hawk	206	14	46	2	19%
Red-shouldered Hawk	20	3	7***	-	-
Broad-winged Hawk	474	24	3752	184	89%
Rough-legged Hawk	8	3	-	-	-
Marsh Hawk	445	29	67	6	14%
Osprey	722	29	201	4	22%
Peregrine Falcon	45	3	-	-	-
Merlin	448	21	32	-	7%
American Kestrel	3693	161	1691	107	33%

* Based on observations from 1967-1977 (1971 station not manned).

** $\frac{C+D}{A+C+D}$

*** I question the validity of this sighting of seven Red-shouldered Hawks in one group.

TABLE 6

SIZE OF LARGEST GROUPING

Goshawk	1
Sharp-shinned Hawk	44
Cooper's Hawk	2
Red-tailed Hawk	6
Red-shouldered Hawk	7*
Broad-winged Hawk	250
Rough-legged Hawk	1
Marsh Hawk	4
Osprey	4
Peregrine Falcon	1
Merlin	2
American Kestrel	8

* The reliability of this figure is questionable.

The Sharp-shinned high of 44 individuals seems rather interesting. I again note that the figure for Red-shouldered Hawk is probably unreliable.

With regard to interspecies groups--I refer to the data in Column B, Table 5--the most frequently occurring ones are the Sharp-shinned--American Kestrel combination followed by the Sharp-shinned--Broad-winged combination. The third most frequent combination is Sharp-shinned--Marsh Hawk followed by Sharp-shinned--Osprey (see Table 7). The Sharp-shinned Hawk has the highest preference for interspecific groupings, and it is followed by the American Kestrel.

The Pulse Phenomenon

When you are on station, it becomes quite clear that the migrating hawks do not come through randomly but in bursts. That is, superimposed on the diurnal cycle are fluctuations of small amplitude, which I call pulses. Peter Cannell (personal communication) has made a statistical test of the data on these pulses and has confirmed that the pulses are real. Furthermore, it should be noted that these pulses are not necessarily composed of conspecifics but may be interspecific.

TABLE 7

TYPES AND FREQUENCIES OF INTERSPECIAL GROUPINGS*

	Frequency of Grouping
Sharp-shinned Hawk - American Kestrel	162
Sharp-shinned Hawk - Broad-winged Hawk	32
Sharp-shinned Hawk - Marsh Hawk	21
Sharp-shinned Hawk - Osprey	19
American Kestrel - Merlin	10
Sharp-shinned Hawk - Cooper's Hawk	6
Sharp-shinned Hawk - Red-tailed Hawk	5
Sharp-shinned Hawk - Merlin	5
American Kestrel - Merlin	5
American Kestrel - Osprey	5
Sharp-shinned Hawk - American Kestrel - Broad-winged Hawk	4
American Kestrel - Broad-winged Hawk	2
Sharp-shinned Hawk - Merlin	2
Sharp-shinned Hawk - American Kestrel - Marsh Hawk	2
Cooper's Hawk - Red-shouldered Hawk	2
Sharp-shinned Hawk - Rough-legged Hawk	2
Broad-winged Hawk - Marsh Hawk	1
Broad-winged Hawk - Osprey	1
Broad-winged Hawk - Cooper's Hawk	1
Broad-winged Hawk - Red-tailed Hawk	1
Osprey - Red-tailed Hawk	1
Osprey - Merlin	1
Marsh Hawk - Red-tailed Hawk	1
Sharp-shinned Hawk - Goshawk	1
Peregrine Falcon - Sharp-shinned Hawk	1
Peregrine Falcon - Merlin	1
Peregrine Falcon - American Kestrel	1
Red-tailed Hawk - Merlin	1
Sharp-shinned Hawk - Osprey - Cooper's Hawk	1
Sharp-shinned Hawk - American Kestrel - Red-tailed Hawk	1
Sharp-shinned Hawk - American Kestrel - Osprey	1
Sharp-shinned Hawk - American Kestrel - Merlin	1
Sharp-shinned Hawk - Marsh Hawk - Broad-winged Hawk	1
Sharp-shinned Hawk - Osprey - Red-tailed Hawk	1
Sharp-shinned Hawk - Marsh Hawk - Red-tailed Hawk	1

* Based on observations from 1967-1977 (1971 station not manned).

One of the difficulties in dealing with the pulse phenomenon has been in depicting or mathematically describing it, so that we can better grasp its significance. In figures 5, 6 and 7 I present examples of the pulse phenomenon.

FIGURE 5

PULSE PHENOMENON, OCTOBER 10, 1977

9:30-35_		1SS				
35-40						
40-45_		1SS				
45-50__		2SS				
50-55_		1SS				
55-60___		3SS				
10:00-05____	Wind dying	2SS	2PF			
05-10__	Thermalling behavior	2SS				
10-15_____		10SS				
15-20__		1AK	lo			
20-25						
25-30__		1SS	1AK			
30-35__		1AK	lo			
35-40_		1SS				
40-45__		1SS	1AK	1MH		
45-50_____	Moving thermal to thermal	9SS	lo			
50-55_____		4SS	1AK			
55-60_____		4SS	2AK	2MH	lo	1M
11:00-05____		1SS	2AK	1MH		
05-10__		2SS				
10-15____		1SS	3AK			
15-20___		3SS				
20-25_	Wind springs up from SW	1SS				
25-30__		1SS	1AK			
30-35						
35-40_		1SS				
40-45						
45-50						
50-55_		1SS				
55-60_____		3SS	lo	1M		
12:00-05__		1SS	lo			
05-10___		1SS	1MH	1UF		
10-15						
15-20_____		5SS	2AK	1UF		
20-25___		3SS				
25-30						
30-35____		1SS	2AK	1PF		
35-40_____		4SS	2AK	1M		
40-45_____		4SS	3AK	1CH		
45-50___		2AK	1M			
50-55___		1SS	2AK			
55-60__		1SS	1M			
1:00-05_____		6SS	2AK	1M		
05-10__		2SS	1M			
10-15_____		2SS	5AK			
15-20_____		5SS	1PF			
20-25						
25-30___		3SS				
30-35__		1AK	1MH			
35-40_____		10SS				
40-45____		3SS	1AK			
45-50_____		6SS				
50-55____		2SS	1AK	1MH		
55-60_____		7SS	3AK	1M		

See Figure 7 for Key. _ = one individual.

FIGURE 6

PULSE PHENOMENON, SEPTEMBER 19, 1976

8:00-05_	Sunny and hazy	1o		
05-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50_		1SS		
50-55				
55-60				
9:00-05				
05-10____	Wind picks up	5SS		
10-15____		4SS		
15-20_____		10SS		
20-25__		2SS		
25-30_____		9SS	1AK	
30-35_____		11SS		
35-40_____		10SS	1o	
40-45_____	Wind dropping	10SS		
45-50____		5SS		
50-55				
55-60_		1SS		
10:00-05	Calm			
05-10____		5SS		
10-15____		5SS		
15-20____		3SS	1AK	
20-25____		5SS		
25-30_		1RT		
30-35_____	Wind picks up, SSW	5SS	1o	
35-40_____		9SS		
40-45____		7SS		
45-50____		5SS		
50-55_____		6SS		
55-60_		1MH		
11:00-05_____		5SS	1PF	
05-10___		1SS	1AK	1MH
10-15_____		5SS	1AK	
15-20_____		6SS	1AK	
20-25___		3SS		
25-30___		3SS		
30-35___		3SS		
35-40__		2SS		
40-45_		1SS		
45-50__		1SS	1o	

See Figure 7 for Key.

_ = one individual.

FIGURE 7

PULSE PHENOMENON, SEPTEMBER 11, 1977

7:15-20	
20-25_	1RT
25-30	
30-35	
35-40	
40-45	
45-50	
50-55	
55-60	
8:00-05	
05-10	
10-15	
15-20___	1SS 1MH 1o
20-25__	2SS
25-30	
30-35	
35-40	
40-45	
45-50	
50-55	
55-60	

KEY: _ = one individual.
SS = Sharp-shinned Hawk
CH = Cooper's Hawk
RT = Red-tailed Hawk
MH = Marsh Hawk
o = Osprey
PF = Peregrine Falcon
M = Merlin
AK = American Kestrel
UF = Unidentified Falcon

NOTE: The wind was light and from the southwest. The sky was originally overcast. However, it began to clear in the west with a distinct edge of clouds moving to the east. As this edge of clouds moved over the water, the sun broke through brilliantly on the water. Between 8:15 and 8:25 the hawks rose from their roosts in trees on the edge of the shore as the line of clearing weather moved towards them. The movement began three or four minutes before the roosts were in the sun, but, it appeared, in response to the breaking through of sunlight on the water.

What are the causes of the clumping of hawks in their migratory behavior? We suggest the following:

1. When thermals develop, various species move towards them, work their way up to the top, and then peal off in a loose gathering (see Figure 5 10:00 to 11:00 a.m.).

2. Aggressive behavior contributes to the make-up of pulses. For instance, I have the observation of Sharp-shinned Hawks moving toward a Red-tailed Hawk to harass it, and then move on together past the observation station.

3. Pulses also arise through fraternization; a hawk sees another pass by and joins it.

4. An increase in wind speed seems to stimulate the hawks to rise out of their roosts and move (see Figure 6 9:00 and 10:00 a.m.).

5. Weather conditions may be conducive to migration in one region but not in another. Once a group starts moving, it continues as a group, or as a pulse, through the next region.

6. A change in sunlight can trigger a movement (see Figure 7).

7. Wind patterns may produce a pile-up of hawks, as for example, at the crest of a wind wave rising over a high point.

Agonistic Behavior

We have also been making observations of agonistic behavior. By this I refer to combative behavior, in some instances showing the quality of a contest, rather than outright naked aggression, although this is at times involved. Agonistic behavior also includes what is termed harassment. From a sample of 456 observations (see Table 8), I have compared the species rates of agonistic behavior (see Table 9).

The Merlin initiated agonistic behavior the most frequently, while the Broad-winged Hawk is the least aggressive. Note that certain species--the Merlin, Sharp-shinned Hawk, and Peregrine Falcon--have initiation rates of agonistic acts that are significantly higher than the proportion of their species to all migrating species together. There are also certain species which have a significantly lower rate of initiation of agonistic acts, such as Osprey and Broad-winged Hawk.

TABLE 8

OBSERVED ACTS OF AGONISTIC BEHAVIOR (1965-1977)

Aggressor	Target: Sharp-shinned	American Kestrel	Broad-winged	Red-tailed	Osprey	Marsh Hawk	Merlin	Goshawk	Peregrine Falcon	Red-shouldered	Totals
Sharp-shinned Hawk	166	74	42	16	14	12	10	1	1	1	337
American Kestrel	31	17	6	8	3	5					70
Broad-winged Hawk	1		2								3
Red-tailed Hawk	1										1
Osprey	1		1								2
Marsh Hawk	2		1	1							4
Merlin	21	9	3		1		2		1		37
Goshawk											
Peregrine Falcon	1										1
Cooper's Hawk	1	—	—	—	—	—	—	—	—	—	1
	225	100	55	25	18	17	12	1	2	1	456

TABLE 9

RATES OF AGONISTIC BEHAVIOR

	Rates of Initiation (per thousand)	Probability that Proportion of Agonistic Acts Significantly** Higher	Lower
Merlin	62.3	<.001	
Sharp-shinned Hawk	28.1	<.001	
Peregrine Falcon	17.2*		
American Kestrel	10.2	<.001	
Marsh Hawk	6.2		.03
Cooper's Hawk	5.9		
Red-tailed Hawk	2.9		.04
Osprey	1.8		<.001
Broad-winged Hawk	.6		<.001

* Sample very small.

** The question posed: Is the proportion of a species initiation signnificantly different from the proportion of that species migrating to all species migrating?

In Table 10 I show rates for targets of harassment; that is rates of receiving acts of agonistic behavior. Note that the Red-tailed Hawk is attacked significantly more frequently than all other hawks. The Broad-winged receives a significantly lower rate of harassment than one would expect, considering the larger proportion of this species migrating. I believe that these two significant rates are related to flight behavior. The Broad-winged Hawk frequently moves through at great heights, making it a less available target, while the Red-tailed Hawk moves closer to the ground, intruding into the temporary territories that hawks may have taken up during a pause in their migrating movements.

I have also asked the question as to whether the various species of hawks have a preference in their agonistic behavior for other species (see Table 11). Note that the Sharp-shinned Hawk prefers the Red-tailed Hawk, as does the American Kestrel. The Sharp-shinned Hawk also prefers the Broad-winged Hawk and has a tendency, on the edge of significance, to attack other Sharp-shinned Hawks. The preference of the Merlin for the Peregrine is based on too small a sample to be beyond suspicion.

TABLE 10

TARGETS OF HARASSMENTS

	Harassed Rates (per thousand)	Probability that Proportion of Being Harassed Significantly** Higher	Lower
Red-tailed Hawk	71.6	<.001	
Peregrine Falcon	34.5*		
Marsh Hawk	26.2		
Merlin	20.2		
Sharp-shinned Hawk	18.8	.02	
Osprey	16.5		
American Kestrel	14.6		
Broad-winged Hawk	10.9		<.001

* Sample very small.

** The question posed: Is the proportion of a species being harassed to all acts of harassment significantly different from the proportion of that species migrating to all species migrating.

Notes

1. The station is usually manned by me, my wife, Laura W. R. Appell, and my three daughters, Laura Parker, Amity, and Charity, who devote their weekends to observing and recording. During this past year the station was manned by Peter Cannell, when we were not able to be there, and he joined us for much of the other observing time as well.

2. Bill Clark, Raptor Information Center (personal communication), points out that the second peak of the American Kestrel migration would tend to coincide with the movement of adults through Cape May shortly thereafterwards. The earlier peak probably indicates a movement of immature American Kestrels.

TABLE 11

TEST FOR SIGNIFICANCE OF AGONISTIC PREFERENCE BY SPECIES

	Initiations		
	Sharp-shinned Hawk	American Kestrel	Merlin
Target			
Sharp-shinned Hawk	(+) .05		
American Kestrel			
Broad-winged Hawk	(-) .003	(-) .029	
Red-tailed Hawk	(+) .001	(+) .001	
Osprey			
Marsh Hawk		(+) .01	
Merlin			
Peregrine Falcon			(+) .001

NOTE: (+) indicates that the proportion of the target species selected for harassment to all acts of aggression is higher than the proportion of the target species to all species migrating.

(-) indicates that the proportion of the target species selected for harassment to all acts of aggression is less than the proportion of the target species to all species migrating. The standard error of proportions for species by species harassment were computed to determine whether any species significantly preferred any other species or significantly avoided any other species for harassment. The probability of this distribution of acts of harassment are computed from data in Table 4.

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SIGHTING OF A FRANKLIN'S GULL IN VINEYARD SOUND, MASSACHUSETTS

by Albert W. Nickerson, Manomet

On Monday, October 10, 1977, at 1:00 P.M. EDT, while guiding the Bird Watcher's Islands Cruise aboard M/V SHOREHAM, I saw a Franklin's Gull (Larus pipixcan) at 41° 30.0'N, 70° 37.5'W, 1.5 nautical miles north-west of West Chop Light, at the north-east end of Vineyard Sound, Massachusetts.

The ship had left Newport, R.I., that morning and was en route to Oak Bluffs, Martha's Vineyard. Right after lunch, I went on deck and shortly thereafter noticed a small gull sitting alone on the water about 500 feet away off the port bow.

I initially assumed the bird to be an adult Laughing Gull (Larus atricilla) in winter plumage since a) differentiating field marks were not noticed while the bird sat immobile, and b) large numbers of Laughing Gulls had been seen during the morning, especially at the mouth of the Narragansett Bay, Rhode Island.

As the ship approached at 12 knots and I watched the gull through 7 X 35 binoculars, it raised and spread its wings slightly, preparing to take flight. At this point my attention was drawn to the fact that the bird displayed significantly more white on the wings, apparently on the outer trailing edges, than one would expect on a Laughing Gull. When the bird was within about 200 feet, it lifted itself from the surface of the water and flew south-west, opposite to the ship's direction, slightly below eye level at a distance of about seventy feet. It then vanished behind the ship.

In spite of rather quick wing beats and rapid motion relative to the ship, an irregular white band was clearly visible on the upper surface of the wing, cutting diagonally inward from front to rear across the middles of the primaries and dividing the slate-gray mantle and inner primaries from the outer primaries which were mostly black with white tips.

The gull had been observed on the water for about 20 seconds and was seen in the air for about 10 seconds. The view was excellent and allowed observation of the prominent diagnostic field marks on the wing, but was too short in duration to permit thorough study of the more subtle differentiating factors or the precise wing formula.

I was able neither to show the gull to the tour, nor to obtain the confirmation of additional observers since only five of the non-birding passengers had yet returned to the deck after lunch. I have seen large numbers of Franklin's Gulls in the northern plains states years ago, but recognition was due primarily to previous study of field guides and regional compilations.

Summary of Observed Field Marks

Head: white, with a grayish patch beginning behind eye, extending over the dome and around the back of the head and ending at the nape,

Bill: dark

Mantle: slate-gray

Wings: described above. In comparison to the plate by Singer in Birds of North America, which I consulted just after the sighting, the white band across the primaries was less regular in appearance, blending into the slate-gray at the proximal side and describing a less even line of demarcation with the black of the outer primaries at the distal side. This may have been due in part to the almost horizontal angle at which the bird was seen while in flight, which tended to foreshorten the pattern. The general effect is well shown in Forbush, Vol. I, Fig. 9, with the exception that the black appeared more extensive. The underwings were not well observed due to shadow and the slight downward angle of view.

Underparts and tail: pure white

Feet and legs: not well observed.

Differential Identification

Laughing Gull. As described, the wing pattern rules out this species. Size difference was not obvious, but the bird was alone and no direct reference was available. No difference in the shade of the mantle was specifically noted. Due to the briefness and unexpectedness of the sighting, my attention was focused on the prime field marks--the wings--at the expense of the more subtle differentiating features.

Bonaparte's Gull (Larus philadelphia) adult has to be considered, but the white triangle on the forefront of the primaries simply did not exist. No Bonaparte's Gulls were seen on October 10.

Aberrant plumaged juvenile small gulls of any species are unlikely candidates, especially since the gull was observed to have a pure white tail.

Weather Conditions

On October 9, 1977, the day before the sighting, a large low pressure system over the Great Lakes caused gale conditions along the New England coast. Southerly winds of 30 knots and heavy rain were experienced in Vineyard Sound. By October 10, the low had moved north-east and a cold front had moved through. At the time of the sighting, winds were gentle westerly, temperature was about 50°F, and there was a high, thin, partial overcast. The horizon was clearly visible and conditions for observation were generally ideal.

Literature Cited

Robbins et al., Birds of North America, 1966.

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ANNOUNCING:

WHERE TO FIND BIRDS IN EASTERN MASSACHUSETTS

Bird Observer announces the forthcoming publication of the first book of its kind for Massachusetts. This 176-page, soft-cover volume contains 34 articles, most of which have previously appeared in Bird Observer. All articles have been revised and updated, however, and many are accompanied by new, more-detailed maps.

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Cape Ann
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Marblehead Neck
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Plum Island
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Springs Pond

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Compiled, revised and edited by Leif J. Robinson and Robert H. Stymeist, with the assistance of the staff of Bird Observer, this book will be a valuable addition to any birder's library. If you've subscribed to Bird Observer since its inception, the book will update your knowledge and, conveniently kept in the glove compartment of your car, will prove a handy reference on birding trips. If you're a recent subscriber to Bird Observer, the book will introduce you to a number of birding areas in the eastern half of the state. This volume will also make an excellent gift for anyone interested in birds.

Where to Find Birds in Eastern Massachusetts will be available in early December. It will retail for at least $4.00, but until February 15,1979, Bird Observer subscribers may order as many copies as they wish for only $3.00 per copy, plus 5% sales tax for Massachusetts residents. Include 75¢ for postage and handling for each book ordered.

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MANOMET BIRD OBSERVATORY

Banding 1 Jan. - 30 June 1978

1977 was an excellent spring migration through MBO and by comparison this spring can only be described as poor. Although the 96 species banded approximate the 101 of last year, and repeats were only 408 down due to increased effort, the drop in new bandings of 1,299 birds represents a 38% decline!

Powdermill, Penn., on the west of the Eastern Flyway, also had a low spring so the decline may have been general. After two severe winters numbers of the more northern sparrows were low, but so were warblers, catbirds and thrushes generally. Species which were more numerous than usual this year included male Sharp-shinned Hawks, Mourning Doves, Acadian Flycatchers, Traill's Flycatchers and Blue Jays; while the birds of the year for our banding operation were a Blue Grosbeak male on May 9 and a male Yellow-throated Warbler on May 29.

Many thanks to MBO, and Kathleen S. Anderson, for the kind permission to publish this report.

Sharp-shinned Hawk	12	Yellow Warbler	25
American Kestrel	1	Magnolia Warbler	31
Ring-necked Pheasant	1	Black-throated Blue Warbler	6
American Woodcock	1	Yellow-rumped Warbler	19
Mourning Dove	144	Black-throated Green Warbler	2
Screech Owl	1	Blackburnian Warbler	1
Saw-whet Owl	1	Yellow-throated Warbler	1
Ruby-throated Hummingbird	(21)	Chestnut-sided Warbler	4
Common Flicker	11	Blackpoll Warbler	22
Eastern Kingbird	11	Prairie Warbler	3
Great Crested Flycatcher	5	Palm Warbler	2
Eastern Phoebe	4	Ovenbird	22
Yellow-bellied Flycatcher	5	Northern Waterthrush	31
Acadian Flycatcher	6	Mourning Warbler	3
Traill's Flycatcher	38	Common Yellowthroat	103
Least Flycatcher	6	Yellow-breasted Chat	4
Eastern Wood Pewee	4	Hooded Warbler	1
Tree Swallow	21	Wilson's Warbler	8
Bank Swallow	17	Canada Warbler	23
Rough-winged Swallow	1	American Redstart	75
Barn Swallow	1	House Sparrow	1
Blue Jay	107	Redwinged Blackbird	17
Common Crow	1	Orchard Oriole	1
Black-capped Chickadee	23	Northern Oriole	20
White-breasted Nuthatch	3	Common Grackle	44
Red-breasted Nuthatch	3	Brown-headed Cowbird	9
Brown Creeper	5	Scarlet Tanager	1
House Wren	11	Cardinal	7
Winter Wren	1	Rose-breasted Grosbeak	1
Carolina Wren	1	Blue Grosbeak	1
Mockingbird	4	Evening Grosbeak	6
Gray Catbird	438	Purple Finch	11
Brown Thrasher	9	House Finch	8
American Robin	50	Common Redpoll	1
Wood Thrush	6	Pine Siskin	30
Hermit Thrush	19	American Goldfinch	16
Swainson's Thrush	15	Rufous-sided Towhee	55
Gray-cheeked Thrush	1	Savannah Sparrow	5
Veery	5	Sharp-tailed Sparrow	1
Blue-gray Gnatcatcher	1	Dark-eyed Junco	33
Ruby-crowned Kinglet	17	Tree Sparrow	21
Cedar Waxwing	12	Chipping Sparrow	1
Starling	27	Field Sparrow	1
White-eyed Vireo	3	White-throated Sparrow	180
Solitary Vireo	4	Fox Sparrow	26
Red-eyed Vireo	13	Swamp Sparrow	15
Black-and-White Warbler	56	Song Sparrow	68
Tennessee Warbler	2		
Northern Parula	4		

SPECIES BANDED.....96 + (1)

Birds Banded: 2,098 Ruby-throated Hummingbirds: 21 Repeats: 2,015

TOTAL HANDLED.....4,134

FIRST ANNUAL MID-WINTER BALD EAGLE SURVEY

The Raptor Information Center of the National Wildlife Federation is conducting a mid-winter Bald Eagle Survey on Saturday, January 20, 1979. On Friday, January 19, Massachusetts State Fish and Wildlife personnel will survey the Quabbin region, but anyone spotting Bald Eagles outside the Quabbin area on the 20th, or in case of inclement weather, the 21st, is asked to report the sighting, with as many details as possible, to Paul M. Roberts, 24 Pearson Road, Somerville, MA. 02144. Please contact him for further information.

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