

PARKER RIVER NATIONAL WILDLIFE REFUGE  
PLUM ISLAND  
NEWBURYPORT, MASSACHUSETTS 01950

ANNUAL NARRATIVE REPORT  
CALENDAR YEAR 1978

Satellite Refuges:

Rachel Carson N. W. Refuge  
Wapack N. W. Refuge  
Pond Island N. W. Refuge  
Thacher's Island N. W. Refuge  
John Hay N. W. Refuge

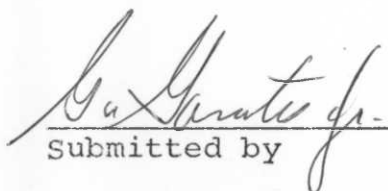
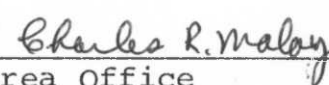


Permanent Personnel

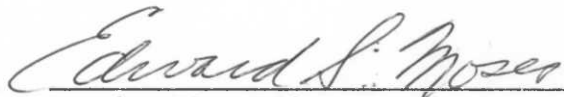
1. George W. Gavutis, Jr., Refuge Manager (GS-12)
2. David L. Beall, Assistant Refuge Manager (GS-9)  
transferred to Great Meadows NWR, Mass, 1/15/78
3. Robert A. Zelle, Assistant Refuge Manager (GS-9)
4. Maurice Mills, Jr., Assistant Refuge Manager (GS-7),  
Rachel Carson NWR, Maine.
5. Jeffrey F. Ulrich, Assistant Refuge Manager (GS-7)
6. Douglas G. Spencer, appointed Refuge Manager (Trainee),  
(GS-5) on 4/10/78.
7. Michael R. Bauer, appointed Refuge Manager (Trainee),  
GS-5) on 4/24/78.
8. Donald G. Grover, Visitor Assistance and Safety  
Specialist (GS-9)
9. Anthony D. Leger, Visitor Protection (Safety) and  
Control Specialist (GS-7)
10. Thomas J. Stubbs, Maintenance Foreman (WS-9)
11. Raoul J. DeSerres, Maintenance Mechanic (WG-10)
12. Chester W. Dearborn, Maintenance Worker (WG-7) - Part-time
13. Daniel Rines, appointed Maintenance Worker (WG-5) on  
1/15/78 - Part-time.
14. Helen K. Garrett, Refuge Clerk (GS-4) - Part-time
15. Clara V. Bell, Refuge Clerk (GS-5) - Part-time

Absent for photos: 2, 9, 12, 13

Review and Approvals

	<u>9-3-80</u>		<u>9/16/80</u>
Submitted by	Date	Area Office	Date

PARKER RIVER N. W. REFUGE  
Refuge

	<u>9-14-80</u>
Regional Office	Date



### Temporary Personnel

Malcolm Fraser	4/23/78-9/1/78	Camp Director, Youth Conservation Corps
Elizabeth A. Kay	5/9/78-8/18/78	Group Leader, YCC
Jayle Younger	5/9/78-8/18/78	Group Leader, YCC
Barnett A. Schlinger	5/9/78-8/18/78	Group Aid, YCC
Andrew C. French	1/1/78-9/9/78	Biological Aid
	9/10/78 -	Temporary Intermittent
Scott F. Powers	3/12/78-7/29/78	Info. Recep. (Gateperson)
	7/30/78-	Temporary Intermittent
Nancy L. Riley	5/26/78-9/1/78	Info. Recep. (Gateperson) through College Work-Study Program at University of New Hampshire
	9/2/78 -	Temporary Intermittent
Bob J. Ridenour	5/21/78-7/29/78	Recreation Aid
	7/30/78-	Temporary Intermittent
Neil D. Courtney	5/11/78-	Laborer, Temp. Intermittent

### The New England Young Adult Conservation Corps

Clayton M. Bryant,	Camp Director (GS-11)
Daniel J. O'Brien, Jr.,	Administrative Officer (GS-9) transferred to Job Corps Center as Administrative Officer, Iroquois NWR in October 1978
Ann Harrison	Work Coordinator (GS-7)
William L. Papoulias	Group Leader (GS-7)
Margaret Gilmore	Group Leader (GS-7)
Seth Mott	Group Leader (GS-5) Rachel Carson NWR Maine, transferred from Great Meadows NWR, Mass. on 10/1/78.
Susan Dewildt	Group Leader (GS-5) transferred in from Great Meadows NWR, Mass. on 10/22/78.
Robert Snyder	Carpenter (Temporary 700-hr. Appt. Intermittent) 10/22/78 -

The New England YACC Administrative Headquarters located at Parker River NWR but under the supervision of Regional Office (Youth Conservation Programs).



## TABLE OF CONTENTS

	<u>Page</u>
<u>I. GENERAL</u>	
A. Introduction . . . . .	1
B. Climatic and Habitat Conditions. . . . .	2
C. Land Acquisition . . . . .	6
D. System Status. . . . .	6
 <u>II. CONSTRUCTION AND MAINTENANCE</u>	
A. Consruction. . . . .	9
B. Maintenance. . . . .	14
C. Wildfire . . . . .	14
 <u>III. HABITAT MANAGEMENT</u>	
A. Croplands. . . . .	16
B. Grasslands . . . . .	16
C. Wetlands . . . . .	16
D. Forestlands. . . . .	17
E. Other Habitat. . . . .	18
F. Wilderness and Special Areas . . . . .	18
G. Easements for Waterfowl Management . . . . .	18
 <u>IV. WILDLIFE</u>	
A. Endangered and/or Threatened Species . . . . .	18
B. Migratory Birds. . . . .	18
C. Mammals and Non-Migratory Birds and Others . . . . .	24
 <u>V. INTERPRETATION AND RECREATION</u>	
A. Information and Interpretation . . . . .	29
B. Recreation . . . . .	33
C. Enforcement. . . . .	36

Page

A. Field Investigations . . . . .	47
B. Cooperative Programs . . . . .	48
C. Items of Interest. . . . .	52
D. Safety . . . . .	56
E. Credit . . . . .	58

## I. GENERAL

### A. Introduction

The Parker River National Wildlife Refuge is located in Essex County, Massachusetts, 38 miles north of Boston, along the coast. The refuge occupies two-thirds of the southern portion of Plum Island and the 2-acre headquarters site is located separately, next to a Coast Guard lighthouse on the heavily inhabited northernmost tip of the island.

The refuge is one of the few natural barrier beach-dune complexes left in the Northeastern United States. Total size is approximately 4,650 acres. The topography varies from the barrier beach-dune complex to the Kettle-hole like (not glacial) depressions which support cranberry bogs and swamps, to the four glacial drumlin deposits of rocks and clay which support more typical upland environments. Protected behind the 818-acre barrier beach-dune complex are approximately 2,994 acres of refuge salt marsh.

Also located on the refuge are three major impoundments which total 265 acres of brackish to fresh water marshes. Two miles of man-made dikes were constructed around portions of the salt marsh to form these impoundments. Since they are strictly rainfall dependent, during normally dry summers, water only remains in borrow pits, ponds, and channels. These impoundments provide for a diverse habitat for all wildlife indigenous to this area, particularly black ducks and Canada geese. There are dozens of species that would not occur here without the fresh water impoundments.

Normal high tides average 8 feet, with bi-monthly tides of over 11 feet flooding the salt marshes up to the base of the dunes.

Being that the refuge is situated very close to heavily populated areas, considerable interpretation and recreation use occurs, as well as other wildlife and non-wildlife-oriented activities. At present, our objective is for more environmental education, wildlife-wildlands interpretation, appreciation, observation, photography



and less non-wildlife use.

Rachel Carson National Wildlife Refuge in southern coastal Maine is now staffed by an Assistant Refuge Manager and is under the administration of Parker River. Also under the administration of Parker River are the following unstaffed satellite refuges:

Pond Island, Maine; Wapack, New Hampshire; John Hay, New Hampshire; and Thacher's Island, Massachusetts.

B. Climatic and Habitat Conditions

This year started with January having above normal precipitation due to several torrential rain storms and a record-breaking snowfall on January 20 when over 35.9" fell. The warm rains early in the month produced significant open water in the impoundments for a few days, only to refreeze again rapidly.

Cold weather persisted through February. On February 6, a hurricane force Nor'easter, with record-breaking winds (61 mph.), and a record-breaking snowfall within a 24-hour period (23.6") hit the Northeast, including Plum Island, causing an emergency situation. Many of the islanders were stranded and experienced considerable flooding to their homes. The refuge experienced overwash in Lot #1. Over a foot of sand was blown onto the paved lot and another overwash occurred at Lot #11 near Emerson's Rocks and Stage Island Pool. The overwash at Lot #11 caused Stage Island Pool to raise 2 feet and overflow, flooding sections of the refuge road. The salinity of the pool increased considerably and remained that way throughout the year. During the storm, one of the life-use cabins at the Knobbs, west of South Pool, disappeared. Up to the end of March, only 4x4 vehicles were able to pass Lot #10 on the refuge road.



Combination of a lunar high tide and Nor'easter storm results in considerable flooding to low-lying and beach areas of the island. Above photograph shows the only road connecting the island with the mainland.



The remainder of the first half of 1978 was cool and dry. The impoundments did not completely thaw out until the end of March compared to March 16th of the preceding year. The water levels were at the highest they have ever been.

The second half of the year started off being hot and dry, but by October temperatures dropped into the 20°'s causing a killing frost on October 16. The fall remained cool and dry.

On November 21, the first snowfall fell, amounting to 2 inches. All impoundments were frozen by November 27 because of the unseasonable temperatures which remained in the teens. Total rainfall for the year was 42.8 inches, the normal being 41.5 inches. The total amount of snowfall for the year was 84.75 inches, an almost record-breaking year, only surpassed by the year 1948 which had 89.2 inches of snow. A mean annual temperature of 50.4° F. indicated a cooler year than normal when compared to the long-term annual temperature of 51.3° F.



## Monthly Impoundments Gauge Readings

and

## Average Monthly Precipitation

Month	North Pool* Avg. Reading	South Pool* Avg. Reading	Stage Is. Pool* Avg. Reading	Total Rain	Inches Snow
January	Frozen	Frozen	Frozen	8.36	38
February	Frozen	Frozen	Frozen	1.94	25.25
March	6.85	5.48	Gauge in Disrepair	2.60	13
April	6.74	5.32	"	3.44	-
May	6.55	5.25	"	5.47	-
June	6.23	5.17	"	4.69	-
July	5.38	4.43	"	1.54	-
August	5.13	4.15	"	4.43	-
September	4.76	3.76	"	.31	-
October	5.0	3.87	"	3.61	-
November	Gauge in Disrepair	3.76	"	2.23	3.25
December	Frozen	Frozen	Frozen	4.21	5.25
Annual Total				42.83	84.75

\*0 is equal to mean sea level.

C. Land Acquisition

1. Fee Title

There is no active acquisition program at Parker River.

Under the Refuge Revenue Sharing Act, \$2,670.97 was paid to Essex County, Massachusetts, for Fiscal Year 1978.

2. Easements

Nothing to report.

3. Other

Nothing to report.

D. System Status

1. Objectives

PPBE objectives were last revised in 1974. Future revision will be made when new guidelines have been developed.

The only Annual Work Plan Advice action which was not fully accommodated was the post-season black duck banding quota of 600 ducks. Due to transfers, training, and mild weather in February, only 313 black ducks were banded.

A new funding category was added in FY 1978, Cyclical Maintenance. Some difficulty has been experienced in accurately tracking the expenditure of these funds within the total budget.

2. Funding

Funding for Fiscal Year 1979 looked good according to the Annual Work Plan Advice in August. However, a few changes occurred by the end of the first quarter. The budget was reduced from \$338,000

total to \$326,000. As of the second quarter of FY 1979, refuge funding for the past five years was as is shown on table on Page 8.

Inflation is the main cause of the rising costs of operating and maintaining the station. Our annual budget increases seem to barely keep pace with rising costs. Total manpower has not changed very much over the past five years but the costs have steadily risen due to inflation.



	1110	1210	1220	1240	*BLHP Rehab Const/Rehab.	Man years		
						Perm.	Temp.	Total
FY		O&M	Cycl.	O&M	Cycl.			
1979	1000	104,000	33,000	6000	149,000	33,000		
1978		111,971	9,000	2575	150,688	34,000	316,195*	10.0 4.3 14.3
1977		182,000			127,000	21,900	8.9	2.2 11.1
TQ		18,860			33,500		8.9	
1976		97,000			107,100	15,000	10.5	2.6 13.1
1975		101,200			80,800		9.3	3.6 12.9
1974		87,000			83,000	11,000	9.5	3.7 13.2

Changes from AWPA 1210 - 8,000 Rehab for vehicle dropped from budget due to vehicle purchased end of FY 1978.

1240 - 4,000 Cyclical maintenance funds withdrawn by request from Area Office.

\* 890,000 - funds for construction of a new headquarters complex.

50,000 - funds scheduled for office/residence rehab at Rachel Carson NWR.

316,195 - contract awarded for rehab of the refuge road.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

In the late spring, a leak was discovered in the Stage Island Pool water structure. Upon excavation, it was found that a section of the corrugated metal pipe had rusted through. Since the integrity of the entire structure was seriously in doubt, a new one was installed. In addition, for ease in opening, the flap gate was replaced by a screw gate. The old flap gate was difficult to open and close, due to excessive depth. This was especially true when ice covered the pool.



The pipe and flap valve looming upward in Stage Island impoundment. Trapped air and a rusted section of pipe caused the pipe to buckle and rise.

To facilitate installation of the new structure, and simplify future maintenance work as well as making the gate easier to open and close during periods of drawdown, it was installed 3 feet higher than the old structure. This shallower installation is expected to relieve

pressure on the gate and prevent the screw gate superstructure from being completely submerged. Water management practices will not be affected by the shallower installation of the new structure. At this new elevation, we still have the capability to drain all water from this impoundment except for water in the former tidal creeks which have never been necessary to drain. Hopefully, a properly designed and more adequate structure can be installed in the future under the Bicentennial Land Heritage Program (BLHP).



YACC enrollees and refuge staff installing the replacement water control structure at Stage Island impoundment.

A contract was awarded to Midway Excavators, Inc. in the amount of \$316,195.00, under the BLHP, for improvement of approximately 3.4 miles of refuge road. The work, which commenced on November 24, 1978, consisted of excavation, road realignment, installation of drainage culverts and guard rails where necessary, and ditching. The contract called



for the installation of a gravel subbase to bring the road up to grade for the entire 3.4-mile length. In addition, the first 2.2 miles will have a base consisting of crushed gravel stone, fine graded, and an oil seal coat applied. Hopefully, money for paving this particular section will be allocated in the near future. Should it not, we can expect serious problems with this section since the seal coat alone, without the paving, can be expected to break through within a year or two.



The typical pre-BLHP spring condition of the refuge road which is servicing nearly half a million visitors a year.



During the winter months, the refuge road has historically been overwashed by high tides and ice flows which hinder access by staff and visitors.

The fire of April 5, 1978 which burned our newly-converted YACC building (see Wildfire section) necessitated the start of work on temporary YACC office, work, and storage areas. Three bays in the equipment building at Subheadquarters were chosen for temporary YACC use. Enrollees closed in and poured concrete floors in two bays in the rear of the equipment building to store supplies and equipment previously occupying the main portion of the building to make room for their operations.

Construction of a new YACC work and office building at the northern end of Plum Island, adjacent to refuge headquarters, was started in September.

The YACC enrollees rehabilitated approximately 4,000 linear feet of elevated boardwalk trail at the Hellcat

Swamp Trail. In addition, 500 linear feet of elevated boardwalk leading from Lot #11 to the beach was built. The enrollees also constructed 9 purple martin houses, 64 swallow nest boxes, 8 wood duck nest boxes, and 25 mallard/black duck nesting boxes.

Several new items of equipment were acquired over the year. These included: a John Deere 670 road grader (BLHP funds), which replaced a 1942 Cat model 212; a John Deere 444 frontend loader (BLHP funds), which replaced a 1954 Cat model D4; two Dodge W200 4x4's - one of these for Parker River NWR replaced a 1971 Dodge 4x4 which was completely rusted and unsafe for use. The other new Dodge was acquired without trade-in for use at Rachel Carson NWR. A jeep CJ-5 replaced a 1974 International Scout which had badly rusted; a 16-HP tractor with rotary lawn mower replaced a 1968 7-HP tractor/mower which was inundated with saltwater during the February 6 storm; a "speed gun" radar unit; and a mobile radio on the local police department frequency.



This is our "build-a-truck" program necessitated by a lack of funds to replace vehicles but adequate cyclical maintenance funds for renovating. Shown are Maintenance Mechanic DeSerres (left) and Maintenance Worker Rines (right).

Despite rustproofing measures, most of our vehicles are consumed by rust within a few years and before mileage reaches normal replacement standards.

B. Maintenance

The base station antenna at headquarters was replaced. The 60-foot metal tower had rusted from the inside out causing it to break during high winds.

The refuge road was graded periodically. Eight hundred fifty cubic yards of gravel was hauled and spread on both the main refuge road and the North Pool Dike road.

Three hundred fifty cubic yards of sandy clay fill was hauled and spread to repair sand blowouts on the North and South Pool Dikes. Approximately 2 acres of dike were stabilized by covering with sandy clay fill, seeding, fertilizing with 10-10-10, and mulching.

Buildings 18, 21, and 22, at the Stage Island Bluffs area were taken down and salvaged. The buildings had been covered under a Special Use Permit to Wilbur K. Foster (who just died) in the amount of \$359.00 annually.

Approximately 6,500 linear feet of boardwalk trail was maintained.

C. Wildfire

On April 5, the YACC enrollee building at Subheadquarters, originally a barn, was completely destroyed by fire. The cause of the fire was officially undetermined, but refuge personnel suspect a marijuana cigarette in the Clivus Multrum toilet. This was in spite of inordinate precautions and planning to prevent such an occurrence. In addition to the workshop building, a toilet facility, hand tools, 4,000 board feet of pressure treated lumber, two chain saws, and a table saw were ruined. Property loss in the fire was estimated at \$25,00-\$30,000. YACC group leaders and enrollees had to work out of a bay in the refuge equipment building for the remainder of the year.





All that remained of the YACC building that was destroyed in a fire in early April. Despite repeated reminders, "No Smoking" signs, and a "just in case" butt can, a contraband cigarette in the Clivus Multrum composting toilet was believed to have been the cause. A smoldering fire in the toilet the day before was flooded with several hundred gallons of water and appeared to be out. Apparently, some of the floating material was still smoldering - like a peat or muck fire does. Needless to say, composting toilets, especially those having fiberglass tanks, have some serious limitations.

The Newbury Fire Department, because of its close proximity, has jurisdiction over the entire refuge, even though the refuge lies in three towns (Newbury, Rowley and Ipswich). The Plum Island volunteer Fire Department which is located at the northern end of the island can also respond if needed, especially if there is a fire at the headquarters complex.

The refuge has a mutual verbal agreement to assist the area towns and the State with manpower/equipment during emergencies.

### III. HABITAT MANAGEMENT

#### A. Croplands

Not applicable.

#### B. Grasslands

In April, two miles of dike along North and South pools were fertilized with 10 tons of 10-10-10. This enabled the poor soil of the dikes to continue to support grass and thus keep erosion in check while also providing good quality browse for geese.

Along with the dikes, 88 acres of upland fields at North and South Pools, Stage Island, Cross Farm, and Nelson's Island were mowed in August. This provided an open area of stubble for migrating and overwintering geese.

#### C. Wetlands

In an effort to control the spread of purple loosestrife in the North Pool, approximately 25 acres of wetland meadow were mowed. This introduced emergent has almost no value to wildlife and continues to invade the pools while also contributing detritus to the buildup in channels.





Problems which sometimes come up when mowing purple loosestrife in the impoundments. This stuck OC-6 is being used to pull out a stuck OC-3. Eventually we had to hire a heavy duty tow truck with many feet of cable to pull both vehicles out. Shown from left to right are Maintenance Foreman Tom Stubbs, Maintenance Worker Dan Rines, and Maintenance Mechanic Woody DeSerres.

In September, a local farmer was issued a Special Use Permit to cut 20 acres of salt marsh. Approximately 20 tons of hay were removed. These mowed areas have proven to be more attractive to migratory shorebirds than the dense unmowed areas.

#### D. Forestlands

Over 200 pine and spruce seedlings were planted on Grape Island in an effort to reforest an open field area to provide diverse evergreen cover on this remote portion of the refuge.

E. Other Habitat

On April 1, the Massachusetts Beach Buggy Association planted several thousand sprigs of beach grass to rebuild damaged dunes near Lot #1, Lot #11, and Camp Sea Haven.

F. Wilderness and Special Areas

The Parker River Wilderness Proposal remains quiet while awaiting scheduling by congressional committees.

At present, there is nothing to report on the 150-acre Research Natural Area and the 200-acre Public Use Natural Area.

G. Easements for Waterfowl Management

Nothing to report.

#### IV. WILDLIFE

A. Endangered and/or Threatened Species

For two weeks in the middle of August, a peregrine falcon, trailing plastic streamers from its legs, was sighted on the refuge. Peregrines continued to be seen on various occasions throughout the fall migration period by both refuge staff and bird clubs.

Ospreys were recorded flying over the refuge in April, and merlins were seen in major raptor flights during April and May and again in October and November.

B. Migratory Birds

1. Waterfowl

In comparing waterfowl use days to last year, geese were down 52 percent for the first half of the

year and then averaged 6 percent higher from July to December. From January to March 1978, duck usage was 9 percent higher than in 1977, but then averaged 14 percent lower for the rest of the year. However, black duck use days were up 10 percent during migration and over-wintering periods, while dropping 7 percent during the breeding season. Canada geese peaked at 1,500 individuals in May, up from a February low of 200. Other goose peak observations included 250 brant in April and 550 snow geese in May. A white-fronted goose was observed with a flock of Canada geese in the South pool during September. Black ducks reached 8,000 in December and were at a low of 300 in June. Other ducks sighted in unusual numbers included 50 canvasbacks in the Merrimack River and 10 fulvous tree (whistling) ducks resting on the refuge during fall migration.

Breeding season population counts were down for waterfowl in general, but annual production for most species remained the same. However, black duck production dropped 30 percent. By June, 20 different goose broods had been observed, with a total of 100 goslings. Use of duck nesting boxes remained low, with about 5 percent of the total having hens occupy them. In cooperation with the Patuxent Wildlife Research Center, two eggs were collected from a black duck nest for pesticide residue analysis. Both DDE and PCB were present, but at a level below the mean for these compounds in the 1971 sample.

Post-hunting season banding began in January and continued past the customary February 28 finish. Unusually cold weather and the ongoing reward banding program were the reasons for trapping into March. A total of 313 blacks were banded and 55 of the green-anodized reward bands were used.



It's hard to believe that a duck would be found in such a desolate looking place, but this is our post-hunting season banding site and 313 black ducks were banded here. Shown is Refuge Manager (Trainee) Spencer. Photo was taken in February.

Pre-season banding lasted from July 24 to October 5, with 384 black ducks being banded. During this period, nightlighting by airboat was done on three occasions to band a variety of waterfowl. The annual YCC drive-trapping of molting geese was held in July and resulted in only 10 geese receiving bands. The old geese are apparently getting wise to us.



Annual checking and refilling of duck nest boxes were carried out in February.



A just-transported and released wood duck brood and hen in front of the blind in the North Pool impoundment. This release is the beginning of a project to establish wood duck nesting in the refuge.

## 2. Marsh and Water Birds

During August, 2,000 snowy egrets were observed roosting in Stage Island Pool. Black-crowned night herons, green herons, and glossy ibis were common on the refuge throughout the summer. Of particular note were two least bitterns flushed from among the emergent vegetation of Stage Island Pool in June.

Also of interest were the large flights of cormorants passing over the refuge in October. On one particular day that month, over 5,000 were counted.

3. Shorebirds, Gulls, Terns, and Allied Species

Again this year, common terns nested on the refuge, using mallard-black duck nest boxes and muskrat houses. After six pairs of least terns were observed exhibiting pre-nesting behavior, a section of the beach was fenced off and closed to public use. Over 20 nests were eventually established in this protected area, and, in July, the first young least terns appeared. Three piping plover nests were also found in the protected enclosure.



Recently-hatched least terns blending in exceptionally well with their environment. The depression is a human footprint.



In September, the very rare sighting of a bar-tailed godwit was made in the salt pannes. This West Coast bird was feeding among a flock of 200 Hudsonian godwits.

The refuge again cooperated in the Manomet Shorebird Survey from July 5 until all shorebirds had migrated from the area.

#### 4. Raptors

Snowy owls were a common occurrence in 1978, with sightings in March and then again from October to December. The Ipswich River Audubon Club reported five on the refuge during one weekend in December.

In March, a great horned owl was discovered nesting in a spruce tree on the Bluffs at Stage Island. The nest was deserted in April, and the one egg found within it contained a half-developed embryo.

During a raptor flight in April, merlins and sharp-shinned hawks were observed along with a record 339 kestrels. On May 1, a major accipiter migration occurred, with 200 sharp-shinned hawks, 80 kestrels, 1 Cooper's hawk, 1 merlin, and 2 marsh hawks noted.

Rough-legged hawks and short-eared owls were common throughout December.

#### 5. Other Migratory Birds

To facilitate the nesting of swallows, 14 small ledges were constructed by the YACC enrollees and placed under the eaves of the Subheadquarters buildings. Both cliff and barn swallows readily accepted the ledges and built nests on them, but the cliff swallows were constantly harassed by house sparrows and their nests were often broken open. Tree swallows occupied most of the small bird houses throughout the refuge.

Mourning doves were numerous throughout the winter, especially around the bird feeder at the Hellcat Nature Trail blind.

A loggerhead shrike was reported on the refuge in the spring, and at least two Northern shrikes overwintered here.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

Snow conditions and resultant closure of the refuge road in March enabled the staff to make a partial deer census. Between Cross Farm and Subheadquarters, 7 deer were seen. Two fawns in the summer and a doe in the fall were hit by cars adjacent to the North pool - the first road kills in recent years.

Also during the March deer census, 5 red foxes and tracks of others were seen. In November, a fox observed suffering from mange was destroyed. Another fox exhibiting symptoms of mange was seen in December, indicating the refuge's high population is starting to crash.



Evidence of an outbreak of mange adversely affecting our red fox population as it seems to do every few years.

## 2. Other Mammals

A dead hooded seal was found on the beach in April and turned over to the New England Aquarium, Boston. During the summer, an injured harbor seal was also given to the Aquarium and we were informed that it later died. Both seals were emaciated and carried heavy parasite loads. In November, seals were regularly reported in the ocean opposite Lot #5 and at Emerson's Rocks.

During March, otter tracks and slides were observed in North Pool and Stage Island Pool. Two otters were seen in Stage Island Pool in April, and 3 were reported in the pool during August.



River otter den found in a small island in the North Pool impoundment.

Raccoons do not usually inhabit the island portion of the refuge, but tracks were found in March, and an albinistic raccoon (probably a released pet) was discovered in the trash bin at Lot #1.



Found in our dumpster by a startled visitor, a "partial albino" raccoon, probably dropped off in the refuge after being a pet for someone. It was found to be very tame and was donated to a local high school.



As a result of a squirrel boom on the mainland, squirrels have established themselves on the island. The first recorded observations of gray squirrels on the island were made in October when one was seen running along the Stage Island Pool dike and another on the refuge road one mile north of Subheadquarters. Both red and gray squirrels were then stocked by refuge personnel. Red squirrel tracks and pine cone remnants have been found in the Japanese black pines opposite North Pool. A good overwintering population from the previous year, coupled with a poor food crop, made it possible.



Species Diversity - Two State trappers from the Commonwealth of Massachusetts, Fisheries and Wildlife, releasing a local problem beaver inside the North Pool impoundment after refuge staff found evidence of beaver entering the refuge apparently from overcrowded colonies on the mainland.

### 3. Resident Birds

The refuge ring-necked pheasant population appears in good condition. The birds are often observed along the road and in open fields throughout the refuge.

### 4. Other Animal Life

The first recent record of painted turtles (4 plus) since their introduction many years ago was made this year in the north end of the North Pool. Pickerel frogs, green frogs, and newts were also also introduced to North Pool and Stage Island Pool in August.

"Red tide" closed the clam flats on May 30. They remained closed until August.



Found at Hellcat Swamp, resting on a bayberry bush, this Forester Moth, family Agaristidae - one of our smaller and more inconspicuous species.



## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

A total of 425,316 people visited the refuge during calendar year 1978, compared with 476,089 visits during calendar year 1977. The decrease of approximately 50,000 visits occurred primarily during the months of March, April, and May. The late cold spring this year, in which some ice was still lingering in the impoundments in early May, was the principal reason for this drop in annual visitation.

The refuge was filled to capacity on 28 occasions, requiring temporary closure of the entrance gate. The majority of these closures occurred on weekends. Refuge closure generally occurs late in the morning during our busy season from May 1 to September 30, and we stay closed until 3:00 p.m. We have found this procedure to be the best method to allow refuge activities to "wind down," reducing lines of vehicles, and assuring people of getting into the refuge when they return after 3:00 p.m.

Area teachers again made good use of the refuge for environmental education. Approximately 5,000 students utilized the refuge during May and June, with 8,467 student visits for the entire year. Seven thousand seven hundred ninety environmental education visits were noted for the previous reporting period in calendar year 1977.

The refuge hosted an environmental education workshop, PREP (Parker River Environmental Project), this year on May 13, 1978. This workshop had been held annually for many years until last year, when the PREP planning committee decided not to hold it due to decreasing attendance, particularly by new teachers. However, this year's session had good attendance - 55 teachers who, through field study, were acquainted with Plum

Island's potential as an educational resource. The workshops are coordinated by the Parker River Environmental Project Planning Committee in cooperation with Essex County Agricultural Extension Service and Parker River National Wildlife Refuge staff.



## PREP PLANNING COMMITTEE

Ralph Goodno  
Extension Sea Grant Marine Specialist

Christine Bailey, Coordinator  
Thompson Educational Center  
Thompson's Island, Boston

Joseph Balsama, Science Supervisor  
Swampscott Public Schools

Robert Knights, Science Supervisor  
Pentucket Regional High School

Dave Ryan, Science Department  
Manchester High School

James Connors  
Pentucket Regional Junior High School

Sarah Fraser Robbins  
Director of Education  
Peabody Museum, Salem

Wayne Sylvester  
Pentucket Regional Junior High School

George Gavutis, Manager  
Parker River National Wildlife Refuge  
Newburyport

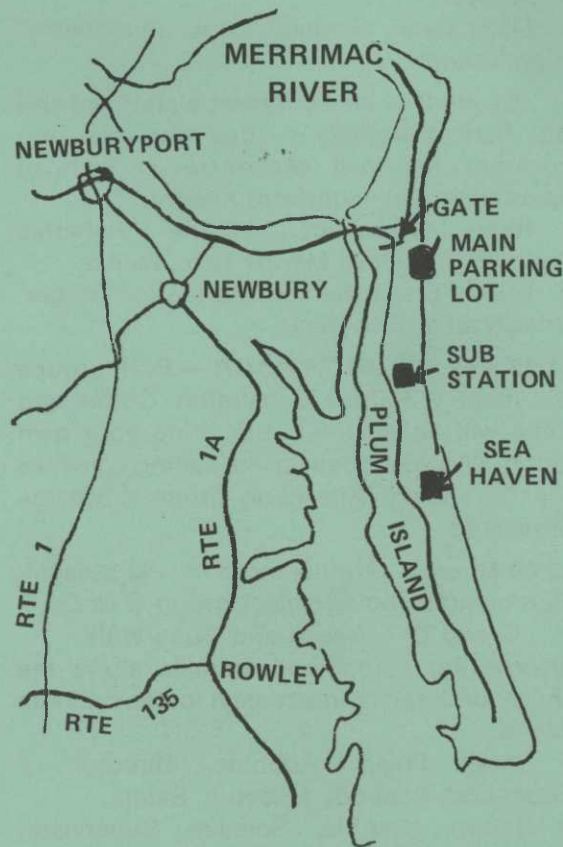
## NATIONAL WILDLIFE REFUGE



U.S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF  
SPORT FISHERIES AND WILDLIFE  
**UNAUTHORIZED ENTRY PROHIBITED**

## WORKSHOP LOCATION

### SALISBURY



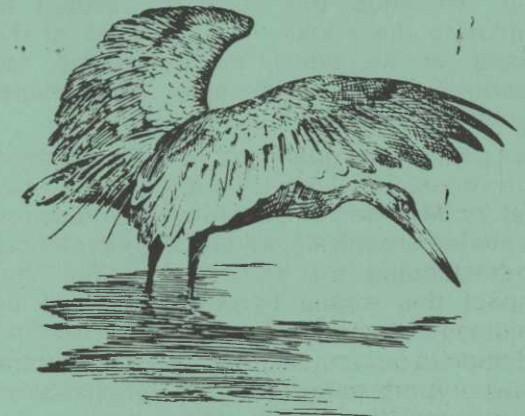
OPEN TO THE PUBLIC  
WITHOUT REGARD TO  
RACE, COLOR,  
OR NATIONAL ORIGIN.

Issued by the Cooperative Extension Service, A.A. Spielman,  
Director, in furtherance of the Acts of May 8, June 30, 1914;  
University of Massachusetts, United States Department of  
Agriculture and County Extension Services cooperating.

## ECOLOGY WORKSHOP

### PARKER RIVER ENVIRONMENTAL PROJECT VII

at  
Plum Island, Newburyport



Saturday, May 13, 1978  
8:30 a.m. — 2:00 p.m.

AN EXTENSION SEA GRANT  
ADVISORY PROGRAM

### Sponsored by:

Cooperative Extension Service  
University of Massachusetts  
U.S. Department of Agriculture  
and  
Country Extension Services Cooperating  
and  
Massachusetts Institute of  
Technology Sea Grant Program  
and  
United States Department of the  
Interior, Fish and Wildlife Service  
Bureau of Sports Fisheries and  
Wildlife



## AN INVITATION

A day in the field, especially on Plum Island where all your senses are atuned to the breaking surf, the vistas from atop wind-beaten dunes, the wheeling ducks as they settle into the salt marsh, and the picturesque black pines dominating the mats of heather and kneehigh barberry, is a day to remember. Our workshop this year is devoted to exploring the nooks and crannies of the island in an effort to understand the interrelations of each plant and animal community.

Our goal is to acquaint you with Plum Island as an educational resource, and to unravel its history. Methods of fieldstudy, identification of marine organisms, wildlife and vegetation, understanding the forces of nature that impact this fragile barrier island will be included in the tour - plus - a new and exciting addition to our annual program - a tour of the Newburyport waterfront with emphasis on fishing activities and its history.

## SUGGESTIONS

- Dress warmly and appropriately for outdoor activities, rain or shine.
- Bring your own lunch, notebook, camera, binoculars, etc. (we'll supply tonic)
- Park your car at main parking lot, lock it, and board busses not later than 9:00 a.m. Private cars must be left at main parking lot.
- Registration is limited to 100 and will be \$5.00 per person.

## PROGRAM

**8:30 a.m. — Meet at Main Parking Lot** (see map). Orientation and organization of morning schedule.

**9:00 a.m. —** Participants leave for morning sessions: Participants should select group A or B. Park and lock car.

**Group A — Marine Environment Transect** - outdoor lab. techniques for studying beaches, dunes, and saltmarshes.

- Joseph Balsama, Swampscott Science Supervisor
- Dave Ryan, Science Dept., Manchester High School

**Group B — Newburyport Waterfront and It's Fishing Activity** - bus tour covering commercial and recreational fishing operations and waterfront history

- Rusty Iwanowicz, Marine Fisheries Biologist, Cat Cove Marine Lab., Salem
- Robert Bruce, Senior Information Officer, Mass Marine Fisheries

**11:00 a.m. — LUNCH HOUR** — Both groups will meet at Refuge Substation. Coffee and tonic will be provided, but bring your own lunch. Slides of commercial fishing activities will be shown. Afternoon program will be organized.

**12:00 Noon** — Groups leave for PM session. Participants should select group C or D

**Group C — Beach and Dune Walk** discovering plants and animals along the shore; understanding coastal forces on Plum Island.

- Sarah Fraser Robbins, Director of Education, Peabody Museum, Salem
- Robert Knights, Science Supervisor, Pentucket Regional High School, West Newbury

**Group D — Plum Island Tour** to familiarize teachers with its history, management, and availability as an educational resource

- George Gavutis, Manager, Parker River National Wildlife Refuge, Plum Island
- D'Arcy VanBokkelen, Newburyport Historian.

**2:00 p.m.** - End of Workshop at Main Parking Lot.

## REGISTRATION

WORKSHOP — PARKER RIVER ENVIRONMENTAL PROJECT VII

SATURDAY, MAY 13, 1978

Attendance limited to 100. Please register by May 10, 1978

**Registration fee — \$5.00.** Make checks payable to **Ecology Workshop Fund**

**Mail to:** Ralph H. Goodno, Cooperative Extension Service, Essex Agricultural and Technical Institute, Hathorne, Massachusetts 01937

Full Name \_\_\_\_\_

Phone \_\_\_\_\_

Address \_\_\_\_\_

Zip \_\_\_\_\_

Affiliation \_\_\_\_\_

On April 1, the Massachusetts Beach Buggy Association (MBBA) planted several thousand sprigs of beach grass on disturbed sites in the Lot #1, Sea Haven, and Lot #11 areas.

On April 30, the annual cleanup of Plum Island was held. The MBBA took over most of the responsibilities for organizing and conducting the cleanup this year since our YACC "labor force" can accomplish litter pickup year-round. Refuge participation in this year's cleanup included providing award patches and burlap trash bags for participants, and making arrangements for the use of town and refuge dump trucks.

Requests for refuge tours were numerous, as usual. Increased staff has allowed for some increased participation in these activities; however, lack of a suitable visitor contact facility still limits our participation. Refuge personnel made a special effort to meet with college classes in ecology and wildlife management to discuss Parker River NWR, refuge management, wildlife, and careers in the wildlife field.

## 2. Off-Refuge

This year, due to a full complement of staff, several talks and slide shows were given to various educational and Service groups throughout the area.

Staff members attended all planning meetings of the Youth Waterfowl Training Program. At the annual banquet in March, a book award was presented by the refuge staff to one volunteer instructor for his participation in the program for three consecutive years.



At the Summer Job Fair held in February at the University of New Hampshire, approximately 100 students were given information on Federal wildlife careers and application procedures. A staff member also attended the Career Day held at Northern Essex Community College, talking for the most part to high school students interested in a career with the Fish and Wildlife Service.

Three meetings of the Essex County League of Sportsmen's Clubs were attended this year. In March, input was given on waterfowl management in relation to regulations and seasons. During the November meeting, the BLHP projects and the closure of the gate at the State end of the island were discussed.

At a March meeting of the Massachusetts Beach Buggy Association, refuge staff discussed the Plum Island cleanup day, beach grass planting locations, and the surf fishing program.

B. Recreation

1. Wildlife-oriented

The refuge's comprehensive open-book hunter exam, first used in 1975, is still being used successfully. The exam undergoes yearly revision and shuffling around of questions to remain consistent with State and Federal laws and to minimize the chances of any cheating. As usual, the deadline for receipt of this exam at the refuge office was 10 days prior to the opening of the Massachusetts Waterfowl Season. Requests for the refuge exam continued to drop as more and more hunters are certified each year. Seven hundred exams were mailed out before this hunting season, as opposed to 1,000 exams in 1977. A total of 391 new persons were certified to hunt on refuge areas in 1978.

The Massachusetts Waterfowl Season was split again this year with the regular duck season dates from October 11-October 28 and December 6-January 6; and goose season dates from October 11-November 10 and December 6-January 13. The second half of the split seasons this year was late, extending into January, largely in response to a demand from a minority of hunters. Use of refuge hunting areas during the second half of the split seasons was somewhat heavier than usual, probably in response to these new later dates that were established.

A minor hunting accident occurred on December 9 at Refuge Hunting Area A. A hunter rested the barrel of his shotgun on his foot while having a coffee/smoke break, and the weapon discharged into his boot. The individual was treated and released at a local hospital with, luckily, only a superficial foot wound.

The 1978 waterfowl season was 61 days in length, with an estimated 825 hunters making a total of 1,235 visits. This is lower than last year's estimated 900 hunters/1,480 visits. Approximately 756 waterfowl were harvested, resulting in a normally low overall success rate of .61 birds/hunter. The following are estimates of the major species taken this year: Canada goose - 106; black duck - 482; green-winged teal - 95; and blue-winged teal - 17. The number of black ducks and Canada geese taken was only slightly down from the previous reporting period, when 197 Canada geese and 527 black ducks were harvested, and this may be related to this lower visitation.

There were three hunts involving 54 youths in this year's Youth Waterfowlers Training Program. Ten Canada geese, 2 snow geese, 9 black ducks, 3 pintail, 3 green-winged teal, 4 mallards, and 1 wood duck were taken by the youth hunters. Results were similar to previous years, with an average of .59 birds/hunter.

Refuge "fruit pickers" had cooler, more comfortable weather than in 1977, with little rain and a fairly good crop of beach plums and cranberries. The season dates were from the first Tuesday after Labor Day until October 31, and the limits were three quarts of each per person per year. The current season dates, in effect for at least three years, have served well to eliminate the heavy Labor Day weekend rush for these limited resources. As often occurs, most of the available beach plums were picked by the harvesters within the first week after Labor Day.

A total of 1,504 fishing permits were issued this year, 458 of them for fishermen with over-the-sand vehicles, and 1,046 for nighttime walk-on fishermen. A total of 1,130 permits were issued in 1977. The increase was due to the "bluefish blitz" of 1978. Bluefish hit the refuge beach "in force" for the first time in several years. Many excellent runs were noted, providing action and excitement for refuge surfcasters. Striped bass fishing also had its high points, with at least one 50-lb. striper taken on the refuge. Also of interest this year was the taking of 2 coho salmon in the surf near the Merrimack River.

The "red tide" or paralytic shellfish poisoning, now an annual occurrence it seems, caused the closing of all area shellfish flats through June and July. The Towns of Newbury and Rowley reopened on August 3, and the Town of Ipswich a few days later. In spite of the closings, 262 permits for special parking and access to clam flats were issued to clammers this year.

Ninety-five special permits were issued to refuge birdwatchers. These permits allow parking at Sub-headquarters, Nelson's Island, and the main access road adjacent to the refuge's "Pines" area. Access to portions of the refuge's North and Forward pool

dikes and to Nelson's Island is also authorized from July 15-September 30 of each year.

A 3-day American Kennel Club-sanctioned retriever field trial, sponsored by the Colonial Retriever Field Trial Club, was held on the refuge on September 29, 30, and October 1. About 100 retrievers, mostly black labs, from all over the Eastern United States participated. Approximately 400 persons were involved in or observed the trials. The Colonial Retriever Field Trial Club also held a small 1-day trial in the spring at the refuge's Nelson's Island area.

## 2. Non-Wildlife-Oriented

Sunbathing, with associated swimming and wading, on the refuge's miles of ocean beach is the primary non-wildlife-oriented recreation activity on the refuge. In 1978, despite the refuge's dusty road, bicycling and jogging were increasingly popular pursuits.

## C. Enforcement

Law enforcement, or Visitor Protection and Control as it is known, continues to be a constant challenge to all who are associated with this phase of operations at Parker River. The refuge again saw an increase in total violations this year, continuing the trend established over the past few years.

During 1978, we began to change our system for disposition of cases. In 1977, we relied heavily on the U.S. Magistrate System for prosecuting over 95 percent of our cases. In 1978, the Magistrate still handled two-thirds of our cases, but processing by the Magistrate ground almost to a halt. This resulted in a large backlog of cases in Federal Court: of 205 cases submitted to the U. S. Magistrate, 168 were still pending at year's end. The older the pending cases get, the more problems are created. Offenders are usually told to expect a contact in a certain period of time and receive none; the chain of events in a case, even when documented, may become co-mingled with cases of a similar nature; the officer may be transferred to a

new station; the defendant's right to a speedy trial is lessened; and, finally, if the cases hang fire for too long, we find ourselves into a new season with more cases and an even bigger backlog. This situation also leads to reporting problems with the Division of Law Enforcement.

In contrast, our turnover time for cases in State Court is much better, averaging 4-6 weeks/case. The ease of accessibility and simplicity of the local court, combined with a real understanding of our problems by local officials makes the use of State Court a viable alternative to Federal Magistrate Court. Of 89 cases prosecuted in State Court, only 14 are still pending at this time. Two of these cases are on appeal and the rest are pending due to non-payment of fines.

The future looks considerably better for disposition of our cases in 1979. The enactment of a Forfeiture of Collateral System for certain Federal offenses in October of 1978 should clear up many of the problems we have had with the court system. The establishment of uniform fines for offenses, combined with a system whereby offenders may pay by mail, should lead to quick disposition of cases and decreased travel and court appearance time by law enforcement personnel. In addition, this system will lead to continuity in enforcement within the different town jurisdictions on the refuge. The Forfeiture of Collateral System is still new and a few "bugs" need to be worked out, but early returns demonstrate that this system should be an improvement over the old one.

Eight hundred seventy-nine offenses were documented during the reporting period, with two-thirds (584) falling into the motor vehicle category. This is an increase of 239 offenses over the same period in 1977. Illegal parking, motor vehicle trespass and speeding accounted for nearly all of the increases. The number of parking tickets issued (272) doubled the number



issued last year. We continued to rely heavily on the use of Town Parking Tickets to save time and allow us to issue a citation without actually contacting the operator of a vehicle. Also, these tickets are rarely challenged and ease our subsequent paperwork load to some extent.

The increase in motor vehicle offenses may also be attributed to increased enforcement staff (now two full-time positions), patrols and the use of our radar gun purchased in early 1978. This expanded use of radar has not only resulted in increased apprehensions but has helped to generally slow down traffic - especially in high public use areas such as Lot #1 and the Hellcat Swamp Nature Trail.

Motor vehicle trespass violations nearly doubled in 1978. A majority of these cases involved entering after hours and driving on the beach without a fishing permit. Joy-riding on the beach and dunes continues to be a problem, but increased patrols and excellent cooperation from bona fide fishermen are resulting in more apprehensions of the violators. The higher fines (\$50.00 vs. \$15.00-old system) for this offense under the FOC System may also prove to be a valid deterrent to this type of illegal activity in the long run.

General public use violations decreased slightly over the same period in 1977. Controlled substance violations remained about the same, while alcoholic beverage violations and nudism both decreased significantly. General trespass violations showed the greatest increase in this category. Documented breaking and entering of motor vehicles apprehensions increased in 1978 due primarily to increased efforts to solve this problem on the part of all refuge personnel. Cooperation was received from the Newbury Police Department, U. S. Fish and Wildlife Service Special Agents, YACC personnel, refuge staff, and members of the public.

These efforts resulted in the apprehension of one crew we believe has been working in the refuge for at least two years. This case resulted in the recovery of stolen property and a subsequent arrest of the alleged offenders. The case was still pending in State Court at year's end.

In another case, an off-duty Army Lieutenant contributed significantly to the apprehension and conviction of a man (see news article following) who admitted breaking and entering into at least four cars on that particular day. The thief was convicted of possession of burglary tools and larceny and sentenced to one year in jail. The case is currently under appeal. This problem (B&E) will continue to need attention in the future, but we feel we have a better grasp on the problem than we have had in past years.

*15-1343*  
The Daily News

*MB 702*  
Monday, August 21, 1978

## Brookline man arrested at Wildlife Refuge; charged with larceny

NEWBURY — A 29-year-old suspension went into effect Aug. Brookline man was arrested at 16.

4:39 p.m. Friday at the Parker River Wildlife Refuge and charged with larceny and possession of burglary tools. Robert Decelle, 119 Cherry Street, Exeter, N.H. was arrested at 1:20 a.m. Saturday by officer Dana Pagley on Route 1 and charged with driving a motor vehicle while under the influence of alcohol.

Ronald Ouellette, 1870 Beacon Street, Brookline was arrested by refuge officials and turned over to Newbury Police Chief John Curran for allegedly breaking into motor vehicles at the refuge. He will be arraigned Tuesday in Newburyport District Court.

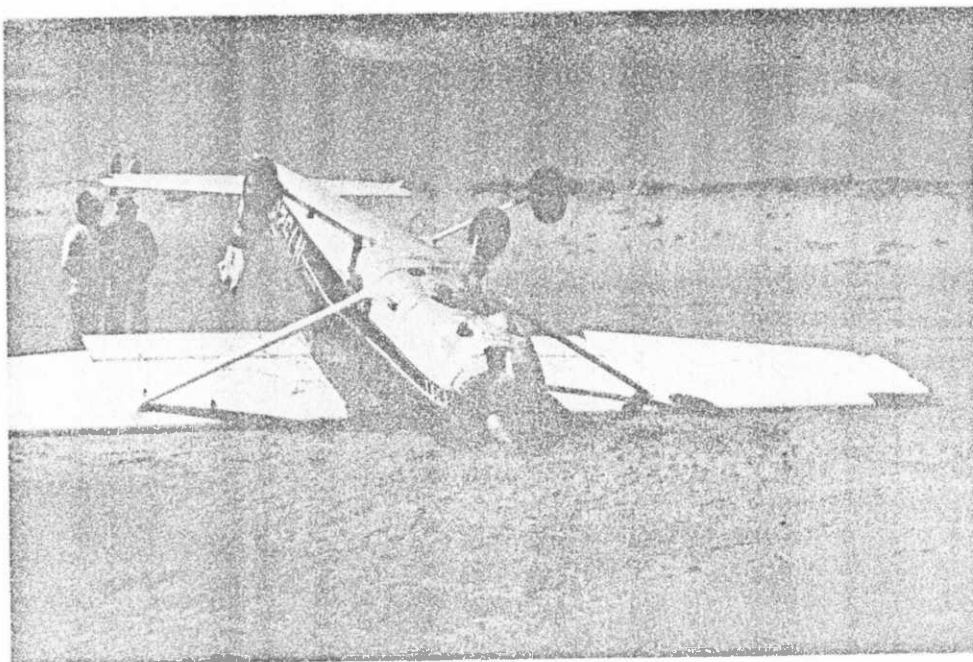
Police are investigating a reported breaking and entering at the residence of William B. Foley, Central Street, sometime Saturday.

He was scheduled to be arraigned in Newburyport District Court Monday morning. According to reports, the break was discovered at 9:17 a.m. Saturday by a caretaker of the property. Reported stolen were minor articles, including a lamp.

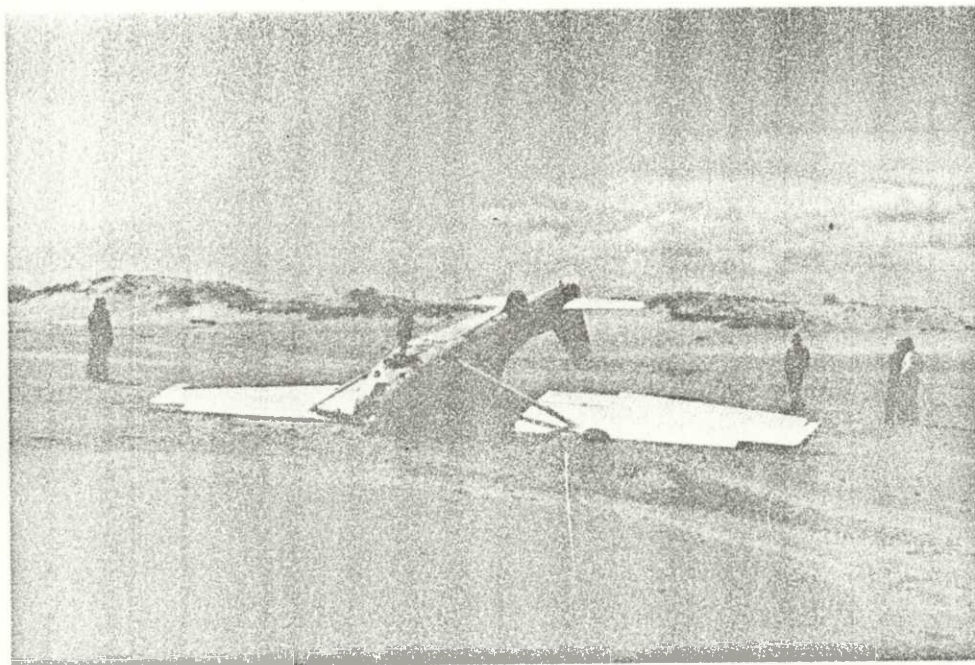
In other action, police were notified by the Registry of Motor Vehicles that the license of Phillip J. Boyd, 22, 8 Maple Terrace, has been suspended for 30 days. Boyd has been stopped three times for speeding within one year, police said. The Sgt. George Riel and officer Dana Pagley investigated.

Thirteen aircraft violations were documented in 1978, most involving low flights. Countless others were observed but could not be documented due to various circumstances. Low flights can be a problem, especially in summer when air traffic is on the increase. One such incident, involving a plane carrying advertising banners, nearly went to court but an agreement was reached with the owner and the plane steered clear of the refuge for the rest of the summer.

One accident occurred when a plane tried to land on the refuge beach. The landing went well until the wheels started to drag in the loose sand and the plane flipped over. Luckily, the plane was only going 10-15 mph. and there were no injuries.



Moral of the story . . . "Don't try to land on our beach!"



A prime example of learning the hard way!



A too frequent problem we have  
with the refuge entrance gate  
house - vandalism.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

Parker River National Wildlife Refuge  
Newburyport, Massachusetts 01950

AIRPLANE VIOLATION FORM

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ OBSERVER(S): \_\_\_\_\_

PLANE REG.# \_\_\_\_\_ # ENGINES \_\_\_\_\_ COLOR(S) \_\_\_\_\_

WING TYPES: Single ☐ High ☐ Low ☐ Bi-plane ☐ Rotating ☐ Fixed ☐

ALTITUDE: \_\_\_\_\_ DIRECTION OF TRAVEL: From \_\_\_\_\_ to \_\_\_\_\_

LOCATION (First Spotted): \_\_\_\_\_

HOW WAS # OBSERVED? Naked Eye ☐ Binoculars ☐

DID PLANE FLY WITHIN 500 FT. OR DIRECTLY OVER PEOPLE? \_\_\_\_\_

DID PLANE DISTURB ANY WILDLIFE? \_\_\_\_\_

OTHER OBSERVATIONS PERTAINING TO THIS INCIDENT. \_\_\_\_\_





Hunting violations were up slightly from 1977, probably due to increased enforcement. Our hunter examination/certification program has eliminated many of the violations from refuge hunting areas. Most of our cases this year were generated at the State area on the southern tip of the island. The situation in this location improved somewhat over previous years with the installation of a new gate by the State which closed off the road and the second State parking lot. This limited the number of parking spaces available to fifteen, and hence limited the number of hunters. This resulted in hunters being turned away on only three occasions throughout the entire season and greatly increased the quality of the hunting experience at the State end. An additional effect of the gate closure has been to help control motor vehicle trespass violations on the beach and dunes at the south end.

Three hundred forty-four cases were submitted to State and Federal Court for prosecution. Two hundred five of these were presented to Federal Magistrate Court, 89 to State Court, and 50 via the new FOC System. Of those cases brought to a conclusion, 70 percent resulted in guilty findings, 4.5 percent not guilty, 4.5 percent dismissed by court), and 21 percent were continued without a finding. This last category (continued without a finding) was used by the court when sufficient facts for a finding exist but, for various reasons, the court does not wish to impose a guilty finding on a person's record. This finding is generally accompanied by substantial costs of court - often \$100.00 or more.

Fines for the year totaled \$4,935.00, not including local fines for parking tickets. This total would have been much greater had all our cases been heard on a timely basis. Some individuals paid fines of over \$200.00 and a \$100.00 fine was not uncommon in State Court.

Throughout the year, many verbal warnings were issued for offenses that occurred on the refuge. In addition,

41 official warning letters were sent. Forty complaints were received. Seizures were made in controlled substance and alcoholic beverage offenses, late shooting, lead shot, and hunting out of season cases. Cooperation and assistance were given to and received from: the Alcohol, Tobacco and Firearms Bureau, U. S. Coast Guard, Drug Enforcement Administration, Immigration and Naturalization Service, Federal Aviation Administration, U. S. Secret Service, as well as State and local law enforcement agencies.

The presence of a uniformed officer and marked patrol vehicle at the entrance gate when we re-open on busy weekends have been very effective in reducing potential problems, resulting in some vehicles turning away before they get to the gate.

Adequate posting of speed limits, open and closed areas, permitted activities, and refuge visiting hours have resulted in an informed compliance by a majority of refuge visitors.

During 1978, four local police officers were conveyed deputy authority by the Service. This occurred after the "busy" season but has already proved a help to the individual refuge officer, especially when he works alone at night. This action, combined with the purchase of radios on the local police frequency, which put us in contact with all the local police departments, will enable us to do our job more effectively and provide us with an all-important backup officer, with authority on the whole refuge, who is able to respond in a short period of time. This added assistance, combined with the increased training of our Assistant Refuge Managers in law enforcement duties, will - in the long run - enable us to control specific problems on the refuge and further enhance the experience of our visitors. Our favorable, or unfavorable location - depending on one's point of view (being 50 minutes from approximately six million people, will most certainly present a continuing challenge at this refuge in the field of public use enforcement.

MOTOR VEHICLE VIOLATIONS

Speeding	160
Operating to endanger	02
Motor vehicle trespass	82
No license in possession	11
No registration in possession	16
No state inspection/sticker	06
Illegal parking (Federal)	12
Illegal parking Ipswich	158
Illegal parking Newbury	93
Illegal parking Rowley	09
Driving under influence of alcohol	03
Failure to stop for police officer	03
No helmet (motorcycle)	09
Impeded operation	01
Unregistered motor vehicle	07
Improper Operation	04
Uninsured motor vehicle	01
Failure to keep to right-of-way	02
Passing without clear view	01
No eye gear - motorcycle	02
Carrying passenger without helmet	01
Carrying passenger on learner's permit	<u>01</u>
Total	584

GENERAL PUBLIC USE VIOLATIONS

Possession of controlled substances	87
Possession of alcoholic beverages	58
Intoxicated	02
Possession of a dangerous weapon	02
Trespass	30
Nudism	19
Pet violations	07
Refusal to comply with request	02
Illegal clamming	06
Harassing wildlife	02
Littering	06
Destroy/remove vegetation	01
Disorderly conduct	08
Fire in dunes	08
Destruction of property	02
Public fornication	02
Contempt of court	01
Breaking and entering	07
Minor in possession of alcohol	01
Launching/landing boat	06
Airplane	01
Horses on refuge	02
Impersonating a police officer	01
Operating refuge backhoe without authorization	01
Total	262

HUNTING VIOLATIONS

Unplugged gun	04
Protected species	03
Hunting in closed area	03
Early shooting	02
Late shooting	06
No State stamp	01
Closed season	04
Unsigned stamps	07
Possession of lead shot	03
Total	33

OTHERS

Nol Pros. by U.S. Attorney	01
----------------------------	----



## VI. OTHER ITEMS

### A. Field Investigations

The following studies were being conducted on the refuge by researchers under Special Use Permits:

SUP 5-PRR-77-12 - The Vascular Flora of Plum Island, Essex Co., Massachusetts, with an Analysis of the Impact of Pedestrian Traffic on the Coastal Dune Vegetation, Mark J. McDonnell, Department of Botany and Plant Pathology, University of New Hampshire. Field work was completed in 1978. A final report of results expected during calendar year 1979.

SUP 5-PRR-78-2 - "Studies of Productivity of Saltmarsh Vegetation and Algae (Cladophora) and Population Study of Amphipod Gammarus mueronatus and Associated Invertebrate Fauna in Ponds Supporting Cladophora Growth." This special use permit was issued to Dr. Ernest Ruber, Department of Biology, Northeastern University. Several graduate students are working under his direction. A progress report has been received and the permit has been renewed to continue these studies.

SUP 5-PRR-78-11 - A Study of Denitrification Rates Obtainable in Salt Marsh Sediments, Dr. Norton H. Nickerson, Tufts University. This study is part of a Master's degree program by Ms. Catherine Cook. A final report will be submitted in calendar year 1979.

SUP 5-PRR-78-13 - A Study of Possible Factors Influencing the Abundance of Invertebrate Fauna in Sandy Beaches, Drs. Robert A. Croker and Edward B. Hatfield, Jackson Estuarine Lab, Adams Point, Durham, New Hampshire. Samples were taken in 1978. The permit will be renewed to continue the study for another year.

In addition to the above activities, the refuge investigated mosquito populations in the salt marshes on the

Parker River and Rachel Carson National Wildlife Refuges. This was a follow-up to a formal study done in the early 1960's. Many of the ponds studied at Parker River were created by blasting in the salt marsh. It had been observed that these potholes supported populations of mosquito-eating fish and that mosquito populations were significantly reduced. Results of this follow-up has indicated that the areas in the vicinity of the potholes are still relatively free of mosquito breeding.

B. Cooperative Programs

Young Adult Conservation Corps

The Young Adult Conservation Corps camp which was established during the latter part of 1977 at Parker River National Wildlife Refuge was utilized for a variety of tasks during 1978. A few of the labor-intensive projects that YACC's completed included assistance with winter post-season banding, building salvage, trail maintenance and improvement, nestbox construction, and maintenance, and assistance with public use at the entrance gate.

The YACC program got off to a slow start due to inclement weather for outdoor work in the winter and a shortage of vehicles, materials and tools in the beginning. The initial work of the camp was directed toward renovating a former storage building at Subheadquarters as their work area. Unfortunately, this building was completely destroyed by a fire in March and the YACC operation had to crowd into a storage bay of the cement block equipment storage building.

The YACC camp reached the full enrollment level of 20 during the spring and summer months. Adequate funds were available in the program to provide supplies and materials to keep work projects going

during the spring and summer.

Around the end of fiscal year 1978, the funding for the program was severely restricted and hiring freezes were put into effect. The YACC enrollees had sufficient materials and work projects to keep most of the work force occupied during the latter part of calendar year 1978. The YACC manpower proved to be very helpful during the hunting season by assisting in collecting black duck and mallard gizzards. They were able to cover several hunter access points in the refuge vicinity.

Without sufficient funding for work projects, this program will be somewhat limited. The refuge cannot afford to buy materials except for very high priority type projects.

#### Youth Conservation Corps

The Youth Conservation Corps camp started operations on June 26, with 20 enrollees. As in the past summers, the YCC's were involved in a variety of work projects: maintaining trails, nesting structures, brush clearing, public use assistance and mosquito population surveys. During the summer, there was adequate work for both the YACC and YCC programs. The YCC's were especially involved with environmentally-oriented projects such as the mosquito population survey in salt marsh pot-holes, biological surveys on Grape Island, and Purple Loosestrife control. The YCC's also set up a spike camp at Rachel Carson Refuge improving the nature trail and removing abandoned unsafe structures.

The YCC's had erected a wind-powered electrical generating system in 1977 at the refuge Subheadquarters. The windplant was badly damaged during the 1978-79 winter. A subsequent inspection of the unit revealed a faulty bearing. The vendor agreed to replace the unit with another of equal quality or a better unit for the difference in price. The YCC camp was authorized to trade in the defective unit for an Aero Power

SL 1000, 1,000-watt unit. The unit did not arrive until toward the end of the summer. It was installed on the tower at Subheadquarters but was not put into operation. Camp Director Mal Fraser and Assistant Refuge Manager Al Zelle hooked up the electrical connections after the camp closed to get the unit into operation. As of the end of 1978, this unit was not producing power at the end of the lead-in line. Plans are to trouble-shoot this problem in the spring of 1979.

A Parker River Environmental Workshop (PREP) was held on May 13. A group of approximately 55 teachers and 10 college students assembled at Parking Lot #1. A beach transect exercise was conducted in the morning. Refuge Manager Gavutis presented a slide talk about the refuge to the group at noon. This was followed by a choice of activities in the afternoon. Rusty Iwanowicz, Marine Fisheries Biologist, Cat Cove Marine Lab in Salem, conducted a tour of the Merrimack River waterfront. Mr. Robert Knights, Science Supervisor at Pentucket Regional High School, West Newbury, Mass. conducted a program about the geology of the coastal area and Sarah Robbins, Director of Education, Peabody Museum, Salem, Mass. conducted a beach and dune walk.

A total of 131 black duck gizzards and 9 mallard gizzards were collected from hunters during the waterfowl hunting season. One black duck gizzard contained five lead pellets; the remainder of the gizzards contained no lead or steel shot.

A total of 29 virginia and 51 sora rails, taken near the refuge, were sent to Patuxent Wildlife Research Center for lead analysis. The results of collections from 1975 to 1978 are summarized in the following tables.



Table 1. Results of 1978 Massachusetts Rail Collection Examination  
(Number of birds with ingested shot in parentheses)

DATE	SPECIES	AM	AF	IM	IF	IU	TOTAL
1 Sep	Sora			1	2		3
	Virginia	1		3	3	1	8
4 to 8 Sep	Sora		1	3	8	1	13
	Virginia			1	2	1(1)	4(1)
13 Sep	Sora		1	6	8		15
	Virginia		1	3	3		7
14 Sep	Sora				3		3
	Virginia		1	1	3		5
16 Sep	Sora	1(1)		2	5(1)		8(2)
	Virginia		1	1			2
20 Sep	Sora			3	5	1	9
	Virginia			1	2		3
TOTAL	Sora	1(1)	2	15	31(1)	2	51(2)
	Virginia	1	3	10	13	2(1)	29(1)

Table 2. Summary of 1975-1978 Massachusetts Rail Collection Data

Species	Year	Number of birds examined	Percent with ingested shot	Age ratio (I : A)	Immature sex ratio (M : F)
Sora	1975	103	2.9	16.0	0.78
	1976	100	5.0	23.2	0.38
	1977	36	5.7	11.0	0.72
	1978	51	3.9	16.0	0.48
Virginia	1975	87	0	5.1	0.51
	1976	50	2.0	2.7	0.45
	1977	34	2.9	15.0	0.33
	1978	29	3.4	6.2	0.77

Refuge personnel attended meetings of the Plum Island State Reservation Advisory Committee during the year. This advisory committee makes recommendations to the State regarding the management of the Sandy Point State Park which adjoins the refuge. With our encouragement as a de facto member, the committee recommended that gates be installed and that one of the two parking lots be closed from the opening of hunting season until April. This action aroused opposition among sportsmen. A special meeting was held in December to hear arguments for opening the gate to the second parking lot. After hearing the pros and cons on this subject, a vote was taken of the members of the advisory committee. The committee reversed its earlier decision and voted by a narrow margin of one vote to open the gate. However, the State (Division of Forests and Parks) decided to keep the gate closed as originally planned. The first lot was adequate to accommodate fifteen cars. This limitation has helped to reduce the severity of crowding and violations. A firing line situation usually develops along the refuge boundary. With the reduction of hunter density and the restriction of access, these abuses were reduced. Also, there was no damage to the fragile dunes such as occurred in the past from 4-wheel drive vehicle use.

C. Items of Interest

Bicentennial Land Heritage Program

On August 24, a public meeting about refuge Bicentennial Land Heritage Program improvements was held at the Newbury Round School. A BLHP leaflet was handed out to the 20 persons attending. Along with the refuge staff, Messrs. Gerry Atwell, Area Office, Marvin Armstrong and Tom McAndrews, Regional Office (BLHP), also attended.

November 6, Refuge Manager Gavutis and refuge staff met with Anne Donahue (CGS), Messrs. Petrick and Winslow (EN) and representatives of Midway Excavators to discuss the refuge road rehabilitation project.

December 7, Refuge Manager Gavutis met with Dick Forster, Massachusetts Audubon Society; Tom McAndrews, Regional BLHP Coordinator; John Grugan and Rod Gaskell, Mass. Attorney General's Office; and Les Smith and Gary Clayton, Mass. Office of Coastal Zone Management to discuss BLHP projects.

On December 28, Refuge Manager Gavutis attended a meeting in the Regional Office with Jonathan Woodman Associates, Architects, regarding the design of the new refuge headquarters complex.

#### Oil Spill-Related Activities

From late January to February 2, Maintenance Worker Dearborn assisted New Hampshire personnel in responding to an oil spill in Great Bay.

On April 1, Refuge Manager Gavutis inspected a spill of #2 deisel fuel in the Cape Cod Canal. No birdlife appeared to have been affected.

From September 12-13, Refuge Manager Gavutis attended the Oil Spill Field Coordinators' meeting held at White River Junction, Vermont.

On December 27, Refuge Manager Gavutis attended a coordination meeting at the Regional Office with Allen Jackson, Regional Office Oil Spill Coordinator, Mass. Audubon, the Mass. Fisheries and Wildlife Department, and Mass. Society for the prevention of Cruelty to Animals personnel with regard to oil spills.

#### Special Details

On March 15 and 16, Visitor Assistance and Safety Specialist Grover was detailed to Missisquoi National Wildlife Refuge to "scout" the area with Manager O'Shea, preparatory to assisting in stopping the illegal shooting of muskrats on the refuge during spring breakup.

From April 13-15, Visitor Assistance and Safety Specialist Grover was detailed to Missisquoi NWR to assist in preventing the illegal shooting of muskrats on the refuge.

From October 3-8, Visitor Assistance and Safety Specialist Grover was detailed to Missisquoi NWR to provide assistance during the first week of the Vermont Waterfowl Hunting Season.

Visitor Assistance and Safety Specialists Grover and Leger and Assistant Manager Mills, Rachel Carson, were detailed to the Great Swamp NWR Deer Hunt from December 7-10.

Assistant Manager Maurice Mills was detailed on a nightlighting banding assignment in New Brunswick, Canada, from July 19 to August 23.

#### Training

Assistant Manager Zelley and Visitor Protection and Control Specialist Leger attended a three-week course in law enforcement at the Federal Law Enforcement Training Center, Glynco, Georgia, from January 10 - February 1.

Assistant Manager (Trainee) Ulrich attended the Refuge Manager Training Academy at Beckley, West Virginia, from January 15 to February 11.

Assistant Manager Mills attended the Refuge Manager Training Academy from February 26 to March 24.

From March 21-24, Assistant Manager Zelley and Refuge Clerks Kay Garrett and Clara Bell attended the New England Area Administrative Workshop in Durham, New Hampshire.

Assistant Managers Zelley, Ulrich, Spencer and Bauer, Visitor Protection and Control Specialist Leger and YACC enrollees received first responder and CPR training in June.

From September 19-21, Assistant Manager Zelle attended the Regional Environmental Education Workshop at Concord, Massachusetts.

#### Personnel Actions

Assistant Manager David Beall transferred to the Refuge Manager position at Great Meadows National Wildlife Refuge on January 15.

Daniel Rines entered on duty January 15 as a Maintenance Worker (WG-5), Permanent part-time.

Douglas Spencer entered on duty as an Assistant Refuge Manager (Trainee) (GS-5) on April 10.

Michael Bauer entered on duty as an Assistant Refuge Manager (Trainee) (GS-5) on April 24.

Assistant Refuge Manager (Trainee) Jeffrey Ulrich was promoted to GS-7 Assistant Manager effective June 4.

YACC Group Leader Meg Gilmore resigned to get married in July.

On October 22, Robert Snyder was employed on a 700-hr. appointment with the YACC as a carpenter to supervise construction of a new building to house the Parker River YACC operations.

#### Miscellaneous Items

Area Manager Charles Maloy toured Rachel Carson and Parker River NWR's on April 11 and 12.

Refuge Manager Gavutis attended the Regional Conference in Harrisburg, Pennsylvania, from May 14-20.

Refuge Manager Gavutis and Assistant Manager Mills attended the Barrier Beach Management Workshop on Cape Cod from May 21-23.



Two young students from the Rupert A. Nock Middle School, Newburyport, Mass., spent the day, June 2, at the refuge observing the work of Assistant Refuge Managers as part of the school's Career Exploration Program.

Farrell Graham, a free lance photographer, was given a tour of the refuge by Assistant Managers Zelle and Bauer on June 8, pursuant to a story for the National Geographic Magazine.

Refuge Manager Gavutis met with Tom Mountain, Refuge Manager at Missisquoi NWR, on October 8-9 to review that station's hunting program.

On December 19, Manager Gavutis and Assistant Manager Zelle met with Area Office Task Force Member Sheila Minor at the Concord, N. H. Area Office.

On December 1, Visitor Protection and Control Specialist Anthony Leger relinquished his single status to marry Jayle Younger, a former YCC Group Leader.

D. Safety

A total of 14 man days were lost during the year due to a work-related injury. Refuge Manager Gavutis slipped on ice in the refuge parking lot and broke his leg on January 23. Chester Dearborn (Laborer) was involved in an accident when the old refuge dump truck overturned while unloading some fill material at the Stage Island Dike. No apparent significant injuries were sustained in this accident and only minor damage occurred to the truck. A safety meeting was held following the accident to insure that it would not recur.

On August 11, 1978, an accident occurred involving a YCC Group Aid driving a government vehicle and a refuge visitor. The visitor was struck by the van

mirror when the government van turned to avoid hitting another oncoming vehicle. Only minor injuries to the visitor and the child she was carrying in her arms resulted. A safety meeting was held and the aide's government license was suspended for the remainder of the year.

On August 15, an accident involving a Camp Sea Haven employee occurred on the refuge. The employee was returning from a "night on the town" and flipped his van over on the refuge road. The vehicle was a total wreck. This accident emphasizes a continuing problem we are having with Camp Sea Haven employees who seem to have a lack of respect for refuge rules. This accident was investigated by the Newbury Police Department.

On October 31, a refuge visitor stepped in a hole in the boardwalk on the Hellcat Swamp Nature Trail, resulting in torn ligaments in her left knee. A safety committee meeting was held and corrective action included regular inspection of the boardwalk, with closure of any unsafe sections.

Safety meetings were held in conjunction with regular staff meetings and after each accident/incident. Other safety meetings were held before major work projects, when summer seasonals entered on duty, and at the beginning of YCC camp.

E. Credit

## Section:

I-A, B, C; II-C; VI-C, E -  
Douglas Spencer

I-D; VI-A, B - Robert Zelley

II-A, B - Thomas Stubbs

III; IV; V-A - Michael Bauer

V-A, B - Jeffrey Ulrich

V-C; VI-D - Anthony Leger

## Typing:

Clara Bell and Kay Garrett

## Photographs:

Credit designated under each photo.

## Editing:

George W. Gavutis, Jr.

RACHEL CARSON

RACHEL CARSON NATIONAL WILDLIFE REFUGE

WELLS, MAINE



Permanent Personnel

George W. Gavutis, Jr., Refuge Manager (GS-12)  
Maurice Mills, Jr., Assistant Refuge Manager (GS-7)

Young Adult Conservation Corps

Seth Mott, York, Maine, Group Leader (GS-5)

Enrollees Assigned to Rachel Carson NWR

Laurie R. Brown, Kennebunk, Maine

Patrick Hayes, Wells, Maine

Robert Hutchins, Kennebunk, Maine

Brian St. Savior, Limerick, Maine

## I. GENERAL

### A. Introduction

Rachel Carson National Wildlife Refuge is located along the southern Maine coast and is administered as a satellite of the Parker River Refuge in Newburyport, Massachusetts. When completely acquired, it will consist of approximately 4,054 acres of salt marsh and upland buffer in 9 units between Kittery and Portland.

Initially established in 1966 as the Coastal Maine National Wildlife Refuge, it was renamed and dedicated on June 27, 1970 in honor of Miss Rachel Carson, the renowned author and environmentalist who spent much of her life on the Maine Coast.

The 9 refuge divisions lie in 11 different towns and villages. The surrounding areas are primarily summer resorts with tourism and fishing the major industries.

The primary objectives of the refuge are to protect the valuable southern Maine coastal marshes from alteration and development, and to provide migration and wintering habitat for waterfowl, especially the black duck.

### B. Climatic and Habitat Conditions

The year's weather was highlighted by two winter storms on January 9 and February 6. Exceptionally strong onshore winds combined with above normal high tides and heavy snowfall caused severe coastal flooding which resulted in over \$26 million in damages to the southern Maine coast.

The southern Maine coastal area was proclaimed a disaster area following the February 6 storm. National Guard units moved in with heavy equipment to clear roads of gravel, sand, snow and ice. As a result of the storm and subsequent cleanup operations, several several acres of salt marsh were covered with rock,

sand, and miscellaneous debris from damaged beach houses. Several areas are still covered with up to twelve inches of rock and sand which has killed the existing vegetation and prevented its regrowth.

Temperatures ranged from a high of 96° F. in July to a low of -14° in February. The mean annual temperature was 44.2°F; the long range norm is 45.5°. The total annual precipitation of 36.47 inches was slightly below the long range average of 42.22 inches.

C. Land Acquisition

1. Fee Title

At the beginning of the report period, Rachel Carson totaled 2,064.82 acres. A 3.04-acre donation in the Spurwink River Division increased the total to 2,067.86 acres.

A total of 4,054.10 acres has been approved for acquisition by the Migratory Bird Conservation Commission. The status of each of the nine divisions is shown below.

<u>Division Name</u>	<u>Acreage as of 12/31/78</u>	<u>Total Projected Acreage</u>	<u>% Acquired as of 12/31/78</u>
Brave Boat Harbor	411.96*	419.2	98%
Moody	299.37	339.5	88%
Lower Wells	542.96	1,203.5	45%
Upper Wells	185.2	294.2	63%
Mousam River	78.5	272.3	29%
Goose Rocks	317.11	652.0	49%
Little River	105.10	244.9	43%
Goosefare Brook	.82	189.5	1%
Spurwink River	<u>126.84</u>	<u>439.0</u>	<u>29%</u>
	2,067.86	4,054.1	50%

\* Includes a 38.4-acre conservation easement.

The need for a more active acquisition program is evidenced by the continual loss of salt marsh and associated upland buffer to development - within the approved refuge boundary. The demand for more housing in the towns which encompass the refuge is rapidly increasing. The installation of a sewer system in wells has turned previously unbuildable lots into prime house sites.

The sums of 278.74 and 2,975.04 were paid to Cumberland and York Counties, respectively, under the Refuge Revenue Sharing Act.

## 2. Easements

Nothing to report.

3. Other

Nothing to report.

D. System Status1. Objectives

Rachel Carson has its own Objectives which were approved in 1972 but they are outdated and in need of considerable revision. Since this station was not permanently staffed until December 1977, the 1972 Objectives were based largely on assumptions without benefit of first-hand knowledge or information of the area. Consequently, there are potentials for activities not realized during the formulation of the Objectives.

Commencing in January, outputs for Rachel Carson were reported separately from Parker River.

2. Funding

Rachel Carson does not have a separate budget and is dependent on Parker River for funding. The Assistant Refuge Manager position (GS-7/9) was allotted under the Bicentennial Land Heritage Program for FY 1978.

II. CONSTRUCTION AND MAINTENANCEA. Construction

Renovations of a summer cottage on Tract 214 of the Lower Wells Division, which were begun in December 1977, were completed this spring by the Parker River Maintenance Staff and YACC. The building will serve as a temporary office/residence. A \$50,000 BLHP rehabilitation package for this structure has been approved for the second half of FY 1979.



The Parker River YCC constructed a short stretch of boardwalk over the salt marsh at the Upper Wells Dedication Site Trail. The YCC also removed an obsolete building from Tract 149 of the Lower Wells Division.

The bronze dedication plaque came loose from the granite boulder it rests in (it was never properly set). A concerned visitor advised refuge staff who removed the plaque and took it to a local expert who permanently mounted and sealed it in the granite boulder.



1978

Maurice Mills

This summer cottage on Drake's Island Road in Wells was partially renovated to serve as an interim office/residence. The hay bales are somewhat unsightly but highly effective in keeping this drafty building warm during the cold Maine winters.

B. Maintenance

Nothing to report.

C. Wildfire

There were no wildfires on the refuge during 1978.

III. HABITAT MANAGEMENT

A. Croplands

Not applicable.

B. Grasslands

Not applicable.

C. Wetlands

Mosquito control on refuge salt marshes remained a concern of the Towns of Wells and Scarborough. Since 1976, the townspeople of Wells have undertaken a voluntary dragonfly purchase and stocking program. The program entered its third year in 1978 and the participants are reportedly satisfied with results.

So far, only the freshwater species of dragonfly has been utilized in mosquito control efforts. However, Dr. Larry Kelts, of Merrimack College, North Andover, Mass., has documented the occurrence of the salt marsh dragonfly, Erythrodiplox bernice in the Wells marshes. Dr. Kelts would like to undertake a pilot study to determine the feasibility of mass-rearing this species and their effectiveness in controlling mosquitoes.

The Town of Scarborough, which encompasses part of the Spurwink Division, appropriated funds to aerial spray 44 salt marsh mosquito breeding pools with Abate 4E five times during the mosquito breeding season, from May through September. On April 27,

Assistant Manager Mills attended a public hearing on Scarborough's proposal, held jointly by the Maine Department of Environmental Protection and Pesticides Control Review Board. Testimony was presented on both sides of the issue. The State agencies ultimately decided to deny the required permits.

In order to offer local towns a "proven", non-chemical means of mosquito control, a refuge management study to determine the effects of small scale salt marsh alteration on breeding mosquitoes in the Rachel Carson Refuge was proposed. It is our belief that, by undertaking a selective, small scale open marsh water management program, using hand tools and CETA or some other public works type labor force, local towns could significantly reduce mosquito breeding on the salt marshes.

As work on the EPA-funded, multi-million dollar Wells Sewer Project continued, numerous wetland, encroachment, and trespass violations - both on and adjacent to the Moody and Lower Wells Divisions of the refuge - were documented. In cases where refuge lands were involved, the responsible parties were notified by certified mail of the violation and requested to restore the area to its former state. Off-refuge violations were referred to the appropriate agencies for action (Maine Department of Environmental Protection and U. S. Army Corps of Engineers).

Voluntary compliance with our restoration requests were limited and new fill violations off the refuge were increasing. On October 31, a meeting was held at the refuge headquarters at the request of the Concord, N. H. Ecological Services Office to discuss the problem. Representatives of the Concord ES Office, refuge, Corps of Engineers, Department of the Interior's Solicitor's Office, Environmental Protection Agency and National Marine Fisheries Service attended and visited a number of violation sites.

Following lengthy discussion, it was determined that, since the Wells Sanitary District's activities are federally funded, the District is obliged to meet certain standards and conditions. It was determined that the District's involvement in the wetlands and refuge violations was sufficient cause to withhold grant payments until 26 specific cases were resolved. Considerable progress towards fill removal and wetlands restoration was made before the weather prevented further work. Follow-up and resolution of all cases is anticipated by the spring of 1979.

D. Forestlands

Nothing to report.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

Nothing to report.

G. Easements for Waterfowl Management

Nothing to report.

#### IV. WILDLIFE

Since 1978 was the first year this refuge was staffed, no meaningful comparison of wildlife population data with previous years is possible.

A. Endangered and/or Threatened Species

A peregrine falcon was observed on the Lower Wells marsh during the first week of October. An osprey was present on the Upper Wells marsh during April. Despite the fact that bald eagles nest within 100 miles of Wells, and have been observed over the

northern Massachusetts coast, no sightings of this species on or over the refuge have been reported.

#### B. Migratory Birds

A total of 173, 013 waterfowl use days were recorded for 1978. The most common species of duck on the refuge is the black which peaked at 850 in December and accounted for just under half (81,500) the total waterfowl use days.

Interesting sightings included several whistling swans over the Lower Wells marsh in December, 400 snow geese on the Spurwink River and Lower Wells marshes in April, and gadwalls on the Upper Wells marsh throughout the summer months. Six brant were observed in Wells Harbor in April and a flock of 25 were seen in the Mousam River Division in early May.

The following is a summary of waterfowl usage of Rachel Carson during 1978:

<u>1. Species Waterfowl</u>	<u>No. Use Days</u>
Whistling Swan	31
Snow Goose	4,500
Canada Goose	20,030
Atlantic Brant	92
Mallard	5,045
Black Duck	81,500
Gadwall	765
Pintail	770
Green-winged Teal	10,560
Blue-winged Teal	5,620
American Wigeon	30
Wood Duck	340
Ring-necked Duck	30
Bufflehead	16,346
Common Merganser	150
Red-breasted Merganser	14,290
Hooded Merganser	60
Common Goldeneye	11,685
Old Squaw	1,220
Greater Scaup	31
	<hr/>
	173,095



## 2. Marsh and Water Birds

Great blue herons, green herons, black-crowned night herons, snowy egrets and glossy ibis were common on the refuge salt marshes from May through September. American bitterns and little blue herons were also occasionally observed. A black-crowned night heron nest, with three young, was found on the upland edge of the Spurwink River marshes on July 10.

Common loons, horned grebes and double-crested cormorants were frequently observed feeding in the tidal estuaries. Two pied-billed grebes were observed on the Mousam River in early September.

## 3. Shorebirds, Gulls, Terns and Allied Species

Herring, great black-backed and ring-billed gulls were common throughout the year. A flock of 10 Bonaparte's gulls were observed in the Wells marshes on September 12. Common terns reportedly nested on the Lower Wells and Little River marshes.

Several pairs of least terns and piping plovers attempted to nest on Crescent Surf Beach, adjacent to the Upper Wells marsh. Refuge staff and Parker River YACC enrollees assisted the Maine Audubon Society in posting the area. The birds eventually abandoned the site due to human and dog disturbance. A second colony was established on Goose Rocks Beach. Birds from both colonies were frequently observed feeding in the adjacent refuge marshes. The least tern and piping plover are among Maine's rarest birds and only nest at four locations along the coast.

Several Arctic terns were observed in the salt panne near Wells Harbor in early September. This salt panne also hosted a large number and variety of shorebirds throughout the summer and early fall. It is probably the best wildlife observation area

on the refuge. The more interesting shorebird species observed included the whimbrel, western sandpiper, pectoral sandpiper and willet.

Two pairs of willets were present throughout the summer and are assumed to have nested on the Goose Rocks marsh. They have traditionally nested at this location for years.

#### 4. Raptors

Sharp-shinned; Cooper's and red-shouldered hawks were seen in the Upper Wells marshes during spring migration. Marsh hawks were occasionally observed during the spring and fall. A short-eared owl was seen over the Moody marshes on April 6 and over the Lower Wells on June 4. A merlin was observed chasing shorebirds in the Webhannet River flats on September 12.

A pair of great horned owls are probably residents of the marsh edge at the north end of the Lower Wells Division. A snowy owl was reported on Drake's Island Beach (adjacent to the Lower Wells marshes) on November 30. Kestrels were occasionally observed throughout the year.

5. A northern shrike was observed on the Spurwink River Division in December. Kingfishers were abundant from April through October, with a few hardy individuals staying the entire winter. Purple martins were common in the Wells area; most of the privately-owned and maintained nest boxes along the Lower Wells marsh were filled to capacity.

### C. Mammals and Non-Migratory Birds and Others

#### 1. Game Mammals

White-tailed deer occur along the marsh edge of all nine divisions of the refuge. They are especially common in the Wells and Spurwink River Divisions. These areas are situated next to

State game sanctuaries where hunting and trapping are prohibited. At least eight were harvested in the vicinity of the refuge headquarters during the State firearms deer season in November.

2. Other Mammals

Harbor seals were frequently observed in the Webhannet (Lower Wells Division) and Mousam Rivers. The district game warden reports that there is a substantial river otter population in Stevens Brook in the Moody Division.

3. Resident Birds

The Seacoast Sportsmen's Club of Wells and Ogunquit has traditionally stocked the upland edges of the Wells and Moody salt marshes with ring-necked pheasants. The birds are raised through a cooperative program with the Maine Department of Inland Fisheries and Wildlife.

4. Other Animal Life

An eastern milk snake was observed at the Upper Wells Dedication Site in September.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Rachel Carson's only designated public use area is the Dedication Site Trail on the Upper Wells Division. In the past, this area was heavily used by local school systems for field trips and environmental education. However, with recent cutbacks in funds, many teachers have been forced to eliminate such trips. The area is used primarily by tourists visiting the surrounding resort towns from Memorial Day through Labor Day.



1978

Maurice Mills

The view from the Dedication Site at the Upper Wells Division. This is the most well-known and popular portion of the refuge.

On June 15th, Assistant Manager Mills conducted a group of first graders from the Wells Elementary School on a tour of the Trail. The Maine Audubon Society also sponsored several trips to the area during July and August.

The refuge map/leaflet was revised to show the location of the refuge headquarters and to include the address and telephone number of the refuge office.

## 2. Off-Refuge

Slide-talks on the National Wildlife Refuge System and Rachel Carson Refuge were presented to a wildlife ecology class at Nason College, Springvale, Maine and the Ipswich River Audubon Club in Topsfield, Massachusetts.

B. Recreation

1. Wildlife-Oriented

Waterfowl, deer, and upland game birds have traditionally been sought by hunters on current and proposed refuge lands. Due to our scattered ownership pattern in some divisions, the lack of boundary posting, and absence of personnel, no attempt has been made to control hunting on our current holdings. We also hope to avoid posting and thus closing one or more areas to hunting and then reopening them at a later date when a hunting plan has been approved.

During the early planning stages of the refuge and public pre-acquisition meetings, waterfowl hunting was discussed as an activity which would be continued after establishment of the refuge. It was also felt that by strategically dividing the hunting areas (which are limited to 40 percent of the total refuge acreage) among the nine divisions, little, if any, change would occur in the use patterns of the area by hunters.

On October 12, a meeting was held to discuss current hunting and trapping trends on the refuge and future programs. Representing the Maine Department of Inland Fisheries and Wildlife were Lee Perry, Assistant Chief, Wildlife Division; Warren Eldridge, Assistant Regional Biologist; and Warden Supervisor Russell Dyer. Refuge Manager Gavutis, Assistant Manager Mills, and Gerry Atwell of the Concord, N. H. Area Office represented the refuge.

The State personnel provided some insight into where the various types of hunting were occurring. They also recommended that, in order to obtain the maximum amount of input, we should contact local sporting clubs and offer to meet with them to discuss the refuge and the proposed controlled hunting program. Eight local clubs were notified by mail and three responded. Following these

informal meetings with sportsmen, two public meetings were planned for early 1979.

Based on random bag checks and observations, the total waterfowl hunter use within the approved refuge boundary was estimated at 1,038 visits and 2,557 activity hours, with an average daily success rate of .4 birds per visit. Hunting pressure was very light during the first part of the season but increased markedly in late November and early December.

## 2. Non-Wildlife-Oriented

Non-wildlife-oriented use of the refuge is limited to an occasional jogger and recreational boaters during the summer months. No conflicts with wildlife or other visitors have been observed to date.

## C. Enforcement

Due to the limited public use facilities available at Rachel Carson, few visitor violations occur. An attempt was made to contact waterfowl hunters in the field to gather information on their use of different refuge areas and to check for compliance with State and Federal regulations. Only one hunter was found in violation. He bagged a black duck within 100 yards of the refuge office without having a current Duck Stamp or State Hunting License. He was cited for two violations and paid \$100.00 in fines.

## VI. OTHER ITEMS

### A. Field Investigations

An outline for the following refuge management study was prepared and submitted for review and approval:

"A Study of the Effects of Small Scale Salt Marsh Alteration on Breeding Mosquitoes in the Rachel Carson National Wildlife Refuge."



B. Cooperative Programs

Youth Conservation Corps

The 20-enrollee non-residential YCC camp from Parker River set up several spike camps at the Upper Wells and Goose Rocks Divisions. Among the work accomplished were construction of a short boardwalk, removal of an obsolete building, boundary posting, and removal of storm-deposited debris from the refuge marshes.



1978

Maurice Mills

This short stretch of boardwalk next to the Branch Brook in the Upper Wells marsh was constructed by the Parker River YCC who set up a spike camp at Rachel Carson.

Young Adult Conservation Corps

During the early months of the year, YACC enrollees from Parker River traveled to Rachel Carson several times a week to assist in renovating the interim

headquarters/residence building. Given the need for a labor force at Rachel Carson, a decision was made to establish a satellite camp. On October 1, the camp began with four enrollees and one Group Leader. One enrollee was assigned to the office to serve as a Clerk Typist. The remainder of the crew assisted in routine maintenance, brushed and posted boundary lines, insulated the refuge headquarters roof, constructed and installed a bird feeder at the refuge office, and assisted in re-setting the incoming water pipes below the frost line.

The initial plans called for construction of a pole building on an upland site in the Moody Division to serve as a workshop and storage area. However, funding for the program diminished before construction began. A trailer was placed on the site and served as the camp headquarters.

C. Items of Interest

Assistant Manager Mills participated in the following:

January 15	Promoted to GS-7.
February 26- March 24	Attended Refuge Managers Training Academy, Beckley, West Virginia.
April 12	Accompanied Area Manager Maloy and Refuge Manager Gavutis on tour of seven refuge divisions.
April 20	Attended a Mosquito Control Symposium at the University of Maine, Augusta.
May 21-23	Attended Barrier Beach Management Workshop at Provincetown (Cape Cod), Massachusetts.

June 20	Attended a firearms training and qualification session at Husson College, Bangor, Maine.
July 19- August 23	Served as crew leader for the Canadian Banding Assignment, St. John River Marshes in New Brunswick, Canada.
September 18-19	Accompanied Gerry Atwell, Concord Area Office, on a tour of the seven southern refuge divisions.
December 7-10	Traveled to Great Swamp NWR in New Jersey to provide law enforcement assistance during an anti-hunting demonstration.

D. Safety

Nothing to report.

E. Credit

Narrative Report:	Maurice Mills, Jr.
Typing:	Clara Bell, Kay Garrett, and Laurie Brown
Photographs:	Maurice Mills, Jr.
Editing:	George W. Gavutis, Jr. and Robert A. Zelle

WAPACK

WAPACK NATIONAL WILDLIFE REFUGE

New Hampshire

## I. GENERAL

### A. Introduction

Wapack National Wildlife Refuge (under the administration of Parker River National Wildlife Refuge) is composed of 1,672 acres on Pack Monadnock Mountain among the Towns of Peterborough, Greenfield, and West Hilton, New Hampshire. Located 50 miles WNW of Parker River NWR, this was the first National Wildlife Refuge in New Hampshire. Consisting of bogs and swamps, mountain peaks, ledges and cliffs, the refuge is covered by mixed hardwoods with blueberry, bare rock, and small trees as understory. Many migratory songbirds utilize the mountain and hawks migrate and nest in the area. All common northeastern woodland species may be found at Wapack, including such mammals as deer, fisher, mink, weasel, raccoon, fox, bobcat, gray squirrel, red squirrel, snowshoe hare, porcupine, striped chipmunk, and many species of mice and voles. The Monadnock spur of the Appalachian Trail is a three-mile trail popular for day-hiking, nature and geology study, and blueberry picking in an unspoiled wilderness-type area.

Three visits were made to the refuge this year. While general conditions remained the same, it was noticed that the trail needed repairs in several locations, and that a number of open fires had been made with some evidence of camping.

### B. Climatic and Habitat Conditions

Nothing to report.

### C. Land Acquisition

#### 1. Fee Title

Under the Revenue Sharing Act, a total of \$10.14 was paid to Hillsborough County, N. H. for the



period FY 1978. Due to excessive deed restrictions, the value of this donated refuge to the Fish and Wildlife Service remains low.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Nothing to report.

### B. Maintenance

As of December 1978, we were still awaiting a trail maintenance proposal and notification on whether the Appalachian Mountain Club was willing and able to work. Use of YACC or YCC personnel for this purpose is being considered.

### C. Wildfire

No wildfire occurred at Wapack NWR during 1978.

## III. HABITAT MANAGEMENT

Nothing to report.

## IV. WILDLIFE

Nothing to report.

## V. INTERPRETATION AND RECREATION

Nothing to report.

## VI. OTHER ITEMS

Nothing to report.

Credit

Narrative Report:

Michael R. Bauer

Typing:

Clara Bell

Editing:

George W. Gavutis, Jr.

POND ISLAND

POND ISLAND NATIONAL WILDLIFE REFUGE

Maine

## I. GENERAL

### A. Introduction

Pond Island National Wildlife Refuge (under the administration of the Parker River National Wildlife Refuge in Massachusetts) is a 10-acre rock base, treeless island located near Popham Beach, Maine, sixteen miles NE of Portland, Maine, and eighty miles N-NE of Parker River NWR. The refuge was established in 1973 as a breeding, feeding, resting area for large colonies of herring and black-backed gulls, eider ducks, and other pelagic species. The island is 75 percent vegetated with mixed grasses, dune grass, bayberry, Juneberry, poison ivy, and rose.

Due to severe personnel limitations and fund restrictions, only one visit was made to Pond Island during the year. On August 18, Refuge Manager Gavutis, Assistant Manager Zelle, Refuge Manager (Trainee) Spencer, Daniel O'Brien (YACC), and Walter Soroka (LE) visited the island and conducted an avian survey, straightened up the osprey pole, and checked the refuge boundary signs.

Very little information has been accumulated about this refuge because of its remoteness and the above-mentioned limitations.

### B. Climatic and Habitat Conditions

Nothing to report.

### C. Land Acquisition

#### 1. Fee Title

There is no active acquisition program at Pond Island but several productive islands surround this island that should be protected from any future human development. One forested island

.75 mile W-SW of Pond Island (Wood Island) has an active osprey nest located on it.

Sagadahoc County, Maine, received \$35.36 under the Revenue Sharing Act for the fiscal year 1978.

## 2. Easements

At the refuge's inception on March 29, 1973, the U. S. Coast Guard reserved the right to maintain an existing navigational light tower and fog signal as follows:

1. Retain in fee approximately 676 square feet of land to house the existing light tower and fog signal device.
2. Retain a 20-foot right-of-way over the path of the underground power control cable which extends from the light structure to the island's shoreline.
3. Retain the right of ingress and egress from the one landing area on the island to the retained facilities for service and maintenance.

## D. System Status

### 1. Objectives

No formal objectives have been prepared for this satellite. To date, outputs have been included as part of the total outputs submitted for Parker River Refuge to save time and paper. Parker River's file copy of the output reports, however, shows the data broken out for each satellite refuge.

### 2. Funding

This refuge does not have a separate budget. Funding is provided in Parker River Refuge's budget.



## II. CONSTRUCTION AND MAINTENANCE

Nothing to report except for wildfire.

### c. wildfire

During a visit to the island on August 18 by refuge staff, a burnt area approximately 50'x20' was noted in the driftwood and tide rack and thatch. There was no damage to the resource and the cause was undetermined.

## III. HABITAT MANAGEMENT

Nothing to report.

## IV. WILDLIFE

Nothing to report except for raptors.

### 4. Raptors

During the August 18 visit to Pond Island by several refuge personnel, an osprey nest with 2 large young was noted on Wood Island W-SW of Pond Island. The refuge osprey nesting pole was straightened up during this visit.

## V. INTERPRETATION AND RECREATION

The island above the high tide line is not open to the general public during the nesting season from March 1 to July 31; however, environmental education, nature study and photographic opportunities are available to the public from August 1 through February 28 during daylight hours.

VI. OTHER ITEMS

Nothing to report.

Credit

Narrative Report:

Douglas G. Spencer

Typing:

Clara Bell

Editing:

George W. Gavutis, Jr.

THACHER'S ISL.

THACHER'S ISLAND NATIONAL WILDLIFE REFUGE

Massachusetts

## I. GENERAL

### A. Introduction

Thacher's Island National Wildlife Refuge (under the administration of the Parker River National Wildlife Refuge in Massachusetts) is a 50-acre island located 0.6 miles offshore, east of Emerson's Point, and 2.27 miles southeast of the center of Rockport, Mass., approximately 14 miles southeast of Parker River National Wildlife Refuge. Twenty-two of the 50 acres became a National Wildlife Refuge in 1972 and the remaining acreage which includes the only suitable boat landing site is Coast Guard property. The island is ledge outcrop with a hard, sloping shoreline of ledge, cobbles, and gravel. It has a thin mantle of acid loam and is vegetated with grasses and small shrubs consisting of poison ivy, bayberry, beach plum, and rose. The island furnishes nesting habitat for many herring gulls and some black-backed gulls, and provides a resting and feeding area for numerous passerine birds during migration. Twin 124-foot granite lighthouses, built in 1861, one of which is on the refuge, are National Historic Sites. The island is not open to the general public.



One of the twin granite lighthouses (a National Historic Landmark) on Thacher's Island NWR.

Due to personnel limitations and funds restrictions, no visits were made to Thatcher's Island during the year.

B. Climatic and Habitat Conditions

Nothing to report.

C. Land Acquisition

1. Fee Title

Under the Revenue Sharing Act, a total of \$2,670.97 was paid to Essex County, Mass., for the fiscal year 1978. Most of this sum, however, was for the 4,650-acre Parker River National Wildlife Refuge.

D. System Status

1. Objectives

No formal objectives have been prepared for this refuge. To date, outputs have been included as part of the total outputs reported for Parker River Refuge to save time and paper. Parker River's file copy of the output reports, however, shows the data broken out for each satellite refuge.

2. Funding

This refuge does not have a separate budget.

II. CONSTRUCTION AND MAINTENANCE

Nothing to report.



III. HABITAT MANAGEMENT

Nothing to report.

IV. WILDLIFE

Nothing to report.

V. INTERPRETATION AND RECREATION

Nothing to report.

VI. OTHER ITEMS

Nothing to report.

Credit:

Narrative Report: Douglas G. Spencer

Typing: Clara Bell

Editing: George W. Gavutis, Jr.

JOHN HAY

JOHN HAY NATIONAL WILDLIFE REFUGE

New Hampshire

## I. GENERAL

### A. Introduction

John Hay National Wildlife Refuge is comprised of 164 acres which were donated by Mrs. Clarence L. Hay to the Department of the Interior in 1972. This became the second National Wildlife Refuge established in New Hampshire. The property is located in West-Central New Hampshire in the Town of Newbury along the southeast shore of Lake Sunapee. The property is 75 miles northwest of the Parker River National Wildlife Refuge and 40 miles north of Wapack National Wildlife Refuge. A mile of lakefront on Lake Sunapee, a small island, and an upland area which is forested by 200-year-old trees, are included on the refuge. The refuge provides habitat for black ducks, teal, wood ducks, woodcock, ruffed grouse, and various passerines. Deer, bear, mink, weasel, raccoon, and muskrat also use the area.

The John Hay Refuge is under the administration of Parker River National Wildlife Refuge but, because Mrs. Hay maintains a life residency on the refuge, the area is not open to the general public, there is no active management, and no visits were made by the staff this year.

### B. Climatic and Habitat Conditions

Nothing to report.

### C. Land Acquisition

#### 1. Fee Title

Nothing to report.

### D. System Status

#### 1. Objectives

No formal Objectives have been prepared for this satellite. To date, outputs have been reported

as part of the total outputs submitted for Parker River Refuge to save time and paper. Parker River's file copy of the output reports shows the data broken out for each satellite refuge.

2. Funding

This refuge does not have a separate budget.

II. CONSTRUCTION AND MAINTENANCE

Nothing to report.

III. HABITAT MANAGEMENT

Nothing to report

IV. WILDLIFE

Nothing to report.

V. INTERPRETATION AND RECREATION

Nothing to report.

VI. OTHER ITEMS

Nothing to report.

Credit

Narrative Report: Douglas G. Spencer

Typing: Clara Bell

Editing: George W. Gavutis, Jr.