

MONTEZUMA NATIONAL WILDLIFE REFUGE  
Seneca Falls, New York

ANNUAL NARRATIVE REPORT  
Calendar Year 1979

NATIONAL WILDLIFE REFUGE SYSTEM  
Fish and Wildlife Service  
U. S. DEPARTMENT OF THE INTERIOR



PERMANENT PERSONNEL

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- 2. Anthony D. Leger . . . . . Assistant Refuge Manager (Trainee), GS07  
(EOD 3/25/79 from Parker River NWR)
- 3. Grady E. "Gene" Hocutt . . . . . Refuge Manager, GS12
- 4. William H. Hegge . . . . . Assistant Refuge Manager, GS09  
(EOD 11/4/79 from Back Bay NWR)
- 5. Melvin J. Norsen . . . . . Maintenance Worker, WG07
- 6. Judith A. McMahon . . . . . Administrative Clerk, GS06
- 7. Gary R. Jones . . . . . Outdoor Recreation Planner, GS09
- 8. Vernon A. Dewey . . . . . Biological Technician, GS07
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(Transferred to Blackwater NWR 1/27/79)

TEMPORARY PERSONNEL

- \* Susan M. Rice (4/23/79 - 11/15/79) . . . . . Interpretive Aid, GS02
- \* Peter Saracino (8/29/79 - 12/31/79) . . . . . Interpretive Aid Volunteer
- 6. Julie Lundgren (EOD 2/27/80) . . . . . YACC

\*Not Shown in Picture

Reviews and Approvals

*Grady E. Hocutt* 2-20-81  
 Submitted by Date

*William A. Hutchinson* 2/25/81  
 Area Office Date

MONTEZUMA NATIONAL WILDLIFE REFUGE

Central Office Date

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# MONTEZUMA National Wildlife Refuge

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.



prepared by  
DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE

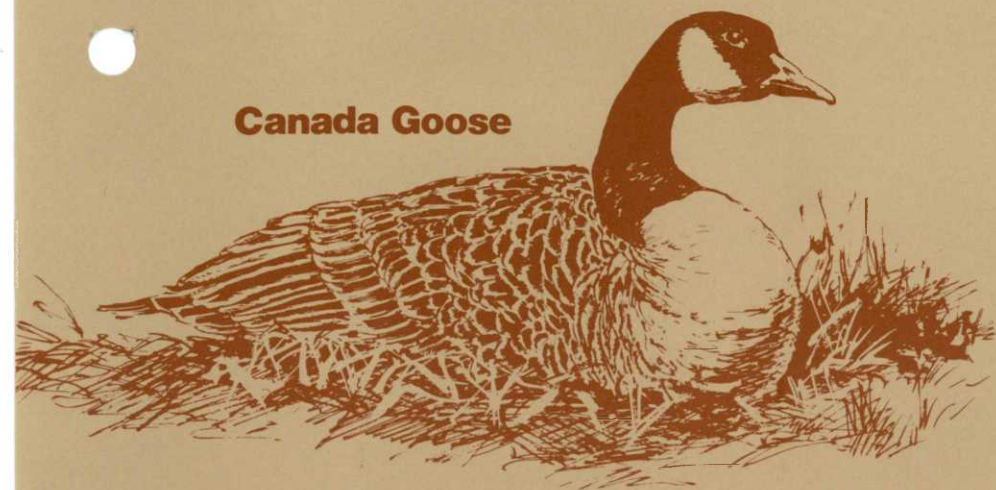
August 1979



# MONTEZUMA

National Wildlife  
Refuge

# MONTEZUMA National Wildlife Refuge



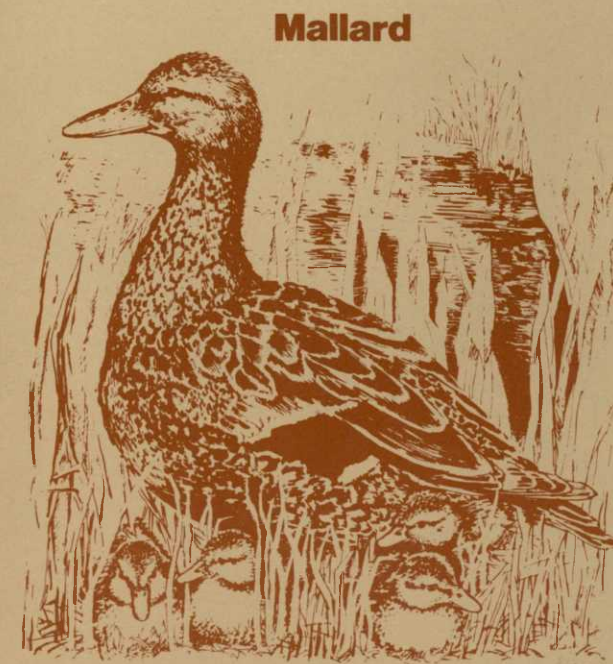
Canada Goose



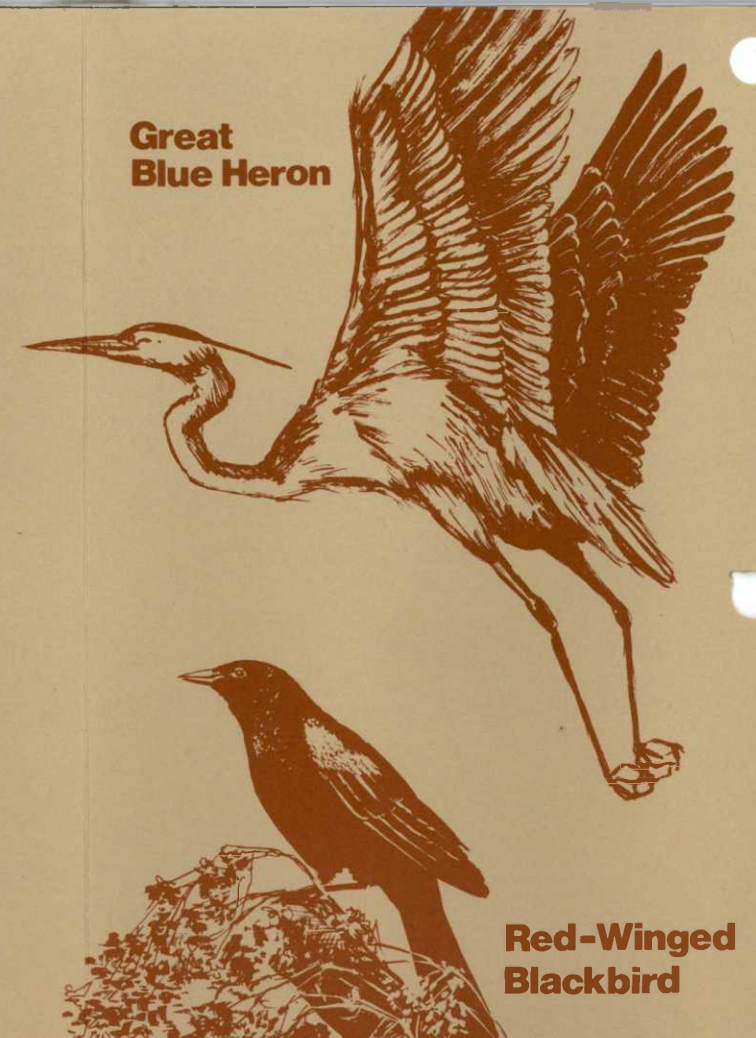
Red-Tailed Hawk



Muskrat



Mallard



Great  
Blue Heron

Red-Winged  
Blackbird

## INTRODUCTION

Montezuma National Wildlife Refuge is located at the north end of Cayuga Lake, in the Finger Lakes Region of New York.

Before 1900 the Montezuma Marsh extended north from Cayuga Lake for 12 miles and was up to 8 miles wide. It was one of the most productive marshes in North America. As with many marshes its importance went unrecognized and by 1911 all but 100 acres had been drained.

In 1937 the 6,432-acre refuge was established with development aimed at restoring a part of the marsh. The success of this restoration is apparent each fall and spring when waterfowl fill the sky.

## WILDLIFE

Montezuma's varied habitats provide food and cover for numerous birds, mammals, and fish. A total of 282 species of birds have been seen. Canada geese, mallards, wood ducks, teal, and other birds nest on the refuge. The largest concentrations of waterfowl occur during migration. Peak populations have reached 140,000 Canada geese in April and 150,000 ducks in October.

Besides waterfowl, there are many species of herons, shorebirds, terns, and songbirds at Montezuma. White-tailed deer are common and easily seen at dawn and dusk. Woodchucks are abundant along dikes.

Bald eagles in New York have declined to one breeding pair. A program to re-establish a nesting population by releasing young birds in the wild was begun at Montezuma in 1976.

Refuge marshes are excellent muskrat habitat. Muskrats use water plants for food and to construct their houses. Waterfowl need a mix of open water and vegetation for food and cover. Too many muskrats result in not enough cover, too few allow the plants to choke out the open water. Muskrats are managed to maintain marsh vegetation in a desirable condition for waterfowl.

## PUBLIC USE

Montezuma is open daily from sunrise to sunset. Visitors can enjoy a visitor contact station, self-guided auto tour route, two observation towers, and nature trail. The refuge also provides area teachers and students with an outdoor classroom for environmental education.

Warm water fish are abundant in the canals and rivers surrounding the refuge. Popular species are the brown bullhead, northern pike, and wall-eye. There are three public fishing sites and a boat launch. When conditions warrant, hunting of waterfowl, deer, and upland game is allowed under special regulations.

# MONTEZUMA

## National Wildlife Refuge



OFFICE



HIKING



VISITOR AREA



FISHING



TOWER



BOAT RAMP

--- BOUNDARY

••• AUTO TOUR

EXIT 41

GOVERNOR THOMAS E. DEWEY  
THRUWAY

TSCHACHE

POOL

MAIN  
POOL

N. Spring Pool

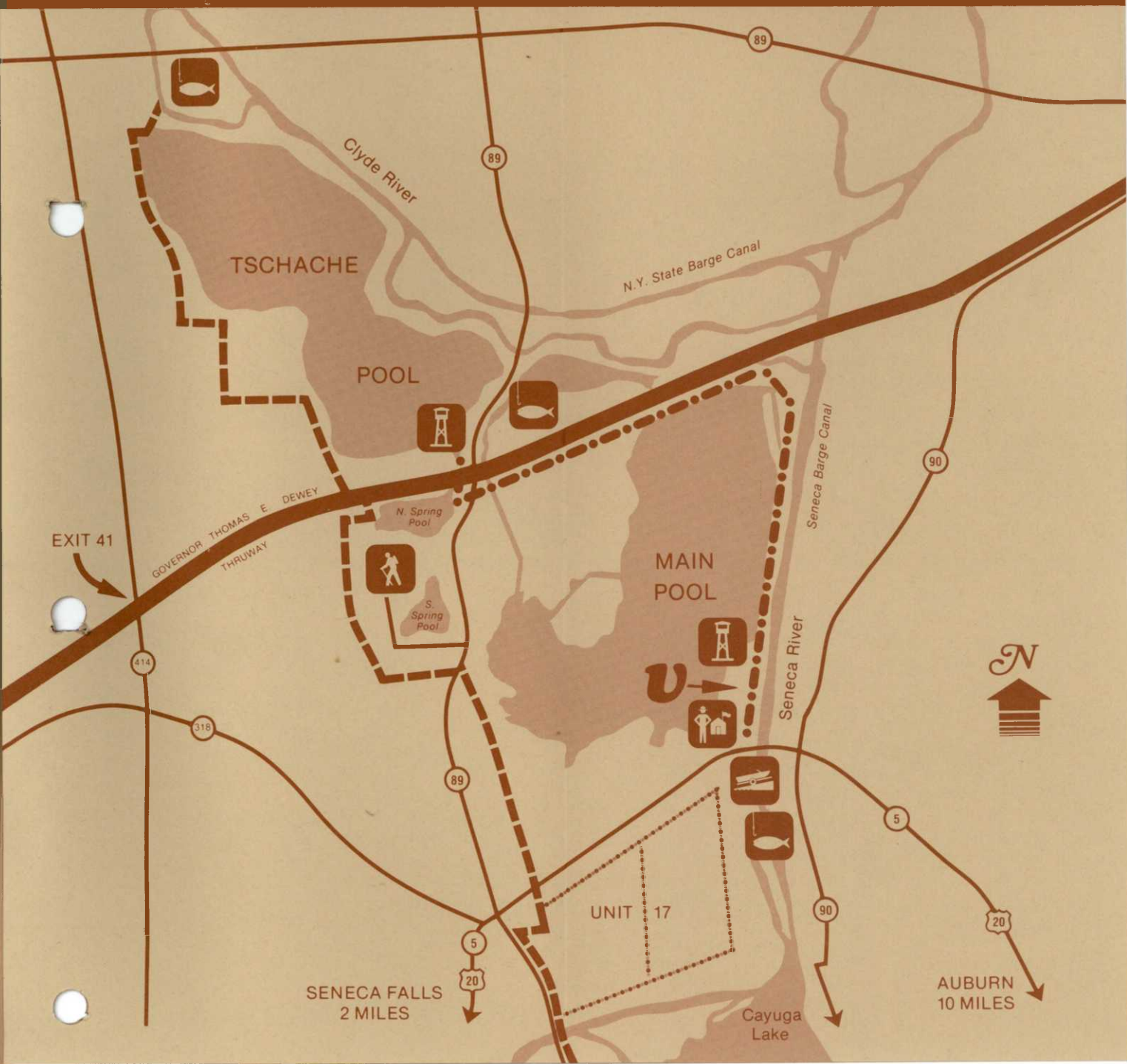
S. Spring Pool

UNIT 17

SENECA FALLS  
2 MILES

Cayuga  
Lake

AUBURN  
10 MILES



## I. GENERAL

### A. Introduction

Montezuma National Wildlife Refuge is located in Seneca County at the northern-most end of Cayuga Lake. It is in the heart of the Finger Lakes Region of Central New York State. The 6,334-acre refuge was established in 1938 to restore a portion of the original 80 square mile Montezuma Marsh, which was effectively destroyed when the New York State Barge Canal was built in 1911.

Restoration efforts have re-created vestiges of the earlier biologic diversity, ranging from extensive marshes to flooded green timber and upland hardwoods. Peak fall and spring populations, respectively, of 55,000 and over 60,000 Canada and blue/snow geese represent a heartening step upward from the bleak 1930's. Conversely, the sighting of 50 geese on Cayuga Lake in the late 1930's was cause for newspaper mention and great local excitement.

### B. Climate and Habitat Conditions

Weather data were obtained from our own weather station located at headquarters and Locks 1 and 25 of the New York State Barge Canal system. Precipitation for 1979 totalled 41.18 inches. This was approximately 10 inches above 1978 figures. June was the driest month with a recording of 2.33 inches of precipitation. In contrast, September, the wettest month, had 4.96 inches of precipitation. Our 38-year average precipitation is 31 inches. Snowfall for the year was 55.31 inches; this was 33.21 inches below the 1978 snowfall. January had the most snow with 16.25 inches. Seasonal snowfall (1978-79 winter) was 75.05 inches. Seasonal snowfall for the 1979-80 winter as of 12/31/79 totalled 9.51 inches. Average snowfall for the area is 64 inches, based on 31 years of records.

Spring thaws and rain resulted in our dikes being topped by about 2 feet in some areas in March. Minimal damage resulted from this. Summer was hot and humid with temperatures in the 80's and 90's on numerous occasions. Duckweed and other aquatics appeared to be in adequate supply throughout the summer and

fall months in all pools. An over abundance of corn found in harvested fields throughout the area helped to hold both ducks and Canada geese (12,000) on the refuge in large numbers through the end of the year.

None of the refuge pools were completely frozen over at the end of the year. This can be attributed mainly to unseasonably warm fall weather.

C. Land Acquisition

Nothing to report.

D. Systems Status

1. Objectives

Montezuma Refuge is assuming an increasingly important role in meeting Atlantic Flyway waterfowl management objectives. This is primarily due to tremendous increases in Canada goose populations. Radical changes in adjacent agricultural practices and ice-free water in the nearby Finger Lakes have combined to produce alarming numbers. Fall populations of geese are now in excess of 50,000 and spring migration is trending toward 100,000. Approximately 25,000 geese now winter on Cayuga Lake; another 8,000 winter on nearby Seneca Lake. This is an increase of some 10,000 birds since 1978.

Our primary objective is to provide feeding and resting habitat for migrating waterfowl and waterbirds. A new, and important objective, is our participation with the New York State Department of Environmental Conservation in the cooperative, 5-year bald eagle hacking/reintroduction program.

Waterfowl production, with the possible exception of wood ducks, is a purely secondary objective.

Montezuma is located in a beautiful rural setting. The setting, however, is deceptive. Over 2,000,000 people live within an easy 1 hour drive of the refuge. The refuge is bisected by the New York State Thruway (I-90) and Routes US5 and NY20. The refuge was visited by 253,300 persons during CY79. Total public use represents a 21 percent increase in visitation over 1978.

Funding limitations and other factors during the past years have created serious lags in enhancing visitor education, interpretive, and wildlife-oriented recreational programs. Progress in overcoming the serious 1240 program deficit was made when we finally acquired an Outdoor Recreation Planner. Much progress was made during the year in reducing serious conflicts relating to the sheer numbers of visitors and, also, in alleviating time/space conflicts between consumptive and non-consumptive programs.

The 1240 program is designed to support the environmental education demand from adjacent school districts and to enhance the interpretive element of visits by the public to the refuge. Several teacher workshops were held; our teacher-directed, conceptually oriented environmental education program was materially strengthened.

The greatest 1210 challenge at Montezuma is to provide habitat needs for waterfowl, waterbirds, and other avian and mammalian species--while attempting to slow the rate of increase in Canada geese stop-overs. Our initial effects are directed toward the cessation of past plantings of winter wheat and stopping late summer mowing which has encouraged goose browse. Tame hay mixes are being considered with advice from Cornell University and the Soil Conservation Service, to provide nesting cover and to restore soil fertility. Clipping schedules are designed to insure that regrowth in grasslands will be unpalatable to geese.

## 2. Funding

Montezuma is in a contradictory and potentially dangerous situation insofar as funding levels are concerned. The refuge is at a major cross-roads -- one at which decisions must be made which will allow strengthening of on-going programs or retrenchment and accelerated deterioration.

In 1210 matters, our major problems are: (1) over 3,000 acres of marsh in the Main and Tschache Pools which have lost 75 percent of their storage capacity to eutrophication over the past 25 years; (2) silted-in borrow ditches; and (3) over 9 miles of dike in need of major rehabilitation. There are no current plans nor money for attempting to remedy the problems. Funding in 1210 in FY79 was \$119,000.

In 1220, we support one of the largest muskrat/marsh management programs in the region. Our deer management problems are serious. In 1400, this refuge is providing major support for one of the region's most intensive endangered species programs. Our funding level in 1220 and 1400, respectively, in FY79 were \$2,000 and \$2,500.

Subprogram 1240 is our greatest problem area. We support nearly 300,000 legitimate, wildlife-oriented visits per year. This use includes 4½ miles of auto tour route, a large environmental education program (20,000 AH), a developing interpretive program, a large public fishing program, and three managed hunting programs. Funding in 1240 for FY79 was \$63,000.

In 1979 a new administrative, maintenance, and visitor contact facilities were approved for planning under the auspices of BLHP. They will replace 45 year old buildings. Construction of these buildings will begin to ameliorate the visitors-operations conflicts we now endure, as well as providing expanded office/shop space.

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

Although the regular maintenance staff constructed fences at both the Seneca Spillway (Main Pool) and Connecting Spillway (Tschache and May's Point Pools), no major construction projects were undertaken during 1979. Construction projects of a limited scope were, however, completed by YCC/YACC Enrollees (see Cooperative Programs).

### B. Maintenance

Primary maintenance work during 1979 addressed objectives associated with a continued high volume of wildlife oriented public use and corresponding refuge visibility. Accordingly, the following activity list identifies those projects of major concern:

<u>Dikes/Roads/Parking Areas</u>	<u>Distance/Amount</u>
Resurfacing wildlife tour route (partial)	1,300 ton
Resurfacing Esker Brook parking area	50 ton
Resurfacing Tschache Pool tower parking area	50 ton
Resurfacing May's Point Pool fishing area	100 ton
Grading May's Point dike	1.5 miles
Grading Tschache Pool dike	4.0 miles
Mowing May's Point dike	2.0 miles
Mowing Unit 17 dikes	4.0 miles
Mowing South Spring Pool dike	.5 mile
Mowing Tschache Pool dike	4.0 miles
Mowing tour route (Main Pool dike)	5.0 miles
TOTAL:	21 miles/1,500 ton

Vehicles and Equipment

Painting/Bodywork on 1973 pickup  
Engine work/camshaft replacement on 1977 pickup  
New vehicle delivery -- 1979 Volare wagon  
New vehicle delivery -- 1979 Dodge 4x4 pickup  
New boat delivery -- 18 foot Airgator airboat  
New equipment delivery -- John Deere Grader



A welcome replacement for our 1940 vintage grader. Photo by Steve Flanders



*Replacements such as this new 4x4 were essential in view of Upstate New York winters and deteriorated 4x4 vehicles.  
Photo by Steve Flanders*

Buildings

*Information Booth repair -- siding, display cases, lighting and painting*

Structures

- Carp screen repair - Seneca Spillway*
- Snagging - White Brook.*
- Snagging - Connecting Spillway*
- Culvert replacement - tour route*
- Interpretive sign re-work - tour route*
- Sign re-work - May's Point fishing area*
- Boundary sign replacement*

Rehabilitation maintenance work on the Tschache, May's Point, and Main Pool dikes in the form of dike slope facing, seep repair, and dike elevation have been put off due to funding constraints and inadequate or unsafe refuge heavy equipment. All refuge impoundments are over or near 40 years old and thus very eutrophic. Impoundment conditions, therefore, are on the brink of becoming even more unfavorable for wildlife maintenance.

C. Wildfire

Nothing to report.

## III. HABITAT MANAGEMENT

A. Croplands

Field 8, which was planted to 25 acres of winter wheat in 1978, was converted to grassland in 1979. Growth was poor. The field will probably have to be reworked in 1980 or 1981. This completes our conversion to grasslands of all farming units that were previously in row crops. The rapid rise in the numbers of geese in recent years indicates that one of the last things we should do is attempt to feed and hold more geese. Large numbers of Canada geese migrate through the entire Finger Lakes region of New York State each year. These geese find ample food in croplands adjacent to the refuge. The public has come to accept and even anticipate these semi-annual invasions of geese.

The conversion (to grasslands) will enhance soil stability and fertility. A purely secondary objective will be to increase nesting cover for ground nesting waterfowl and other birds.

B. Grasslands

Two Grazing Permits were issued in 1979: (1) Edward Lawson (79-5) grazed a maximum of 20 head of cattle in Grazing Units 1 and 2 and Field 1, and a maximum of 20 head of cattle in Grazing Unit 4 and Field 4; (2) Wanda Waugh (79-4) grazed a maximum of 20 head of cattle in Grazing Unit 3. Total revenue received from these permits was \$431.00.

In 1979 surveys were conducted to determine if ground nesting waterfowl were utilizing the Grazing Units. Not a single nest was located in any of the units. The areas currently being grazed do not appear to have the cover or litter necessary to support nesting waterfowl. As a result of these surveys and changes in FWS policy concerning grazing, 1980 will be the last year for cattle grazing at Montezuma Refuge.

In the last ten years 16 former farming units have been converted to grassland. Some of the units have been allowed to revert naturally, while others have been seeded to tame hay mixtures. In the future, rather than grazing these units to hold back succession, we plan to mow them on 3 to 5 year schedules. The use of fire as a grassland management tool will also be investigated for units which are conducive to this practice. All in all,

by 1981 we should have over 561 acres of grassland as potential nesting habitat for waterfowl and other birds which prefer this type of habitat.

### C. Wetlands

The management of water levels is one of our most important and expensive programs. This emphasis is inescapable in a flood plain situation where over 4,500 acres of grossly eutrophic marshes are ringed with 18 miles of obsolete dikes.

The objectives of our water management program are to: (1) Provide resting/feeding habitat for migratory waterfowl and other water-birds; (2) provide nesting habitat for local waterfowl/water-birds; and (3) provide waterfowl viewing for refuge visitors. Although it is not always possible to maximize for all of these requirements in any one year (i.e., excessive rainfall, drought, etc.), water levels are maintained to assure the best mix of all major requirements. The presence of a variety of waterfowl, shorebirds, waders, and other wildlife provides enjoyment to many people that visit the refuge. Some manipulation of water levels is done for muskrat control and to enhance shorebird habitat.

We are confronted with two major problems in the management of our marshes at Montezuma: (1) The eutrophication of the pools and (2) the spread of Purple Loosestrife (Lythrum salicaria). The marshes will continue to fill in until some major rehabilitation work is done. At present, funds are not available for the dike raising and dredging that would be necessary.

Loosestrife is present in all pools and has displaced approximately 30 percent of the cattail/bulrush communities since 1950. Empirical evidence gained at Montezuma during summer 1977, and at other stations in northeastern United States and Canada, indicates that new seedlings of loosestrife are severely stressed by putting 8 to 12 inches of water over the plant during the critical period of rapid stem elongation.

Succession by cattail (Typha spp.), arrow arum (Peltandra spp.), and sago pondweed (Potamogeton pectinatus) in the May's Point Pool during artificially induced higher water levels in 1977 seems to promise benefits for other pools. Our 1979 water management program attempted to replicate in other pools the 1977 May's Point conditions. A 3-year, refuge-funded study on control techniques for loosestrife began in May 1978. A graduate student from Cornell University's Cooperative Wildlife Research Unit conducted the study. See Section VI (a) for further details.

Carp infestation of shallow refuge pools is a perennial problem. Control efforts are encompassed by two interdependent action: (1) preventing ingress from the adjacent Barge Canal by using rotating drums and/or carp screens at all water control structures and (2) depending upon winter kill which occurs on an average of once every two years. Past experience at the refuge indicates that drawdowns for carp control usually serve only to encourage the spread of Purple Loosestrife and, on occasion, to produce massive winter kills of desirable emergent plant communities.

Following is an overview of the wetland units at Montezuma:

#### MAIN POOL

This pool covers approximately 1,200 acres. Water depths were maintained at 1 to 2 feet throughout the pool during the summer months. Cattail, Purple Loosestrife and scattered stands of bulrush were present over much of the pool and provided excellent cover for waterfowl. Pondweed growth was good.

#### NORTH SPRING POOL

This pool is 118 acres in size and drains into the Tschache Pool. There is very little emergent vegetation in this dead timber marsh due to the high sulphur and tannic acid levels. An excellent growth of duckweed (*Lemna spp.*) is present and provides a good source of food for waterfowl during fall migration. The water level in this pool was held at, or above, normal throughout the year.

#### SOUTH SPRING POOL

This 37-acre pool lies directly south of the North Spring Pool. The spring supplies a year-round supply of water which can be diverted into the Main Pool. The pool is used by all the dabbling ducks on the area and, along with the North Spring Pool, is a nesting area for green herons.

#### TSCHACHE POOL

This pool is the northernmost pool on the refuge and covers about 1,300 acres. It is fed by two major streams--Black Brook and White Brook. Tschache Pool provides the main water supply for the May's Point and Main Pools. Water levels were maintained at planned elevations through most of the year but were down somewhat during the drought period in July and August. Emergent vegetation was present over much of the pool and provided excellent cover for waterfowl. This pool is also used for our controlled waterfowl hunt and is the site of the bald eagle transplant program.

MAY'S POINT POOL

This 200-acre pool was maintained about one-half foot above normal through July in an attempt to control the spread of Purple Loosestrife. The water level was then allowed to fall until it reached its lowest level in September. This is done to accommodate migrating shorebirds. The pool was restored to normal levels in December.

UNIT 17

The two pools--East and West--cover approximately 600 acres and were first flooded in 1968. Flooding (to a depth of about 8 to 12 inches) generally begins in mid-March with drawdown occurring about July 1, depending on nesting chronology. This unit is our major wood duck nesting area.

In 1977 after this pool was drained, we discovered that the main flood control gate had rusted off its shaft. Due to this problem and concern about severe stress to the timber, this area was not flooded in 1979. However, the borrow pits remain flooded to encourage cattail growth and provide brood habitat.

D. Forestlands

Montezuma Refuge has a total of 1,798 acres of wooded land. Species composition is mostly bottomland hardwoods. No commercial timber is present on these areas. Due to the designation of much of these lands as research natural areas and the breakdown of our water control structure in Unit 17, no manipulation of these lands occurred in 1979.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

*Beech-Maple Knoll:* An 8-acre tract located in the southwest corner of the Tschache Pool (Primary Type SAF60; beech-sugar maple). This unit is the only pure beech-maple stand on the refuge.

*Swamp Woods:* A 100-acre tract located in the southern portion of the Main Pool (Primary Type SAF39; black ash, American elm, red maple). Nothing to report.

G. Easements for Waterfowl Management

*Nothing to report.*

## IV. WILDLIFE

A. Endangered and/or Threatened Species

The eagle hacking program continued for a fourth year. Two 6-week old bald eagles arrived from Minnesota on June 21. Two other eaglets from Minnesota arrived on July 12. Additional eagle sightings this year included three different individuals in April -- one from 1977 was observed. The refuge hosted as many as six different birds during two quarters of 1979. See Section VI for additional information.



Eaglets on artificial nest atop the hacking tower. Their presence has stimulated positive community concern. Photo by Steve Flanders

B. Migratory Birds1. Waterfowl

The spring migration of 1979 was significantly less impressive than the previous year. Peak Canada goose population for the

period was estimated at 50,000 birds. The peak population of ducks fell off to an estimated 7,000 birds. Spring blue and snow goose populations, however, have been increasing steadily. Peak snow and blue goose population was estimated at 10,000 birds. The significant decline in Canada goose numbers may be attributed to spring flood conditions over the entire refuge. Peak flows in the adjacent New York State Barge Canal led to water overtopping refuge dikes. Any attempt at water management proved to be worthless.

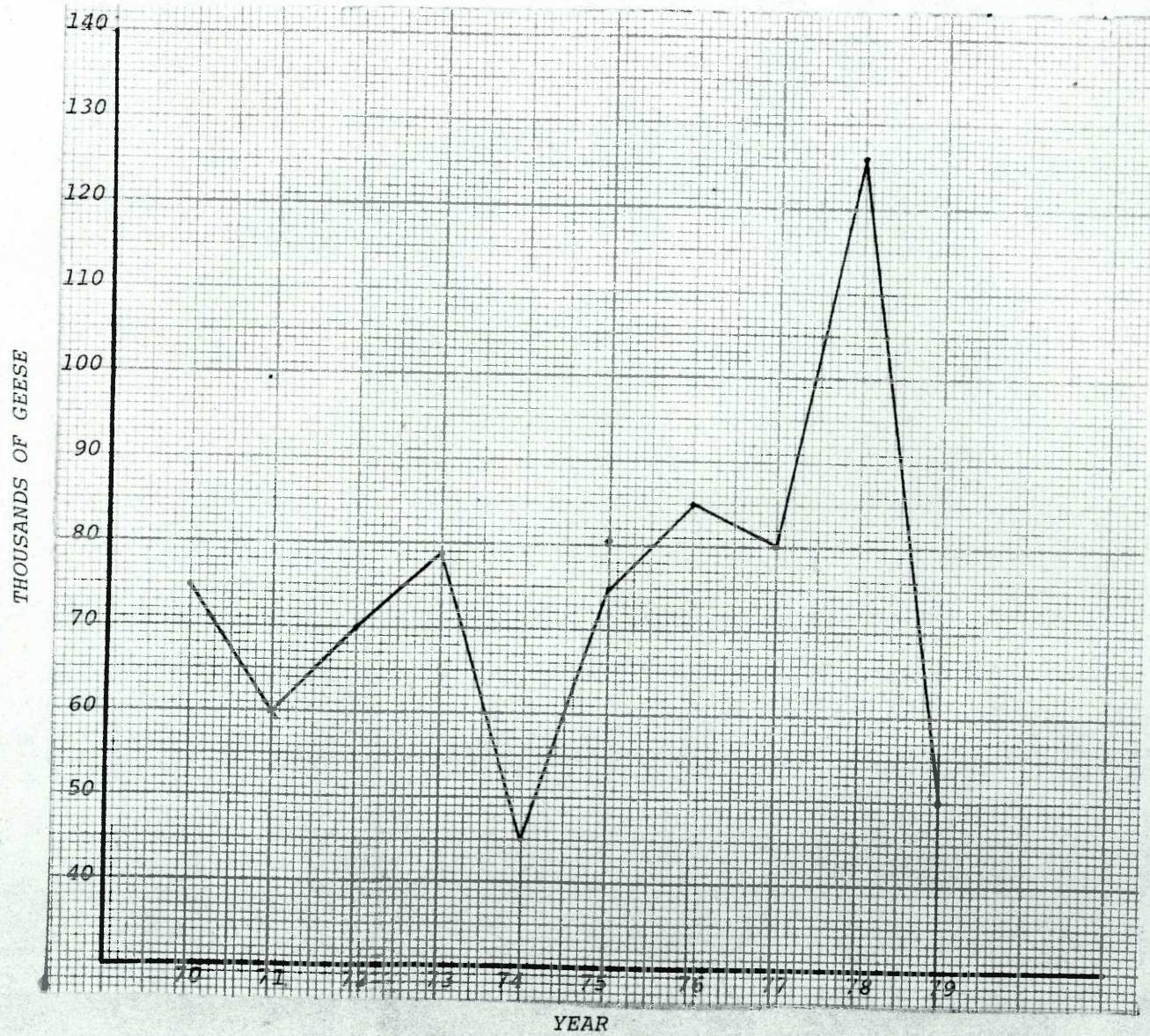
Canada goose production was estimated at 350 goslings. This was a definite increase over the previous year. Duck production declined to 2,300 birds produced. Species of principal concern were mallards, wood ducks, gadwall, and blue-winged teal. The following graphs generally depict peak use and production data for ducks and geese for a 7 to 10-year period. One table also displays pertinent wood duck production data for CY79. The absence of planned spring flooding on the East and West Pools of Unit 17 has significantly affected wood duck production. Flooding has been eliminated until timber stress effects can be evaluated. A major wood duck box relocation effort has been planned in order to mitigate the anticipated lower production resulting from the cessation of spring flooding.

The fall Canada goose migration was erratic and slow. By mid-October less than 20,000 geese were recorded during census activities. The goose population peaked at approximately 60,000 birds in late October/early November. Land use practices (cereal grains) within a 5 to 10-mile radius of the refuge have decidedly impacted refuge use days. Although use days do parallel peak populations, a consistent departure in the two seem to confirm the influence of adjacent land use practices.

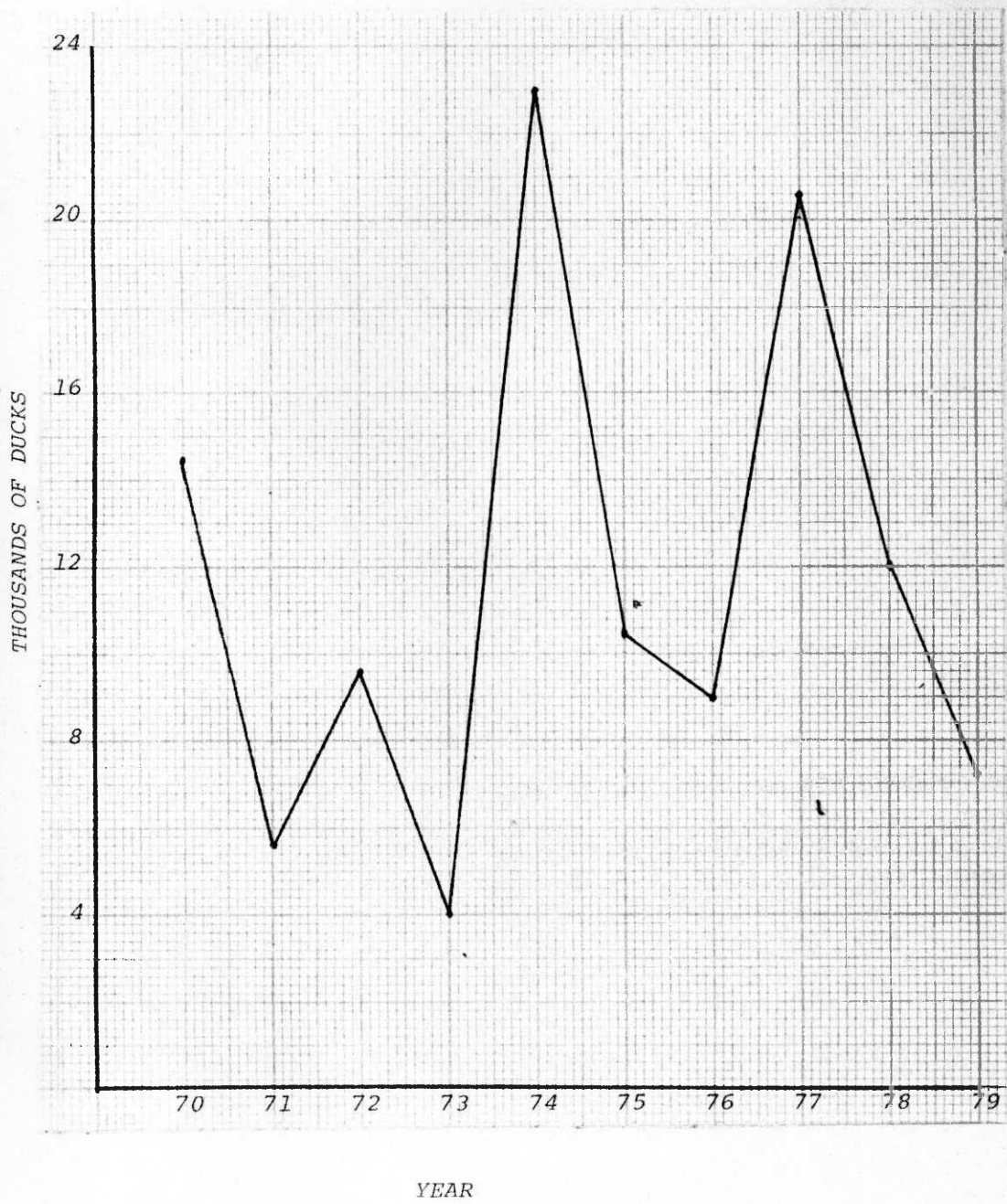
Duck use during the fall peaked at 50,000 birds. This is a sizeable increase over the previous year's observation. A similar phenomenon seems to be occurring with regard to peak duck population departure from use days. The following graphs display peak fall population and use day data.

Above-normal temperatures delayed pool freeze-up by one month. Freeze-up did not occur until December 20. Open water conditions were responsible for intermittently holding an estimated 15,000 ducks and 10,000 Canada geese on the refuge. Diurnal activity resulted in most birds

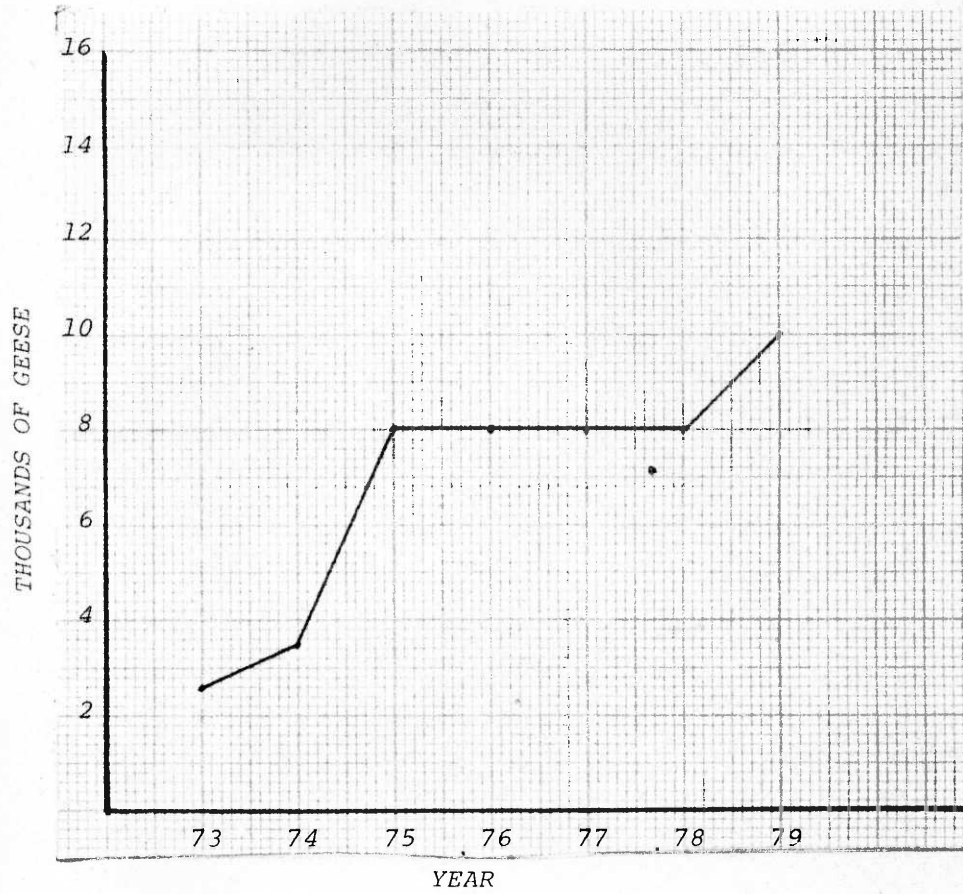
CANADA GEESE: PEAK NUMBERS  
SPRING (MAR/APR/MAY)



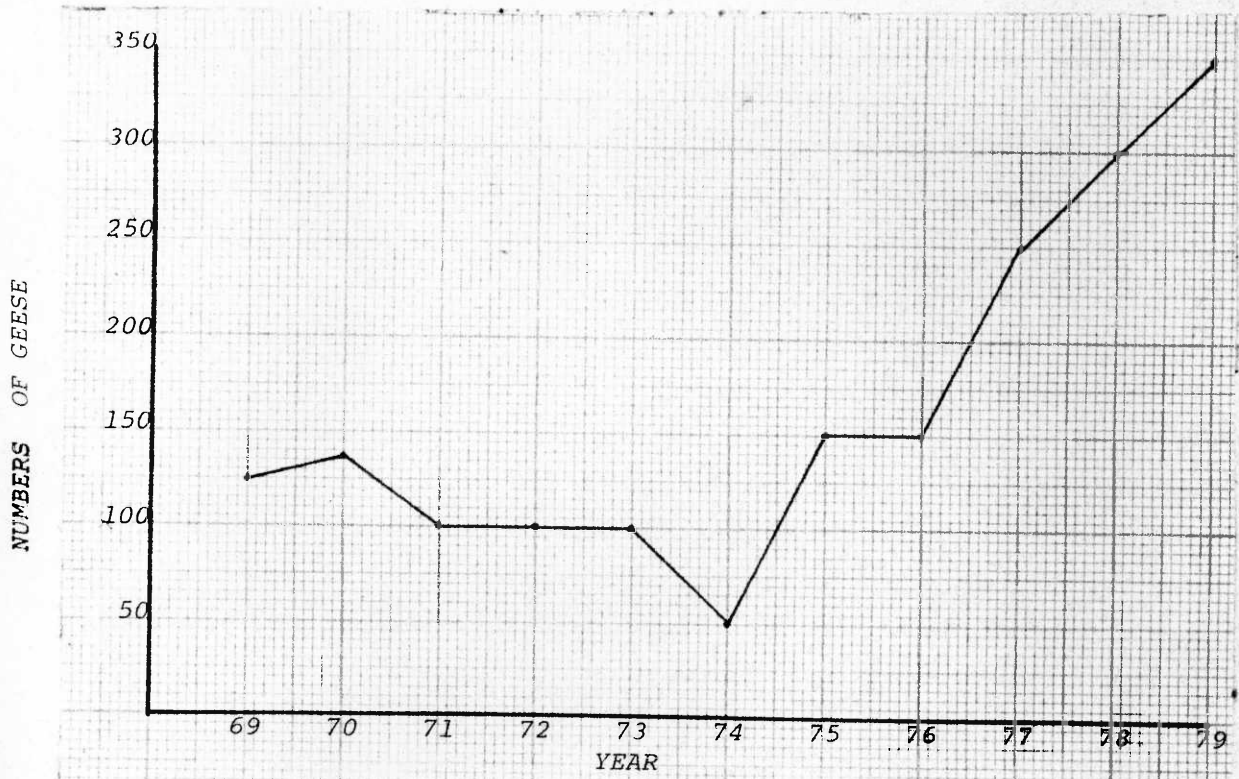
DUCKS: PEAK NUMBERS  
SPRING (MAR./APR./MAY)



SNOW & BLUE GEESE: PEAK NUMBERS  
SPRING (MAR/APR/MAY)



PRODUCTION: GEESE



PRODUCTION: DUCKS

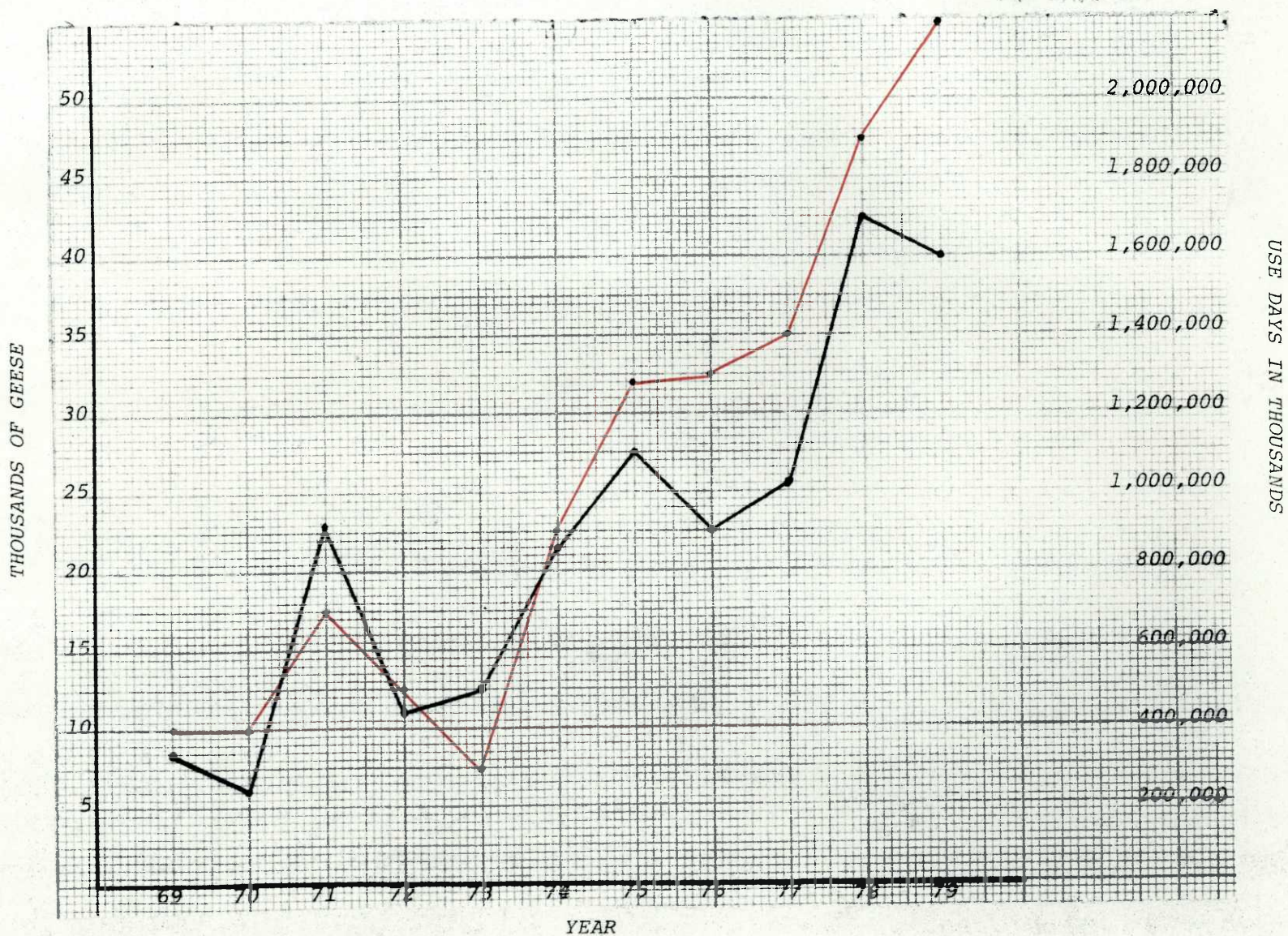


	Main Pool	Tschache Pool	South Spring Pool	North Spring Pool	Unit 17 West Pool	Unit 17 East Pool	TOTAL
TOTAL BOXES	38	26	4	6	35	36	145
Successful Nests	16	7	3	0	5	11	42
Total Eggs	153	76	35	0	59	177	500
Eggs Hatched	106	71	29	0	53	136	395
Unsuccessful Nests	2	3	0	0	1	8	14
Total Eggs	19	21	0	0	1	79	120
No. of Dead Ducklings	1	0	0	0	0	2	3
Total Eggs--All Boxes	172	97	35	0	60	256	620
% of Boxes Used (Total Nests/Total Boxes)	47%	38%	75%	0	17%	53%	39%
Average Clutch Size (Total Eggs/ Successful Nests)	9	10	12	0	10	13	11
Average No. of Ducklings Leaving Nest (Eggs Hatched/ Successful Nests)	7	10	10	0	11	12	9

WOOD DUCK BOX CHECK - 1979

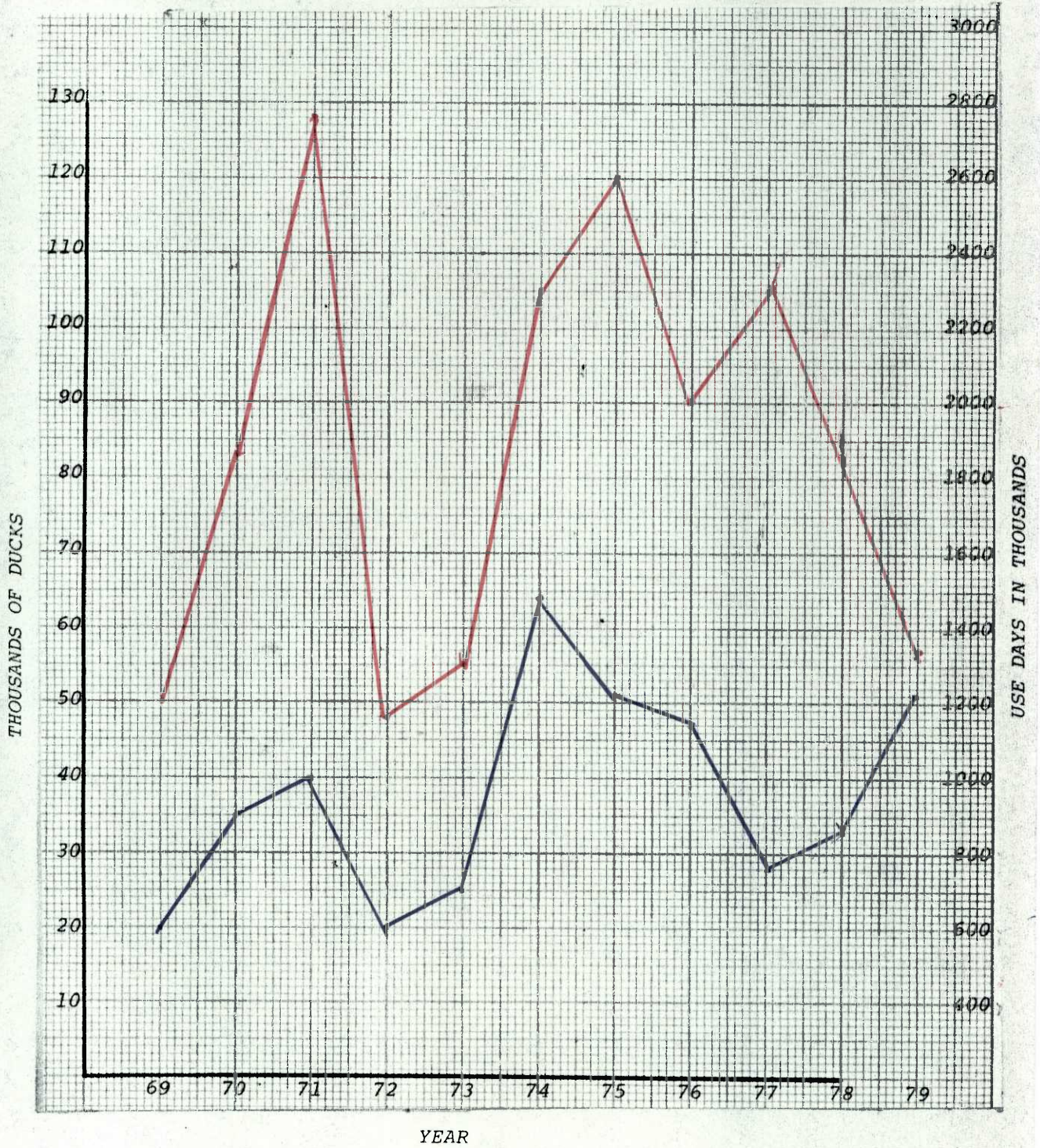
CANADA GEESE: PEAK NUMBERS & USE DAYS  
 FALL (SEPT/OCT/NOV)  
 (USE DAYS = AVG. POP X 90 DAYS)

PEAK USE ●  
 USE DAYS ●



DUCKS: PEAK NUMBERS & USE DAYS  
FALL ( SEPT/OCT/NOV)  
(USE DAYS = AVG. POP. x 90 DAYS)

● PEAK USE  
● USE DAYS



feeding in adjacent fields. Approximately 25,000 geese spend the entire winter in the area, primarily on Cayuga Lake. This is an increase over the previous year.

Refuge pre-season banding operations were conducted during September. A total of 100 mallards were banded - 50 of each sex.

## 2. Marsh and Waterbirds

The colony of black-crowned night herons peaked at 100 birds and 20 young were produced. Great blue herons are becoming increasingly more common; peak population was reported at 250 birds. Least and American bittern declined with estimated peak populations of only 30 birds respectively. Corresponding production also fell off to a total of 20 young produced. Total use days for all species numbered 134,472.

Accidental observations of a white pelican and sandhill crane were reported during the year. This was the second consecutive year in which a white pelican was observed on the refuge.

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

Flooded habitat during the spring contributed to somewhat of a downturn in shorebird populations. Herring gulls, ring-billed gulls, killdeer and black terns continue to represent the primary species using the refuge.

Common and black terns, woodcock, snipe and killdeer all nested on the refuge. An estimated 200 young were produced--all species.

## 4. Raptors

In total, 11 species of raptors commonly use the refuge. Red-tailed hawks and American kestrel account for the majority of raptors commonly using the refuge. Peak populations of 22 and 27 respectively were reported during the year. Total use days for the two species numbered 12,160.

A peregrine falcon was sighted in October. Other species present included turkey vultures, marsh hawk, sharp-shinned and Cooper's hawks, rough-legged hawks, great horned owls, screech owls, and snowy owls.

A peak population of three osprey were observed during the year. One pair of osprey attempted to nest on a snag in the Tschache Pool but were unsuccessful. We later determined that it was a false attempt. It is noteworthy to mention that the eagle hacking tower is within one-half mile and in direct line of sight of the osprey nest. Therefore, we anticipate that readily observable interspecific competition between osprey and eagles will result should these birds successfully nest next year.

Four immature bald eagles were hacked on the refuge in 1979. For further information see Section VI (B).

5. Other Migratory Birds

The annual Christmas Bird Count was held on January 1, 1979. Fifty-four species were tallied for a total of 5,964 birds.

C. Mammals and Non-Migratory Birds

1. Game Mammals

White-tailed deer are present throughout the year and reach peak numbers on the refuge during the winter months. Basically, the refuge serves as a quasi-yarding area with animals wintering in our bottomland hardwoods area and feeding on waste grain in adjacent fields at night. Shifts in agricultural practices from dairy/pasture operations to small grain/row crop farming over the last 10 to 15 years have affected overall herd condition and viability on and off the refuge to the point, where now the major limiting factor is the severity of weather conditions. During the winter browse plants become more important if the deer cannot move out to these contiguous fields to feed.

Deer starvation during the winter of 1978-79 was evident but light. As expected, young animals were most often stressed. The deer population was estimated to be 350 to 450 animals in July. This varied little from the previous year. Hunter harvest data is poor due to funding and manpower constraints. Additional studies of deer population dynamics are needed to supplement the poor harvest data and ocular observations.

2. Other Mammals

The muskrat population peaked at 8,000 in August. Traditional use of this resource has amounted to harvesting this species

under special use permit. Experience has shown that the muskrat take has consistently been under target levels established by the refuge. Therefore, the fur management/trapping program was transformed this year to a bid system designed to attract the "professional" trapper and improve muskrat harvests within our marshes and along dikes. Six management units have been designated. Each unit requires a minimum bid based upon estimated muskrat productivity. These units are assigned for a single season to the highest bidder. Total bids for the 1978-79 season amounted to \$3,992.00. A total of 2,286 muskrats were taken. Gross income generated was \$14,859.00. The harvest was determined to be low due to poor ice and snow conditions. As the program progresses, we anticipate that harvests will improve.

Gray and red squirrel populations remained stable throughout the year. Good squirrel habitat is at a premium; total potential habitat only amounts to approximately 600 acres. Cottontail rabbit populations remained low with an estimated peak population of only 125. Habitat is also limited for this species. Planned future closures of refuge Grazing Units should ultimately benefit cottontails on the refuge.

The woodchuck population on the refuge is consistently high. Their activities continually present problems insofar as safety is concerned; therefore, some animals are removed in affected areas. Other mammals which commonly occur on the refuge are mink, raccoon, beaver, opossum, red and grey fox.

### 3. Resident Birds

The status of the refuge pheasant population may be improving. The initial termination of grazing on one unit has already contributed to a slight increase in the population. However, adjacent and regional land use practices such as conversions from dairy/pasture operations to row crop and resulting clean farm techniques will continue to limit gains.

Mourning dove, ruffed grouse, common crow, and pileated woodpecker populations remained stable throughout the period.

### 4. Other Animal Life

Carp are present in all pools and the New York State Barge Canal. They serve as a primary food source for the bald eagle reintroduction program. The increasing number of this rough fish may be partly responsible for the recent presence of osprey on the refuge.

## V. INTERPRETATION AND RECREATION

### A. General

Montezuma had 253,300 total refuge visits in 1979. This is the highest use figure in recent refuge history. This figure is on the conservative side as only those visitors using the headquarters entrance are counted. Total visitation is broken down on a monthly basis:

January - 1,350	July - 19,000
February - 1,300	August - 18,600
March - 24,700	September - 25,250
April - 36,200	October - 41,650
May - 27,350	November - 31,100
June - 22,200	December - 4,600

Visitor activities at the refuge are separated by subprogram as follows:

Recreation Wildlife Non-Consumptive -	60 percent
Interpretation -	21 percent
Recreation Wildlife Consumptive -	15 percent
Environmental Education -	4 percent

There was no non-wildlife recreation use at Montezuma.

During 1979 approximately 85 percent of visitation came from New York State. Of this 85 percent, 80 percent of the New York State visitors were from the Finger Lakes/Rochester/Syracuse areas (65-mile radius) and 20 percent from the remainder of the state. Visitors using the Guest Register in the Visitor Contact Station represented 43 states and 19 foreign countries. Many visitors came from Canada, especially nearby Ontario and Quebec provinces.

### B. Interpretation & Non-Consumptive Wildlife Oriented Recreation

#### 1. Environmental Education (EE)

One hundred and thirty-five teachers completed six EE Teacher Workshops at Montezuma during 1979. Five of these workshops

were held in the spring; the other was held in the fall and was specifically about migration. These workshops proved very effective. In the month following the spring workshops 825 students participated in EE activities at the refuge--all accompanied by a teacher trained at our workshops. Workshops do take a great deal of time for planning, preparation and instruction; however, the results they are achieving make it all worthwhile.



Teachers learn the fundamentals of stream ecology at a spring teacher workshop. Photo by Gary Jones



*Students use the refuge environmental education room prior to going out on the refuge. Photo by Gary Jones*

*In conjunction with the last spring workshop, Montezuma hosted the Harrisburg Area Office EE Workshop. Attending were Bill Hutchinson from the HAO, Ed Yaw and Bob Bernath from the Newton Regional Office, Ed McCrea from Washington, two Refuge Managers, five Outdoor Recreation Planners, and three Assistant Refuge Managers. They participated in the teacher workshop, gave field station presentations and heard two panel discussions--one by FWS and the other by local teachers and principals. There was lots of discussion, cussing, and learning about EE.*



*FWS personnel hear a panel discussion by teachers and principals at the Harrisburg Area EE Workshop. Photo by Gary Jones*



*Service personnel in the trenches with teachers at the Harrisburg Area EE Workshop. Photo by Gary Jones*

An Environmental Education Advisory Board was formed during 1979. Seven teachers and principals representing five school districts met on a seasonal basis to help plan workshops and visits. This board helps insure that our EE efforts are useful to area schools. They must be--in 1979 there were a total of 5,500 EE visits for 16,000 activity hours.

## 2. Interpretation

The highlight of 1979 was the interpretation of the bald eagle restoration program. A unique approach was implemented--the use of closed circuit television. Visitors at the Tschache Pool observation tower watched the same live picture of the nest that the technicians monitoring the eagles saw.



Refuge visitors watch live television pictures of eagles on the hacking tower. Photo by Sue Rice

The use of television helped to alleviate many of the management problems associated with the eagle program. It drew large numbers of visitors away from the headquarters area. It assured everyone a good look at the eagles and thus reduced the number of trespass problems in the vicinity of the hacking tower. This was offset slightly by the increase in public inquiries resulting from media coverage but the favorable publicity and visitor comments the refuge received were worth it.



The bald eagle restoration program attracted the media with favorable coverage resulting. Photo by Gary Jones

The eagle interpretation effort began with a special refuge field day. Eagle Day was held July 4 to acquaint the public with the refuge and the eagle restoration program. A total of 1,600 visitors attended programs on endangered species and watched the eagles on the hacking tower. This crowd was larger than expected and strained refuge facilities, but no major problems resulted. Newspaper reporters from Rochester and the Finger Lakes attended and excellent articles resulted.



*Refuge facilities are sometimes overtaxed by visitors but this should be alleviated by new development planned under the Bicentennial Land Heritage Program. Photo by Gary Jones*

*During 1979 the refuge set up and manned two large displays-- National Wildlife Week at the Great Northeast Sports Show in Syracuse and National Hunting and Fishing Day at the Shoppingtown Mall also in Syracuse. Paid attendance was over 12,000 at the sports show, and most saw our display. Mall officials estimate that 7,000 saw the refuge display and new airboat at Shoppingtown.*



*The new refuge airboat, display and mounted wildlife attracted large crowds in Syracuse. Photo by Gary Jones*

*During spring and fall migration, roving interpreters took our interpretive efforts directly to the visitor. Armed with spotting scopes, field guides, and the willingness to answer questions these interpreters reached a large number of visitors normally ignored. This technique proved very effective by interpreting "at hand" objects that already attracted the visitors' attention.*



*Roving interpreter explains to a visitor how bald eagles are banded and identified.  
Photo by Sue Rice*

*There were a total of 72,750 interpretive visits for 68,600 activity hours in 1979. The greatest single activity was the self-guided interpretive auto tour route with 61,250 visits.*

### *3. Recreation Wildlife Non-Consumptive*

*Recreation wildlife non-consumptive visits continue to constitute the largest public use of the refuge. Wildlife/wildlands observation accounted for over 203,000 visits. Surprisingly, land vehicle visits increased as a result of the Iranian Oil Crisis. The gas shortage caused an increase in the number of visitors from the Finger Lakes/Rochester/Syracuse areas. We also noted an increase in the average number of visitors per vehicle.*

C. Consumptive Wildlife-Oriented Recreation

There were 50,500 visits in this public use category for 155,000 activity hours in 1979. The most frequent occurring activities by visit were:

Warmwater fishing	- 94 percent
Archery deer hunting	- 4 percent
General waterfowl hunting	- 1 percent
Small game hunting	- 1 percent

Fishing use increased from 28,100 visits in 1978 to 47,800 in 1979. This is due to the fact that a combination of alternating flood and drought along with irregular water discharge in 1978 produced the worst fishing in 25 years. Conditions returned to normal in 1979.

Over 1,800 archers took part in the refuge deer hunt. Twenty-five deer were checked at the office as required; however, we know that everyone does not play by the rules and suspect at least twice that number were harvested. Fifty deer harvested would mean a kill ratio of 3.5 percent. This is close to the official New York State average for archery deer hunters.



Deer are checked to determine age, sex and general health. Photo by Steve Flanders

The bow season at Montezuma coincided with the state gun season-- November 19 to December 11, 1979. In September a coordination meeting was held with the New York State Department of Environmental Conservation. At that meeting it was decided that no major changes would be made to the deer hunt due to shortages of funds and manpower.

During the 1979 waterfowl hunt at Montezuma, 413 hunters spent 2,650 activity hours and took 394 ducks and geese. The season ran from October 11 to November 15, 1979 with hunting on Tuesdays, Thursdays, and Saturdays. The first weekend of the hunt was reserved for the Young Waterfowlers Training Program (YWTP). Twenty-nine young men and women participated in the YWTP this year--there seems to be a renewed interest in this program.



Young waterfowlers learn the correct way to use decoys.  
Photo by Gary Jones

As in 1978, all waterfowl hunters must take the New York State Waterfowl Identification Course and provide proof of satisfactory completion. This is primarily due to the presence of bald eagles at the refuge. Maintenance Worker Steve Flanders taught four of the state identification courses at the refuge and 105 people attended. Steve also assisted with two hunter safety courses in Waterloo, New York.

Changes in the waterfowl hunt which were implemented in 1977 were also continued in 1979 with good results. The hunt was restricted to the Tschache Pool (1,300 acres). A maximum of 40 hunters, 20 parties of two, were allowed each day. Each party had to have a boat as no dike shooting was allowed. Each hunter was allowed 15 steel shot shells per day. Hunting ended at 12 noon each day and hunters were encouraged to use retrievers.

Small game hunting at Montezuma is a token program; 125 hunters spent 375 activity hours with most after rabbit. The 1979-80 season began December 17, 1979 and extended through February 29, 1980. Night-time raccoon hunting was allowed with a Special Use Permit only. Five permits were issued in 1979--most to refuge neighbors. The sharp drop in the price of raccoon caused a proportionate drop in hunters' interest. The change to this permit system has allowed us to gain control over the former practice of hunters and dogs all over the refuge at night.

## VI. OTHER ITEMS

A. Field Investigations

## 1. Wildlife Management Studies

- No. 10 - BANDING LOCAL AND FLIGHTLESS GEESE TO DETERMINE MIGRATIONAL PATTERNS AND HARVEST RATES OF MONTEZUMA REARED CANADA GEESE; by refuge personnel

This study was inactive during CY79.

- No. 11 - THE ECOLOGY AND MANAGEMENT OF PURPLE LOOSESTRIFE; by refuge personnel and the New York Cooperative Wildlife Research Unit, R. A. Malecki (Assistant Leader), and T. J. Rawinski (M. S. Candidate)

The second field season of purple loosestrife research was completed in 1979. Life history studies revealed that seeds remained 96 percent viable after an 8-month storage period in water, second-year plants were only slightly stressed by partial inundation and the phenology of bloom was earlier in 1979 than in 1978.

Ecological impacts of loosestrife on a marsh ecosystem were assessed. Overall, wildlife value of loosestrife was inferior to cattail with only red-winged blackbirds preferring loosestrife. In water areas where loosestrife grew with cattail, loosestrife density decreased most where cattail density was greatest. The effects of selective foraging of cattail by muskrats are being monitored in these mixed stands. Grazing by white-tailed deer had a significant impact on the growth of loosestrife at a site where grazing pressure was heavy and the plants occurred as scattered individuals.

Experimental control of loosestrife was conducted off the refuge using competitive plant species, the herbicide glyphosate and manipulative measures such as cutting and burning. Japanese millet, when seeded with loosestrife, proved an excellent competitor. Reed canary-grass shows promise in

controlling loosestrife on less wet sites. Cutting in late summer resulted in more effective control than mid-summer cutting. The effects of burning cut loosestrife shoots will be determined next field season. Plots of loosestrife sprayed with three application rates of glyphosate at three different times of the year will be sampled next field season. The study is continuing.

- No. 15 - GROWTH AND SURVIVAL OF SWAMP WHITE OAK AND OTHER TREE SPECIES IN A GREEN TIMBER WATERFOWL IMPOUNDMENT; by Dr. D. Q. Thompson and Frank Golet

This study was inactive during CY79.

- No. 16 - ECOLOGY AND MANAGEMENT OF GREEN TIMBER IMPOUNDMENTS: by Dr. D. Q. Thompson, Al Nice, and Cornell University personnel

This study was inactive during CY79.

## 2. Other Applied Research

- a. FEASIBILITY OF LOW ALTITUDE OBLIQUE AERIAL PHOTOGRAPHY AS AN INFORMATION SOURCE FOR WETLAND MANAGEMENT; by Cornell University personnel, Dr. E. Hardy, and Michael S. Hall (PhD Candidate)

This study was inactive during CY79. The study will continue when funds become available.

- b. BLACKBIRD ROOSTING STUDY; by Cornell University and William Bridgeland (M.S. Candidate)

In 1979 the blackbird roosting population was monitored during the late summer and early fall as part of a study of red-winged blackbird foraging behavior. A portion of this data was reported at the Eighth Bird Control Cornell Seminar at Bowling Green, Ohio, and will be included in a Cornell University Master thesis to be completed in 1980.

Other investigations continue under the direction of Dr. James Caslick and John P. Hayes. Blackbird population monitoring and more detailed evaluation of the interactions between roosting birds and the marsh habitat will be made. The study is continuing.

- c. BALD EAGLE REINTRODUCTION PROJECT; by New York State Department of Environmental Conservation (NYS DEC) and the U. S. Fish and Wildlife Service (FWS)

The eagle hacking program continued for a fourth year. Two 6-week old bald eagles arrived from Minnesota on June 21. Two other eaglets from Minnesota arrived on July 12. Additional eagle sightings this year included three different individuals in April--one from 1977 release, one from 1978 release, and one unmarked bird. Two different birds were observed intermittently in May and in October a bird released in 1977 was observed. The refuge hosted as many as six different birds during two quarters of 1979. The following table is a summary of eagle numbers and use days since 1972. This table is derived from quarterly reports, Monthly Hightlights, and Narrative Reports.

The intent of the project is to re-establish nesting bald eagles in Central, Upstate New York. The last known successful nesting effort occurred in the late 1950's. The eagles were presumed to have been extirpated by high levels of DDT, DDE, dieldrin, and heavy metals in the food chain. We seem to be on our way towards achieving this goal. In the fall of 1979 two Montezuma-released bald eagles, in adult plumage, were observed in northern New York. The two birds, released in 1976, may have already formed a pair-bond. If they nest in 1980 it will be the first new eagle nest in New York State in some time.

B. Cooperative Programs

1. Youth Conservation Corps Program (YCC)

Four YCC staff positions, 13 Enrollee positions, and one Youth Leader position were filled for the 1979 YCC Program. YCC, established in 1971 at Montezuma, has been of great help in accomplishing a large number of work projects that otherwise might not have been completed.

The non-residential camp opened July 5 and terminated August 15. Staff employees entered on duty a few days earlier to familiarize themselves with the refuge and to set up for upcoming work projects. The total budget for 1979 was \$15,300. Most of this was expended for staff and Enrollee salaries. Since YCC budgets have not increased significantly in recent years,

BALD EAGLES: NUMBERS AND USE DAYS

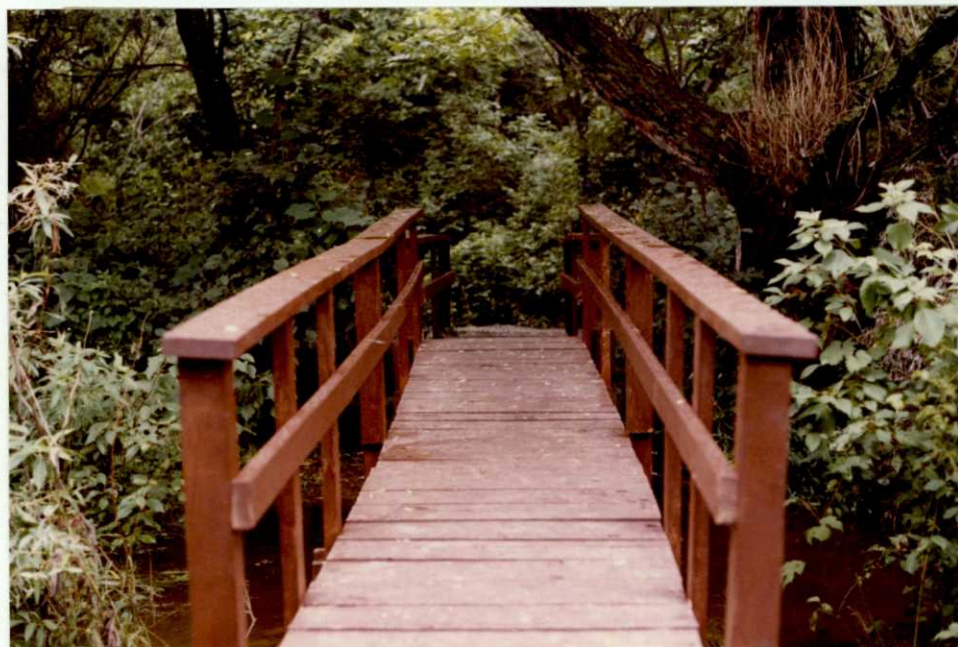
Calendar Year	Jan-Mar		Apr-June		July-Sept		Oct-Dec		Total Use Days
	No.	Use Days	No.	Use Days	No.	Use Days	No.	Use Days	
1972			2	20	2	180	1	30	230
1973	1	5	*	*	2	40	**		45
1974	**		2	60	3	150	1	30	240
1975	1	5	2	100	2	60	**		165
1976	**		**		3	200	2	50	250
1977	**		5	25	7	450	5	150	625
1978	1	15	3	20	5	380	3	180	595
1979	**		6	175	6	398	2	45	618

\* no report

\*\* not present

we have to supplement these monies with refuge dollars in order to complete work projects and run a quality camp.

In 1979, 18 work projects were completed with an appraised value of \$18,350.00. Some of the major projects completed were: staining and painting wooden structures, clearing and seeding nesting islands, clearing brush from right-of-ways, maintaining and upgrading the Esker Brook Nature Trail, construction of a new bridge over Esker Brook, placing rip-rap around the Seneca Spillway, litter pickup, loosestrife pulling, and water control structure maintenance. As usual, environmental education was stressed throughout the camp and the entire camp spent a weekend in the Adirondack Mountains studying the ecology and public use impacts of the area.



Foot bridge reconstruction at Esker Brook was a one of several worthwhile learning experiences for YCC Enrollees. Photo by Tony Leger

1979 was another excellent year for YCC at Montezuma and we hope this worthwhile program continues for many more years.

## 2. Young Adult Conservation Corps Program (YACC)

1979 was another disappointing year for YACC. Due to freezes and attrition, we spent most of the spring with only a Group Leader and three Enrollees. In early July the Group Leader was transferred to Back Bay YACC. In early August the last Enrollee resigned. After that time YACC was basically a non-entity at Montezuma.

Due to a lack of manpower and limited funding, only two major work projects were completed by YACC in 1979. These were re-construction of a foot bridge and construction of the South Spring Pool environmental education platform. After the program ended accounting problems began to surface. It seems that many vendors had not been paid for services dating back to the beginning of the camp in May 1978. The refuge was compelled to address these problems and try to expedite payments to vendors. With the help of the staff at Parker River YACC, we identified the overdue accounts and reprocessed the invoices. By December 1979 most of the accounts were finally straightened out.

We plan to resurrect YACC at Montezuma in 1980 under a new format. The refuge will support a maximum of seven Enrollees under the direct supervision of station personnel. No Group Leader will be assigned. The plan is to hire whatever number of Enrollees we can support and assign them to various programs (i.e., maintenance, public use, administration). The Enrollees will then be supervised by the refuge staff member responsible for that specific program area. We hope that under this new system YACC will be a positive experience at Montezuma--for both the Enrollees and the refuge.

## 3. Commercial Fishing

One Special Use Permit was issued during CY79 to remove carp from the Main Pool, Tschache Pool, and May's Point Spillways. This permit was issued to Fred Martin (79-1). During 1979, 37,700 pounds of carp were taken from refuge waters. Dead carp were shipped on ice to markets in New York City. Live carp were shipped to Montreal, Quebec, and Indiana. The program will continue in 1980. Revenue received was \$25.00.

## 4. Other Uses

A Special Use Permit for flag cutting (cattail) was issued to Ward Russell (79-7). Total revenue received was \$25.00.

A Special Use Permit for beekeeping was issued to Irving Gable (79-2). This permit allowed Mr. Gable to position no more than 50 hives on the refuge. Total revenue received was \$25.00.

C. Items of Interest

1. Items of Interest

The EIS for the proposed Cayuga County Airport located 2.5 air miles from the refuge boundary was adopted during 1979. Refuge and Wildlife Assistance personnel made presentations regarding the proposed facility siting during public hearings conducted in May. Air strike hazards, potential impacts to the bald eagle restoration program and other disturbance problems were noted. Follow-up site visits were made as part of meetings held with FAA and Wildlife Assistance personnel. During one such visit to the proposed airport site in April, 14,000 Canada geese and several million blackbirds were observed in the area within a one-hour period. In July, information received from FAA confirmed that the selected site of the Cayuga County Airport planning group was no longer viable. This was due in large measure to FWS testimony and documented air strike hazards. Federal funding was subsequently withheld by FAA. We are anticipating further pressure from Cayuga County officials to approve their selected site.

A controversial "sign of the times" surfaced as a potential hazard to Montezuma Refuge. This so-called "sign of the times" in actuality is a landfill. The potential problems emanate from the fact that Black Brook, the refuge's principle water supply, flows through the center of the Tantalio Landfill located in Waterloo, New York. The landfill was established in 1958 and has continued operation to date with minimal monitoring as to the types and quantities of waste streams. Several local chemical companies, manufacturing-processing plants, as well as the City of Rochester and most surrounding communities, have deposited waste at this site. To compound matters, the operator has applied for a permit from the New York State Department of Environmental Conservation (DEC) to expand the operation by approximately 80 acres. In response to this issue, refuge staff hosted coordination meetings with DEC administrative and technical-laboratory personnel to appraise planned investigations. A sampling and testing program ensued under the direction of Dr. Ward Stone, Chief Wildlife Pathologist for DEC. Preliminary results uncovered residuals of several chlorinated hydrocarbons persisting in leachate streams. The

magnitude of the threat is embodied in (1) a permit to discharge leachate into the brook; (2) quantity and mass of existing landfilled waste; (3) soil mechanics and site hydrology, and (4) poor design. This issue will certainly intensify over the next calendar year.



Aerial view showing portion of Tantalito Landfill. Road runs north and south. Note Black Brook bisecting area NW to SE. Also note pooled water around edges of working faces; almost all of these pools are contaminated with leachate. Several heavy metals and some organics have been identified. Photo by Hegge.

## 2. Personnel Actions - Promotions and Transfers

January 27: William Koch, primary Assistant Refuge Manager, transferred to Blackwater NWR. We wish Bill much success at his new assignment.

January 28: Grady Hocutt, Refuge Manager, received a promotion to GS12. Well deserved, Gene!

March 25: Anthony Leger entered on duty as Assistant Refuge Manager (Trainee). Tony transferred in from Parker River NWR. Welcome to Montezuma, Tony!

April 8: Judith McMahon was promoted to Administrative Clerk, GS6. Congratulations!

April 8: Steven Flanders, Maintenance Worker, was promoted to WG8. Congratulations, Steve!

June 3: Gary Jones, Outdoor Recreation Planner, received his GS9. Congratulations!

September 9: Melvin Norsen, Maintenance Worker, was promoted to WG7. And congratulations to you too, Mel!

November 4: William Hegge entered on duty as the primary Assistant Refuge Manager. Bill transferred in from Back Bay NWR. Welcome to Montezuma, Bill!

### 3. Other Personnel Activities

#### Manager Hocutt:

Instructed hunting and fishing courses at the National Wildlife Refuge Training Academy, Beckley, West Virginia - 2/22 to 2/23/79 and 4/9 to 4/10/79.

Attended Area II Project Leaders Conference, Boiling Springs, PA - 3/28 to 3/29/79.

Hosted Area II Environmental Education Workshop, Seneca Falls, New York - 6/6 to 6/8/79.

Attended Area II Conference, Harrisburg, PA - 8/8 to 8/9/79.

#### ORP Jones:

Attended the Area II Environmental Education Workshop, Seneca Falls, NY - 6/6 to 6/8/79.

Attended Area II Project Leaders Conference, Boiling Springs, PA - 3/28 to 3/29/79.

Attended AIN Workshop, Bloomington, Minnesota - 2/12 to 2/17/79.

#### Administrative Clerk McMahon:

Attended the Area II Project Leaders Conference, Boiling Springs, PA - 3/28 to 3/29/79.

Other:

The following employees received the 8-hour defensive driver training course held at the refuge and provided by the Seneca Army Depot: Hocutt, Dewey, Jones, Flanders, McMahon, Norsen, and Leger.

## 4. Credits

Bill Hegge: I (A), (C), (D); III; IV; VI (C.1.)  
 Vern Dewey: I (B)  
 Tony Leger: III; VI (A.c.); VI (B)  
 Gary Jones: V  
 Judy McMahon: VI (A); VI (C. 2, 3, 4); VI (D); typing  
 Gene Hocutt: editing

D. Safety

In the first week of operation, the four staff members and 14 Enrollees of the refuge's YCC camp attended the 8-hour American Red Cross Multi-Media First Aid Training Course in Seneca Falls. The NSC Defensive Driving Course was given to all new staff members, including the YCC staff. The YCC staff members were given safety orientation and training prior to the camp opening. YCC Enrollees were given instructions on the proper use of tools and personal protective equipment. YCC safety meetings were held weekly and tailgate sessions were held before the start of new job assignments.

Refuge safety meetings were held in conjunction with regular staff meetings.

# MONTEZUMA

NATIONAL WILDLIFE REFUGE



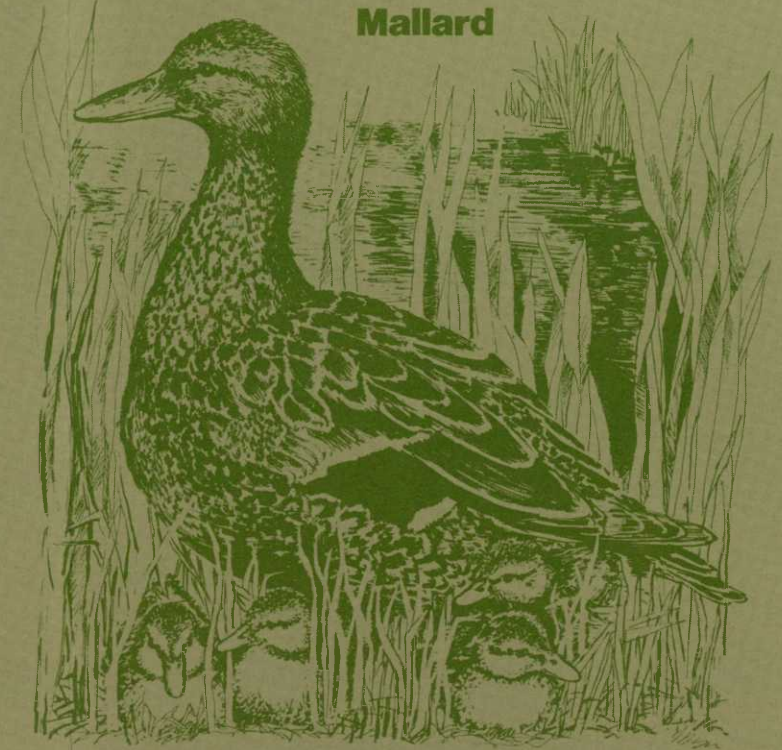
Bald Eagle



Muskrat



Great Blue Heron



Mallard

**ENVIRONMENTAL  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION**

Environmental education embodies a philosophy of teaching. This philosophy utilizes the joy and challenge of the out-of-doors and ecology to make more vivid and more enjoyable the essential skills of reading, writing, arithmetic, social studies, art, and music. The real pay-off is an investment in tomorrow's citizens and the nation's legacy of wildlife and wildlands.

Montezuma has developed several EE facilities. There are three designated EE sites.

Unit 17 is an EE area for upland studies encompassing beaver activities, boardwalks, and a good example of plant succession. South Spring Pool is used for various aquatic studies. Esker Brook Nature Trail is a beautiful walking trail offering studies on geology and stream ecology.

The environmental resource room has a complete collection of mounted wildlife. Films, microscopes, and dip nets are available for on-refuge use. The self-guided auto tour route is a good way to see the refuge.

The visitor area includes a contact station with seasonal displays, observation tower, and restrooms.

Registration is required for use of these facilities.

Each spring and fall Montezuma hosts EE teacher workshops. These enable teachers to use the refuge's EE sites and other facilities. They become comfortable in the out-of-doors and learn ecological concepts. Activities are practiced for use both at Montezuma and the schoolyard.

Montezuma's teacher workshops have proved very enjoyable and informative. Interested teachers should contact the refuge.

**MONTEZUMA**  
NATIONAL WILDLIFE REFUGE

-  EE SITE
-  OFFICE
-  AUTO TOUR
-  VISITOR AREA
-  TOWER
-  SUBHEADQUARTERS



ENVIRONMENTAL  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION

For further information contact:

Refuge Manager  
Montezuma National Wildlife Refuge  
R.D. #1, Box 1411  
Seneca Falls, New York 13148  
Telephone: (315) 568-5987

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.



prepared by  
DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE

August 1979



MONTEZUMA  
NATIONAL WILDLIFE REFUGE  
ENVIRONMENTAL  
EDUCATION  
EDUCATION  
EDUCATION  
EDUCATION  
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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.



September 1980  
RL 52550-2

# BIRDS of Montezuma

National  
Wildlife  
Refuge



New York

MONTEZUMA NATIONAL WILDLIFE REFUGE in Seneca County, New York, was established in 1937 to provide nesting, resting, and feeding area for ducks, geese, and many water birds and songbirds. This Refuge contains 6,334 acres of widely diversified habitat, from extensive marshes to upland hardwoods. Refuge objectives include providing food, rest, and protection for spring and fall migrations and providing for wildlife-oriented recreation.

Public uses include a five-mile self-guided automobile tour around the Main Pool, a three-mile hiking trail and opportunities to fish, take pictures, and eat a picnic lunch near the Refuge Headquarters.

Birding opportunities are best from March through November with peak migrations of waterfowl in mid-April and early October. Warblers are abundant in late May to early June. Summer nesters and broods provide excellent viewing — there is always something to see on a birding tour.

This folder lists 314 species of birds that have been identified on Montezuma Refuge since the establishment in 1937. Please report any sightings of birds that are not included in this list to the Refuge Manager.



Most birds are migratory, therefore their seasonal occurrence is coded as follows:

**SEASON**

- s — Spring            March-May
- S — Summer        June-August
- F — Fall             September-November
- W — Winter         December-February
- † = Nesting has occurred on the refuge

**RELATIVE ABUNDANCE**

- a — abundant     a species which is very numerous.
- c — common      certain to be seen or heard in suitable habitat.
- u — uncommon   present, but not certain to be seen.
- o — occasional   seen only a few times during a season.
- r — rare            seen at intervals of 2 to 5 years.

**LOONS - GREBES - CORMORANTS - HERONS - IBISES**

	s	S	F	W
___ Common Loon.....	o		o	
___ Red-throated Loon .....			r	
___ Red-necked Grebe .....		r		r
___ Horned Grebe .....	o		o	
___ Pied-billed Grebe† .....	c	c	c	
___ Double-crested Cormorant.....	o	o		o
___ Great Blue Heron.....	c	c	c	o
___ Green Heron† .....	o		c	o
___ Little Blue Heron .....		r	r	
___ Cattle Egret .....		r	r	
___ Great Egret.....	o		c	o
___ Snowy Egret.....		r		
___ Black-crowned Night Heron† ....	o		c	c
___ Least Bittern† .....	o		o	o
___ American Bittern† .....	c		c	c
___ Glossy Ibis.....		r		r

**SWANS - GEESE and DUCKS**

___ Mute Swan .....	o	o	o	o
___ Whistling Swan .....	c		o	o
___ Canada Goose† .....	a		c	c
___ Brant .....				o
___ Snow Goose.....	c			o

s S F W

___ Ring-billed Gull .....	c	c	c	o
___ Bonaparte's Gull .....	o	o	o	
___ Common Tern† .....	c	c	c	
___ Caspian Tern .....	o	o		
___ Black Tern† .....	c	a		
___ Rock Dove† .....	c	c	c	c
___ Mourning Dove† .....	c	c	c	o
___ Yellow-billed Cuckoo† .....	o	o		
___ Black-billed Cuckoo† .....	o	o		
___ Barn Owl .....	r	r	r	r
___ Screech Owl† .....	c	c	c	c
___ Great Horned Owl† .....	c	c	c	c
___ Snowy Owl .....			r	
___ Barred Owl† .....	r	r	r	r
___ Short-eared Owl .....	o	r	o	o
___ Saw-whet Owl .....	o	o	o	
___ Whip-poor-will .....	o			
___ Common Nighthawk .....	o			
___ Chimney Swift† .....	c	c		

**HUMMINGBIRDS - KINGFISHERS -  
WOODPECKERS - FLYCATCHERS  
LARKS - SWALLOWS**

___ Ruby-throated Hummingbird† .....	c			
___ Belted Kingfisher† .....	c	c	c	o
___ Common Flicker† .....	c	c	c	o
___ Pileated Woodpecker† .....	o	o	o	o
___ Red-bellied Woodpecker† .....	c	c	c	c
___ Yellow-bellied Sapsucker .....	o	o		
___ Hairy Woodpecker† .....	o	o	o	o
___ Downy Woodpecker† .....	c	c	c	c
___ Eastern Kingbird† .....	c	c	o	
___ Great Crested Flycatcher .....	o	c		
___ Eastern Phoebe† .....	c	c	c	
___ Willow Flycatcher .....	o	c		
___ Alder Flycatcher .....	o	o		

s S F W

___ Least Flycatcher† .....	c			
___ Eastern Wood Pewee† .....	c			
___ Olive-sided Flycatcher .....	r	r		
___ Horned Lark† .....	o	o	o	o
___ Bank Swallow† .....	c	c		
___ Rough-winged Swallow .....	o	o		
___ Barn Swallow† .....	c	c	c	
___ Cliff Swallow† .....	r	r		
___ Purple Martin† .....	c	c		

**JAYS and CROWS - TITMICE  
NUTHATCHES - WRENS**

___ Blue Jay† .....	c	c	c	c
___ Common Crow† .....	c	c	c	o
___ Black-capped Chickadee† .....	c	c	c	c
___ Tufted Titmouse .....	o	o	o	
___ White-breasted Nuthatch† .....	c	c	c	c
___ Red-breasted Nuthatch† .....	o	o	r	
___ Brown Creeper† .....	o	o	o	o
___ House Wren† .....	c	c		
___ Winter Wren† .....	c	c	c	
___ Carolina Wren .....	r	r	r	
___ Marsh Wren† .....	c	c	c	
___ Sedge Wren† .....	r	r		

**MOCKINGBIRDS - THRUSHES -  
GNATCATCHERS and KINGLETS -  
WAXWINGS**

___ Mockingbird .....	r	r		
___ Gray Catbird† .....	c	c	c	
___ Brown Thrasher† .....	o	o	o	
___ American Robin† .....	c	c	c	o
___ Wood Thrush† .....	c	c	o	
___ Hermit Thrush .....	c	c		
___ Swainson's Thrush .....	o	o		
___ Gray-cheeked Thrush .....	o	o		

s S F W

___ Ring-billed Gull .....	c	c	c	o
___ Bonaparte's Gull .....	o	o	o	
___ Common Tern† .....	c	c	c	
___ Caspian Tern .....	o	o		
___ Black Tern† .....	c	a		
___ Rock Dove† .....	c	c	c	c
___ Mourning Dove† .....	c	c	c	o
___ Yellow-billed Cuckoo† .....	o	o		
___ Black-billed Cuckoo† .....	o	o		
___ Barn Owl .....	r	r	r	r
___ Screech Owl† .....	c	c	c	c
___ Great Horned Owl† .....	c	c	c	c
___ Snowy Owl .....		r		
___ Barred Owl† .....	r	r	r	r
___ Short-eared Owl .....	o	r	o	o
___ Saw-whet Owl .....	o	o	o	
___ Whip-poor-will .....	o			
___ Common Nighthawk .....	o			
___ Chimney Swift† .....	c	c		

**HUMMINGBIRDS - KINGFISHERS -  
WOODPECKERS - FLYCATCHERS  
LARKS - SWALLOWS**

___ Ruby-throated Hummingbird† .....	c			
___ Belted Kingfisher† .....	c	c	c	o
___ Common Flicker† .....	c	c	c	o
___ Pileated Woodpecker† .....	o	o	o	o
___ Red-bellied Woodpecker† .....	c	c	c	c
___ Yellow-bellied Sapsucker .....	o	o		
___ Hairy Woodpecker† .....	o	o	o	o
___ Downy Woodpecker† .....	c	c	c	c
___ Eastern Kingbird† .....	c	c	o	
___ Great Crested Flycatcher .....	o	c		
___ Eastern Phoebe† .....	c	c	c	
___ Willow Flycatcher .....	o	c		
___ Alder Flycatcher .....	o	o		

s S F W

___ Least Flycatcher† .....	c			
___ Eastern Wood Pewee† .....	c			
___ Olive-sided Flycatcher .....	r	r		
___ Horned Lark† .....	o	o	o	o
___ Bank Swallow† .....	c	c		
___ Rough-winged Swallow .....	o	o		
___ Barn Swallow† .....	c	c	c	
___ Cliff Swallow† .....	r	r		
___ Purple Martin† .....	c	c		

**JAYS and CROWS - TITMICE  
NUTHATCHES - WRENS**

___ Blue Jay† .....	c	c	c	c
___ Common Crow† .....	c	c	c	o
___ Black-capped Chickadee† .....	c	c	c	c
___ Tufted Titmouse .....	o	o	o	
___ White-breasted Nuthatch† .....	c	c	c	c
___ Red-breasted Nuthatch† .....	o	o	r	
___ Brown Creeper† .....	o	o	o	o
___ House Wren† .....	c	c		
___ Winter Wren† .....	c	c	c	
___ Carolina Wren .....	r	r	r	
___ Marsh Wren† .....	c	c	c	
___ Sedge Wren† .....	r	r		

**MOCKINGBIRDS - THRUSHES -  
GNATCATCHERS and KINGLETS -  
WAXWINGS**

___ Mockingbird .....	r	r		
___ Gray Catbird† .....	c	c	c	
___ Brown Thrasher† .....	o	o	o	
___ American Robin† .....	c	c	c	o
___ Wood Thrush† .....	c	c	o	
___ Hermit Thrush .....	c	c		
___ Swainson's Thrush .....	o	o		
___ Gray-cheeked Thrush .....	o	o		

s S F W

___ Veery†	.....c	c	o
___ Eastern Bluebird†	.....r	r	r
___ Blue-gray Gnatcatcher†	.....o	o	
___ Golden-crowned Kinglet	.....c	c	
___ Ruby-crowned Kinglet	.....c	c	
___ Water Pipit	.....c	c	
___ Cedar Waxwing†	.....o	o	o o

**SHRIKES - VIREOS - WARBLERS -  
BLACKBIRDS - TANAGERS**

___ Northern Shrike	.....		o
___ Loggerhead Shrike†	.....r	r	
___ Starling†	.....a	a	a c
___ Yellow-throated Vireo†	.....o	o	
___ Solitary Vireo	.....o	o	
___ Red-eyed Vireo†	.....c	c	c
___ Philadelphia Vireo	.....r	r	
___ Warbling Vireo†	.....c	c	c
___ Black-and-white Warbler	.....c	o	c
___ Prothonotary Warbler†	.....o	o	
___ Golden-winged Warbler	.....o	o	
___ Blue-winged Warbler	.....r		
___ Brewster's Warbler	.....r		
___ Tennessee Warbler	.....o	o	
___ Orange-crowned Warbler	.....r		
___ Nashville Warbler	.....c	c	
___ Northern Parula	.....o	o	
___ Yellow Warbler†	.....c	c	c
___ Magnolia Warbler	.....c	c	
___ Cape May Warbler	.....c	c	
___ Black-throated Blue Warbler	.....c	c	
___ Yellow-rumped Warbler	.....c	c	
___ Black-throated Green Warbler	.....c	c	
___ Cerulean Warbler†	.....c	o	c
___ Blackburnian Warbler	.....c	c	
___ Chestnut-sided Warbler	.....o	o	
___ Bay-breasted Warbler	.....o	o	
___ Blackpoll Warbler	.....c	c	
___ Pine Warbler	.....o	o	

s S F W

___ Prairie Warbler	.....o	o	
___ Palm Warbler	.....o	o	
___ Ovenbird†	.....c	c	c
___ Northern Waterthrush	.....o	o	o
___ Louisiana Waterthrush	.....o	o	o
___ Connecticut Warbler	.....r	r	
___ Morning Warbler	.....o	o	o
___ Common Yellowthroat†	.....c	c	c
___ Yellow-breasted Chat	.....r	r	
___ Hooded Warbler	.....r	r	
___ Wilson's Warbler	.....o	o	
___ Canada Warbler	.....c	o	
___ American Redstart†	.....c	c	c
___ House Sparrow†	.....c	c	c c
___ Bobolink†	.....o	o	c
___ Eastern Meadowlark	.....c	c	c o
___ Red-winged Blackbird†	.....a	a	a o
___ Northern Oriole	.....c	c	c
___ Rusty Blackbird	.....o	o	
___ Common Grackle†	.....a	a	a o
___ Brown-headed Cowbird†	.....c	c	a o
___ Scarlet Tanager†	.....c	o	o

**GROSBEAKS, SPARROWS  
and BUNTINGS**

___ Cardinal†	.....c	c	c c
___ Rose-breasted Grosbeak†	.....c	c	c
___ Indigo Bunting†	.....c	c	
___ Evening Grosbeak	.....r	r	r
___ Purple Finch†	.....c	o	c o
___ House Finch	.....o	o	o o
___ Common Redpoll	.....		r
___ Pine Siskin	.....		r
___ American Goldfinch†	.....c	c	c o
___ Rufous-sided Towhee†	.....c	o	c
___ Savannah Sparrow†	.....o	o	o
___ Grasshopper Sparrow†	.....o	o	o
___ Henslow's Sparrow†	.....o	o	o
___ Vesper Sparrow†	.....o	o	o
___ Dark-eyed Junco	.....o	o	o

s S F W

___ Chipping Sparrow† .....	C	C	C	
___ Field Sparrow† .....	C	C	C	O
___ White-crowned Sparrow .....	C	C		
___ White-throated Sparrow .....	C	C		
___ Lincoln's Sparrow.....	O	O		
___ Swamp Sparrow†.....	C	C	C	
___ Song Sparrow†.....	C	C	C	O
___ Lapland Longspur .....				O
___ Snow Bunting .....				O



NOTES

Location \_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_ Total \_\_\_\_\_

Observers \_\_\_\_\_

\_\_\_\_\_

Additional Species \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

For additional information, contact:

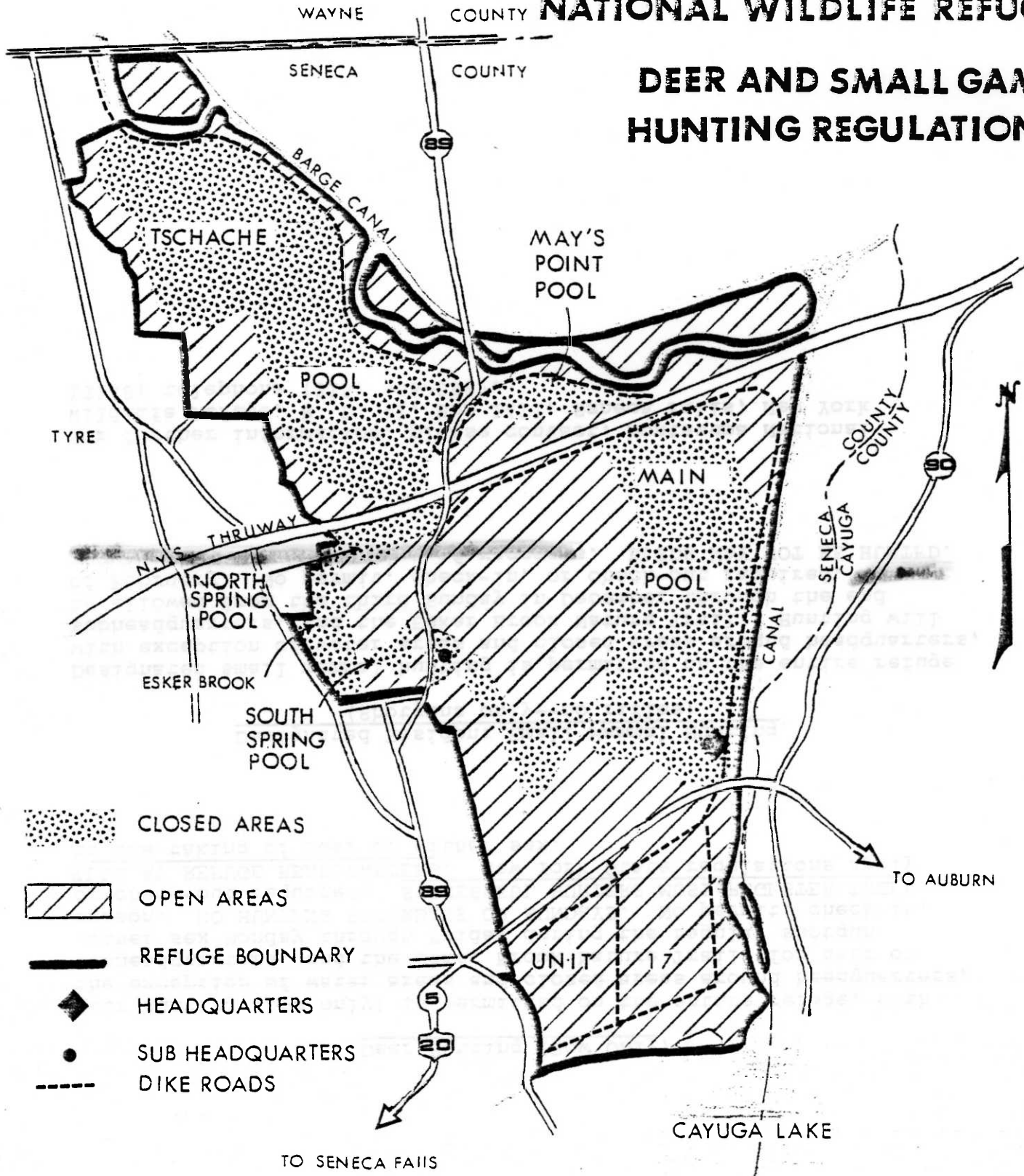
Refuge Manager  
 Montezuma National Wildlife Refuge  
 RD #1, Box 141  
 Seneca Falls, New York 13148  
 Telephone: (315) 568-5987

The following is a list of accidental species that have been recorded only once or twice on the Montezuma National Wildlife Refuge.

Western Grebe	Parasitic Jaeger
Eared Grebe	Glaucous Gull
Leach's Storm Petrel	Iceland Gull
Wilson's Storm Petrel	Little Gull
White Pelican	Least Tern
Gannet	Arctic Tern
Black Swan	Roseate Tern
Pink Footed Goose	Forester's Tern
White Fronted Goose	Gull-billed Tern
Bar Headed Goose	Razor Bill
Egyptian Goose	Thick-billed Murre
Cinamon Teal	Dovekie
Eurasian Green Winged Teal	Black Guillemot
Shelduck	White-winged Dove
Fulvous Whistling Duck	Long-eared Owl
Barrow's Goldeneye	Scissor-tailed Flycatcher
King Eider	Western Kingbird
Red-crested Pochard	Say's Phoebe
Masked Duck	Yellow-bellied Flycatcher
Gyr Falcon	Acadian Flycatcher
Turkey	Gray Jay
Bobwhite	Common Raven
Louisiana Heron	Boreal Chickadee
Yellow-crowned Night Heron	Sprague's Pipit
White Ibis	Bohemian Waxwing
American Flamingo	Yellow-headed Blackbird
Greater Sand Hill Crane	Brewer's Blackbird
Yellow Rail	Boat-tailed Grackle
Black Rail	Blue Grosbeak
Purple Gallinule	Pine Grosbeak
American Avocet	European Goldfinch
Black-necked Stilt	White-winged Crossbill
Lapwing	Dickcissel
Piping Plover	Sharp-tailed Sparrow
Marbled Godwit	Lark Sparrow
Buff-breasted Sandpiper	Oregon Junco
Red Phalarope	Clay-colored Sparrow

# MONTEZUMA NATIONAL WILDLIFE REFUGE

## DEER AND SMALL GAME HUNTING REGULATIONS



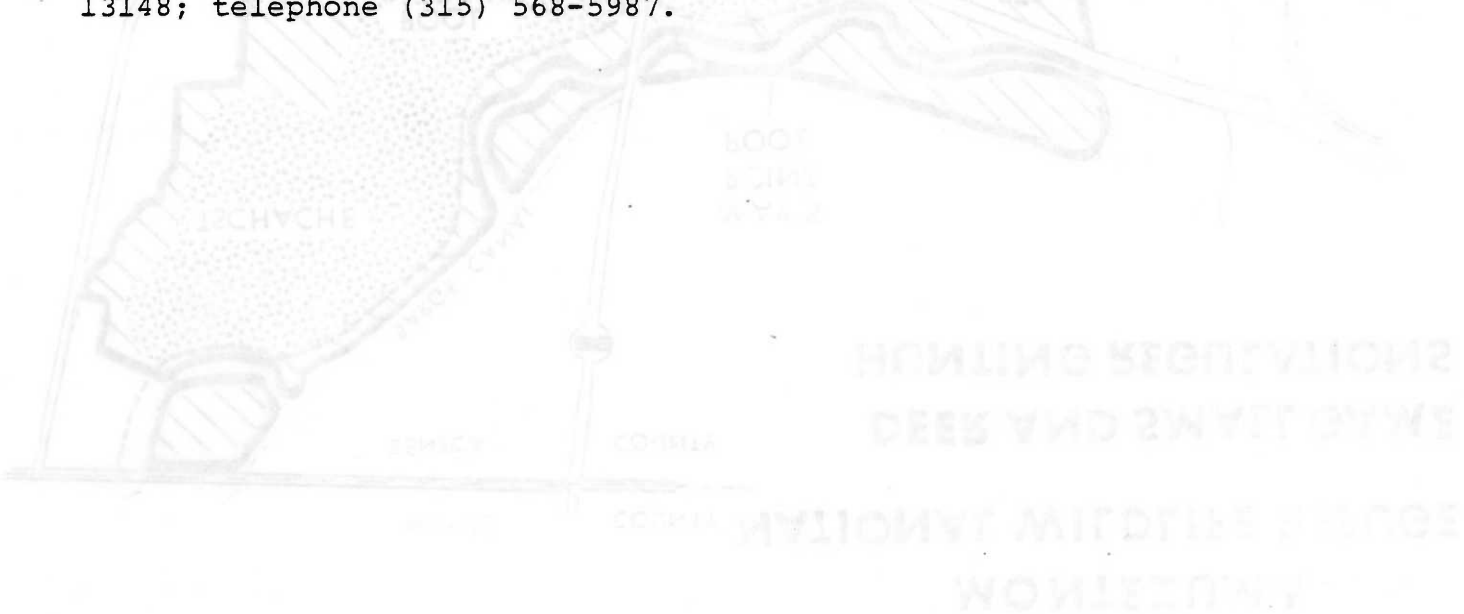
Deer Hunting (Bow Only)

Deer hunting (bow only) is permitted on the entire refuge, with the exception of water areas and closed areas around headquarters, subheadquarters, and the Esker Brook Nature Trail, for deer of either sex Monday through Friday during the regular shotgun season. NO HUNTING SATURDAYS OR SUNDAYS. No permit, check-in, or check-out required. SUCCESSFUL HUNTERS MUST REGISTER THEIR KILL AT REFUGE HEADQUARTERS. New York State regulations apply to the taking of deer of either sex.

Designated Resident Small Mammal Hunting  
(Shotguns only--no rifles)

Designated small mammal hunting is permitted on the entire refuge with exception of water areas and closed areas around headquarters, subheadquarters, and the Esker Brook Nature Trail. Hunting will be allowed from the third Sunday in December through the end of February. No permit, check-in, or check-out required. ~~Permit required for hunting of raccoons.~~ BIRDS MAY NOT BE HUNTED.

For further information, please contact: Montezuma National Wildlife Refuge, R. D. #1, Box 1411, Seneca Falls, New York 13148; telephone (315) 568-5987.

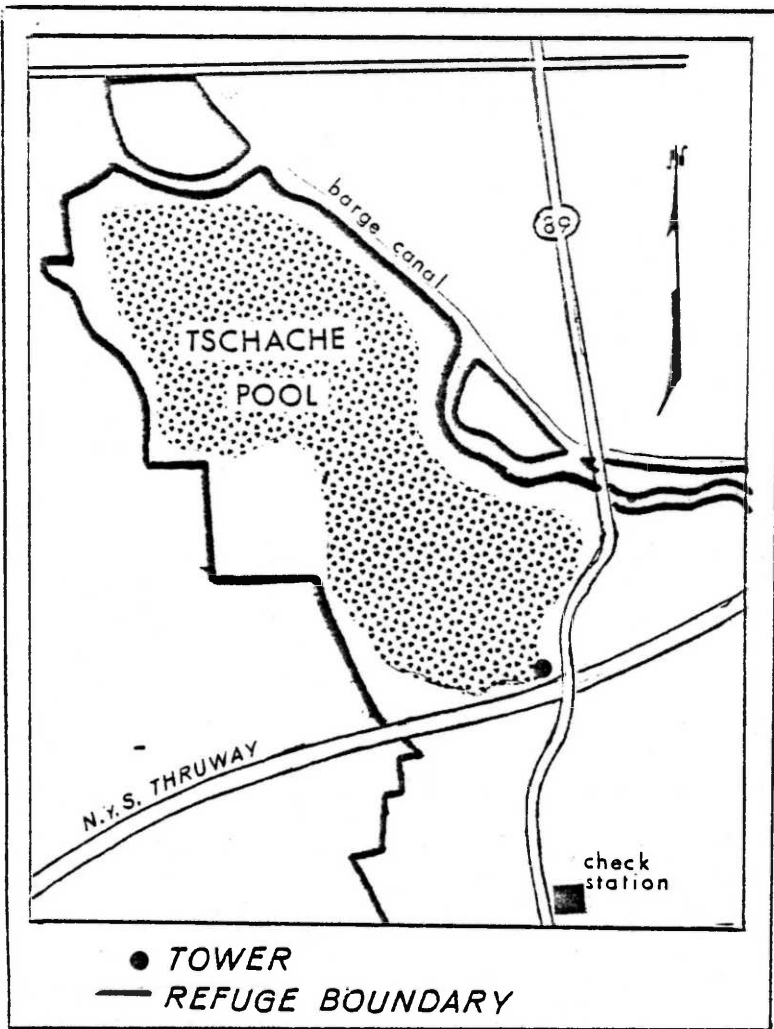




## MONTEZUMA NATIONAL WILDLIFE REFUGE

### WATERFOWL HUNTING REGULATIONS

Hunting is permitted in accordance with state and federal regulations and the additional restrictions described below.

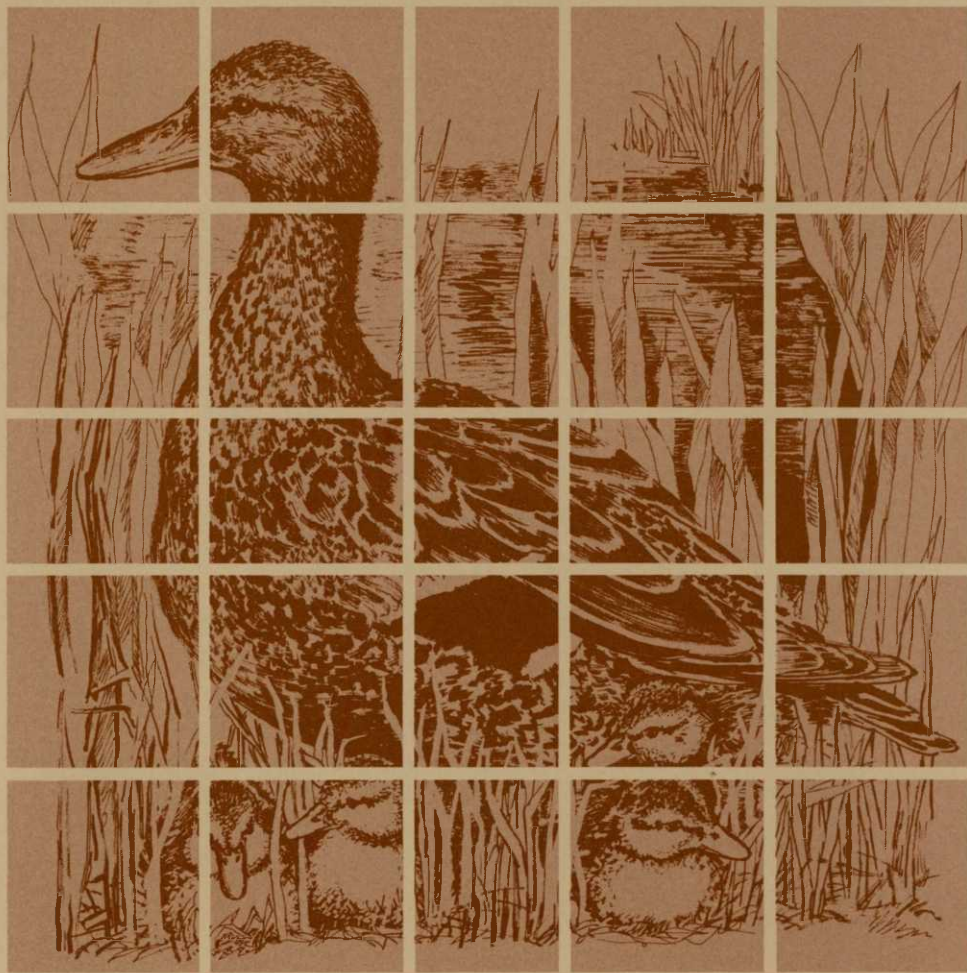


Waterfowl hunting is permitted from individually selected sites (free roam) within the Tschache Pool on a PERMIT BASIS on Tuesdays, Thursdays, and Saturdays from the opening day of the waterfowl season until the end of the first half of a split season, the pool freezes over, or the third Saturday in November--whichever comes first. The first Saturday is reserved for the Young Waterfowler's Training Program hunt. In August applications for permits are available from the refuge or upon written request and must be returned no later than two weeks prior to the opening of the waterfowl hunting season. A random drawing for reservations will be held prior to the season--only successful applicants are notified. Persons with reservations may bring one companion. Both the successful applicant and his companion must sign in the morning of the hunt. A DAILY CHECK-IN IS REQUIRED AT LEAST ONE HOUR BEFORE LEGAL SHOOTING TIME. Failure to appear will cause forfeiture of the reservation. Forfeited reservations will be awarded to other hunters by drawing on the morning of the hunt. Successful completion of the New York State Waterfowl Hunter Identification Course is required to hunt on the refuge. It is the hunter's responsibility to provide proof of completion upon request.

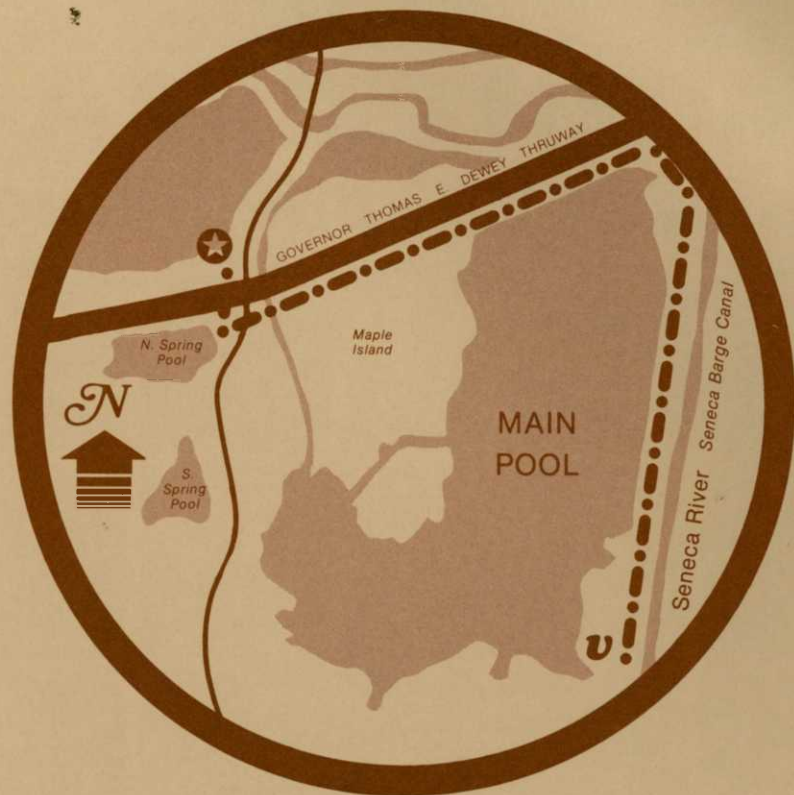
Each hunter is limited to 15 steel shot shells with not larger than Size #1 fine shot. ONLY STEEL SHOT SHELLS CAN BE USED. STEEL SHOT NOT AVAILABLE AT THE REFUGE. Hunting ends each day at 12 noon local time. All hunters must checkout at the Check Station on Route 89 by 1 p.m. local time. The use of well-trained retrievers is encouraged.

For further information contact: Montezuma National Wildlife Refuge, RD1, Box 1411, Seneca Falls, NY 13148; telephone 315-568-5987.

**A  
Visit To  
MONTEZUMA  
National Wildlife Refuge**



# A REFUGE TOUR



AUTO  
TOUR



VISITOR  
AREA

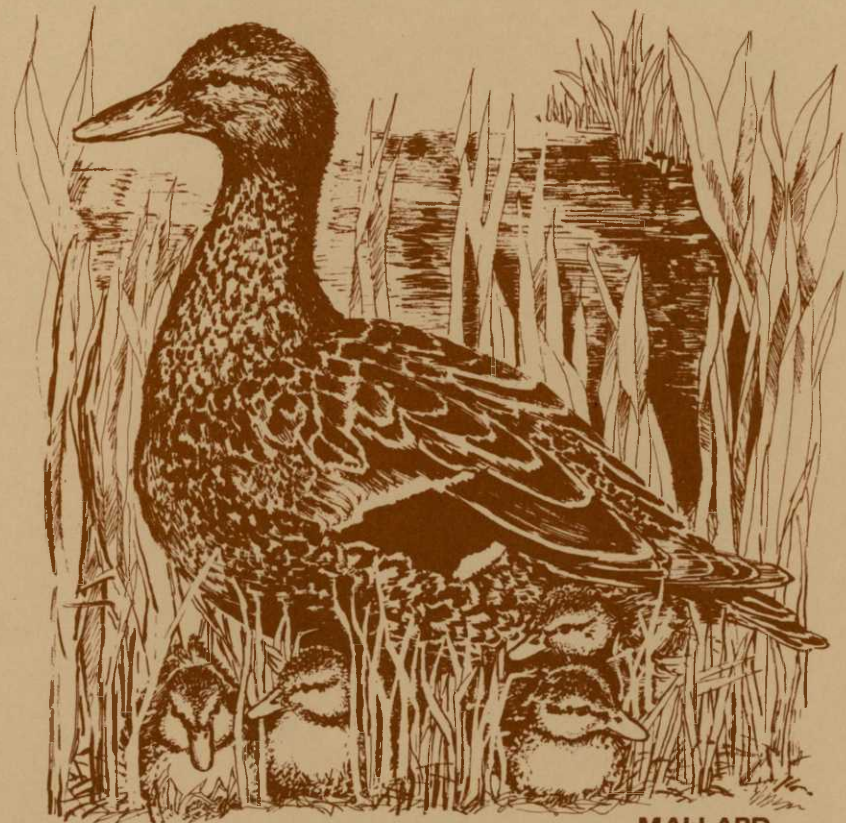


EAGLE  
TOWER

Welcome to Montezuma! This self-guided auto tour will take you 3.5 miles through the national wildlife refuge. Follow the numbered markers to the Eagle Observation Tower on Route 89. **PLEASE RETURN THIS GUIDE THERE.** Obey the 15 m.p.h. speed limit and drive safely. Remember, here you are the guests of wildlife.

# MARSH HISTORY

1



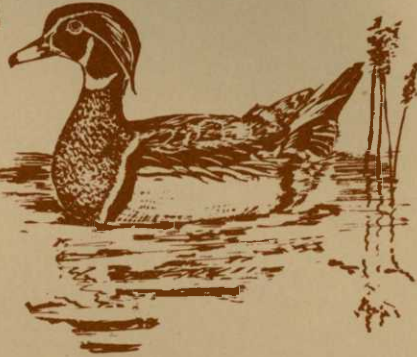
MALLARD

Before 1900, the Montezuma Marsh was one of the greatest freshwater marshes in North America. As with many wetlands, its importance was unrecognized and all but 100 acres were drained. The refuge has restored 5,085 acres. Wetlands are among the most biologically productive lands we have. They also naturally prevent flooding, filter pollution and replenish ground water supplies.

## 2

VIEWING  
WILDLIFE

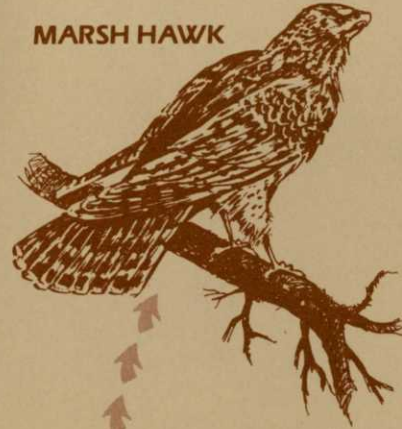
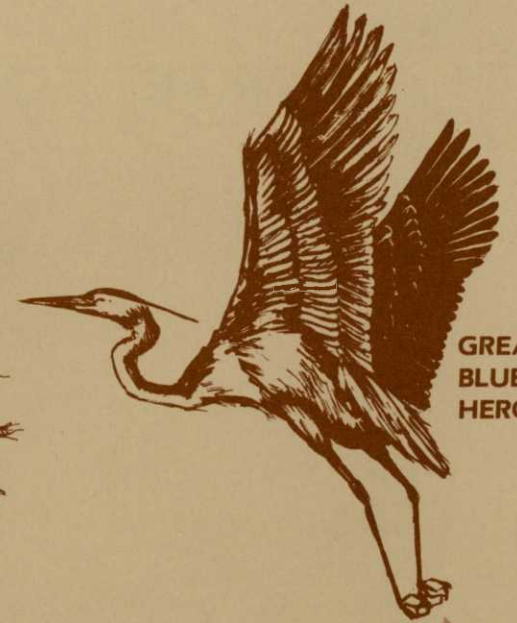
WOOD DUCK



WHITE TAILED DEER

YELLOW-SHAFTED  
FLICKER

MARSH HAWK

GREAT  
BLUE  
HERON

MUSKRAT



BULLHEAD



CATTAIL

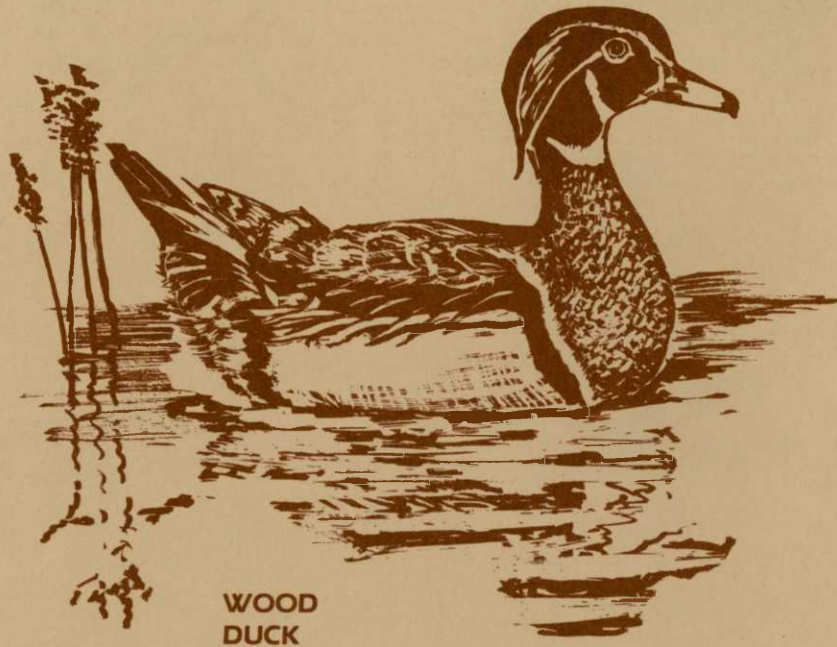


MINERALS

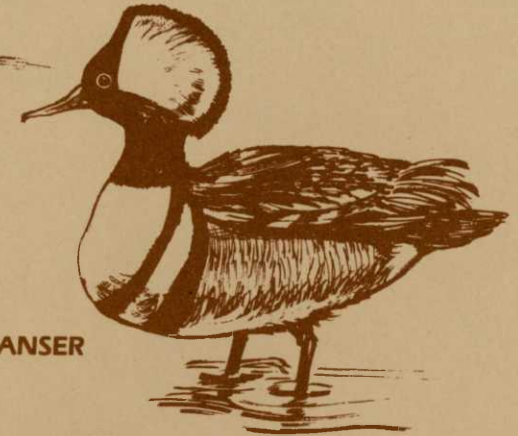
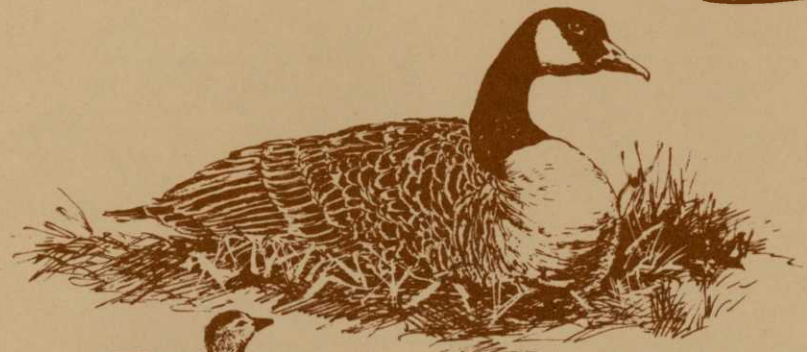
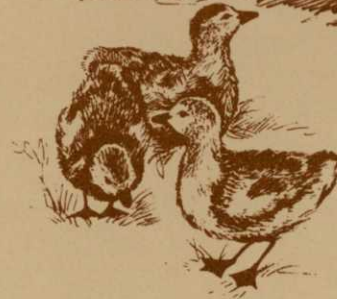
SUNLIGHT

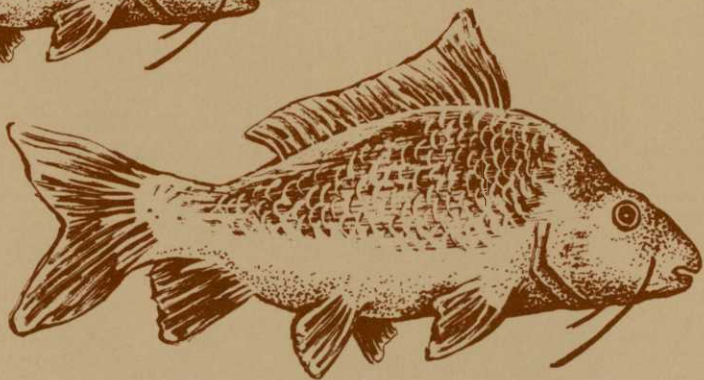
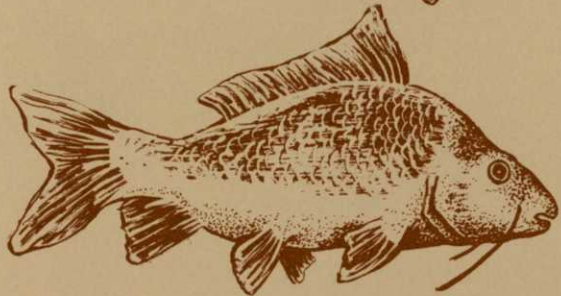
Energy (food) flows through marsh food chains from one group of living organisms to another.

Food, water, shelter and space form **habitats** for wildlife. To see an animal you must first know its habitat requirements. Various types of waterfowl will be found in different parts of the marsh. The marsh hawk hunts over marshes and nearby fields. Deer feed at the edge of woods and marsh, disappearing at the first signs of danger.

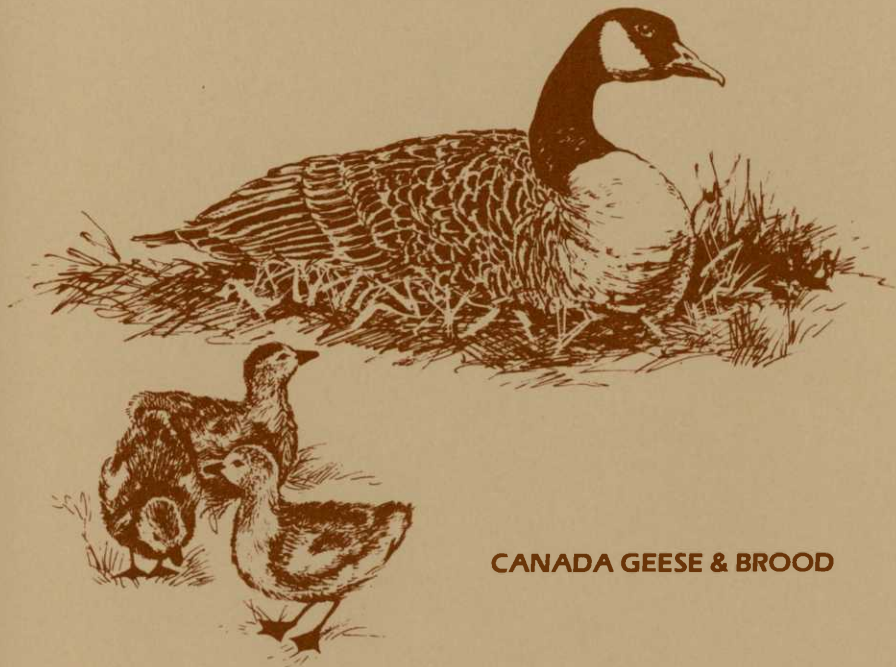
**WATERFOWL****WOOD  
DUCK**

Montezuma is managed as resting, feeding and nesting habitats for migratory waterfowl. Swans are the largest seen. You can see up to 150,000 Canada geese and an equal number of ducks. During migration you should visit late in the evening to watch large flocks returning from off-refuge feeding forays.

**AMERICAN WIGEON****HOODED MERGANSER****CANADA GEESE**

**4****CARP &  
SPILLWAY**

Water is the lifeblood of the refuge. This water control structure allows water levels to be managed for the benefit of many types of wildlife. In spring, the release of water attracts large numbers of carp from the canal. Carp are bottom feeders, stirring up mud and silt. This kills beneficial marsh plants by blocking out sunlight. Rotating and fixed screens keep carp from the marsh.

**NESTING  
ISLAND****5****CANADA GEESE & BROOD**

In the area to your right artificial nesting islands have been built for waterfowl. During May through July, the water to your left is a good place to see waterfowl broods. You will often see Canada goose broods crossing this road.

6

## PURPLE LOOSESTRIFE



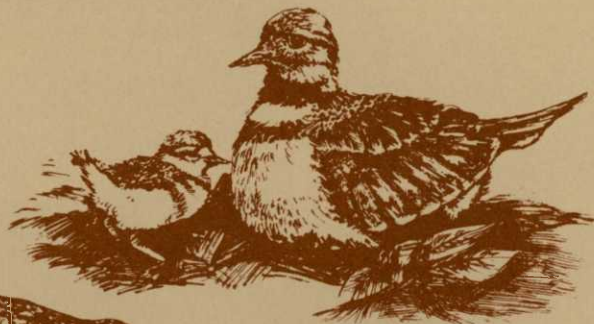
In the summer you will see an abundance of purple flowers to your right and left. This is purple loosestrife. Loosestrife, like the carp, is an introduced species. It is not native and is of little importance to wildlife. Unfortunately, it spreads easily and chokes out more desirable marsh plants.

## THRUWAY

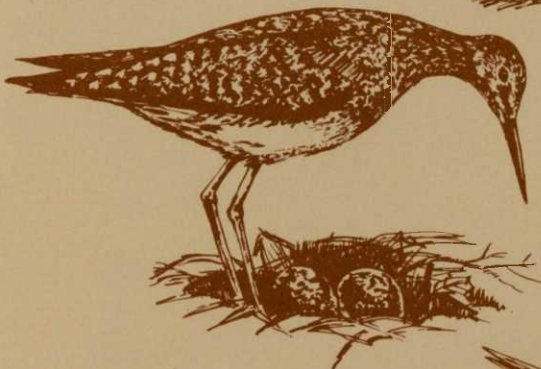
7



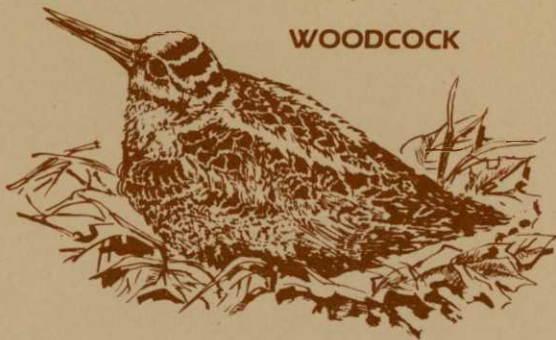
On your right is the New York State Thruway. It was built across Montezuma in the 1950's. This is the connecting spillway. It allows water to flow into the main pool, to your left, from storage pools across the thruway. This helps to insure adequate water for the main pool.



KILLDEER



YELLOWLEGS



WOODCOCK



SNIPE

The wetlands and mudflats to your left is excellent habitat for shorebirds, a diverse group of wading birds. The killdeer calls its name and draws intruders from its nest by feigning injury. Yellowlegs wade through the shallows on bright yellow legs. The snipe flies by in rapid zigzags close to cover. At night the woodcock probes the moist ground for food.



Directly before you is a flooded timber impoundment. Marsh habitat was needed more than forest and the area was flooded. You can see heavy concentrations of wigeon here in the spring and mallards and teal in the fall.

10

## BALD EAGLE



From this tower you can see the hacking platforms across the pool. Here, between 1976 and 1980, bald eagles are being released in an attempt to reintroduce the bird. Eagles were eliminated from New York by the indiscriminate use of pesticides and habitat loss. You may see eagles in the spring and summer perched on dead trees or soaring overhead.

**PLEASE  
RETURN  
THIS BOOK  
HERE**

**As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.**

For more information contact:

**Refuge Manager**  
**Montezuma National Wildlife Refuge**  
R.D. #1, Box 1411  
Seneca Falls, New York 13148  
Telephone (315) 568-5987



**Department of the Interior**  
U.S. Fish and Wildlife Service



August 1979

# MAMMALS



## Montezuma

### National Wildlife Refuge

In general mammals are secretive and active after darkness fills the swamps and woods. Look for tracks and other signs of their presence.

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

MONTEZUMA NATIONAL WILDLIFE REFUGE contains 6,000 acres of swamp woodland, marsh, and cultivated fields. The area is managed to provide habitat for all forms of wildlife, especially waterfowl. This endeavor is intended to benefit people as well as the wildlife concerned.

Mammals often have a conspicuous role in the habitat management of a refuge. The impact of muskrat activity on the marsh vegetation at Montezuma is an example. Muskrats eat a variety of water plants and use some as construction material for their houses. Waterfowl and wading birds need a mix of open water (for mobility) and vegetation (for food or cover). Too many muskrats result in not enough cover and too few allow the plants to choke out the open water. At Montezuma muskrat populations are controlled by winter trapping. Between 1,000 and 8,000 animals are removed each year, yet there are always enough survivors in summer to help manage the refuge wetland.



The following list of 48 mammals was derived from refuge records and accounts of animals from similar habitats in surrounding areas. The order in which the species appear and the scientific names follow Miller and Kellogg, List of North American Recent Mammals, with common names and notes on habits and habitat preferences coming from Burt and Grossenheider, A Field Guide to the Mammals, Houghton Mifflin Co., 1964; W. J. Hamilton, Jr., The Mammals of Eastern United States, Comstock, 1943; and Ralph S. Palmer, The Mammal Guide, Doubleday and Co., 1954.

Opossum (Didelphis marsupialis). Although formerly confined to more southerly climates, this pouched mammal is now found in large numbers throughout the refuge and is often killed on the highway.

Masked Shrew (Sorex cinereus). This small mammal is abundant throughout the moist woodlands, but like other shrews, is rarely seen.

Smoky Shrew (Sorex fumeus). Damp woodlands with moss-covered logs and ferns are the preferred habitats of this shrew.

Pygmy Shrew (Microsorex hoyi). A relatively rare mammal of both wooded and open areas. At 2.3 grams, it is by weight the smallest living mammal.

Shorttail Shrew (Blarina brevicauda). This common shrew is found on nearly all the habitat types of the refuge. Its vole size, lead-gray color and short tail distinguish the shorttail from other shrews.

Least Shrew (Cryptotis parva). This rare mammal favors open grassy areas but may frequent forests and marshes as well.

Hairytail Mole (Parascalops breweri). A tunnel dweller, this mole favors the drier, looser soils of the refuge.

Star-nose Mole (Condylura cristata). This common mole is found in the heavier, damper soils of woods and fields.

Little Brown Myotis (Myotis lucifugus). This common bat is a feeble and erratic flier, active from dusk to dawn. It roosts during daylight hours in buildings or trees.

Keen Myotis (Myotis keeni). Flying strong and direct, this bat emerges late in the evening.

Indiana Myotis (Myotis sodalis). The Indiana myotis spends the daytime in man-made structures or hollow trees.

Small-footed Myotis (Myotis subulatus). The smallest of the Eastern myotis group, this bat appears early in the evening.

Silver-haired Bat (Lasionycteris noctivagans). This winged mammal often abroad before sundown is characterized by a slow erratic flight and roosts alone in forested areas.

Eastern Pipistrel (Pipistrellus subflavus). The smallest bat in the area, this pipistrel emerges at dusk. It is a slow, weak, erratic flier.

Big Brown Bat (Eptesicus fuscus). Commonly found around buildings, this relatively large bat is a strong flier with frequent abrupt changes in direction.

Red Bat (Lasiurus borealis). These bats emerge in deep dusk and generally fly in pairs over wooded areas. Their rapid, high flight is marked by frequent spiraling descents.

Hoary Bat (Lasiurus cinereus). A large solitary inhabitant of the wooded areas, the hoary bat flies late, high and direct.

Snowshoe Hare (Lepus americanus). A small population of hares inhabits the swamp woodlands.

Eastern Cottontail (Sylvilagus floridanus). The cottontail is common along dikes and in brushy borders of fields and swamp woodlands.

Woodchuck (Marmota monax). Woodchucks are abundant along the dikes and some are present in the swamp woodlands. They may often be observed in summer months feeding along the highway shoulders.

Eastern Chipmunk (Tamias striatus). Small numbers of these animals are present in drier forested and brushy areas.

Eastern Gray Squirrel (Sciurus Carolinensis). These tree-dwelling squirrels are abundant in the swamp woodlands.

Red Squirrel (Tamiasciurus hudsonicus). Although generally associated with coniferous stands, red squirrels are frequently found in the deciduous swamp woodlands.

Southern Flying Squirrel (Glaucomys volans). This gliding member of the squirrel family is nocturnal and rarely observed in its preferred deciduous woods habitat.

Beaver (Castor canadensis). This large fur-bearing rodent occurs along the canals and river banks.

Deer Mouse (Peromyscus maniculatus). This small white-footed mouse is found in moderate numbers throughout the swamp woodlands.

White-footed Mouse (Peromyscus leucopus). Closely resembling the deer mouse, the white-footed mice prove adaptable to varying moisture conditions and are found in greater numbers within the swamp woodlands.

Southern Bog Lemming (Synaptomys cooperi). This small lemming occurs in damp, heavily vegetated areas.

Boreal Redback Vole (Clethrionomys gapperi). This vole favors the damp surroundings of the swamp forests and occurs there in small numbers.

Meadow Vole (Microtus pennsylvanicus). High populations of this rodent occur in fields while lesser numbers may be found in forested areas.

Pine Vole (Pitymys pinetorum). Forest floors with a layer of duff for tunneling are the preferred habitat of this vole.

Muskrat (Ondatra zibethicus). This rodent, often valued for its fur, is abundant in the marshes.

Norway Rat (Rattus norvegicus). This is an introduced pest, and may be found along foundations of buildings.

House Mouse (Mus musculus). The house mouse is also an introduced species, which usually inhabits old buildings.

Meadow Jumping Mouse (Zapus hudsonius). This mouse is found in high numbers in refuge meadows and swamps, while occurring less frequently in open wooded areas.

Woodland Jumping Mouse (Napaeozapus insignis). Related closely to the meadow jumping mouse, however, favors woodlands with ground cover near a source of open water.

Porcupine (Erethizon dorsatum). A sight record approximately 15 years ago is the only known occurrence.

Coyote (Canis latrans). Transients no doubt cross refuge boundaries on occasion.

Red Fox (Vulpes fulva). Several inhabit the brushy areas and swamp woodlands.

Gray Fox (Urocyon cinereoargenteus). This nocturnal and more secretive fox occurs rarely.

Raccoon (Procyon lotor). Raccoons are common near marshes and waterways.

Shorttail Weasel (Mustela erminea). Small numbers are found in brushy and wooded areas near water.

Least Weasel (Mustela rixosa). This smallest of carnivores is found in open wooded areas. Tracks have been observed in the swamp woodlands.

Longtail Weasel (Mustela frenata). This weasel may be found in most habitats near water.

Mink (Mustela vison). Moderate numbers of this furbearer occur along canals and pools and some are taken in winter by trappers.

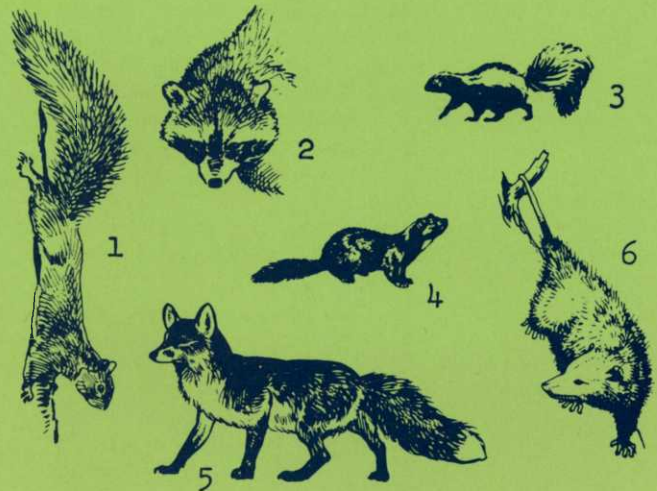
Striped Skunk (Mephitis mephitis). Skunks are found in semi-open wooded areas and brushy sections near water.

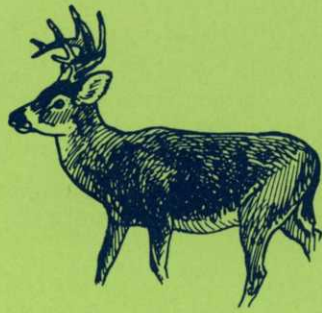
Bobcat (Lynx rufus). Two observations of this mammal were made in 1955 and another in 1956. It is rare on the refuge.

Whitetail Deer (Odocoileus virginianus). Deer can often be seen feeding in refuge fields in late afternoon.

#### IDENTIFY SOME MAMMALS

Match numbers with the names on the next page.





Answers to: IDENTIFY SOME MAMMALS

- |             |            |
|-------------|------------|
| 1. Squirrel | 4. Mink    |
| 2. Raccoon  | 5. Fox     |
| 3. Skunk    | 6. Opossum |

For more information contact:  
Refuge Manager  
Montezuma National Wildlife Refuge  
Route 1, Box 232  
Seneca Falls, New York 13148

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RL-337  
April 1979



# MONTEZUMA National Wildlife Refuge

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prepared by  
DEPARTMENT OF THE INTERIOR  
U.S. FISH AND WILDLIFE SERVICE

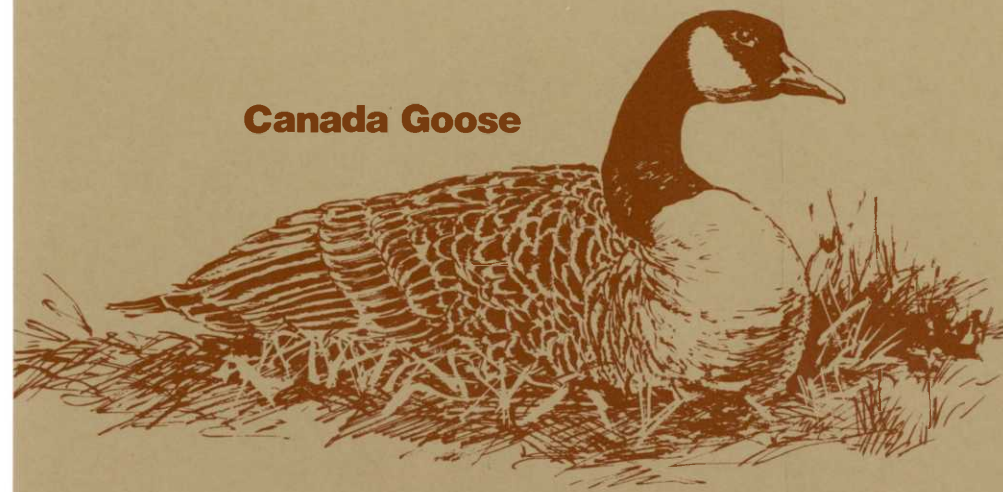
August 1979



# MONTEZUMA

National Wildlife  
Refuge

# MONTEZUMA National Wildlife Refuge



Canada Goose



Red-Tailed Hawk



Muskrat



Mallard



Great  
Blue Heron

Red-Winged  
Blackbird

## INTRODUCTION

Montezuma National Wildlife Refuge is located at the north end of Cayuga Lake, in the Finger Lakes Region of New York.

Before 1900 the Montezuma Marsh extended north from Cayuga Lake for 12 miles and was up to 8 miles wide. It was one of the most productive marshes in North America. As with many marshes its importance went unrecognized and by 1911 all but 100 acres had been drained.

In 1937 the 6,432-acre refuge was established with development aimed at restoring a part of the marsh. The success of this restoration is apparent each fall and spring when waterfowl fill the sky.

## WILDLIFE

Montezuma's varied habitats provide food and cover for numerous birds, mammals, and fish. A total of 282 species of birds have been seen. Canada geese, mallards, wood ducks, teal, and other birds nest on the refuge. The largest concentrations of waterfowl occur during migration. Peak populations have reached 140,000 Canada geese in April and 150,000 ducks in October.

Besides waterfowl, there are many species of herons, shorebirds, terns, and songbirds at Montezuma. White-tailed deer are common and easily seen at dawn and dusk. Woodchucks are abundant along dikes.

Bald eagles in New York have declined to one breeding pair. A program to re-establish a nesting population by releasing young birds in the wild was begun at Montezuma in 1976.

Refuge marshes are excellent muskrat habitat. Muskrats use water plants for food and to construct their houses. Waterfowl need a mix of open water and vegetation for food and cover. Too many muskrats result in not enough cover, too few allow the plants to choke out the open water. Muskrats are managed to maintain marsh vegetation in a desirable condition for waterfowl.

## PUBLIC USE

Montezuma is open daily from sunrise to sunset. Visitors can enjoy a visitor contact station, self-guided auto tour route, two observation towers, and nature trail. The refuge also provides area teachers and students with an outdoor classroom for environmental education.

Warm water fish are abundant in the canals and rivers surrounding the refuge. Popular species are the brown bullhead, northern pike, and wall-eye. There are three public fishing sites and a boat launch. When conditions warrant, hunting of waterfowl, deer, and upland game is allowed under special regulations.

# MONTEZUMA

## National Wildlife Refuge



OFFICE



HIKING



VISITOR AREA



FISHING

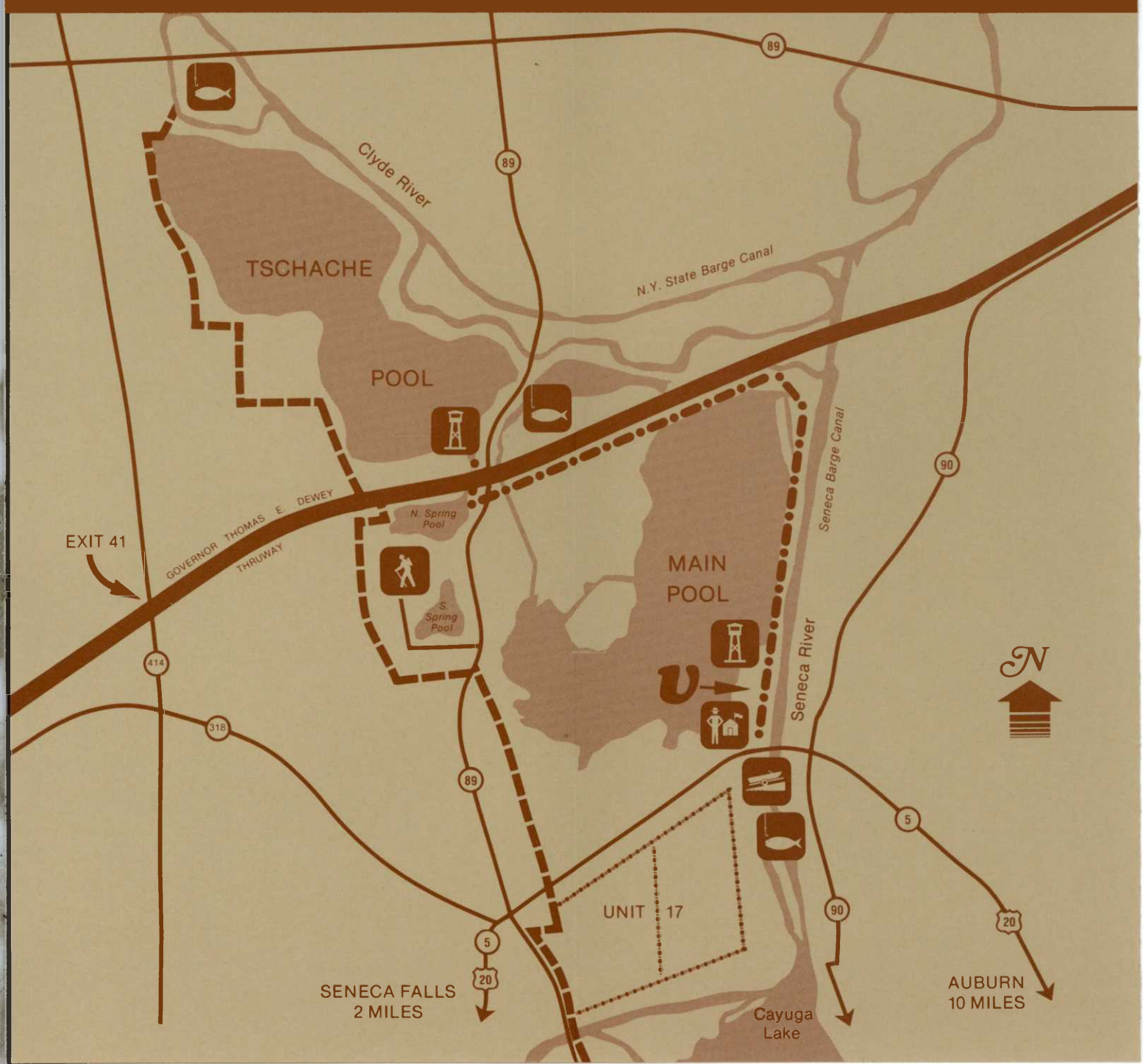


TOWER



BOAT RAMP

--- BOUNDARY    -.- AUTO TOUR



learn to hunt, feed, and survive on their own. We also know that these transplanted youngsters orient to the area from which they are released and return to that area in later years. Of the 15 eagles so far released in the program, only one bird is known to have been lost for sure—a 1977 release found shot to death in central-western Pennsylvania in November, 1978. Through reports and observations made by ornithologists and other interested people, project personnel have confirmed that at least seven of the remaining 14 eagles are still surviving.

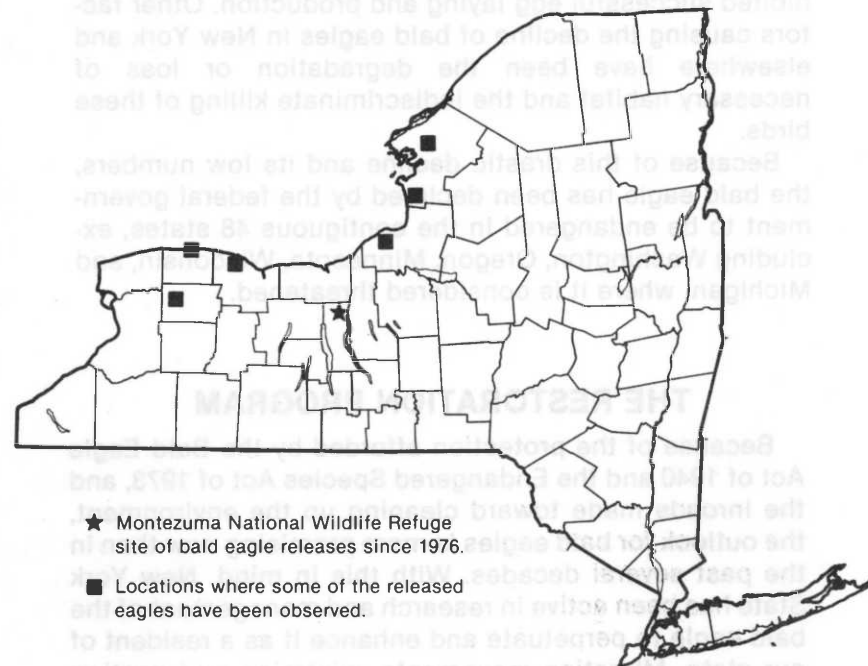
Even though the remaining eagles have not been positively identified, there is an excellent chance that these birds are also still out there somewhere doing well, because immature bald eagles often wander randomly for the first few years of their life. As the attached map indicates, many of the eagles released at the Montezuma Refuge have been observed along the southern and eastern shoreline of Lake Ontario. Many of the birds have also been observed returning to the hack site the year after their release and even two and three years after. Overall, these "hand reared" eagles appear to have an excellent survival rate.

The greatest success of the program so far has been the establishment of a nesting territory by the first two eagles released in the program in 1976. These birds have achieved the characteristic adult white head and tail and have built their own nest in an area of New York approximately 80 miles northeast of the Refuge. This nesting pair (established through the hacking project) represents a **doubling** of the number of nesting bald eagles in New York State; from our previous single nest now to two!

This nesting represents attainment of the overall program objective: the reestablishment of nesting bald eagles in areas of suitable habitat in New York State. Program personnel are extremely optimistic that additional territories and nests will be established in other areas as more of the hacked eagles become sexually mature.

The second phase of the restoration program, the insertion of eaglets into unproductive bald eagle nests, has been equally successful. Since 1978, two young eagles have been fostered and fledged from the western New York nesting site. Fostering young birds at this site will continue as long as the nesting adults remain.

### WHERE HAVE THE EAGLES GONE?



- ★ Montezuma National Wildlife Refuge  
site of bald eagle releases since 1976.
- Locations where some of the released eagles have been observed.

#### Conclusion

All in all, the future for the bald eagle in New York looks bright. Levels of environmental contaminants such as DDT which have drastically affected bald eagles are declining. Many areas of suitable nesting habitat are available throughout New York State. And, most importantly, young eagles are being returned to New York skies and given the chance to make New York their home through the efforts of New York's pioneering bald eagle restoration program.

For more information on bald eagles or other endangered species in New York, you can contact:

Endangered Species Unit  
Wildlife Resources Center  
Delmar, N. Y. 12054

FW-P137 (7/80)

## NEW YORK'S BALD EAGLE RESTORATION PROJECT



New York State  
Department of Environmental Conservation  
Division of Fish and Wildlife  
Endangered Species Unit  
in cooperation with  
U. S. Fish and Wildlife Service  
Montezuma National Wildlife Refuge  
and  
the States of Michigan, Minnesota and Wisconsin

## FACTS ABOUT BALD EAGLES

The bald eagle is one of the largest birds of prey found in North America. The white head and tail are the characteristic field marks of our national symbol when the bird is mature at four to five years of age. Immature bald eagles lack the white head and tail and are mostly chocolate brown with varying amounts of white splotches over the body, tail and underwing parts as they mature.

The bald eagle stands about 30 inches high and has a wing span of six to seven feet. They are long lived birds, with a life span in the wild of over 30 years. They are predominantly fish eaters, although they will eat carrion, when it is available.

These birds mate for life and return to the general area from which they fledged to build a nest. The nest is a large stick structure usually located high up in a large live tree near water. The same nest is reused and added to each year for several years; sometimes use is alternated between two nests in the same area. In either case, the nests get larger with each successive year of use, often becoming eight or more feet deep six feet across and weighing hundreds of pounds. In many instances the weight of the nest has caused the toppling of all or part of the nest tree.



## HISTORICALLY

Prior to the 1950's, New York State had up to 70 nesting pairs of bald eagles located mostly in northern and western New York. Since 1960 (until 1980) there has been only one known active bald eagle nest in the entire state located in the Finger Lakes region of western New York.

This nesting pair, and many of the others which had existed in our state, suffered from an accumulation of pesticides in their body tissues (primarily DDT) which inhibited successful egg laying and production. Other factors causing the decline of bald eagles in New York and elsewhere have been the degradation or loss of necessary habitat and the indiscriminate killing of these birds.

Because of this drastic decline and its low numbers, the bald eagle has been declared by the federal government to be endangered in the contiguous 48 states, excluding Washington, Oregon, Minnesota, Wisconsin, and Michigan, where it is considered threatened.

## THE RESTORATION PROGRAM

Because of the protection afforded by the Bald Eagle Act of 1940 and the Endangered Species Act of 1973, and the inroads made toward cleaning up the environment, the outlook for bald eagles is more promising now than in the past several decades. With this in mind, New York State has been active in research and management of the bald eagle to perpetuate and enhance it as a resident of our state. Migration movements, wintering and nesting activities are being studied throughout the state.

In addition, in 1976 New York launched one of the most comprehensive bald eagle restoration programs in the nation, designed to return breeding bald eagles to all portions of the state still suitable for their existence. The restoration program has two parts: the increase in production from our nest site by chick transfers; and, the rearing and release of young eagles in suitable habitats by hacking.

### The Hacking Project

In 1976 it was decided to try a falconry technique called hacking, to release young bald eagles to the wild. This method has been used successfully with peregrine falcons. The Montezuma National Wildlife Refuge was chosen as the site for the release program because of its central location, large amounts of open water and suitable habitat, abundance of fish and mammal prey species, and limited disturbances. In addition,

Montezuma was formerly an active bald eagle nesting site as late as 1959.

In the hacking process, 7-8 week old immature bald eagles are placed in artificial nests on a caged platform atop 35 foot high towers. At this age they are almost as big as adult birds, but still need to develop their strength and flying ability. These birds are fed carp and small mammals by their human caretakers until they are ready to fly at about 12 weeks of age. The feeding is done carefully so that the eagles do not associate people with food or lose their fear of human beings. During this time the birds are orienting to their new surroundings at Montezuma.

When the eagles are 11-12 weeks old and ready to fly (fledge), they are moving about the cage, sticking their heads out between the cage bars and exercising their wings. The cage bars are then removed and the eagles are allowed to fledge. Prior to their release, each bird is given an individual colored wing marker and a leg band.

Once the eagles have fledged, the hardest part of the hacking job is just beginning. Food must still be placed on the towers after the eagles fly off, for until the immature eagles learn how to hunt on their own, they will return to the tower to feed. By the time the eagles are about 20 weeks old, they can provide for themselves and soon after leave the refuge. In addition, once these birds fledge, their movements and activities must be monitored to assure their well being. This is done by using short term radio transmitters which will drop off each bird after use.

### Successes

So far, fifteen bald eagles have been released at the Montezuma Refuge through hacking; two in 1976, five in 1977, four in 1978, and four in 1979. Nine of these birds were obtained from wild nests in Michigan, Minnesota and Wisconsin, and the remaining six birds were obtained from captive breeding stock at the U. S. Fish and Wildlife Service Research Laboratory in Patuxent, Maryland.

During the summer of 1980, five more young bald eagles will be released at Montezuma.

The program so far has demonstrated that young bald eagles can be reared in man made situations and still