

MONTEZUMA NATIONAL WILDLIFE REFUGE
SENECA FALLS, NEW YORK

ANNUAL NARRATIVE REPORT
CALENDAR YEAR 1991

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGE SYSTEM


REVIEW AND APPROVALS

MONTEZUMA NATIONAL WILDLIFE REFUGE


Seneca Falls, New York

ANNUAL NARRATIVE REPORT


Calendar Year 1991


Refuge Manager

03/01/92
Date


Refuge Supervisor Review

5-6-92
Date


Regional Office Approval

5/8/92
Date

INTRODUCTION

Montezuma National Wildlife Refuge is located at the north end of Cayuga Lake in the Finger Lakes Region of New York State. The refuge contains 6,432 acres and is situated in Seneca County. The refuge is 35 miles west of Syracuse, 40 miles north of Ithaca, and 45 miles east of Rochester. Land was initially acquired under Executive Order 7971, dated September 12, 1938. The purpose of the acquisition was: "...as a refuge and breeding ground for migratory birds and other wildlife...". For other lands acquired under the Migratory Bird Conservation Act (16 U.S.C. 715-715r), as amended, the purpose of acquisition was: "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds".

Proposed objectives for the refuge are as follows:

1. Maintain and, when possible, enhance resting, feeding, and nesting habitat for migratory waterfowl and other migratory waterbirds.
2. Provide resting, feeding, and nesting habitats for bald eagles and ospreys (a state-designated threatened species).
3. Within constraints imposed by the two objectives above, efforts shall be made to provide adequate habitat diversification to permit the presence of self-sustaining communities and populations of other life forms that are typical of central New York State.
4. Provide opportunities for public wildlife education and enjoyment when these opportunities are compatible with the above objectives and the reasons for the area's establishment.

LAND TYPE INVENTORY

<u>LAND CLASSIFICATION</u>	<u>ACRES</u>	<u>% OF TOTAL</u>
Wetland Types:		
Riverine	42	.7
Palustrine	3,600	56.0
Upland Types:		
Grassland	560	8.7
Woodland	2,000	31.1
Brush	170	2.6
Administrative Lands (Bldgs., Parking, Roads, etc.)	60	.9
TOTAL REFUGE ACRES	6,432	100.0

Fall peaks of Canada geese approximate 50,000 birds; in spring this number has exceeded 100,000. Approximately 15,000 snow geese use the refuge in spring. Late fall use by mallards has annually approached or exceeded 100,000 birds. Use by American black ducks in the fall often reaches 25,000. Approximately 1,400 ducks and geese are produced annually.

Use of the refuge by other water-related avian species is significant. Bald eagles have been common at Montezuma since the hacking program was discontinued in 1980. They have been resident on the refuge since 1986, and first mated in 1987. Eagles have successfully nested on the refuge for four of the last five years, producing seven young. One pair of osprey generally nest each year, a rare occurrence for the interior of New York. There are also nesting colonies of black-crowned night-herons and great blue herons.

Wildlife education opportunities abound for refuge visitors. Approximately 150,000 persons visit the refuge annually. In addition to a stop at the Visitor Center, visitors may drive the 3.5 mile auto tour route or walk dike trails or the Esker Brook Nature Trail. Some 3,400 area school students are annual recipients of formal on-site and off-site wildlife education programs by trained teachers, volunteers, or refuge staff. Many teachers are involved each year in refuge-affiliated workshops.

INTRODUCTION

PAGE

TABLE OF CONTENTS

i

A. HIGHLIGHTS 1B. CLIMATIC CONDITIONS 2C. LAND ACQUISITION

1. Fee Title Nothing to Report
2. Easements 3
3. Other 3

D. PLANNING

1. Master Plan Nothing to Report
2. Management Plans. 5
3. Public Participation. 5
4. Compliance with Environmental and Cultural
Resource Mandates. 7
5. Research and Investigation. 8
6. Other Nothing to Report

E. ADMINISTRATION

1. Personnel 11
2. Youth Programs. 11
3. Other Manpower Programs Nothing to Report
4. Volunteer Program 12
5. Funding 14
6. Safety. 14
7. Technical Assistance. 16
8. Other Items 23

F. HABITAT MANAGEMENT

1. General 36
2. Wetlands. 36
3. Forests 42
4. Croplands Nothing to Report
5. Grasslands. 43
6. Other Habitats. 44
7. Grazing Nothing to Report

F. HABITAT MANAGEMENT (Continued)

8.	Haying.	Nothing to Report
9.	Fire Management	44
10.	Pest Control.	45
11.	Water Rights.	Nothing to Report
12.	Wilderness and Special Areas.	46
13.	WPA Easement Monitoring	Nothing to Report

G. WILDLIFE

1.	Wildlife Diversity.	48
2.	Endangered and/or Threatened Species.	48
3.	Waterfowl	51
4.	Marsh and Water Birds	57
5.	Shorebirds, Gulls, Terns, and Allied Species.	58
6.	Raptors	60
7.	Other Migratory Birds	60
8.	Game Mammals.	61
9.	Marine Mammals.	Nothing to Report
10.	Other Resident Wildlife	66
11.	Fisheries Resource.	Nothing to Report
12.	Wildlife Propagation and Stocking	Nothing to Report
13.	Surplus Animal Disposal	Nothing to Report
14.	Scientific Collections.	66
15.	Animal Control.	67
16.	Marking and Banding	67
17.	Disease Prevention and Control.	69

H. PUBLIC USE

1.	General	70
2.	Outdoor Classrooms - Students	73
3.	Outdoor Classrooms - Teachers	76
4.	Interpretive Foot Trails.	77
5.	Interpretive Tour Route	77
6.	Interpretive Exhibits/Demonstrations.	78
7.	Other Interpretive Programs	80
8.	Hunting	81
9.	Fishing	84
10.	Trapping.	Nothing to Report
11.	Wildlife Observation.	85
12.	Other Wildlife Oriented Recreation	Nothing to Report
13.	Camping	Nothing to Report
14.	Picnicking.	Nothing to Report
15.	Off-Road Vehicling.	Nothing to Report

H. PUBLIC USE (Continued)

16.	Other Non-Wildlife Oriented	
	Recreation	Nothing to Report
17.	Law Enforcement	85
18.	Cooperating Associations	Nothing to Report
19.	Concessions	Nothing to Report

I. EQUIPMENT AND FACILITIES

1.	New Construction	88
2.	Rehabilitation	94
3.	Major Maintenance	97
4.	Equipment Utilization and Replacement	101
5.	Communications System	102
6.	Computer Systems	102
7.	Energy Conservation	102
8.	Other	Nothing to Report

J. OTHER ITEMS

1.	Cooperative Programs	Nothing to Report
2.	Other Economic Uses	104
3.	Items of Interest	104
4.	Credits	111

K. FEEDBACK - Nothing to ReportL. INFORMATIONAL PACKET

(Inside Back Cover)

A. HIGHLIGHTS

The Record of Decision for the Northern Montezuma Wetlands Joint Venture Project was finalized in mid-August, 1991. Regional Director Lambertson and New York State Department of Environmental Conservation Commissioner Jorling approved Alternative 2 (a joint state/federal 35,000 acre expansion) for the FEIS.

The New York State Farm Bureau and several county-level Farm Bureau chapters (Wayne, Cayuga, Seneca, and St. Lawrence Counties) were active throughout the summer and fall in opposition (via media, political pressure, and rallies) to the Montezuma expansion project.

1991 was the most critical year in a decade for the refuge's involvement with the New York State Department of Environmental Conservation in the permitting and regulation of the Seneca Meadows Landfill. The refuge manager participated in numerous meetings, public hearings, and administrative law hearings in conjunction with a proposal to add another 127 feet of garbage atop the existing, closed final grade.

Service participation continued at a very active level on the Central New York State - Finger Lakes Flood Advisory Committee. As an appointed member, the refuge manager regularly dealt with challenges to expansion, refuge marsh restoration projects, and Private Lands Initiative efforts.

The 1.2-mile water connector between the north end of Cayuga Lake and refuge pools was completed in late 1991. Use of \$300,000.00 in North American Wetlands Council funds and \$112,000.00 in Ducks Unlimited grants allowed completion of this eight year old project.

Controversies (the Expansion FEIS, Farm Bureau, Landfill, flooding, etc.) required inordinate amounts of interaction with support groups, opposition groups, and national and state elected and appointed officials.

The new 10-acre Walter Benning Pool (shorebird management unit) was dedicated on November 3, 1991. Octogenarian Walter Benning and his wife Hazel were present to receive accolades from a list of invited guests which was a "who's who" of birding in upstate New York.

Refuge involvement in the Service Private Lands Initiative and FmHA efforts focused more in 1991 upon the Joint Venture expansion area than statewide. In addition to projects in other locales, nine projects at six sites were completed within the expansion area.

B. CLIMATIC CONDITIONS

Weather data are obtained from a weather station at refuge headquarters and also from nearby Locks 1 and 25 of the New York State Barge Canal System.

A review of the weather summary data presented below does not give a true indication of 1991's climatic conditions in this area. With a mix of months above and below the long-term precipitation average, it should have been an average year for soil moisture and stream flow into refuge pools. Quite the contrary was true as the story for 1991 really focused on the dry summer weather. June was by far and away the driest month, but generally dry, drought-like conditions prevailed for most of the summer and well into the fall. Soil moisture was so low that rainstorms were completely absorbed and little runoff resulted. Refuge impoundment levels dropped throughout the summer as evaporation exceeded inflow, raising concerns about botulism as the summer heat continued.

Monthly precipitation and temperatures for the year are summarized in the table below:

1991 PRECIPITATION							
Month	Snowfall (Inches)	Rain (Inches)	Total Prec. (Inches)	Temp (°F)		40-Year Average Snowfall	49-Year Average Prec.
				Max	Min		
January	15.00	.56	2.66	46	0	16.60	2.05
February	8.00	1.04	1.61	60	0	16.31	2.31
March	.75	3.49	3.69	70	16	8.99	2.78
April	1.25	4.72	4.89	86	20	2.70	2.22
May		3.12	3.12	91	32	.01	3.36
June		1.84	1.84	94	46		3.09
July		3.35	3.35	96	52		3.41
August		3.90	3.90	92	50		3.24
September		3.01	3.01	94	30		2.98
October		2.14	2.14	80	24	1.85	3.27
November	5.75	1.83	3.06	70	16	4.78	3.37
December	17.75	2.46	3.51	66	4	15.38	2.21
TOTALS	48.50	31.46	36.78	96	0	66.62	34.29

C. LAND ACQUISITION

2. Easements

The Refuge Manager at Montezuma National Wildlife Refuge has been designated as the Easement Manager when interest in lands is conveyed to the Service for inclusion into the National Wildlife Refuge System by the Farmers' Home Administration (FmHA) under provisions of the 1985 and 1990 Farm Bills. This responsibility includes approximately 75% of all lands in New York. The Cortland Fish and Wildlife Enhancement (FWE) Field Office is responsible for recommending the conservation easement and assisting the Easement Manager in establishing administration over the easement property.

In New York, the Service has requested that conservation easements be placed on 99 FmHA inventory properties totalling 3,147 acres. The easements range in size from one acre to 200 acres, and are located in 28 counties across the state. The average easement is slightly larger than 31.5 acres in size.

The Service has asked the FmHA for formal fee title transfer on six of the 99 properties identified for conservation easements. The names of the six properties, acreage requested for fee title transfer, and property locations are as follows:

1. R. Spengler	180 Acres	Cattaraugus County
2. S. Pollock	160 Acres	Franklin County
3. S. MacDougal	80 Acres	Steuben County
4. T. Davis	152 Acres	St. Lawrence County
5. G. Fellion	82 Acres	St. Lawrence County
6. F. Harris	200 Acres	St. Lawrence County

3. Other

Following the approval of the Northern Montezuma Wetlands Project Final Environmental Impact Statement (see Section E-8), several nearby landowners approached refuge staff members to express their interest in selling to the refuge. Information on one property, Roger Waugh's 200 acres adjoining Tschache Pool, was forwarded to Realty with our comments stressing it's importance to refuge resources. The property is actively managed for pasture, corn, alfalfa, and spring wheat. It's juxtaposition to Tschache Pool makes this farm highly desirable for goose hunting, and our concern has been that it would be purchased by a hunting group for that reason. Our initial management ideas include

establishment of dense nesting cover, continuation of some farming, and restoration of small wetland areas along the large interior ditch. Despite the fact that no acquisition funds had been directly budgeted for Montezuma in FY-92, Refuges gave the go-ahead to conduct an appraisal of the property. Regional Appraisers Tom Sampson and Hugh Ryboldt spent the week of December 16 in the area conducting the appraisal. Sampson, Ryboldt, Christenson, and Gingrich met with Mr. and Mrs. Waugh on December 16th to discuss the procedures and address any questions raised by the Waughs. Realty will proceed with an appraisal addressing two options on acreage included, but a major obstacle has been raised due to dumping on the property. What was originally thought to have been very limited dumping of clean fill and wood is instead a long-term dump site nearly 1/2 acre in size with unknown materials covered over by fill. We are not aware of any contaminant at this time, but clearly a thorough investigation would be needed prior to purchase. Merely eliminating that area from the purchase is possible, but since the area drains into Black Brook, any contaminants will affect the refuge irrespective of ownership. Obviously, more investigation is needed before any action can be taken.

D. PLANNING

2. Management Plans

Several plans were worked on in 1991, but only the Fishing Plan was completed (November 7, 1991) and sent forward for review and approval. A first draft of the Sign Plan was prepared in September, but was still undergoing internal staff review as the year ended. Work was started on the Law Enforcement Plan, but little progress was made due to other work priorities. Similarly, the Moist Soil Management Plan and Fire Management Plan were set aside due to extensive staff commitments for the Regional Private Land Wetland Restoration Program and to allow completion of the Sub-impoundment Environmental Assessment.

3. Public Participation

Hocutt was the speaker at the annual banquet of the Polish Falcons Club in Auburn, New York in March. A 15-minute presentation about the Northern Montezuma Wetlands Project ("NOMOWET") was given to the 140 attendees at the dinner.

Manager Hocutt presented a slide/talk program to the Poplar Ridge Garden Club in Aurora, New York, on March 18. The subject was "NOMOWET".

In April Hocutt agreed to a two-hour interview by Rhonda Engman, Legislative Chairperson for the New York State Coalition of Animal Rights Organizations. She is also active in People For Ethical Treatment of Animals (PETA). She was following up on questions she had raised at the Refuges 2003 hearings in Batavia, New York, in March. She asked numerous, complex, written questions regarding "inviolable sanctuaries", hunting programs (especially deer), habitat manipulation, predators, etc., etc. We acceded to her request to tape the interview, with the stipulation that we could have the original immediately to make a duplicate. We furnished her, as requested, with several pages from the Refuge Manual. She had earlier stated at a seminar at Cornell University that she would "stop" (prevent) hunting at Montezuma.

Hocutt spent almost 20 hours in formal and informal meetings and telecons with parties interested in the fate of the proposed St. Lawrence Valley NWR. These included the New York State Federation of Bird Clubs, the New York State Federation of Garden Clubs, the New York State Conservation Council, The Laboratory of Ornithology (Cornell University), nine area birding groups, the outdoor editors of the area's two metropolitan newspapers, and numerous other individuals.

Hocutt travelled to Paul Smith College in the Adirondacks in June to address the New York State Federation of Lake Associations regarding wetlands enhancement and preservation. Using Montezuma's 35-year "nightmare" with flooding, carp, loosestrife, and phragmites as an example, Hocutt stressed that almost all lake "problems" are really watershed problems, and that spells "wetlands". He stressed the need for the involvement of Association members in wetlands issues, rather than simply lamenting and attacking the lake "problems", which he characterized as mere artifacts of underlying watershed problems. The group represents Lake Associations from across the state -- including several in St. Lawrence and Franklin Counties.

Hocutt conducted an evening habitat management tour for 25 members of the Poplar Ridge, New York Garden Club in August. The subject was "NOMOWET and Citizen Involvement in Wildlife Decisions".

On the evening of October 15, Hocutt addressed the Town of Tyre, New York Board of Supervisors regarding our work with the Seneca Meadows Landfill. We suggested that it might be helpful, if they were truly concerned about the proposed height increase, if the Board would adopt a formal resolution expressing these concerns. We were called by Board member Tony Salerno the next day to advise that a strong resolution was passed later in their meeting.

In November Hocutt hosted 12 potential major contributors to The Nature Conservancy (TNC) in a program at the refuge. The effort was in response to a request from David Kline, Western and Central New York State Director for TNC. The afternoon included a slide presentation and a lengthy discussion of "NOMOWET" and marsh restoration.

Also in November, Hocutt addressed the Onondaga Audubon Society at the Community Room at the Syracuse Zoo. Discussed were topics ranging from "NOMOWET", the refuge's marsh restoration efforts, threats by the Cross Lake-Seneca River Association, and a number of related topics. Sixty people attended the meeting.

In December Hocutt addressed the Seneca County Federation of Sportsmen's Clubs in Waterloo, New York. This same group voted nine to five in October to oppose the Northern Montezuma Wetlands Project. The meeting was amicable and productive -- in large part because local and state Farm Bureau people did not show up as they had in October when New York State Department of Environmental Conservation Biologist Dave Woodruff walked into the "lion's den".

4. Compliance With Environmental and Cultural Resource Mandates

In both 1988 and 1989, the refuge prepared Section 7 Evaluations for winter drawdowns of refuge pools. Peter Nye, Endangered Species Program Coordinator for the New York State Department of Environmental Conservation, requested the evaluations to assess the impact of the drawdowns on the three adult bald eagles that have established a nesting territory encompassing the Tschache Pool area of the refuge. The drawdowns were initiated to reduce extremely high carp populations in refuge pools. We concluded, and Mr. Nye agreed, that the drawdowns in both 1988 and 1989 had little, if any, impact upon the eagles. It was determined that some fish would remain available in the pools after the drawdowns to supply food for foraging bald eagles. Fish would also be available in the river and canal system bordering refuge pools, and in the nearby Finger Lakes.

Based upon our experiences in 1988 and 1989, a less formal consultation process was followed in 1991 in anticipation of a winter drawdown of Tschache Pool and a partial dewatering of Main Pool. Refuge staff, together with Mr. Nye, agreed that the proposed drawdowns would have little adverse impact on the bald eagles. Past experience has shown that abundant food sources remain for the eagles during and after the drawdowns. In the unlikely event that a food shortage developed, contingency plans were prepared to establish several eagle "feeding stations" within the birds' nesting territory. Road-killed deer carcasses or carp captured from other refuge pools would be provided at such "feeding stations" as an emergency food source for the birds.

During March of 1991 the refuge submitted application materials to the New York State Department of Environmental Conservation for a Freshwater Wetlands Permit extension for work on the Cayuga Lake Water Connector Project. The existing state permit expired in October of 1990 prior to completion of the project. The State granted a permit extension through October of 1993. It is anticipated the work on the project will be completed by the early summer of 1992.

During February and March of 1991 a considerable amount of staff effort was devoted to the writing of an Environmental Assessment addressing a long-term proposal for rehabilitation of wetland impoundments on the refuge. The purpose of the rehabilitation proposal is to increase refuge management capabilities on existing wetland areas, create new wetlands, and increase water management flexibility on all refuge impoundments. The Environmental Assessment proposes the rehabilitation of several existing water control structures, construction of additional water control

structures, and the construction of several miles of interior (subimpoundment) dikes on Main and Tschache Pools.

Once approved, the Environmental Assessment will provide a roadmap to guide refuge management actions for the foreseeable future. A need currently exists to prevent further losses of wetlands and wildlife habitats in the vicinity of the refuge. Historically, the Montezuma Marshes were much more extensive than they are now. Uses and alterations of the landscape have dramatically reduced the quantity and quality of wetlands and wildlife habitats within the geographic area surrounding the refuge, thus substantially reducing the functions and benefits these wetlands once provided. Many of these wetland conversion and alteration activities continue today. To accomplish Service objectives, additional management capability is needed on Montezuma NWR to help offset further wetland losses in the historical Montezuma Marsh basin.

5. Research and Investigations

Work continued on one study during 1991.

Montezuma NR90 - "Increasing The Nesting Productivity of Wood Ducks" (52550-21).

In 1990, Dr. Paul W. Sherman (Section of Neurobiology and Behavior, Cornell University) initiated a systematic investigation of the effects of nest box proximity and visibility on brood parasitism (dump nesting), nesting efficiency, and productivity of wood ducks. The goal is to more rigorously test a hypothesis (developed during previous studies and supported by preliminary data) that nest boxes hidden in the woods near brood habitat are less often parasitized and produce more ducklings per egg laid in them than highly-visible boxes located over open water (singly or in groups). Based on the results, specific management recommendations will be made regarding the future placement of nest boxes at Montezuma and elsewhere. The objective of Sherman's research is to find a more cost-effective way to use the thousands of wood duck nest boxes that are presently scattered all over the United States to enhance the birds' nesting productivity.

Wood duck nest boxes were erected in three configurations: visible-isolated, visible-clumped, and well-hidden. The boxes will be monitored over three breeding seasons (1991-1993), and the following data will be recorded for each configuration: percentage of box use, clutch sizes, numbers of dump nests, nesting efficiency, and hatching success. At present there are about 100 boxes in use at Montezuma, the majority of which fall into the visible isolated or visible

clumped categories. Approximately 30 boxes were moved so that they fit into the well-hidden category.

At the end of the three-year study period, enough information should be available to accept or reject the hypothesis that nest box proximity and visibility increase duck nesting in Montezuma wood ducks and decrease their per capita productivity. Information gathered during the three-year study should place the Refuge Manager in a position to make prudent and justifiable recommendations for managing healthy, growing wood duck populations.

Amy Şalman, a Cornell University undergraduate student, placed three plexiglass settlement plates in Tschache Pool during the summer months. The plates were designed to collect freshwater bryozoans as part of an on-going independent research project. The settlement plates were in place from mid-May to mid-August. A short abstract of her research proposal follows.

Abstract

The biology and ecology of freshwater bryozoans is remarkably understudied, despite their ubiquity. I will firstly survey the geographic distribution and species composition of the freshwater bryozoans (Phylactoleamata) through deployment of plexiglass settlement plates in local ponds. This technique is a well established protocol for sampling marine bryozoans, and has previously resulted in colonization by freshwater bryozoans. These plates will be checked at regular intervals for settlement by bryozoans. The second component of this study is an analysis of hatching success of statoblasts, the asexually produced diapausing propagules of freshwater Bryozoa. I will initially concentrate on collecting statoblasts from the sediments and substrates in the spring at sites where we have observed abundant freshwater Bryozoa (*Plumatella repens*). By coring the sediment I will obtain statoblasts from a range of years; those that lie deeper should be older. By artificially rearing these statoblasts in the laboratory I will be able to see if age or depth in the sediment affects the hatching success of statoblasts.

As of this writing, Amy was still in the process of artificially rearing the freshwater Bryozoa statoblasts in the laboratory.

E. ADMINISTRATION



Front Row (L to R): 4, 3, 10, 2, 7
 Back Row (L to R): 8, 6, 1, 5, 11
 (90-1; SLF)

PERSONNEL

1. Grady E. Hocutt.....Refuge Manager, GS-12, PFT
2. Barrett L. Christenson.....Refuge Manager, GS-11, PFT
3. J. Frederick Caslick..Outdoor Rec. Planner, GS-11, PFT
4. Tracy A. Gingrich.....Biologist, GS-09, PFT
5. Judith A. McMahon.....Fiscal Assistant, GS-06, PFT
6. Nancy J. Estes.....Clerk/Typist, GS-03, PPT
7. Steven L. Flanders....Maintenance Mechanic, WG-10, PFT
8. Melvin J. Norsen.....Maintenance Mechanic, WG-09, PFT
9. Maura J. Sheehan.....Refuge Mgr. Trainee, GS-05, PFT
 (Transferred to Forsythe/Brigantine 06/29/91)
10. Kevin S. Colton.....Tractor Operator, WG-04, TFT
 (1/1/91 - 11/30/91)
11. Marva J. Smith.....Recreation Assistant, GS-04, TFT
 (1/1/91 - 12/30/91)

1. Personnel

1991 was a relatively quiet year for personnel changes here at Montezuma.

Maura Sheehan transferred to Forsythe NWR/Brigantine Division effective June 21, 1991.

Kevin Colton resigned effective December 2, 1991. Kevin obtained a permanent position with Cornell University. We wish you well, Kevin.

A summary of staff allocations for the last seven years is displayed below:

<u>Total</u>	<u>Permanent</u>		<u>Temporary</u>	<u>FTEs</u>
	<u>Full-Time</u>	<u>Part-Time</u>		
FY 1991	8	1	2	10.5
FY 1990	8	1	2	10.5
FY 1989	8	1	2	10.4
FY 1988	9	1	2	9.5
FY 1987	9	1	2	10.1
FY 1986	9	1	2	11.4
FY 1985	9	1	2	11.4

2. Youth Programs

Montezuma's eight-week 1991 Youth Conservation Corps (YCC) camp began on July 2 with six enrollees. Three boys and three girls were selected, and Mary Jo Antonacci, a Waterloo, New York High School Biology and Earth Science teacher, was selected as camp leader. Many valuable projects were completed by the cooperative and enthusiastic group. Refuge facilities were soon sporting new coats of paint, including the catwalk over May's Point Pool Spillway, our maintenance garage doors, and picnic tables. The crew provided valuable assistance at Esker Brook Nature Trail by installing a new trash container, maintaining the bridges, clearing vegetation, and installing fencing. The refuge also became much more litter-free, as the crew picked up trash on a regular basis around the observation towers and at all three fishing areas. The 1991 YCC crew also constructed a new boardwalk and viewing platform, and

reseeded dikes. These projects and their daily work regime helped teach the enrollees how to work together, follow instructions, and take pride in their work.

Increasing enrollee awareness of environmental issues and ecological principles was accomplished by daily discussions of topics such as plant succession, nutrient cycling, terrestrial and aquatic ecology. Also, guest lectures by bald eagle specialist Mr. Mike Allen of the New York State Department of Environmental Conservation and Refuge Manager Hocutt complimented these discussions, while field trips added variety and interest to their employment experience. Carpenter's Brook State Fish Hatchery, the Service's Tunison Laboratory of Fish Nutrition, and Beaver Lake Nature Center were visited during the summer.



Maintenance Mechanic Norsen works with the YCC enrollees on the rehabilitation of the Unit 17 boardwalk (91-2; MJA).

The enrollees ended their YCC experience on August 23, with a feeling of accomplishment and positive attitude toward the environment.

4. Volunteer Program

Our volunteer recruitment program paid dividends in 1991. Six new volunteers were recruited, and quickly began to

contribute. Our twenty-three volunteers contributed over 2,000 hours of service, and provided the staff required to undertake and complete several public use and biological programs. Key 1991 contributions were staffing the Visitor Center and the State Fair, assisting staff at the Check Station, guiding walks, and "mocking-up" brochures.



Best wishes and thanks! Refuge Manager Hocutt presenting a Certificate of Appreciation to departing volunteers Charlotte and Bob Hedler (91-3; MKS).

Robert and Charlotte Hedler, who celebrated their 5th year anniversary as volunteers in May, 1991, retired in June. They were honored and provided tributes for their dedicated service. A loon carving by Kevin Colton was presented to the Hedlers at the June volunteer meeting in appreciation for their many hours of service to the refuge.

Several volunteers earned Special Achievement Pins during 1991.

Grace Schaffer.....	500	hour pin in April
Barb Olds.....	500	hour pin in October
Ed Klein.....	250	hour pin in October
Yvonne Klein.....	250	hour pin in October

5. Funding

	<u>FY 1987</u>	<u>FY 1988</u>	<u>FY 1989</u>	<u>FY 1990</u>	<u>FY 1991</u>
1261 & 1262 - O & M; ARMH; Resource Prob.; Fire	\$370,173	\$433,445	\$403,933	\$412,302	\$612,146
4960 - Entrance Fee O & M	0	0	4,308	0	0
6860 - Expense For Sales	2,000	2,000	2,000	2,000	2,000
8610 - Quarters Rehab.	1,800	3,429	3,556	5,200	5,741
1261 - YCC	0	0	14,280	14,280	16,665
9120 - Fire	0	0	0	3,500	2,500
1230 - Wetlands Restoration	0	0	0	0	20,240
TOTAL	373,973	438,874	428,077	437,282	659,292

FY-91 contract costs for construction of the Cayuga Lake Connector Project totalled \$549,849.00. These monies came from four sources:

- \$134,000.00 in 1261/1262 funds.
- \$112,000.00 from Ducks Unlimited. This project was an accepted MARSH project in New York.
- \$300,000.00 from the North American Wetlands Council. This project was funded as a wetlands conservation project in the Lower Great Lakes/St. Lawrence Basin Joint Venture Area.
- \$3,849.00 from carryover construction funds held in R5 Engineering.

Total direct costs on this large construction project since 1989 are now approaching \$800,000.00. Additionally, both Tenneco Natural Gas and Consolidated Natural Gas undertook considerable expense in 1990 when lowering their pipelines so our ditch could pass above them. When the value of their contributions is included, the total value of the Cayuga Lake Connector Project approaches \$1,500,000.00.

6. Safety

The only serious accident of the year occurred on July 22, when YCC enrollee Jennifer Stupp stepped into a woodchuck

hole while working on Esker Brook Trail and fell forward, injuring her right wrist. She was transported to Taylor-Brown Hospital for x-rays, where she was diagnosed as having a small chip fracture arising from the ulnar styloid. She was able to return to work the next day, but wore a support bandage for 10 days. An interesting side note to her accident was noticed on July 25th when the paperwork was submitted to OWCP; it was the same date in 1990 when we submitted paperwork to OWCP for another YCC enrollee who stepped into a woodchuck hole. Next year, all enrollees will work indoors during that week in July!

As a follow-up to an asbestos bulk sampling survey done in 1990, exterior asbestos siding was removed from four refuge buildings in November. Zeon Corporation of Buffalo, New York removed deteriorated asbestos siding from the quarters house and garage, the Check Station, and the Fur House. New York law required that full protective measures be used: all workers wore appropriate protective clothing; all building openings were sealed; and an independent company performed before and after air tests. Certified Environmental Services of Syracuse performed the air quality testing.

On an individual as-needed basis, staff members attended New York State-certified Defensive Driver Courses. All staff members (including volunteers with U.S. Government licenses) are on-schedule with the every-three-year refresher course which also allows a 10% reduction in car insurance in New York.

As a follow-up to our 1990 State Boating Safety Course, a half-day on the water course was held in June. Special Agent Leonard Lisenbee conducted the course for six staff members, and focused on safe launching and landing, low and high speed handling, and various aspects of trim, loading, beaching, etc.

Staff safety meetings were held throughout the year. In addition to Regional and Service-wide safety alerts, topics included accident reporting, causes and prevention of influenza, CPR Certification, boat safety, and check station (deer handling) safety.

A long-standing deficiency was corrected this year with the addition of power interrupt switches to our table and radial arm saws. Correction of this item had proven very difficult since our initial efforts in early 1990. We were unable to locate an "add on" prefabricated interrupt switch for use on motors above one horsepower, so we began the project by designing our own unit with the help of a local electrical supply outlet. A series of design problems plus scheduling problems with an electrician caused one delay after another

until everything finally came together in May. Now, if power is lost while a saw is in use, it will not restart after power is restored unless the start switch is pressed.

Paul Caldwell, Primary Assistant Manager at Iroquois NWR, once again came here to help with our annual Safety Inspection in September. Assistant Manager Christenson reciprocated a few days later and travelled to Iroquois to assist with their inspection. This is the second year of Region 5's policy of helping neighboring refuges with inspections, and we continue to feel that it works well.

7. Technical Assistance

In January Hocutt attended the monthly meeting in Syracuse, New York of the Governor's Central New York State - Finger Lakes Flood Advisory Board. Approximately 30 persons (members, technical staff, etc.) participated. William Jaynes, President of the Cross Lake - Seneca River Association (CLSRA), gave a one and a half hour presentation which made it clear that there would be no problem along the New York State Barge Canal except for the existence of the New York State Department of Transportation Department (Waterways Division) and this refuge. Hocutt agreed to formally address the group in February, 1992, about the refuge's immediate and long-range water management and infrastructure plans.

During January Hocutt spent considerable time in discussions with John McGuire, District Representative to Syracuse-area Congressman James Walsh regarding a congressional inquiry from William Jaynes (CLSRA) about our \$300,000 grant from the North American Wetlands Conservation Council. Hocutt prepared a response and faxed it back to the Congressman's office on January 30. Hocutt invited McGuire to attend the Advisory Board Meeting in Syracuse on February 21.

In February Hocutt gave an hour and a half presentation which included a written narrative of the refuge's water management regimen, slides, maps, and charts. Hocutt outlined the refuge's 35-year cycle of floods in spring, drought in summer, carp, drawdowns, purple loosestrife, and finally, all of these combined. As a result of extensive research with Jim Campbell (Sub-District Chief, U.S. Geological Survey - Ithaca) and John Baldwin (Waterways Supervisor, New York State Department of Transportation - Syracuse), Hocutt demonstrated that the refuge's so-called storage capacity is only 0.0015 of one percent of the affected watershed. We labeled as folly any notion that we could in any way affect downstream flooding.

Following a lengthy question and answer session, Hocutt summarized that the Service would cooperate in all possible

ways with the Committee, but stated that it should be clear that the Service is even less than an insignificant factor in alleged downstream flooding. Further, we stated that we believed it to be inappropriate and hydrologically in error for CLSRA to use media and the political forum to label us as "...a major contributor..." and "...insensitive and irresponsible...". We explained that we would immediately challenge and provide facts whenever such future allegations were made -- no matter the format.

A number of contacts were held during March with various elected and appointed officials regarding the Cross Lake - Seneca River Association (CLSRA) and their continuing allegations against refuge water management programs. These included John McGuire (District Representative to U.S. Congressman James Walsh), Fred Anders (New York State Secretary of State's Office), Amy Gillenson (Syracuse Representative - New York State Secretary of State), Fred Andersen (New York State Senator Paul Kehoe's Office), and a number of regional and Albany officials with the New York State Department of Transportation and the New York State Department of Environmental Conservation.

In April Hocutt met with Dick Konsella, New York State Department of Environmental Conservation - Albany, who is Chief of their Bureau of Flood Protection. The meeting was to discuss our Cayuga Lake Connector Project, and to discuss aspects of work of the Governor's Central New York State - Finger Lakes Flood Advisory Board.

Also in April, Hocutt participated in the monthly meeting in Syracuse, New York, of the Central New York State - Finger Lakes Flood Advisory Board. The group struggled with defining the scope of the 1.2 million dollar study by the U.S. Army Corps of Engineers of the alleged problems. The diversity of special interests on the 28-member board is sometimes overwhelming.

In May Hocutt participated in a total of nine hours of meetings in Syracuse as a member of the Scoping Executive Committee of the Central New York - Finger Lakes Flood Advisory Committee. This service was at the direct request of the New York State Secretary of State as the Flood Committee struggles with the scope and mission of it's charge. Hocutt also participated in the monthly full committee meeting of the Regional Flood Advisory Group. Hocutt joined Al Starling, Regional Director (Western New York State) for Ducks Unlimited, in a joint presentation about "NOMOWET" and it's probable effects upon alleged flooding in the New York State Barge Canal and Cross Lake.

In June Hocutt participated in the monthly meeting of the Governor's Central New York State - Finger Lakes Flood Advisory Committee in Syracuse, New York.

Discussions were held with Fred Anders (New York State Secretary of State's Office) regarding an attempt by the Cross Lake-Seneca River Association to have the Governor's Central New York State-Finger Lakes Advisory Board formally vote on a "moratorium" for the Northern Montezuma project. Hocutt worked with Anders to devise wording for the board which would simply allow those board members who wished to express their individual views to the decision makers. Hocutt offered his services and those of New York State Department of Environmental Conservation Biologists Stiles and Woodruff to make a special presentation to the Board regarding the project if Secretary Shaffer wished.

On August 14, Hocutt participated in a special meeting in Syracuse of the Central New York State - Finger Lakes Flood Advisory Committee. The meeting was called by Secretary of State Shaffer to allow a presentation by Hocutt of the "NOMOWET" expansion proposal and to permit questions and answers. The meeting was demanded by committee member William Jaynes on behalf of his 1,200-member lobby group, the Cross Lake - Seneca River Association. The meeting was chaired by George Stafford, New York State Director of Coastal Zone Management of Secretary of State Shaffer's office. The meeting was by turns constructive and destructive, as Jaynes repeatedly referred to State and Service proposals (and the FEIS) as "...scams....," "...intentional misrepresentations...", and worse! The two-hour, often acrimonious, meeting was finally concluded after we successfully shelved Jaynes' obvious attempts to first create a vote against the "NOMOWET" project based on hydrological grounds, and then secondly to delay signing the FEIS until hydrological studies to Jaynes' standards (!) were performed. Finally, a compromise vote was taken on three innocuous proposals which were totally non-binding and non-directive, and which offered no challenge to the FEIS. Judy Driscoll (PM-RO) accompanied Hocutt to the meeting.

In October Hocutt participated in a five-hour meeting in Syracuse of the Executive Committee of the Central New York State Finger Lakes Flood Advisory Committee. The meeting was to present the ad hoc group's recommendations to the U.S. Army Corps of Engineers (USCE) and to the New York State Department of Transportation. Three USCE staff attended from Buffalo. Superintendent John Jermano (New York State Department of Transportation - Waterways Division) and several of his Albany and regional staff attended the meeting. On many occasions, the meeting was very acrimonious. William Jaynes, President of the Cross Lake - Seneca River Association, referred to the work of the

USCE in the past as "garbage", a "joke", and worse. Hocutt and Jaynes engaged in a short series of very heated exchanges about the possible effects of refuge water management and the expansion proposal upon alleged flooding. Finally, out of weariness after five hours, the committee agreed upon a modified package to be presented to the full committee.

Late in October, Hocutt received a call from an Aide with Congressman James Walsh (Syracuse) asking for information (for a "constituent") about the National Fish and Wildlife Foundation. On October 31, Hocutt spoke to John McGuire, Executive Assistant to Mr. Walsh, to ensure that indeed it was William Jaynes, President of the Cross Lake - Seneca River Association, who had requested the information. Seems Jaynes has it in his mind that taxpayer dollars cannot be used by a private/non-profit (NFWF) group to help another non-profit (TNC) group buy private lands!?! Anyhow, Lucy Wallace in Bill Ashe's office was very helpful to us in gathering information.

In December Hocutt met with New York State Department of Environmental Conservation Wildlife Biologist Ward Dukelow and three partners in Dukelow's hunting club. The meeting was to discuss challenges to their state wetlands permit by William Jaynes, President of the Cross Lake - Seneca River Association. Jaynes seeks to stop the Service (refuge) from restoring several hundred yards of the duck club's dikes under auspices of the Private Lands Initiative. Jaynes has become so blatant as to demand application materials from the New York State Department of Environmental Conservation under the guise of the Governor's Central New York State Finger Lakes Regional Flooding Advisory Committee. Dukelow, Hocutt, and others complained to Secretary Shaffer about Jayne's gross misuse of his membership on the committee.

In March Hocutt, Refuge Biologist Gingrich, and Ecological Services Biologist Carl Schwartz (Cortland ES Office) met at the refuge with Phil Griswald and Jan Kemp from the Seneca County Soil and Water Conservation Service to discuss a proposal to channelize Esker Brook west of the refuge boundary. The meeting provided an opportunity to discuss the proposed project, tour the area, and discuss refuge concerns and potential impacts. Hocutt emphasized the refuge's position that no channelization work on the stream would occur within refuge boundaries.

Mosquitos were again a source of irritation and consternation as flooding along the New York State Barge Canal in early May produced a bumper crop of woodland mosquitos for the third consecutive year. In a lengthy discussion with Seneca County Health Director Brian Dumbrowski, Hocutt again offered to assist the county with

monitoring traps for EEE vectoring species of mosquitos, but stated emphatically that we will not spray, nor will we permit over-spraying refuge lands. We again asked Dumbrowski to be circumspect in his dealings with media and local elected officials. This followed a confrontation in 1988 during which we felt that a few Seneca County officials tried to deflect criticism of the County by residents by blaming the refuge for all of central New York's mosquitos.

In June Hocutt, Gingrich, Christenson, and Schwartz (ES/Cortland) met at the refuge with New York State Department of Environmental Conservation Region 7 Wildlife Administrator John Proud, Senior Wildlife Biologist Wes Stiles, and Wildlife Technicians David Conley and Dale Smith to discuss the refuge's proposal for a joint project to insure the survival of the Bear Swamp marsh at the headwater of Skaneateles Lake in Cayuga and Onondaga Counties. Most of the 80-acre site is on State land. Long partially or totally impounded by beaver, actions during the past five years by the Forestry Division of the New York State Department of Environmental Conservation have been designed to drain Bear Swamp -- home to many nesting mallards, wood ducks, hooded mergansers, and black ducks. A second meeting was held at Bear Swamp later in the summer where it was determined that the project did not meet criteria for the regional wetlands restoration program, but that we would seek alternate funding to support this desirable and needed joint project.

On the evening of June 3, Hocutt conducted a tour of the refuge for Dr. Robert Hoffman, MARSH Director for Ducks Unlimited, and Ray Whittemore, N.E. Coordinator for MARSH. The Cayuga Lake Connector (where DU has granted \$112,000.00) was inspected, along with sites for future projects. The need for an amphibious excavator at this refuge (and others) to complete long-stalled projects (such as sub-impoundments) was also discussed in some detail.

In late June, at the request of Dr. Richard Malecki, Cornell University Cooperative Wildlife Research Unit, Hocutt spent a day with Cornell entomology graduate students Fritzi Grerstead and Ann Herzig. Ms. Grerstead works with behavioral and life history aspects of the European beetles which will be introduced as part of a biocontrol program for purple loosestrife. Ms. Grerstead left for Germany two days later to study the involved species in their native habitat.

Hocutt met with Henry Zoll (Maintenance Supervisor, New York State Department of Transportation (Waterways) and his assistant, Dee Kingsbury in July. The meeting was to discuss a probable wetlands violation by the Department of Transportation on the refuge adjacent to the May's Point Dam. Large quantities of logs were pulled from the canal

and piled on refuge property. Mr. Zoll was very understanding and responsive. By week's end, a large dragline and several dump trucks were dispatched to remove the logs and small trees. Meaningful discussions were also held with Zoll about installing pedestrian walkways around the fishing areas adjacent to May's Point.

Recreation Aide Marva Smith spent July 1-3 working in the Regional Office for Tom Comish. Much was accomplished for both Tom and Marva.

Refuge staff worked with the FWE Office at Cortland, Tunison Fish Nutrition Laboratory, and the Leetown Fish Hatchery to construct and staff this year's USFWS Exhibit for the New York State Fair (August 22 - September 2). Seven refuge volunteers also helped with the staffing. "EXTINCTION IS FOREVER" was the theme that was conveyed through the use of a photographic display panel, a tank of Atlantic salmon, teacher packets, a coloring contest, and several handouts.

In October Christenson met with Allen Buddle of the New York State Department of Environmental Conservation Bureau of Flood Control in response to a request from a handful of residents around May's Point that the New York State Department of Transportation (Waterways Division) and the Service work together to remove numerous large willows and silver maples that had toppled into the canal from continued erosion of their root systems. We advised Buddle that the canal (along that area) was not a navigation channel, that there was no impediment to small boat traffic, and that it was not our responsibility. Hopefully, Buddle did not tell them that we felt that the large, downed trees were excellent wildlife habitat!

John Peverly of Cornell University collected about 125 square feet of phragmites root stock for use in an experimental program on sewage filtration in November. We offered him 200 acres, but he declined our largess!

Discussions and site visits were held with Henry Zoll, Maintenance Director for New York State Department of Transportation (Waterways Division) regarding bank stabilization at the May's Point Dam Fishing Area. Severe erosion over the past 50 years has created grossly unsafe conditions at this popular site which receives 15,000 plus visitors each year. Mr. Zoll is working on our behalf with the New York State Department of Transportation (Highways) to attempt to secure large rip-rap which has accumulated from a number of highway projects.

Many of the media contacts in 1991 fell more into the category of Technical Assistance than any other. This is because they (1) were potentially or currently

controversial, and/or (2) they required a great amount of background input to the reporter (compared to a "standard" interview. These included in 1991:

- 1/29 - Auburn Citizen (Tobin) - "NOMOWET"
- 2/05 - Finger Lakes Times (Toombs) - Connector
- 2/20 - WTVH-TV Syracuse (CBS) - Canada Goose
Overwintering
- 3/13 - Syracuse Post-Standard (Kelly) - Connector
- 5/02 - Syracuse Post-Standard (Palmer) - "NOMOWET"
- 5/08 - Syracuse Post-Standard (Palmer) - Connector
- 5/6-7 - Syracuse Post-Standard (Palmer) - Skaneateles
Lake Ducks
- 7/02 - Syracuse Post-Standard (Palmer) - "NOMOWET"
- 7/18 - Syracuse Post-Standard (Palmer) - Purple
Loosestrife
- 7/13 - Ithaca Journal (Simonetti) - "NOMOWET"
- 8/01 - Auburn Citizen (McNicholl) - General
"NOMOWET"
- 8/06 - Syracuse Post-Standard (Palmer) - "NOMOWET"/
Farm Bureau
- 8/13 - WBBR-FM Ithaca - NOMOWET/Farm Bureau
- 8/19 - Syracuse Post-Standard (Palmer) - "NOMOWET"/
Farm Bureau
- 8/20 - Seneca Falls Reveille (Van Kirk) - "NOMOWET"/
Farm Bureau
- 8/20 - Finger Lakes Times (Toombs) - "NOMOWET"/Farm
Bureau
- 9/14 - WIXT-TV Syracuse (ABC) - "NOMOWET"/Farm
Bureau
- 9/14 - Auburn Citizen (Tobin) - "NOMOWET"/Farm
Bureau
- 10/29 - Rochester Times-Union (Lowe) - "NOMOWET"/Farm
Bureau

Refuge staff provided a number of on and off-refuge seminars to several area colleges and universities during 1991. These included:

- 4/9 - College of Environmental Science and Forestry,
State University of New York at Syracuse.
35 Wildlife Management students - 2.5 hours
on-refuge (Hocutt).
- 4/27 - Cornell University (Laboratory of
Ornithology). 24 Advanced Ornithology
students - 4 hours on-refuge (Hocutt).

- 4/29 - Cayuga County Community College. 48
- & 4/30 Introductory Biology students - 2 hours
each section on-refuge (Hocutt).

- 9/28 - College of Environmental Science and Forestry,
State University of New York at Syracuse.
20 Wildlife Management students - 2 hours
on-refuge (Gingrich and Smith).

- 11/14 - College of Environmental Science and Forestry,
& 12/05 State University of New York at Syracuse.
110 Wetland Management/Issues students -
2 lectures (off-refuge) at 2 hours each
(Hocutt).

- 12/6 - University of Rochester Laboratory of Laser
Energetics, College of Engineering and
Applied Science. 80 graduate/undergraduate
students and faculty - 1.5 hour lecture
(Hocutt).

8. Other Items

General

Dick Liddiard, Thruway Maintenance Chief in Weedsport, and John Foland, a Thruway Engineer from Syracuse, met with Gingrich and Christenson in March and again in June to discuss long-term maintenance and use of the three water control structures under the New York State Thruway (I-90). By agreements signed when the Thruway was constructed we have management control of the structures, but the Thruway Authority must maintain them. Discussions focused on current maintenance needs due to deteriorating concrete and stoplog channels, and changes needed to meet current management practices. We are proposing that the large screw gate structures be removed and replaced by simpler, low-maintenance channels for short stop logs. They would like to see safety improved by filling in the deep ditches which are now only five to eight feet from the road surface. Both goals could be met for two structures by extending the pipes the full width of their Right-of-Way and moving the control structure to the pool side of our tour route. Foland indicated that he will prepare a formal proposal for changing and rebuilding the structures, which will include moving all the above-ground facilities such as screw gates onto our property (they are currently immediately adjacent to the roadway and protected by guardrails). Our existing agreements with the Thruway Authority will require modification, so this project will eventually require

Engineering, Realty, and Solicitor's input. Further progress on this needed change is expected in 1992.

In April Hocutt and McMahon hosted Lynn Koser, Pat Brooks, and Peter Allen, all from Contracting and General Services in the Boston RO. The visit included an inspection of station procurement procedures and of station property. We also had time for a brief tour of the refuge.

The New York State Electric and Gas Corporation (NYSEG) requested a Right-of-Way along Route 89 to accommodate movement of an existing power line. Christenson discussed their request with Axel Larsen in Realty and discovered that by moving their proposed pole location about fifty feet they would be able to keep all work within the already established Right-of-Way on tracts 162 and 163 and off tract 28B, which does not have an established easement.

Christenson discussed this with Mr. Owen Loudin, NYSEG Realty Specialist, who agreed that they can easily modify their plans to keep all proposed work within established easements. NYSEG completed the line work during the fall.

Northern Montezuma Wetlands Project ("NOMOWET") Joint Venture:

1991 was a year of accomplishment (signing of the Record of Decision) and also of great controversy. The New York State Farm Bureau and its county affiliates targeted "NOMOWET" after their successes in the national and state wetlands imbroglio. Emboldened by their "success" in derailing the proposed St. Lawrence Valley NWR, they focused all of their guns upon "NOMOWET". The 35,000-acre Joint Venture Project with the New York State Department of Environmental Conservation mostly survived the onslaught.

On July 11, we enjoyed having Regional Director Ron Lambertson visit the refuge for most of the day. In addition to an airboat and vehicular tour of the refuge, we teamed up with New York State Department of Environmental Conservation Senior Wildlife Biologists Wes Stiles and Dave Woodruff to tour the state and federal areas of interest in the proposed expansion area.

Also related to "NOMOWET", on August 6, the refuge hosted at the Visitor Center the annual meeting of the New York State Conservation Fund Advisory Council. The group, appointed by the Governor, is chaired by Bob Banister of Rochester, who requested the refuge's involvement. Early in the morning, Hocutt led a wildlife and management tour of Montezuma for Banister, New York State Department of Environmental Conservation Fish and Wildlife Director Ken Wich, and seven

board members. After the meeting in the Visitor Center, New York State Department of Environmental Conservation Regional Biologists Wes Stiles and Dave Woodruff and Hocutt led a tour of the proposed expansion area. The New York State Department of Environmental Conservation Deputy Commissioner for Fish and Wildlife Bob Bendick and his son, Eric, joined the group. Also accompanying the group were budget affairs officials for the New York State Senate, the New York State Assembly, and the Governor's Office. Late in the afternoon, Hocutt provided airboat tours of Montezuma for the budget officials, Director Wich, Chairman Banister, and other board members.

The comment period for the "NOMOWET" Final Environmental Impact Statement was August 19. At the last minute, the New York State Farm Bureau and local Farm Bureau officials from Cayuga, Wayne, and Seneca Counties mounted a carefully orchestrated campaign to attempt to derail a decision. In a series of statewide news releases and a press conference at a Wayne County dairy farm, the Bureau used classic tactics (private property rights, immediate tax losses, "flooding", depredations, and other claims to inflame, or in some cases to intimidate, local farmers). Much of the rhetoric has been not only inflammatory, but in some cases downright misleading. Hocutt and other staff provided numerous on-record and off-record (background) briefings to newspaper reporters from Syracuse, Rochester, and a host of smaller cities. Two taped radio interviews were accomplished. Contacts were made with our congressional people to ensure their knowledge levels were current.

In September Hocutt hosted Central/Western New York State Director David Kline of The Nature Conservancy (TNC) and 20 of their major contributors for a program update ("NOMOWET") and tour of the refuge. The six-hour program was very helpful in demonstrating the role of TNC in important resource issues and acquisitions. Many excellent "bridges" were established -- including strong expressions of support by several TNC members to Congressman Horton a couple of weeks later when the Farm Bureau issues went critical.

Even without the Landfill, the "NOMOWET" expansion proposal threatened to spin out of control due to the last-minute involvement of the New York State Farm Bureau. All of their statewide guns were brought to bear on "NOMOWET" in an attempt to halt a Record of Decision for the FEIS. Congressman Frank Horton was especially targeted because of his representation of all three counties (Seneca, Cayuga, and Wayne) involved. He is also a 28-year veteran, a strong proponent of private property rights, and a leading sponsor of the Hays Amendment. The Farm Bureau brought several professional staff, including many of their north country (St. Lawrence County/Adirondacks) leaders; into central New

York. Media conferences were again held on local dairy farms, and area politicians were invited. Despite our efforts, we could not get them to come to the refuge; they preferred to establish a contrast between well-run farms and the state's Howland's Island WMA.

Acting on a tip, Hocutt made contact with a group of St. Lawrence County Farm Bureau officials on the Auto Tour Route on September 4. A very interesting and educational hour and forty-minute discussion followed; it was frank and candid. They learned a lot more about the Service, and also that "NOMOWET" is not St. Lawrence Valley. Even here the tactics of the Farm Bureau were clear. North Country Director Fred Perrin and former St. Lawrence County dairy farmer and St. Lawrence County Chairman Darryl Sipf did not identify their backseat passenger until they started to leave. He was reporter Mark Purcell of the Ogdensburg Journal.

Hocutt was involved in some 20 newspaper interviews about the controversy during the period. On September 5 alone, five newspaper interviews and one television interview (WIXT-TV Syracuse/ABC) were granted.

In September, enroute back to New York State from Easton, Maryland, Hocutt and Christenson stopped in Washington to brief Jeff Kellmanson, Executive Assistant to Congressman Frank Horton, about the status of "NOMOWET" and the FEIS. We were able to suggest methods by which we could be supportive of their efforts to contain the tremendous pressures set in motion by the Farm Bureau. We also promised to provide organizational support for Mr. Horton's very even-handed handling of these pressures. Accordingly, several days of contacts with our support groups provided very strong support for Mr. Horton and other elected officials. The New York State Sportsmen's Council, The New York State Federation of Bird Clubs, numerous Audubon chapters and sportsmen's clubs, Ducks Unlimited, Waterfowl USA, and on and on, provided sterling backing.

Hocutt initiated and hosted a meeting at the Visitor Center in September which included Bob Banister, Chairman of The New York State Sportsmen's Council and of the Governor's Conservation Fund Advisory Council; Rick Zimmerman (Legislative Affairs Director - New York State Farm Bureau), Paul McDowell (Central New York State Director - New York State Farm Bureau), Roger Arless (Wayne County Farm Bureau President), Don Waterman (Cayuga County Farm Bureau President), Dr. Guy Baldassare (College of Environmental Science and Forestry, the State University of New York at Syracuse); and Wes Stiles and Dave Woodruff (R7 and R8 Senior Wildlife Biologists, New York State Department of Environmental Conservation). The very frank three and a half hour meeting brought many issues into focus and

provided a strong basis for future discussions. The occasion allowed an opportunity to clearly demonstrate that a backlash was building toward the Farm Bureau for its insinuation of their limited philosophy into every single wetlands and wildlife issue in New York State. We expressed a wish to talk, and talk often.

In November, at the request of Ken Wich (Director, Division of Fish and Wildlife, New York State Department of Environmental Conservation), we hosted a planning session in the refuge Visitor Center to discuss "next" steps in the "NOMOWET" issue. Present were Wich, Wildlife Chief Gary Parsons, Wes Stiles, John Proud, David Woodruff, David Kline (The Nature Conservancy), Andy Zepp (The Nature Conservancy), and Hocutt. A very productive four-hour session produced agreement upon a number of "next steps" -- choosing the State "NOMOWET" Project Manager, compartmental management plans, Private Lands Initiative expansion, Cooperative Agreements, and others.

Seneca Meadows Landfill:

1991 was the most critical year since 1981 for refuge involvement in this issue. The Service was again a major player in the application of the Seneca Meadows Landfill (SML) to place another 127 feet of garbage atop the existing landfill, and to modify their permit to allow operation for another five years. The refuge has been involved for over a decade in the State's permitting and regulation of SML. This is because the landfill is the second largest in the state, and is bisected by Black Brook (our primary water source) upstream of the refuge. The landfill has a Phase II "Superfund" site containing over 360,000 tons of toxic/hazardous waste.

In February Hocutt traveled to New York State Department of Environmental Conservation Region 8 Headquarters in Avon, New York, for a working luncheon and meeting with R8 Regional Director Peter Bush, Solid/Hazardous Waste Chief Dan David (P.E.), and Solid Waste Engineer Mary Jane Peachey. The visit was to discuss the current application by Seneca Meadows Landfill (SML) for a permit modification to place an additional 127-foot "lift" (stacks of garbage) atop the current landfill. The privately-owned regional landfill handles waste from Syracuse and Onondaga County, and eight other counties in central New York State. During the meeting, New York State Department of Environmental Conservation staff explained the latest positions of SML and the New York State Department of Environmental Conservation in the negotiations. Hocutt stated Service concerns, chief among them being that SML was in effect operating by permit modification rather than permit renewal, and that this

allowed them to avoid the intense analysis that formal permit renewal would require. We also stated our concern for SML's failure to address remediation of the Superfund site, and for summer, 1990 leachate outbreaks into Black Brook.

Mr. Bush (who was regional attorney for R8 during the 1980-81 SML 17-day Administrative Law hearings) asked us to continue our involvement, and to expand upon our major areas of concern. He stated that formal Administrative Law Hearings would be scheduled, and that he hoped that the Service would maintain its role as a major Party-of-Interest. Accordingly, Hocutt (who had reviewed SML's plans and technical proposals during the preceding two months) provided a letter to Mr. Bush outlining FWS' concerns (remediation, Black Brook sampling/analysis, the escrow account, etc.), and our interest in maintaining "Party" status. In turn, the New York State Department of Environmental Conservation agreed to provide all relevant materials to us, and agreed that regular briefings would be provided by their Region 8 staff.

The refuge's involvement with the Seneca Meadows Landfill and its potential effects upon Black Brook took several convoluted turns during the month of June. Much time was spent in telephone discussions and personal meetings with refuge consultants, New York State Department of Environmental Conservation Solid and Hazardous Waste Engineers, and, ironically, with an attorney (see next paragraph) for the law firm representing Seneca Meadows Landfill (SML). SML's engineering consultants, Dunn Geoscience in Albany, New York, typified concerns of the USFWS as being without "...technical merit..." and, finally, without "...merit..." in their June 6, 1991 formal response to the New York State Department of Environmental Conservation's sixth Notice of Incomplete Application to the applicant. Several discussions/meetings were held during the period with Dan David, Mary Jane Peachey, and Kim Leitner (New York State Department of Environmental Conservation engineers). Hocutt also visited with the U.S. Geological Survey's Bill Kappel and Dr. Ron Scrudato, a geologist who heads up the Research Center of the State University of New York at Oswego.

On June 28, 1991, a young woman named Tracy McClain came into the office indicating an interest in the landfill and in seeing results of any studies that we might have done with regard to Black Brook. In the light of direct questioning by Hocutt, she acknowledged that she was an attorney, and then that she was with a Syracuse firm, and finally that the firm was Lombardi, Devorsetz, Stinziano, Gilberti, and Smith of Syracuse, New York (one of central New York State's largest law firms, and counsel to SML).

Upon further questioning, she acknowledged that she was directed to seek information regarding the Service's level of knowledge and data from Black Brook studies; if unsuccessful, her firm planned to pursue FOIA access the following week. After severely criticizing the actions of her firm, Hocutt explained that the landfill had all studies and documents and that they and/or her firm had been derelict in not securing them. We articulated to Ms. McClain the frustration of the Service in having our concerns treated in what we considered to be an unprofessional and capricious manner by Dunn Geoscience, and stated our doubts that such an attack occurred without sanctions from her law firm. Finally, we explained that we would provide any information freely, so long as we were asked for it, but would fight over every page -- in view of their strategy -- if they went FOIA. At the meeting's end, she asked if Hocutt would meet informally and in more open circumstances with her. He explained that such a meeting would be contingent upon the approval of FWS' Solicitor and the New York State Department of Environmental Conservation.

On July 2, Hocutt again met with attorney Tracy McClain of the firm of Lombardi, Devorsetz, Stinziano, Gilberti, and Smith for three hours regarding the Seneca Meadows Landfill (SML) expansion. This was a "sanctioned" follow-up of her law firm's ploy in sending Ms. McClain as an unidentified "interested party" to the refuge to learn what studies and other data the Service had regarding Black Brook and the Landfill. Hocutt traced the decade-long involvement of the Service in the issue and outlined our existing positions regarding sediment sampling/analysis, surface water management, the closed "Superfund II" site, the escrow account, and other topics. The mutually frank discussions did much to illustrate the seriousness with which the Service views the issue and the outcome of the formal Public Hearings which will commence in late September or early October. Discussions were held with the Solicitor's Office regarding filing an ethics charge against the law firm. Ms. McClain was later severed from the firm before the hearings began.

In June Hocutt met at the refuge with Senior Hydrologist William Kappel of the U.S. Geological Survey Sub-district Office in Ithaca to discuss the hydrogeological ramifications of the proposal by Seneca Meadows Landfill to add another 127 feet of height to their landfill. Also, Kappel inspected the soil profiles and core-boring logs for the Cayuga Lake Connector Project. Hocutt provided the first formal response of the Service to the New York State Department of Environmental Conservation regarding the proposed 127-foot increased height of the Seneca Meadows Landfill. We specifically raised issues relating to hydrogeology, water/sediment sampling and analysis in Black

Brook, the escrow account for the post-closure period (30 years) and related concerns.

Considerable time was spent throughout the summer in reviewing historical sediment and total suspended solids (TSS) data for the Seneca Meadows Landfill (SML). This was done to allow us to comment to the New York State Department of Environmental Conservation regarding our opposition to SML's proposed changes in sediment parameters in the surface water holding ponds and in Black Brook. We also reviewed SML's formal response to the New York State Department of Environmental Conservation's most recent Notice of Incomplete Application for the proposed 127-foot height increase. In their response, SML's attorneys expended five pages in challenging issues of concern raised by the Service regarding the proposed height increase. Hocutt presented a formal response to SML's dismissal of our earlier written comments.

Hocutt met at the Landfill on July 30 with SML Executive Vice President Andrew Meloni to discuss SML's pending permit application to the New York State Department of Environmental Conservation for a 127 foot height increase and a permit renewal for a period of five years. Very frank exchanges were held in which Meloni expressed SML's beliefs about the New York State Department of Environmental Conservation's regulatory activities and his own attempts to bring the landfill into compliance with NYSRR Part 360. We expressed our dissatisfaction with SML's proposal to modify suspended solids and BOD parameters for discharge of the surface water holding ponds into Black Brook. Meloni also took Hocutt on a tour of the facility to view new perimeter drains and other modifications. We were impressed with the fact that Meloni is a trained accountant with over 10 years experience with "national" waste management companies.

On August 6, Hocutt met at the New York State Department of Environmental Conservation Region 8 headquarters with Solid and Hazardous Waste Chief Dan David and Solid Waste Engineer Mary Jane Peachey to analyze the application as it applied to Service concerns, and to devise strategies for our response and the upcoming public hearings.

August was a very intense month for refuge involvement in the permit application for the Seneca Meadows Landfill. On August 26, after six Notices of Incomplete Application, the New York State Department of Environmental Conservation finally deemed the SML application complete. In early August, Hocutt reviewed all of the previous year's technical and operating proposals to ensure that FWS's concerns were addressed in the flood of documents.

Hocutt had several additional discussions during August with SML Executive Vice President Andrew Meloni. On August 26, SML Business Manager Carl Casecia and Superintendent Scott Van Orman met at the refuge with Hocutt to review the completed application and to discuss Service concerns as reflected in that document. On August 29, Hocutt met at the refuge with Engineering Technician Kim Leitner (the New York State Department of Environmental Conservation's on-site monitor at SML), to review 1989-1991 water and sediment analytical data from SML. On August 30, Hocutt met at The State University of New York College at Oswego with Dr. Ron Scrudato, Director of the Research Center, to discuss hydrogeological components of Service concerns about the landfill expansion.

Much of September was consumed by work related to the upcoming Legislative and Issues Administrative Law Hearings regarding the proposed 127-foot height increase at the Seneca Meadows Landfill (SML). Numerous discussions were held with New York State Department of Environmental Conservation R-8 Solid Waste Engineers regarding technical and strategic aspects of the proposal, and the attendant threats to Black Brook and the refuge. Several visits and discussions were held with Bill Kappel, a Hydrologist with the United States Geological Survey (USGS) in Ithaca, New York, and with Dr. Ron Scrudato from The State University of New York College at Oswego. All volumes (seven!) of the DEIS and Operating Plans were reviewed during the period. Because of linkages, it was also necessary to review the DEIS and other documents (including the hearing record) for the fourteen days of public hearings in 1981. The 1988 documents and public hearing record for the 1988 forty-foot height increase were reviewed. On September 3, SML Business Manager Carl Casecia and Superintendent Scott Van Orman delivered documents to the refuge and visited with Hocutt about the proposal.

On September 19, at the request of Seneca Meadows Landfill (SML), Hocutt was accompanied by Hydrologist Bill Kappel (USGS) to a three-hour meeting at the landfill to discuss concerns of the USFWS about the proposed vertical expansion. Present for SML were Executive Vice President Andrew Meloni, Mark Millspaugh, P.E. (Dunn Geoscience), Edward Farenkopf (Chemist, Dunn Geoscience), John Janichuk (Operating Engineer, SML), and Scott Van Orman (SML Superintendent). The meeting was marked, in our opinion, by attempts by Millspaugh and Farenkopf to ferret out loopholes or faults with USFWS concerns which could be used in the hearings by their counsel to weaken our position. Hopefully, they left this very intense meeting with the clear understanding that we intend to maintain existing permit conditions to insure that contaminants stay inside the landfill and out of the brook and away from the refuge. We made it clear that their

problems with total suspended solids (TSS) and other sampling protocols were problems they had created by economic-based business decisions.

Numerous discussions were held throughout September and early October with New York State Department of Environmental Conservation engineers and legal staff regarding the State's position and the evolution of the Service's position. Discussions were also held with engineers and geologists from the landfill's consultants (Dunn Geoscience, Albany, New York). A last-minute flurry of documents was reviewed, and the position of the Service was addressed in a formal policy letter to Administrative Law Judge Andrew Pearlstein.

On the evening of October 15, 1991, Hocutt represented the Service at the Town Hall in Seneca Falls, New York. The Service position was publicly outlined and the position statement was presented to Judge Pearlstein. Testifying in support of the 127-foot height expansion (and five-year permit extension) were Chamber of Commerce representatives and solid waste engineers from Syracuse, Onondaga County, Seneca County, and other municipalities. As always, local elected officials turned out en masse to ensure the "sweetheart" deal that Seneca County and various central New York State townships have struck with the landfill for handling their waste.

On the morning of October 16, a Formal Issues Hearing was convened at the same location. Again, the Service position was stated and explained. The matter quickly condensed to a fight between the New York State Department of Environmental Conservation and the applicant as to whether the proposal should be viewed as a "new" permit or as a "modification" of an existing permit. This question became enmeshed with the more specific engineering question of whether geo-liners would have to be installed. The landfill's attorneys challenged on strictly legal and technical grounds whether or not the Service and Concerned Citizens For The Preservation of Black Brook should have formal "Party" status. The decision of Judge Pearlstein was that we have full access (and redress) with New York State Department of Environmental Conservation staff to ensure that our needs and concerns are addressed.

Subsequent to the Judge's ruling, Hocutt walked out along most of Black Brook around the perimeter of the landfill, and discovered numerous protocol and interpretive violations by Dunn Geoscience in upstream and downstream water samplings between July of 1988 and August of 1991. These were called to the attention of the New York State Department of Environmental Conservation. A set of requests pertaining to permit conditions (and needed new ones) was

also provided to the State. In view of Hocutt's full schedule of work with Refuges 2003, hunting seasons, etc., etc., a decision was made to work through the New York State Department of Environmental Conservation, and to not challenge the "Party" status ruling.

New York State Department of Environmental Conservation Administrative Law Judge Andrew Pearlstein ruled in November that the proposal by Seneca Meadows Landfill (SML) for a 127-foot height increase is, in fact, a "new" application and not a renewal/modification of the existing permit. Consequently, SML has been given a one-year limited extension (instead of a five-year extension) and directed to comply with all appropriate parts of NYCRR Part 360 (the State's landfill management code). This means that a double geomembrane liner will be required. The landfill has in the past refused to even discuss liners. The Judge's ruling means they must install liners (and do a number of other improvements/innovations). It is likely that SML will file an Article 78 (arbitrary and capricious action) and the whole thing will get bogged down in the New York State Supreme Court. Hocutt held several discussions during the period with Dan David, New York State Department of Environmental Conservation R8 Chief of Solid/Hazardous Waste, and his deputy, Mary Jane Peachey, regarding the position of the Service in the whole process.

Starting January 1, 1992, metropolitan Syracuse and Onondaga County will have to haul approximately 1,200 tons of garbage daily from it's transfer stations to a landfill in Scranton, Pennsylvania. The 134-mile trip to Scranton (via I-81 and the Pennsylvania Turnpike) became necessary because of uncertainty about whether the New York State Department of Environmental Conservation would ever grant a 127-foot height increase and permit extension to SML. SML had handled the entire account since 1985. The account's loss was a major blow to Seneca Meadows' cash flow. The immediate problem became one of whether a limited permit would be granted to service nine less-populated counties. The longer range problem for the refuge is the disposition of Seneca Meadows' Phase II Superfund site and it's 360,000 plus tons of toxic and/or hazardous waste. At year's end, for the first time since 1956, serious discussion abounded about permanent closure of the Landfill.

Private Lands Wetland Restoration Program:

1991 saw a continuation of Region 5's successful wetlands restoration program in New York State with the help of several refuges and Fish and Wildlife Enhancement Field Offices. The program was carried out on land that had been ditched or tiled and could be easily restored through the

placement of ditch plugs, removal of drainage tiles, raising of culverts, and/or construction of small low-head dikes. Water control structures, stand-pipes, and rip-rapped spillways were installed where site conditions required their use to restore the natural hydrology of the restoration site.

Several Montezuma staff members contributed to the wetland restoration program in New York State during 1991 through temporary staff assignments, loan of refuge equipment, and coordination with private contractors working on restoration sites.



Maintenance Mechanic Flanders and Dave Nicely (Erie NWR) work on final grading for one of the three restoration projects on the Abbott farm just north of the refuge along Route 89 (91-4; TAG).

Assistant Manager Christenson completed a 16-day wetland restoration assignment as a site identification team member during April. He was responsible for identifying possible restoration sites, meeting with landowners to encourage wetland restoration, surveying and staking sites, coordinating with appropriate federal, state, and local officials, developing site plans, and identifying equipment and material needs. Maintenance workers Flanders and Colton were detailed to project sites to do the actual earthwork. They operated dozers and backhoes to construct ditch plugs

and low-head dikes, break drainage tiles, install water control structures, and fertilize and reseed the sites at the completion of construction. Colton spent two weeks on restoration sites and Flanders spent one week. Montezuma's 550 widetrack bulldozer was loaned to the New York restoration program for six weeks during the late summer.

Refuge Biologist Gingrich spent approximately 25% of his time throughout 1991 working with the wetlands restoration program. The majority of this effort was concentrated within a 30-mile radius of the refuge. Gingrich served as a site identification team leader, Service coordinator with Dates Excavating, Inc. (private contractor for restoration work in the three-county area around the refuge), and coordinator for refuge equipment operators working on sites in Cayuga, Seneca, and Wayne Counties.

All Montezuma staff members involved enjoyed the work assignments and felt the restoration projects were very rewarding. The positive public relations fostered by the restoration program were quite evident when talking to landowners. Even farmers who did not have suitable sites were supportive and pleased with suggestions for wildlife enhancement on their properties. Information on wood duck box placement and bluebird boxes was greatly appreciated. Landowners were often times enthusiastic and pleased just to be able to talk to a wildlife professional about their property and its potential for improving wildlife populations through wise habitat management. Overall, the wetlands restoration program can be viewed as win, win, win for everyone included - landowners, the Service, and most importantly, the wildlife resource.

F. HABITAT MANAGEMENT

1. General

Montezuma National Wildlife Refuge was established on September 12, 1938 by Executive Order 7971 as a refuge and breeding ground for migratory birds and other wildlife in order to effectuate further the purposes of the Migratory Bird Conservation Act of 1909 (45 Stat. 1222).

Primarily, the refuge is to provide habitat and protection for waterfowl, other migratory birds, and endangered species; and to insure the availability of these resources to the American people for their enjoyment now and in the future. As an integral component of the National Wildlife Refuge System, the refuge strives to attain the following proposed habitat objectives.

1. Maintain and, when possible, enhance resting, feeding, and nesting habitat for migratory waterfowl and other migratory waterbirds.
2. Provide resting, feeding, and nesting habitats for bald eagles and ospreys (a state-designated threatened species).
3. Within constraints imposed by the two objectives above, efforts shall be made to provide adequate habitat diversification to permit the presence of self-sustaining populations of other life forms that are typical of central New York State.

To meet these stated objectives, moderate water levels were maintained during migration. Water levels are allowed to decline slightly throughout the waterfowl nesting season. Over 9.5 miles of dikes were mowed during late summer in an effort to maintain succession at a stage suitable for nesting. The dikes represent a substantial portion of the refuge's nesting cover.

2. Wetlands

Wetland management is the essence of habitat management at Montezuma, since approximately 75% of the refuge's 6,432 acres is classified as wetland. The three major wetland classes at Montezuma are Aquatic Bed, Emergent Wetland, and Forested Wetland.

Aquatic Bed presently totals 1,800 acres, and refers to wetlands and deep water habitats dominated by plants that grow principally on or below the water surface, such as

white water lily, coontail, bladderwort, sago pondweed, duckweed, and several additional species of pondweed.

Emergent Wetland, characterized by erect rooted herbaceous hydrophytes, presently totals 1,350 acres and typically occurs in calmer, more shallow water. Dominant emergent vegetation includes cattail, and two exotic plants, purple loosestrife and common reed. Bulrush was once a significant component of the emergent plant community but now occurs only as isolated clumps and in small sparse stands.

Forested wetland is the largest habitat type at Montezuma, comprising 1,850 acres. The term generally refers to wetlands dominated by woody vegetation greater than six meters in height, and can range from temporarily or seasonally flooded regimes to permanently flooded dead trees. Dominant vegetation includes ash, swamp white oak, red maple, and eastern cottonwood. The understory is sparse, and includes common winterberry, northern spicebush, and highbush blueberry.

The refuge continues to be hindered by problems brought on by our lack of flexibility to change water levels and the lack of a reliable water source. Water management facilities at Montezuma were constructed over 50 years ago. The original design had a myriad of "built-in" problems that have since worsened and now severely limit the management of water. These factors are compounded by sedimentation, eutrophication, and the presence of exotic plant and fish species. All of these problems have combined to significantly alter the structure of existing marsh plant communities and reduce their productivity and carrying capacity for marsh dwelling wildlife. Management of habitat diversity is severely hindered by these limiting factors. They also have frustrated most efforts to use more innovative management techniques.

Recently, the refuge has undertaken a major construction project to secure a reliable source of water for the Main Pool. Construction was begun in 1990 on a channel through Unit 17 that will provide water, via gravity transport, from Cayuga Lake to the Main Pool. The gravity flow channel will provide a much-needed independent supply of water for the Main Pool, and a welcome light at the end of a long tunnel is evident for enhancing water availability and transport. Channel construction is more fully described in Section I.1.

At present, dikes impound some 3,500 acres of freshwater marsh contained within the Main, Tschache, May's Point, North Spring, and South Spring Pools. A brief history of the five major impoundments on the refuge is provided below.

Main Pool

Using CCC labor, approximately 3.3 miles of dikes were constructed with little or no imported fill to impound the 1,200-acre Main Pool. The pool was flooded in 1942, and has been managed as an impoundment since that time. Several water level management strategies have been implemented on the pool throughout it's history.

Main Pool has been the traditional purple loosestrife stronghold on the refuge. Again this year, water levels were held high enough to retard loosestrife germination, but not so deep as to unduly stress established cattail. Main Pool will be the primary recipient of benefits derived from the water transport channel from Cayuga Lake when completed.

Main Pool was drawn down during the winter of 1990-91 to remove carp, consolidate bottom sediments, and retard water lily expansion. Rising floodwaters from the adjacent Cayuga-Seneca Canal during winter and early spring came close to overtopping the Seneca Spillway. Fortunately carp ingress was light, and no damage occurred to the Main Pool dike.



Initial flooding of Benning Marsh resulted in a wet meadow situation that was extensively used by a variety of shorebirds late into the fall (91-5; BLC).

Refuge staff completed restoration of the approximately five-acre Benning Marsh during the late summer. A 1,400-foot low head dike was constructed to capture surface runoff and direct precipitation in a roughly triangular area bordered by the New York State Thruway, the Cayuga-Seneca Canal, and the Auto Tour Route. The project was completed using refuge staff and equipment.

Designed to provide waterfowl nesting, brood-rearing, and waterfowl/shorebird resting and feeding habitat, the Benning Marsh project should aid in reaching refuge objectives of increasing waterfowl production. When funding is available, several acres of adjoining upland cover will be managed to provide high quality nesting habitat for waterfowl. Management practices will be directed at improving nesting cover height diversity, density, and species composition.

Tschache Pool

Traditionally known as the Storage Pool, Tschache Pool is a 1,100-acre impoundment created by CCC labor following completion of a 3.25-mile long dike. The pool was first flooded in 1944, and has been managed as an impoundment ever since. The pool contained swamp timber and open wetlands when first created. The timber eventually died following flooding, and the majority of the trees have since fallen. The dead timber marsh has hosted over 100 great blue heron nests as well as an active bald eagle nesting territory -

one of only 18 in all of New York State. The dike encompassing the pool was again closed to the public so as not to unduly disturb the nesting bald eagles. Our own presence along the dike is kept to a minimum during critical periods during the nesting season.

For the last few years we have drawn down Tschache Pool in an effort to reduce carp numbers. Unfortunately, each spring the neighboring New York State Barge Canal has risen and flooded the White Brook Spillway, allowing hundreds of thousands of carp back into the pool. These overwhelmingly high carp numbers play an important role in limiting expansion of aquatic and emergent vegetation in the pool, in addition to hampering water quality and clarity. Until funding is provided to raise the crest elevation of the White Brook Spillway to prevent inflow from the canal, we will be caught in a never-ending (and losing) battle with carp during periods of spring flooding.

May's Point Pool

In 1954 construction of the New York State Thruway across the north end of the Main Pool diked off 160 acres which came to be known as May's Point Pool. The pool is an open water marsh impoundment. Several water level management strategies have been implemented on this pool during its history. Current management of May's Point Pool is directed toward maintaining low water levels and exposed mudflats during the spring and fall to provide habitat for migrating shorebirds.

Drawdown of May's Point Pool was required following spring flooding which allowed intrusion of tens of thousands of carp (91-6; TAG).



May's Point Pool was completely drained during late May to remove carp after heavy rains and high Canal and Clyde River levels allowed the fish to gain access to the pool. Fred Martin, the refuge's commercial carp removal permittee, harvested approximately 11,000 pounds of carp from May's Point during the drawdown.



Extensive growth of cattail resulted from the May drawdown of May's Point pool. Canada geese and muskrats fed extensively on the shoots during summer and fall (91-7; KH).



Some side benefits to a local gypsy moth outbreak were discovered when this group of hungry caterpillars were found devouring purple loosestrife plants in May's Point Pool (91-8; TAG).

After the drawdown, May's Point Pool was refilled to a new higher level in our continuing efforts to combat purple loosestrife expansion within the pool. This was possible with the addition of new channels capable of holding more stoplogs, which in turn allowed us to hold higher levels of water in the pool. The higher water level (about one foot higher than was possible before) stress-floods the newer loosestrife growth that emerged during the past two years.

North Spring Pool

In 1957 a .31-mile long dike was constructed along the west side of State Route 89 to create the 50-acre North Spring

Pool. The impoundment flooded swamp timber which has died due to permanent inundation. The high sulfur and tannic acid levels of the pool have greatly restricted the growth and expansion of emergent vegetation. Purple loosestrife is confined to stumps, fallen decaying logs, hummocks, and along the dike. Several of the stumps and hummocks were used as nesting sites by Canada geese and mallards. An abundance of duckweed during the autumn months provided a good source of food for migrating waterfowl. Throughout much of the fall this pool teemed with American black ducks, mallards, gadwalls, and Canada geese.

South Spring Pool

The South Spring Pool was formed by the construction of a .5-mile long dike in 1958. This 35-acre pool is located directly south of the North Spring Pool and is supplied by several springs originating on the western boundary of the refuge. Water from this pool can be diverted into Main Pool or to North Spring Pool. As is true with North Spring Pool, purple loosestrife is confined to disturbed or exposed areas, such as dikes and rotting tree stumps. Loosestrife is less prevalent in South Spring Pool than in North Spring Pool.

3. Forests

Approximately 1,850 acres of the refuge are non-commercial woodland, the majority of which is classified as forested wetland. Dominant tree species include red maple, black ash, green ash, swamp white oak, and eastern cottonwood. No forest management occurred in 1991.

Unit 17 was created from bottomland hardwood forest habitat through construction of approximately four and a half miles of dikes creating two 300-acre pools in 1965. The two units

were managed as seasonally-flooded green timber impoundments from 1965 to 1977. Since that time the two pools have remained unflooded except for direct precipitation input and spring runoff.

There is significant mammalian activity in this tract, as well as at other water/forest interfaces. During 1985 and 1986, two 25-meter square deer exclosures were erected to help determine whether forest regeneration is retarded due to browsing by deer or due to other environmental factors.

Future management plans for Unit 17 include rehabilitation of the existing pump facilities to allow short duration seasonal flooding of the two bottomland hardwood impoundments. Early spring (mid-March to early May) flooding would provide several hundred acres of foraging habitat for pre-nesting female dabbling ducks. The flooded bottomlands would insure the availability of high-protein invertebrate food sources at a critical period during migration. The birds will then enter the metabolically stressful nesting period in better condition - either here at Montezuma or elsewhere in the Flyway.

5. Grasslands

The establishment and management of fields of undisturbed grassland cover at Montezuma was initiated to provide increased nesting cover for waterfowl and ground nesting birds. To achieve this objective, the approximately 560 acres of grasslands on the refuge have been divided into several Grassland Management Units (GMUs). This was possible only after all on-refuge grazing was terminated in the early 1980's.

Present vegetative conditions in the grassland fields are representative of early old-field successional stages. Encroachment of woody plants and noxious weeds is minimal at the present time. Vegetation within all fields is dominated by species of tall grasses and perennial forbs remaining from tame pasture and hay field plantings during the past several decades. The resulting cover consists of tall, dense, rank live vegetation with loosely packed litter composed of dead vegetation from previous growing seasons. This ground litter serves to conceal nesting hens, and provides a deterrent to predatory mammalian and avian activity.

During 1991, mowing practices were instituted in GMU 1 (headquarters field) in accordance with the current rotational schedule. Clipping heights were maintained at 15 cm (six inches) using rotary and sickle bar mowing attachments. Mowing was delayed until August to prevent

nest destruction of late-nesting and renesting waterfowl and ground-nesting bird species.

Invading and expanding stands of phragmites along the Auto Tour Route and in GMU 5 were mowed in preparation for chemical treatment with Round-up following plant regrowth in early September. However, drought conditions which favored access for mowing resulted in slow, weak phragmites regrowth. This forced the delay of our chemical treatment program until the optimal application "window" had passed.

Nest searches have suggested limited use of refuge grassland units to date. This was confirmed again this year when a nest search of GMU 2 (sub-headquarters field) revealed no waterfowl nesting activity. Future plans to increase nesting use and success include strip mowing, dense nesting cover plantings, and removal of brush and trees from along pool/field interfaces. Monies have thus far been unavailable to undertake these fairly intensive treatments.

6. Other Habitats

In addition to the habitat types already discussed, the refuge has approximately 100 acres classified as rivers, streams, brush, and small isolated grassland areas. These areas are not normally subjected to any periodic habitat manipulation and are allowed to follow a normal pattern of successional change over time. Several acres of land adjacent to administrative, maintenance, and recreational areas are managed in accordance with their respective uses.

9. Fire Management

No prescribed fires were initiated during 1991. The potential for prescribed burns at Montezuma is hindered by the presence of organic peat soils and the fact that two major highways traverse the refuge, thus making smoke management a serious problem. Future prescribed burning activities will require strict prescriptions for allowable wind speed and direction.

A cooperative agreement for wildfire and prescribed fires remains in effect with the Magee Volunteer Fire Department, Inc. A blanket purchase order with the Department provides for reimbursement of costs associated with structural fires and alarm system responses.

Fire supplies (Normal Unit Strength) were purchased for Assistant Refuge Manager Sheehan. Sheehan also attended and successfully completed FWS Basic Fire Training held at Minnesota Valley NWR in late April.

Assistant Manager Christenson successfully passed the required "step test" and was issued a "red card". Christenson was not sent on assignment to participate in western forest fire-fighting activities.

-A small wildfire occurred on May's Point Island near the northeast corner of the refuge. A smoldering fire in the base of a tree was reported by a refuge deer hunter on November 22. Upon inspection it was determined that the fire was burning down into the roots of the tree and smoldering in a subsurface peat layer. On November 26 a circular area approximately 30 feet in diameter around the base of the tree was scraped down to mineral soil with the refuge's JD 550 dozer. A final inspection of the site was made on December 13, and no further indication of fire or smoke was found at that time.

10. Pest Control

Refuge spraying operations this year involved only the ground application of the herbicide Triox (Prometon) to kill weeds around buildings, gates, signs, etc., to reduce the amount of time required for hand-trimming during mowing operations.



Tractor Operator Colton takes a forced break while waiting for assistance (despite the smile, he is stuck!) in the midst of one the larger phragmites stands that was mowed in preparation for chemical treatment (91-9; TAG).

Efforts to control Phragmites included pretreatment mowing of over 25 acres. However, the drought conditions which favored access for the mowing resulted in slow, weak phragmites regrowth. This forced the delay of our chemical treatment program with Round-up herbicide until after the optimal application "window" had passed. Future efforts will require continued mowing, treatment of mowed areas with Round-up, and if permitted, aerial application of Round-up to inaccessible areas.

Control of water lily on Main Pool has traditionally involved underwater cutting with a Hockney Weed Cutter, a very labor-intensive method. This created openings which attracted waterfowl, but results were short-lived. No cutting has occurred since 1989 since effective lily control has been an unexpected result of our winter drawdowns for carp control. Winter drawdowns have resulted in a sharp reduction in lily and a corresponding increase in submerged aquatic vegetation, primarily sago pondweed.

Winter drawdowns as a lily control method are certainly less labor-intensive than cutting and provide slightly longer benefits. However, a long-term management scheme of winter drawdowns is not desirable for many reasons, foremost of which is the near eradication of the Main Pool's muskrat population. Long-term lily control on Main Pool will be reevaluated following completion of the Cayuga Lake water connector and initiation of summer drawdowns in 1992.

12. Wilderness and Special Areas

There are two designated Research Natural Areas (RNA) on the refuge. Maple Knoll, an eight-acre tract located southwest of Tschache Pool, is the only beech-maple association on the refuge.

The second RNA, Swamp Woods, is a tract of approximately 100 acres located southwest of the Main Pool. It is an unusual stand in that it is the last remaining undisturbed example of swamp woodland on the refuge. It was once the common woodland type found on muck soils throughout the historic Montezuma wetlands, but has now become rare due to land clearing and draining of muckland for farming.

The dominant tree species are red maple, swamp white oak, and red ash. Sensitive fern dominates the understory along with royal fern which grows on hummocks. In the sandy soil between the hummocks grow arrowhead, water plantain, and skunk cabbage. Black alder and spicebush are common shrubs. A variety of swamp species grow in the forest, including joe-pye-weed, lizardstail, and jewelweed.

This mature stand is probably virgin, as it shows no evidence of disturbance. Several of the swamp white oaks are over 40" d.b.h., with heights of 75 to 85 feet. Most of the trees are over 30" d.b.h., with an average height of 60 feet. Age of the stand is estimated at from 150 to 200 years old.

A 2,100-acre portion of the refuge has been designated as a National Natural Landmark under provision of the Historic Sites Act of 1935. A large section of the Main Pool, including Maple Island and Black Lake, is representative of conditions in the original marsh in which broad expanses of cattail marsh were interspersed with old river channels and ponds. This area, along with other portions of the refuge, serves as a resting and feeding area for migrating waterfowl and provides nesting for many species of ducks, herons, and other waterbirds.

Broad-leaved cattail forms the main vegetation in the marsh. These often occur in pure stands, but sometimes are mixed with purple loosestrife, bulrushes, sedges, and swamp loosestrife. Other plant species common in the marsh are common reed, smartweed, and burreed. The cattails and other plants appear as islands of emergent vegetation in a shallow lake. The Swamp Woods RNA borders the southern edge of the Montezuma Marshes National Natural Landmark.

G. WILDLIFE

1. Wildlife Diversity

As is true in most relatively-stable biotic communities, wildlife diversity typically does not vary much from one year to the next. The wide diversity of habitat types found on the refuge, including cattail marsh, grassland field, and forested upland and lowland, support most migratory and resident wildlife species found in central New York.

Of particular note in 1991 was the appearance of several rare or uncommon species on the refuge. These included wild turkey, eastern white pelican, black-bellied plover, caspian tern, snowy egret, and horned grebe.

One Hudsonian godwit, a very infrequent migrant, was sighted October 5 on the newly-constructed Benning Marsh by members of a local birding group. The bird's presence bodes well for the future of the Benning Marsh area as a migratory shorebird stop-off point.

2. Endangered And/Or Threatened Species

The following is a list of endangered and/or threatened species which may be found on the refuge:

<u>Species</u>	<u>Status</u>	
	<u>Federal</u>	<u>State</u>
Bald Eagle (<u>Haliaeetus leucocephalus</u>)	E	E
Peregrine Falcon (<u>Falco peregrinus</u>)	E	E
Osprey (<u>Pandion haliaetus</u>)		T
Northern Harrier (<u>Circus cyaneus</u>)		T
Common Tern (<u>Sterna hirundo</u>)		T

a) Bald Eagle

In the mid-1970's New York State 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.

In 1976, a program designed to re-establish nesting bald eagles in New York was undertaken at the Montezuma National Wildlife Refuge by the New York State Department of Environmental Conservation in cooperation with the U.S. Fish and Wildlife Service. The program involved the use of

"hacking" to release young bald eagles to the wild. Montezuma 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 recently as 1959, with young last successfully produced in 1956.

From 1976 to 1980 a total of 23 bald eagles were released at the refuge through the hacking program. The birds were obtained from wild nests in Michigan, Minnesota, and Wisconsin, and from the captive breeding stock at the U.S. Fish and Wildlife Service Research Laboratory in Patuxent, Maryland. The project demonstrated that young bald eagles can be reared in man-made situations and still learn to hunt, feed, and survive on their own. The program attained its first success in the spring of 1980 when the first two eagles released in the program (1976) successfully nested in northern New York. In 1981, the hacking project was expanded and relocated to the Oak Orchard Wildlife Management Area in western New York.

In 1987, three adult bald eagles (a white-tagged male eagle released in 1978 at Montezuma, an unmarked female bird, and a yellow-tagged male bird released in 1982 at the Oak Orchard hacking site) successfully raised two young at an isolated nest site on the northern portion of the refuge. The two young bald eagles were the first to be produced at Montezuma in over 30 years. In late December of 1987, refuge staff worked with the New York State Electric and Gas Corporation (NYSEG) and the New York State Department of Environmental Conservation to stabilize the nest which was precariously perched in a dead elm tree. A 75-foot wooden pole was installed six feet from the nest tree and the nest was then transferred and secured to a platform bolted to the pole.

Despite 1987's success, and our efforts to insure the long-term stability of the nest site, 1988 proved to be year of disappointment when the birds failed in their nesting attempt. During 1989, the three adult bald eagles were once again successful in their nesting attempt on the refuge. A single eaglet was fledged from the pole nesting site.

During the 1990 breeding season, the three birds constructed a second nest within their nesting territory. The new nest was located in a dead snag on Tschache Pool. Two eaglets were successfully fledged from the nest in the early summer.

The three bald eagles again successfully nested on the refuge in 1991. Two eaglets were fledged, bringing production from the refuge to seven since the first nesting attempt in 1987.

Michael Allen (New York State Department of Environmental Conservation Region 8 Biologist) closely monitored the birds' nesting activities. Egg-laying and incubation apparently began on March 15. Hatching occurred during the third week of April with the two young eaglets visible over the edge of the nest on May 1. New York State Department of Environmental Conservation personnel and several refuge staff and volunteers visited the nest on June 3 and banded two healthy eaglets (one male and one female). The young birds fledged in mid-July, and from then until early November adult and immature eagles were seen consistently on Tschache Pool.



This year's eaglets just prior to banding by State Biologists Mike Allen and Peter Nye (91-10; MA).

Sightings of additional bald eagles were recorded periodically throughout the year on Tschache, North Spring, and Main Pools. Aggressive behavior and intra-specific conflict was frequently observed between the three nesting birds and a fourth adult eagle on Tschache Pool. We remain hopeful that a second pair of birds will establish a second nesting territory on the refuge in the future.

The young bald eagles raised at Montezuma in 1991 were but two of sixteen birds fledged throughout New York State this year. The sixteen birds were raised on eleven of the eighteen active nesting territories identified statewide. The reestablishment of nesting bald eagles throughout the

state within the last decade is an accomplishment for which the New York State Department of Environmental Conservation can be extremely proud.

b). Osprey

Since 1988, osprey (a New York State-listed threatened species) had successfully nested on an artificial platform in the Main Pool. The nest site is located immediately to the southwest of the refuge Visitor Center. The proximity of the nest site had provided excellent viewing opportunities for visitors throughout the spring and summer months in past years.

During 1991, the osprey pair were unsuccessful in their nesting attempt at the Main Pool platform site. The reason for the failure is still unknown, but may be the result of raccoon depredation. Efforts will be undertaken before the 1992 nesting season to insure that a more effective predator guard is installed on the pole supporting the nesting platform.

c). Northern Harrier

This New York State threatened species was frequently observed throughout the year foraging over refuge grasslands and marshes. While no active nests were found, northern harriers were thought to have bred on or in the immediate refuge vicinity during 1991.

d). Peregrine Falcon

A single peregrine falcon, an infrequent migrant, was sighted September 20 on Tschache and May's Point Pools by members of a local birding club. Peregrine occurrence on the refuge is normally quite transitory in nature. Birds observed in the past several years have never been known to stay for more than a week at a time.

3. Waterfowl

Montezuma National Wildlife Refuge was established on September 12, 1938 by Executive Order 7971 as a refuge and breeding ground for migratory birds and other wildlife in order to effectuate further the purposes of the Migratory Bird Conservation Act. Since 1938, Montezuma and its associated marshes and other wetland habitats have provided important resting and migration habitat for a diverse waterfowl population. The refuge has assumed a significant role in the Atlantic Flyway as a resting and feeding area for migratory waterfowl. A significant proportion of the mid-Atlantic population of Canada geese now utilizes

Montezuma and the central Finger Lakes area during spring and fall migrations. Fall peaks of Canada geese approximate 50,000 birds; in spring this number has exceeded 100,000. Approximately 15,000 snow geese use the refuge during spring migration. Tundra swans have often exceeded 150 in number during both spring and fall migrations. Late fall use by mallards has approached 100,000 birds. Use by American black ducks in the fall often exceeds 25,000. Wood ducks, gadwall, green-winged teal, American wigeon, northern pintail, northern shoveler, and blue-winged teal comprise the bulk of other dabbling duck species using the refuge during migration.

Diving duck species that stop at Montezuma during migration include canvasback, redhead, ring-necked duck, and lesser scaup. Smaller numbers of bufflehead, ruddy duck, and hooded merganser also utilize wetland habitats at the refuge during migration.

Canada goose, mallard, and wood duck have been the most abundant nesting waterfowl at Montezuma in recent years. Historically, annual waterfowl production at Montezuma was much higher. Several species of waterfowl that formerly nested quite successfully at the refuge now do so only sporadically or not at all.

The marsh and water management system of the refuge has ecologically and structurally aged. The eutrophication of the pools has resulted in the classic waterfowl production cycle: rapid increase in production, dramatic decline, and a long period of dynamic stability at a significantly lower level. The production peak was maintained through the 1960's by water level manipulation which stimulated production, but by the 1970's the eutrophication process, coupled with the loss of water level control, the invasion of exotic plant and animal species, and the decline in water quality significantly affected productivity in the 1970's and 1980's. Current habitat conditions in refuge impoundments have deteriorated to the point that annual waterfowl production has reached historical lows over the last several years.

Overwintering of Canada geese in the Cayuga Lake Basin continued the trend of the last two decades. The numbers of geese staying in upstate New York has skyrocketed since the early 1970's. From overwintering populations of several hundred to a few thousand, current numbers can annually approach 100,000 or more. 1991 was no different in this regard. New York State's midwinter waterfowl survey was conducted during the first week of January. The aerial survey counted 50,000 Canada geese, 15,000 mallards, and 4,000 American black ducks overwintering in the central New York/Finger Lakes region. A second aerial waterfowl survey

of the Cayuga Lake Basin was conducted by the New York State Department of Environmental Conservation on January 29. During this flight surveyors counted over 109,000 Canada geese in the basin. A large overwintering goose population indeed!

These "lake" birds often spent portions of mild winter days sitting on the ice or slush covering refuge pools. Several days of relatively mild weather throughout February encouraged an average of approximately 10,000 Canada geese and several hundred mallards and black ducks to rest on refuge pools. The birds almost certainly came up to the refuge from Cayuga Lake. This phenomenon is repeated each winter with every major freeze/thaw cycle.

Spring migration began quickly in early March as periods of prolonged thaw encouraged birds to move north. Peak goose numbers for March were 10,000 snow geese and 47,000 Canada geese. April brought peak snow goose numbers of 15,000 birds, while Canada goose numbers declined to 32,000. The majority of the Canada geese and all of the snow geese left the area during the last week of April.

Spring duck numbers peaked in late March and early April. Most numerous were mallard, wood duck, green-winged teal, northern shoveler, and canvasbacks. The latter species reached a high of approximately 300 birds during the first week of April.

Fall migration began in late September with the arrival of 1,600 Canada geese, 1,100 mallards, 1,300 green-winged teal, and 200 blue-winged teal. Waterfowl numbers gradually increased throughout the remainder of the autumn. The fall Canada goose peak occurred during mid-October, with approximately 35,000 birds counted on the refuge. Fall duck numbers for many species peaked in late October and early November with over 35,000 birds observed on the refuge. Of particular note during this period was the presence of over 10,000 diving ducks on the Main Pool. Large rafts of canvasbacks, ring-necked ducks, redheads, and scaup were easily observed from the Main Pool tower and Auto Tour Route. The large rafts of birds were an impressive sight for visitors and refuge staff alike. An equally impressive sight occurred during mid-December when fall mallard and American black duck peaks of 35,000 and 30,000 birds, respectively, occurred on the refuge. Seemingly endless flights of 50 to 100 bird groups were observed leaving from and returning to the Main Pool.



Private fields surrounding the refuge held large numbers of Canada geese before and during hunting season. Scenes such as this are the reason behind the tremendous increase in commercial hunting leases in the Finger Lakes region (91-11; KH).

The first Canada goose brood of the spring was observed on April 19. The first wood duck brood was spotted on May 21, and the first mallard brood on May 29.

Waterfowl production at Montezuma was calculated by both our traditional method (broods observed during weekly waterfowl surveys) and the Bennett method.

The Bennett survey was conducted June 10-13, 1991. The total area surveyed included Main Pool, Tschache Pool, North and South Spring Pools, and Unit 17. Results of the survey are as follows:

Bennett's Technique

	<u>Different Broods</u>	<u>Total Broods</u>	<u>Estimated Number Of Broods</u>	<u>Actual Number of Young Seen</u>	<u>Estimated Production</u>
Mallard	2	2	10	15	75
Wood Duck	19	21	53	169	471
Hooded Merganser	1	1	7	5	35
Gadwall	1	1	7	5	35

*Bennett's Technique was conducted between 6/10/91 and 6/13/91; this was during the first peak of hatching.

*Estimated production = [the actual # of young ÷ different broods] x the estimated # of broods.

The "traditional" survey method which consists of recording all waterfowl broods in the impoundments during the weekly waterfowl surveys were consistently recorded with the first brood sighting (Canada goose) occurring on April 19. Again this year (as in past years), the traditional survey included more species than the Bennett survey. The traditional survey method is extrapolated to provide an estimate for the entire refuge. This extrapolation has always produced larger production figures than the Bennett's technique. Results of the traditional survey method are provided below.

1991 Waterfowl Brood Survey (Traditional Method)

	<u>Different Broods</u>	<u>Estimated Number Of Broods</u>	<u>Actual Number of Young Seen</u>	<u>Estimated Production</u>
Canada Goose	31	39	154	193
Mallard	10	15	68	102
Blue-winged Teal	1	2	7	14
Wood Duck	59	89	506	763
Hooded Merganser	1	2	5	10
Gadwall	1	2	5	10

*For Canada Geese, the estimated # of broods = # of broods x 1.25.

*For Ducks, the estimated # of broods = # of broods x 1.5.

*Estimated production is equal to [the actual # of young seen ÷ the actual # of broods] x the estimated # of broods.

Total duck production increased from 398 ducklings in 1990 to 899 in 1991.

The wood duck nest box program at Montezuma has been very successful over the last decade. Yearly monitoring of box use has aided us in attaining a fairly accurate estimate of wood duck production from boxes on the refuge. Natural cavities in suitable habitat appear to be abundant; however, we have no information on their use, locations, or predation rates, so overall production estimates must be considered conservative.

The wood duck box program at Montezuma represents a traditional nest box program with fairly densely-placed boxes (both single and double boxes) in highly-visible areas. While Montezuma has not yet experienced the classic "rise and crash" syndrome of other wood duck box programs around the country, the potential exists. Such a "rise and crash" traditionally results in a severe reduction in hatchability of eggs due to increased rates of dump nesting and increased incidences of intraspecific strife between nesting hens. In an effort to prevent just such a scenario from occurring at Montezuma, the refuge is currently cooperating in a three-year study (1991 - 1993) designed to test the hypothesis that nest boxes well-hidden in the woods near brood habitat are less often parasitized and produce more ducklings per egg laid in them than highly-visible boxes located over open water. Based on the results of the study, specific management recommendations will be made regarding the judicious placement of nest boxes at Montezuma and elsewhere. The overall objective of the research is to find a more cost-effective way to use the thousands of wood duck nest boxes that are presently scattered all over the United States to enhance the birds' nesting productivity. The work is being carried out under the direction of Dr. Paul W. Sherman, Section of Neurobiology and Behavior, Cornell University. Further details on the project are provided in Section D.5.

Wood duck nesting boxes are inspected, cleaned, and maintained in late January and early February for the previous nesting season.

Wood duck box use remained essentially the same as last year with 77% of our 111 boxes used in 1991. Production increased slightly to 605 ducklings, but our hatching rate of all eggs laid dropped to only 42%. Early results from Dr. Sherman's study in Unit 17 indicate a much higher hatching rate than the remainder of the refuge. Clearly, dump nesting is dramatically affecting our overall wood duck production. We are optimistic that Dr. Sherman's research will lead to better management of our wood duck box program.

4. Marsh and Water Birds

A variety of marsh and water birds may be found on the refuge including great blue herons, great egrets, black-crowned night-herons, Virginia rail, American and least bitterns, common moorhen, and pied-billed grebe.



An infrequently-seen marsh resident, this least bittern was released near the Visitor Center Observation Pool after recovery from temporary shock caused by a collision with a car on Route 89 (91-12; KSC).

Black-crowned night herons nested in the purple loosestrife and cattail stands fringing sections of the Main Pool. Production was estimated at 25 birds. Other marsh and water birds observed nesting on the refuge in 1991 included green-backed heron, Virginia rail, common moorhen, and pied-billed grebe. While not nesting on the refuge, double-crested cormorants capitalized on the abundant carp and bullhead populations in refuge pools. Upwards of 500 birds could be observed on Main, Tschache and May's Point Pools throughout the late summer and fall.

Starting in 1982, great blue herons have nested atop dead snags in the east-central portion of the pool. Prior to 1982, when two pair of birds first nested in the snags, this species had not successfully reproduced at Montezuma since the mid-1940's.

While the number of great blue herons nesting in the Tschache Pool rookery had steadily increased each year, the number of suitable nesting sites (dead snags over water) had gradually declined. The snags are the remnants of a hardwood forest that was flooded in the 1940's. Over the intervening years, the snags have rotted and fallen. In late 1990, several passing weather fronts with accompanying high winds accelerated the rate of snag loss. It was anticipated that the heron rookery would relocate at some point to a location with a greater abundance of suitable nesting sites. 1991 proved to be the year that the birds abandoned the Tschache Pool rookery. In mid-April it was discovered that herons were nesting on the southern wooded edge of the Main Pool. The new rookery location contained 30 to 35 active nests, and produced an estimated 75 young.

5. Shorebirds, Gulls, Terns, and Allied Species

American woodcock singing ground surveys were again conducted at Montezuma this year. The survey routes are slightly modified versions of the national singing ground surveys conducted by the U.S. Fish and Wildlife Service Office of Migratory Bird Management.



This woodcock hen and brood were observed near the Tschache Pool Tower (91-13; TAG).

The Unit 17 route was run on April 30 and May 4. Four birds were heard on this route. The North Spring Pool route was run on April 27 and again on May 8. A total of six birds were heard and/or seen on this route.

Herring and ring-billed gulls were a common sight after ice-out in mid-March. Both species appear to take advantage of foraging opportunities presented by winter-killed carp and small bullheads. The gulls were again opportunistic feeders in November and early December when Tschache Pool was drained. Hundreds of herring, ring-billed, and greater black-backed gulls made quick work of any carp left stranded by the receding water during the drawdown.

Killdeer, spotted sandpiper, and American woodcock are the only shorebird species that are common breeders on Montezuma, although many other species are commonly observed during migration. For the past several years, Montezuma has instituted a program of both spring (April - May) and fall (mid-August - late October) drawdowns of water levels on the 160-acre May's Point Pool. This effort is specifically designed to expose mudflats for migratory shorebird use. This program has proven extremely successful in providing both foraging and resting habitat for migratory shorebirds, and excellent viewing opportunities for upstate New York birding enthusiasts.

Shorebird species diversity during both drawdown periods was quite impressive. Killdeer, lesser yellowlegs, spotted sandpiper, semipalmated sandpiper, and semipalmated plover were most numerous. The rarer or more unusual sightings included Baird's sandpiper, stilt sandpiper, Wilson's phalarope, red-necked phalarope, black-bellied plover, and Hudsonian godwit. Virtually every species of shorebird representative of central New York was recorded during the spring and/or fall on May's Point Pool.

The status of the black tern in New York State is currently undergoing review. Historical tern nesting colonies are being evaluated to determine if it is necessary to upgrade the protected status of black terns throughout the state. Montezuma NWR has been participating in the black tern population status evaluation for the last three years.

The first documented observation of black terns at Montezuma occurred in 1942. However, it is probable that terns occurred on the marshes for many years prior to the establishment of the refuge in 1937. Terns were observed nesting on the refuge nearly every year from 1942 to 1986. Historical records document a gradual decline in black tern populations from several hundred in the early 1950's. From 1987 to 1990 there were no known black tern nests on the refuge. Throughout 1991, no nests were observed, and a

maximum of only six individuals were sighted at any one time.

The decline of the black tern nesting population at Montezuma may simply be a reflection of declining populations throughout New York State. However, there may be more localized reasons to explain the decline. The aggressive colonization of the refuge by purple loosestrife caused a decline in the diversity and abundance of native wetland vegetation. The resulting management of the refuge to reduce purple loosestrife encroachment required an increase in water levels, and may have negatively altered many of the historical black tern nesting sites at Montezuma.

6. Raptors

Other than the preceding comments (Section G.2) concerning bald eagle and osprey use of the refuge, raptor populations underwent no noticeable changes in 1991. Red-tailed hawks and American kestrels were commonly observed throughout the year. Several breeding pairs of each species occur on the refuge.

Sharp-shinned and Cooper's hawks are not known to breed on the refuge. However, both species are occasionally seen during fall and winter. Eastern screech owls and great-horned owls are breeders and year-round residents. A northern harrier nest was suspected, but not confirmed. Turkey vultures were observed from March to early November.

Rough-legged hawks and a snowy owl were observed in late November and December. The birds were most likely drawn to the area in response to a high population of meadow voles and other rodents.

7. Other Migratory Birds

Unit 17, located at the northern end of Cayuga Lake, is an excellent place to observe spring and fall migrations. The wooded bottomland hardwoods attract thousands of warblers during migration. Some of the more notable species include prothonotary warbler, cerulean warbler, and Tennessee warbler.

Purple martins successfully bred in one of the two martin houses located on the refuge.

On January 1, 1991, the Montezuma Christmas Bird Count was conducted. A total of 58 species and 27,341 individuals

were recorded. Unusual sightings included one wood duck, 29 tundra swans, 12 short-eared owls, and one Carolina wren.

Montezuma's efforts to assist in the recovery of the eastern bluebird were first rewarded in 1981 when a single pair of birds used one of our nesting boxes to fledge five young. Since 1981, 66 additional bluebirds have fledged from nest boxes on the refuge.

In 1991, one nest box was occupied by eastern bluebirds. A total of seven eggs were laid during two nesting attempts, with five young successfully fledging from the box. Species using the remaining boxes included tree swallows and house wrens. Tractor Operator Kevin Colton monitored the refuge's twenty-four bluebird nesting boxes during the nesting season. Kevin also installed external entrance hole predator guards on each of the boxes. Kevin's work with our bluebird boxes began as a refuge volunteer and has led to his active involvement with the North American Bluebird Society.

8. Game Mammals

For the fourth consecutive year, the refuge conducted a gun hunt for white-tailed deer. In conjunction with the "traditional" archery season, the gun hunt was initiated to implement a more-aggressive program of managing the refuge's deer population. The objective of the hunts is to protect habitat by controlling the size of the pre-winter deer population on the refuge. Our efforts at population control have been limited by New York State Department of Environmental Conservation harvest goals in the Deer Management Units surrounding the refuge. Antlerless deer permits for Deer Management Unit (DMU) 86, of which the refuge is a part, decreased in 1991. Compounding the problem is the fact that even at the lower level, DMU-86 was undersubscribed for the 1991 deer season. This reflects a growing concern among all wildlife managers in the northeastern states: too few hunters to adequately control a growing deer population.

Throughout the year, deer leave the refuge on a daily basis to feed on surrounding agricultural lands. During severe winters the refuge serves as a yarding area for deer from a distance of eight to ten miles. The refuge's 2,000-acre tract of moist hardwood bottomlands and cattail swales provide escape cover not only for refuge deer, but also for those deer from adjacent, non-sheltered farmlands. The deer seek out the thermal protection afforded by the bottomland hardwoods and cattail marshes.

The recent series of mild winters have resulted in too many deer for winter carrying capacities. The large overwintering deer population has had a negative impact upon the overall vigor and diversity of the refuge's plant communities. Several areas of the refuge's treed and/or shrubbed acreage have been heavily browsed in recent years. The refuge's deer hunts have been designed and implemented to reduce the deer population and thus lessen the damage to the vulnerable plant communities.

A total of 123 white-tailed deer were harvested by hunters during the 1991 refuge season (November 1 through December 14).. Archery hunting accounted for 32 deer, with gun hunters removing an additional 91. One hundred ten (110) of the 123 deer harvested were examined by refuge personnel at the voluntary hunter check station. Information collected on each deer included sex, age, antler beam diameter, total number of antler points, and fawn weight. Table 1 summarizes the sex and age breakdown of the 110 deer examined at the Check Station.

Table 1. Summary Of Check Station Data For the White-Tailed Deer Hunt On The Montezuma National Wildlife Refuge, 1991.

Sex	<u>AGE CLASSES</u>					Number Examined
	Fawn	1 1/2 Years	2 1/2 Years	3 1/2 Years	4 1/2+ Years	
Male	24	30	9	0	0	63
Female	11	17	11	4	4	47
TOTALS	35	47	20	4	4	110

Table 2 summarizes the physical condition data gathered on the 39 adult male deer and 35 fawns (both male and female) examined at the Check Station.

Table 2. Summary of Physical Condition Data and Fawn Weights For Deer Taken on the Montezuma National Wildlife Refuge, 1991.

Age Class	Average Beam Diameter (mm) ¹	Average Number Of Antler Points ²	Average Fawn Weight (lbs)
Fawn (female) (n = 11)	-	-	57.5
Fawn (male) (n = 24)	-	-	61.0
1 1/2 Years (n = 30)	19.23	3.67	-
2 1/2 Years (n = 9)	26.67	7.44	-

¹ The diameter of the antler beam was measured with calipers one inch above the base of the antler burr.

² All antler points longer than one inch were counted.

Table 3 provides six-year summary information on deer examined at the Hunter Check Station from 1986 through 1991.

Table 3. Six-Year Summary of Mean Yearling Antler Beam Measurements and Dressed Fawn Weights For Deer Taken On The Montezuma National Wildlife Refuge.

Hunt Year	Average Yearling Beam Diameter (mm) ¹	Average Dressed Fawn Weight (lbs)	
		<u>Female</u>	<u>Male</u>
1986	17.11 (n=9)	--	--
1987	17.88 (n=8)	48.8 (n=5)	48.2 (n=6)
1988	18.18 (n=22)	48.7 (n=7)	54.0 (n=15)
1989	19.00 (n=24)	48.8 (n=14)	55.3 (n=18)
1990	19.69 (n=16)	55.3 (n=4)	57.0 (n=14)
1991	19.23 (n=30)	57.5 (n=11)	61.0 (n=24)

¹The diameter of the antler beam was measured with calipers one inch above the base of the burr.

Although sample sizes are small, both yearling antler beam diameters and fawn weights have increased since 1986. These two measurements of herd health indicate that current hunts appear to be succeeding in reducing deer numbers to levels adequate to insure the overall vigor of the refuge's deer population.

Information in Table 4 is included to demonstrate the positive impact (on gun hunter participation and total deer take) of the change from the collection of a \$10.00 per day user fee to a more reasonable \$10.00 per season user fee. Gun hunter participation increased by over 47% from 1990 to 1991. While gun hunter success rates were similar for both years, total deer take increased by 32% (1990 = 83, 1991 = 123), due to the increase in gun hunter participation.

The change to a season-long pass appears to have reversed 1990's hunter dissatisfaction (and subsequent lower participation rate) with the daily user fee. The change to what the hunters perceive as a more reasonable user fee

should enable the refuge to maintain recent gains in herd physical health indicators.

Table 4. Six-Year Summary Of Selected White-Tailed Deer Hunt Information On Montezuma National Wildlife Refuge (1986-1991).

	<u>Year</u>					
	1986	1987	1988	1989	1990	1991
# Archery Hunt Days	27	45	37	35	19	18
# Gun Hunt Days	--	--	6	14	11	12
Total # Hunt Days	27	45	43	49	30	30
# Archery Hunt Visits	1648	2953	2300	1618	1188	1198
# Gun Hunt Visits	--	--	562	916	352	674
Total # Hunt Visits	1648	2953	2862	2534	1540	1872
# Deer Harvested - Archery	63	89	73	40	38	32
# Deer Harvested - Gun	--	--	61	111	45	91
Total # Deer Harvested	63	89	134	151	83	123
Hunter Success Rate - Archery	3.8%	3.0%	3.2%	2.5%	3.2%	2.7%
Hunter Success Rate - Gun	--	--	10.9%	12.1%	12.8%	13.5%
Total Hunter Success Rate	3.8%	3.0%	4.7%	6.0%	5.4%	6.6%
Avg. # Hunters/Day - Archery	61	66	62	46	63	67
Avg. # Hunters/Day - Gun	--	--	94	65	32	56
Avg. # Hunters/Day - All Hunts	61	66	67	52	51	62

The 1990-91 refuge trapping season was to mark the fourteenth consecutive year that the Fur Management Program used the bid system framework. Five individuals attended the mandatory trapper orientation meeting on either September 19 or 22, 1990. Minimum bids for all units were set at \$100.00. None of the five potential trappers submitted bids for any of the six units open for trapping.

As a result, no furbearer trapping occurred on Montezuma during the 1990-91 season. Reasons given for the lack of interest included:

1. Shortened season length resulting from impoundment drawdowns.
2. Anticipated soft fur market and low fur prices.
3. Perceived low furbearer populations.
4. Lack of free time to devote to successfully running a trapline on one of the units.

Due to ongoing conflicts with planned impoundment drawdowns, a continuation of the current soft fur market, and the lack of trapper interest in the current program, a decision was made to discontinue the trapping program at Montezuma. The closure will continue until such time as a significant change in the above-listed conditions warrants a reevaluation of the action.

10. Other Resident Wildlife

Three wild turkeys, rare refuge visitors, were sighted on Tschache and Main Pool Dikes during March of 1991. Populations of this species have been increasing in upstate New York in recent years. Although limited upland acreage and a lack of mast producing trees may be limiting factors within the boundary of the refuge proper, the turkey population near the refuge appears to be increasing.

A string of mild winters, in conjunction with the availability of good habitat (in the form of managed grassland field/ cattail marsh associations) have been the two most important factors contributing to an increase in the local ring-necked pheasant population. Crowing cock pheasants commonly are heard throughout the spring, and several broods were observed on and in the immediate vicinity of the refuge during the summer.

Montezuma provides only marginal habitat for ruffed grouse. One drumming male was heard by refuge staff, and only a few individuals were flushed during the year.

14. Scientific Collections

John Peverly of Cornell University, Ithaca, New York, collected approximately 125 square feet of phragmites root stock on November 8. The plants will be used in an experimental program designed to test their efficacy in filtration of sewage effluent. We offered him 200 acres, but he declined our largess!

15. Animal Control

Raccoons have historically been a problem during waterfowl banding operations at Montezuma. They frequently find baited areas and discourage duck use, rendering it useless for waterfowl banding. If raccoons do not discover the site during pre-baiting, but find it after the traps are set and ducks are captured, there is the possibility that the raccoons will kill and/or maim captured ducks. During 1991, seven raccoons and five Virginia opossum were captured in traps at the banding sites during the banding period and removed to other areas of the refuge. The success of this removal program is reflected, in part, in the success of our banding program. Not only were over a thousand birds banded, no birds were lost to depredation during the preseason banding effort.

Each year, several woodchuck burrows are treated with rodent control cartridges (gas cartridges) on the refuge. Control efforts are annually limited to a few selected areas along dikes where woodchuck activity, if left unchecked, would result in structural damage to the integrity of the dikes. Control efforts were also undertaken in the vicinity of the Esker Brook Nature Trail where burrowing activity constitutes a safety hazard for refuge visitors.

The refuge has on-going stray dog problems. The animals have been dealt with on an as-needed basis.

16. Marking and Banding

The preseason waterfowl banding effort at Montezuma during 1991 was the most successful in recent memory. The refuge banding quota of 200 mallards (50 each age and sex) was exceeded, as was the refuge quota of 50 American black ducks. Wood ducks, northern pintails, and additional mallards were again banded at the request of the New York State Department of Environmental Conservation to assist them in reaching their statewide goals.

All birds were captured in three-compartment (Montezuma) walk-in traps. A total of 1,028 ducks were banded at two sites adjacent to the Main Pool during nine trap-nights of effort. Banding totals for each species are summarized below:

1991 Preseason Banding Summary

	<u>HYM</u>	<u>AHYM</u>	<u>HYF</u>	<u>AHYF</u>	<u>TOTAL</u>
Mallard	164	177	291	198	830
American Black Duck	12	12	23	9	56
Wood Duck	44	39	23	11	117
Northern Pintail	1	9	3	12	25
GRAND TOTAL					<u>1,028</u>

Total Immature/Adult

Mallard	341/489	= 0.70
American Black Duck	24/32	= 0.75
Wood Duck	83/34	= 2.44
Northern Pintail	10/15	= 0.67

Refuge Biologist
Gingrich discusses
American black duck
identification with
Volunteer Yvonne
Klein (91-14; MKS).



17. Disease Prevention and Control

Throughout the refuge's 1991 archery and gun deer hunts, refuge staff members and volunteers operated a hunter check station to obtain information on deer population age structure and physical condition. Overall physical condition of the animals examined was good, indicating the success of the hunt in meeting its objective of maintaining a healthy refuge deer herd (see Sections G.8 and H.8).

The mid-Atlantic raccoon rabies epizootic, previously affecting the District of Columbia, Virginia, West Virginia, Maryland, Delaware, Pennsylvania, and New Jersey, spread into New York State during 1990. It first appeared in the southern tier counties of Steuben, Allegheny, Cattaraugus, and Chemung. Six hundred sixty-six (666) confirmed cases of rabies have been reported in raccoons in New York during 1991. Fortunately, no confirmed cases have been reported in the immediate vicinity of the refuge.

H. PUBLIC USE

1. General

Montezuma's Public Use program provides wildlife-oriented educational and recreational opportunities compatible with refuge management objectives. This includes a 3.5 mile self-guided auto tour route, a 1.5 mile nature trail, fishing and hunting programs, educational events, environmental awareness workshops, and special events. The tables below provide public use visitation profiles for 1989-1991. Total visitation of 155,300 (Figure 1) was less in 1991 than in 1989 or 1990, due in part to changes in counting procedures at our fishing access sites.

Visitation continued to increase, however, in our focus areas of environmental education, nature trails, staffed visitor center visits, and special events (Figure 2). For example, Visitor Center visitation has increased 34% over the last two years. This was due in large part to the efforts of dedicated volunteers who permitted the Visitor Center to remain open for portions of most days seven days a week. Special program visitation in 1991 increased 125% from 1990. Between 1989-1991, visitation for environmental education increased 416%, with a 17% increase in 1991. We feel good about these increases, and are now working to improve the quality of educational and interpretive experiences on the refuge during 1992.

FIGURE 1 - MONTHLY VISITATION

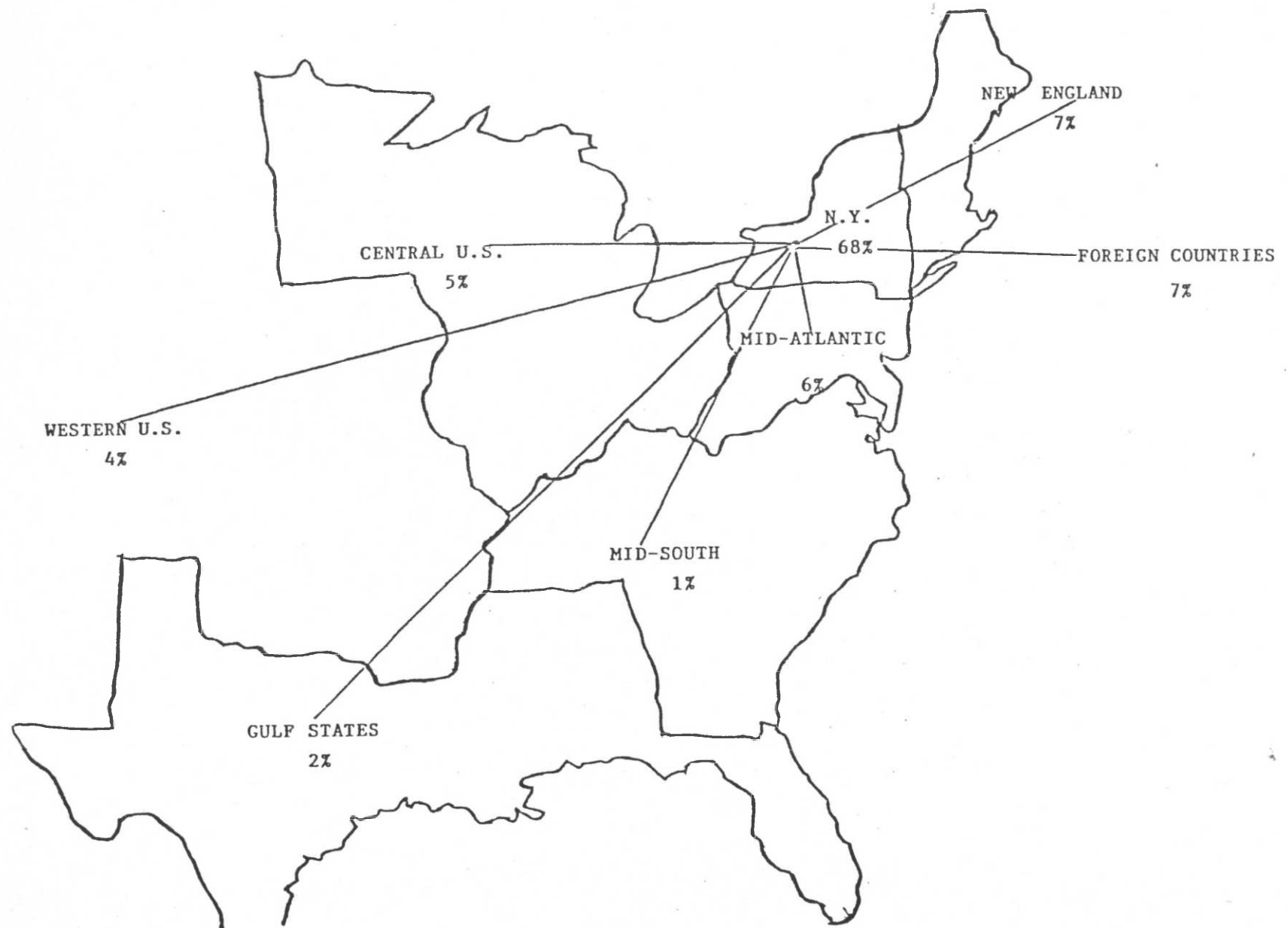
<u>Month</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
JANUARY	2,900	2,300	3,000
FEBRUARY	2,700	3,300	4,200
MARCH	5,400	9,600	8,000
APRIL	26,400	26,300	22,400
MAY	21,900	23,700	18,500
JUNE	18,800	22,100	14,300
JULY	17,700	21,000	18,500
AUGUST	14,200	16,600	17,800
SEPTEMBER	17,500	19,200	15,300
OCTOBER	19,200	16,100	19,000
NOVEMBER	8,100	9,800	11,400
DECEMBER	5,100	3,400	2,900
TOTALS:	<u>159,900</u>	<u>173,400</u>	<u>155,300</u>

FIGURE 2 - VISITATION BREAKDOWN

	<u>1989</u>	<u>1990</u>	<u>1991</u>
Wildlife Observations			
Tour Route	68,800	75,600	71,800
Towers	11,300	8,750	8,900
Trails	10,300	8,000	10,700
Guided Walks		250	280
Photography	3,400	700	500
SUBTOTALS	<u>93,800</u>	<u>93,300</u>	<u>92,180</u>
Visitor Center (staffed)	12,200	15,500	16,200
Visitor Center (unstaffed)	3,700	3,000	1,000
Special Programs		400	900
Informational Visits - Office	800	700	500
Environmental Education			
Students	900	3,400	4,500
Teachers	50	800	400
SUBTOTALS	<u>950</u>	<u>4,200</u>	<u>4,900</u>
Hunts			
Waterfowl	300	300	300
Archery	1,600	1,200	1,200
Firearms	900	350	700
Small mammal	70	25	70
SUBTOTALS	<u>2,870</u>	<u>1,875</u>	<u>2,270</u>
Trapping	80	0	0
Fishing	45,500	54,300	37,400
YEARLY TOTALS	<u>159,900</u>	<u>173,375</u>	<u>155,350</u>

Figure 3, "Visitation Flyway Data", indicates the states of origin for our visitors who signed the guest register at the Visitor Center. This year's analysis indicates more people from New England, Pennsylvania, and the Mid-western states are visiting the Refuge now than in 1989.

FIGURE 3 - VISITATION FLYWAY DATA
MONTEZUMA NATIONAL WILDLIFE REFUGE, 1991



A new public use telephone line was installed during 1991. Recreation Aide Marva Smith proved more than a match for the responsibility of dictating information on public use programs into message format. The line can be called 24 hours a day to obtain information on public use events.

2. Outdoor Classrooms - Students

The Visitor Center is the primary focus of refuge environmental education activities. Student visitation increased again in 1991. We had about 1,000 more students than in 1990. A total of 4,500 students were oriented to the refuge, viewed video tapes and mounted birds, and "followed up" environmental education activities in their respective schools.

Concepts such as adaptation, habitat, extinction, the role and importance of wetlands, and migration were topics addressed during student visitation. In past years, most school groups visited during spring migration (April to June). In 1991, school visitation was heavy during the fall migration. October was our busiest month, with over 1,000 students receiving environmental education programs from refuge staff. Student visitation in 1991 by grade level was:

Elementary	2,061
Middle School.	1,817
High School.	275
College.	347

Total: 4,500

Scout groups continued to visit the Refuge for environmental education. Four hundred and seventy-seven scouts visited in 1991. They were particularly interested in the topic of migration, and talked with refuge staff on other topics of interest such as endangered species. Scouts are often completing merit badge requirements and are therefore attentive and involved. Refuge volunteer Ed Klein stepped forward in 1991 to conduct several scout programs at the Visitor Center. He did a great job, and we will request his services again in 1992.

Refuge staff also helped support educational programs of other agencies. Joint efforts included:

Natural Resource Appreciation Program - Organized by the Cornell Cooperative Extension of Tompkins County. Over 1,200 fourth, fifth, and sixth grade students from Tompkins County attended this five-day program.

Central New York Envirothon - Sponsored by the Cayuga-Onondaga County Soil and Water Conservation District. Five high school teams were given a wildlife exam written by ORP Caslick, in addition to a presentation of the Wetland Model (see below). The teams were participating in the regional competition for the New York State Envirothon Championship.

Seneca County Conservation Day - Organized by the Cornell Cooperative Extension 4-H Program of Seneca County. Over 350 sixth grade students attended.

Cayuga County Conservation Days - Organized by the Cayuga County Soil and Water Conservation District. The two-day program was attended by over 550 sixth graders.

Ontario County Conservation Days - Sponsored by the Community College of the Finger Lakes, the Ontario County Cooperative Extension, and the Ontario County Soil and Water Conservation District. Approximately 500 sixth graders participated in the two-day event.

Refuge Maintenance Mechanic Mel Norsen and Recreation Aide Marva Smith developed a Wetland Model that demonstrates the value of wetlands. This Wetland Model was used in all the above programs, as well as in numerous on-site environmental education programs. The model features four boxes: an undisturbed wetland, a community developed on a drained wetland, a farm with a natural wetland, and a farm that had drained and farmed a wetland area. Using equal amounts of "runoff/flood water", students compared the amount, rate of return, and clarity of water running through each box.

The refuge hosted it's own Conservation Day again this year. Over 100 local scouts participated in the program. Ten volunteers and four staff members served as instructors, time keepers, traffic directors, photographers, and setup/takedown helpers. The station topics were: wetlands and species, recycling, food chains, adaptations, bluebirds, wildflowers, migration, insects, and oil spills.

At year's end, major efforts were begun to recreate formal outdoor education sites (classrooms) similar to those that existed at Montezuma in the early 1980's. Site and grade-specific lesson plans will be developed in conjunction with selected area public school teachers.



Recreation Aide Marva Smith demonstrating the wetland model during the Cayuga County Envirothon (91-15; JFC).



Listen-up! Volunteer Charlotte Hedler provides pointers to cub scouts during Refuge Conservation Days (91-16; BLC).

3. Outdoor Classroom - Teachers

One teachers' workshop was held on June 22, 1991. Ms. Britt Slattery, Assistant Director of Education for Environmental Concern, Inc. of St. Michaels, Maryland facilitated a workshop on "WOW" ("Wonders of Wetlands"). The workshop focused on several field and in-house educational activities from the "WOW" educational module. There was keen interest in the workshop, and 30 people attended. Evaluations indicated that participants thought the workshop a success.

Britt Slattery leading
a field exercise
during our "Wonders of
Wetlands" Teacher
Workshop (91-17; JFC).



Fred Caslick and Sherry Middlemis-Brown from the Cortland, New York FWE field station participated in a teachers' workshop on "Biodiversity" held September 17 in the Watkins Glen State Park. The workshop was sponsored by the Natural History Network, a coalition of agencies interested in environmental education in the Finger Lakes area.

The refuge's film library is worn out from extensive yearly use by teachers from local schools. Also, some films are becoming obsolete and outdated. In an effort to continue to provide quality audio-visual materials to schools, the refuge has been purchasing videos rather than 16mm films. Schools also are using videos more and more for the sake of convenience and cost savings. Fifteen new videos were purchased this year at an average cost of \$30.00 each. 16mm films begin at \$300.00!

Please see Section E.7 (Technical Assistance) for a listing of formal efforts on behalf of area colleges and universities. These programs involved specialized planning and work with the individual professors.

4. Interpretive Foot Trails

Esker Brook Nature Trail is our popular 1.5 mile foot trail. Nearly 11,000 people hiked the trail in 1991, even though it was closed to the general public for most of November and December. Much was accomplished in 1991 to give Esker Brook a real "facelift". A two-panel kiosk was constructed at the trail head, and an interpretive panel (purchased in 1990) was displayed in the kiosk. Work was also completed to improve the appearance and quality of the trail. The refuge paid for bark chips, and these were spread along portions of the trail by prison crews from the New York State Department of Corrections' Butler Shock Incarceration Camp. These crews also placed waterbars, replaced a split-rail fence, filled holes, and reconstructed a portion of the trail using stones. Also, YCC crews assisted in improving the trail by placing a new waste disposal can and completing minor repairs to foot bridges.

An educational and interpretive prospectus was written for the trail by Peter Maitland (a graduate student from The State University of New York College at Cortland) during a summer internship. Finally, refuge volunteer Mary Jane Engle drafted an interpretive brochure that will be very useful as work progresses on the final trail brochure.

5. Interpretive Tour Route

The Auto Tour Route continues to attract the most visitation on the refuge. Approximately 77,800 people traveled the 3.5 mile route adjacent to the Main Pool. The tour route offers excellent opportunities for viewing and photographing wildlife, especially the thousands of ducks and geese during spring and fall. We kept the best wildlife viewing portion of the Tour Route open in 1991 during our gun and archery deer hunts.

Inclement weather and impossible road conditions caused closure of the tour route to vehicles during January, most of February, and a few days in March and December. Then, the tour route became a trail for winter hiking, cross-county skiing, and snow-shoeing.

Two special use permits were issued in 1991 at the request of advertising firms wanting to locate and film on the tour route. Also, pedestrian and bicycle traffic on the tour route seemed to increase in 1991. This results in a much greater disturbance impact upon wildlife than auto traffic does; consequently, in calendar year 1992 we will start a major informational campaign to keep tour route visitors inside their cars when adjacent to waterfowl/waterbird concentrations.

We expect enhanced wildlife viewing from the tour route in 1992 with the addition of the new Benning Pool adjacent to the Auto Tour Route where it approaches the New York State Thruway (I-90). Please see Section J.3. for further information.

6. Interpretive Exhibits/Demonstrations

Refuge staff worked with the Fish and Wildlife Enhancement Office at Cortland, New York, the Tunison National Fishery Nutrition Laboratory, and the Leetown National Fish Research Center in placing a USFWS exhibit at the New York State Fair in Syracuse. "Extinction is Forever" was this year's theme. Our message was conveyed through the use of a photographic display panel, a tank of live Atlantic salmon, teacher packets, wildlife coloring contests, and several handouts. "Winning" entries in the coloring contests were exhibited in the refuge Visitor Center. Several refuge volunteers assisted with staffing the fair exhibit.

Recreation Aide Marva Smith procured a "Suitcase for Survival" from the Service's Forensics Laboratory in Ashville, Oregon. These materials, along with those previously in the refuge's possession, will be ideal for our continuing efforts in endangered species environmental education.

A kiosk was constructed at Tschache Pool to house interpretive panels on the Great Blue Heron and the Bald Eagle. The Great Blue Heron panel is in place, and we hope to acquire a panel on the Bald Eagle for placement in 1992.

New lettering and an interpretive panel were placed on the Visitor Center. The lettering helps identify the Center and the location of the observation deck, while the panel points out refuge regulations.



Bald eagles and great blue herons are interpreted at our new Tschache Pool Kiosk (91-18; KH).



New lettering on our Visitor Center improved visitor orientation to refuge facilities (91-19; KH).

Montezuma continues to exhibit and schedule the use of the North American Waterfowl Management Plan (NAWMP) Exhibits that are regionally owned. This year's schedule of use included:

<u>Display</u>	<u>Site/Date</u>
NAWMP (Large Exhibit)	Great Northeastern Sportsmen's Show, Syracuse, New York, January 23 - 27, 1991.
NAWMP (Tabletop Exhibit)	Finger Lakes Winterfest, Cayuga Lake State Park, Seneca Falls, New York, February 9 - 10, 1991.
NAWMP (Tabletop Exhibit)	Erie NWR, May 24 - June 8, 1991.
NAWMP (Large Exhibit)	Erie NWR, September 21 - 28, 1991.
Endangered Species Exhibit	Frank Knight Elementary School's Environmental Awareness Week, Seneca Falls, New York, November 7 - 8, 1991.

7. Other Interpretive Programs

In an effort to increase the general public's interest in environmental issues the refuge hosted a variety of programs during 1991. These included:

ORP Fred Caslick presented a North American Waterfowl Management Program in January. Also in January, thirty-two people turned out for refuge volunteer Charlie Rouse's winter bird feeding program.

Kevin Colton's bluebird workshop was again successful, with 56 people attending the February program.

Four graduate students from the State University of New York College of Environmental Science and Forestry at Syracuse provided summaries of their research. The research topics were "The Ecology of Mallard and Black Ducks in The Western Adirondack Mountains", "The Breeding Ecology of Mallard Ducks In The St. Lawrence River Valley", "The Ecology of Rabies", and "Beaver Ecology".

Refuge volunteers Polly and Herb Keating and Charlie Rouse presented a shorebird workshop in August. Thirty-seven people attended the program, and learned some

tips on shorebird identification. This represents a first step in a major program to interpret our shorebird resource, and one which will become an annual event here.

Refuge volunteers and wildflower experts Bob and Charlotte Hedler led their final Mothers' Day Wildflower Walk on May 12. Seventy people attended the walk (the group was split, and two walks were actually led).

A Movie Marathon was held in September. Over 20 people enjoyed two hours of films and videos.

The refuge celebrated Earthday 1991 with a week of programs and events. This was coordinated with the Seneca County Chamber of Commerce. Refuge Manager Gene Hocutt discussed the past, present, and future of Montezuma NWR. Julie Harjung from the New York State Department of Environmental Conservation (NYSDEC) presented a program on oil spills. Michael Allen, also from NYSDEC, provided an update on the bald eagles of New York State. Refuge Maintenance Mechanic Steve Flanders presented a waterfowl identification program and attempted a guided walk, but poor weather caused the cancellation of the walk. Over 75 people attended these programs, an average of 19 per program.

A Scout Conservation Day and a Refuge Cleanup wrapped up our Earthweek. Twenty-six volunteers, including a local 4-H club, gathered 15 bags of trash. The Seneca County Chamber of Commerce funded a barbecue picnic following the cleanup.

Refuge staff provided several informational programs and guided tours to special interest groups and senior citizens in 1991. Approximately 250 people affiliated with local bird clubs, Audubon societies, garden or church clubs, and The Nature Conservancy visited the refuge to receive programs by refuge staff. The refuge has become a popular visitation site for organized senior citizen tour groups. For example, approximately 150 Canadian senior citizens visited the refuge and received guided tours from Marva Smith or Fred Caslick.

8. Hunting

Waterfowl:

The ten-day refuge waterfowl season began on Saturday, October 19, and continued on Tuesdays, Thursdays, and Saturdays through November 9. Waterfowl hunters were again charged a \$10.00 per day hunt fee. The lottery system used

to assign parking areas in 1990 was changed to a first-come first-pick system. This seemed to satisfy the hunters, and was easier to administer. One hundred forty-seven hunters made 267 hunt visits this year. Mallards, green-winged teal, American black ducks, and Canada geese made up the majority of the 406 birds harvested. A breakdown of the 1991 waterfowl harvest follows:

WATERFOWL HARVEST BREAKDOWN

Mallards - 185	Common Merganser - 8
Canada Goose - 76	Gadwall - 1
Green-winged Teal - 80	Blue-winged Teal - 2
Black Ducks - 44	Northern Shoveler - 1
Pintail - 8	Wigeon - 1

Total Birds Taken: 406

A comparison of hunter effort and success for 1990 and 1991 is shown below:

COMPARISON OF HUNTER EFFORT AND SUCCESS

	<u>1990</u>	<u>1991</u>
Average # Hunters/Day	29	27
Total # Hunters	293	267
Total Birds Harvested	569	406
Average Birds/Hunter	1.9	1.5
Total Shots Reported	2,387	1,696
Average # Shots	8	6

White-tailed Deer:

The deer hunt is a major public use event at the refuge and in upstate New York, and we offer both an archery and gun hunt. The 1991 hunt offered several new administrative challenges. Construction of the canal from Cayuga Lake to our Main Pool required closure of some parking areas and hunt areas in our Unit 17, but hunters adjusted well. Also, the non-hunting public was accommodated for visiting and bird watching by prohibiting hunting along about one-half of our Auto Tour Route throughout the season, and closure of the entire refuge to hunting over the Thanksgiving Holiday

and weekend. We also utilized volunteers for the first time during the deer hunt to provide Check Station assistance.

The 1991 archery season was November 1 - 16 and December 11 - 14, with no Sunday hunting. Permits for the opening day and first Saturday were issued on a first-come, first-served basis. For the remainder of the season, daily permits were available on a self-service basis. A total of 654 archers made 1,198 hunt visits, and harvested 32 deer during the 18-day season.



A mobility-impaired hunter enjoying a day in the field during the refuge deer hunt (91-20; BLC).

The firearms season was November 18 - 27 and December 7 - 10, again with no Sunday hunting. A lottery drawing was used to issue opening day and first Saturday permits. Of the 115 permits issued, only 67 (58%) were used on the opener. As a result, permits for the following Saturday were issued to lottery winners as well as walk-ins. Only 48 lottery winners (41%) turned out, while 44 additional permits were issued to walk-in hunters. Daily hunt permits for the 1992 season will be available on a first-come, first-served basis, with no lottery required.

The change from \$10.00 a day in 1990 to \$10.00 a season in 1991 made a significant difference in the firearms hunt.

Hunt visits increased from 354 in 1990 to 674 in 1991, a 47% increase. A total of \$2,790.00 was collected from firearms hunters, with \$837.00 returning to Montezuma. An increased number of hunters, not surprisingly, increased the number of deer harvested.

The 1989 - 1991 archery and firearms hunts are summarized in the following table:

THREE-YEAR DEER HUNT SUMMARY

	<u>1989</u>	<u>1990</u>	<u>1991</u>
# Archery Hunt Days	35	19	18
# Gun Hunt Days	14	11	12
# Archery Hunt Visits	1, 618	1,188	1,198
# Gun Hunt Visits	916	352	674
# Deer Harvested (Archery)	40	38	32
# Deer Harvested (Gun)	111	45	91
Total # Deer Harvested	151	83	123
Archery Hunter Success Rate	2.5%	3.2%	2.7%
Gun Hunter Success Rate	12.1%	12.8%	13.5%

9. Fishing

Although no refuge waters are open to fishing, we maintain two fishing areas along the Clyde River. In conjunction with the State of New York, the refuge maintains a third fishing area with boat ramp into the Cayuga/Seneca Canal. This facility is located on state land adjacent to the refuge. Approximately 37,000 people visited our fishing access sites in 1991, compared to 54,000 in 1990. We feel this year's figure is our most accurate annual count, as counter figures were adjusted to eliminate counting boat and travel trailer traffic in and out of the Route 5/20 boat access site.

A Fishing Management Plan was completed in 1991, and addresses the continued popularity of fishing at these refuge sites. Also, it proposes construction of a mobility-

impaired fishing facility at the May's Point Fishing Access Site.

11. Wildlife Observation

Wildlife observation is the primary reason people visit the refuge. Approximately 92,170 people (about 59% of our total visitation) used facilities or participated in programs provided for wildlife observation in 1991. Facilities available include two observation towers, a Visitor Center with Observation Deck, the Auto Tour Route, Esker Brook Nature Trail, and cross-country ski or snowshoe trails. Refuge volunteers and staff led 13 guided walks during 1991. Over 280 people participated in these walks. These included one wildflower walk, one wetland observation walk, and eleven bird walks. Approximately one walk per week was provided during the fall migration. The walks averaged 22 persons each.

17. Law Enforcement

Law enforcement problems and issues continued to be low key here at Montezuma as no real problems surfaced during 1991. We believe that this is a direct result of extensive preventive law enforcement efforts on our part, specifically clear, concise signing, maps, and regulations. Active patrolling during the hunting season also plays an important deterrent role.

Violation Notices written during 1991 are shown below:

1991 VIOLATION NOTICES

<u>Hunt</u>	<u>Violation</u>	<u>Officer</u>	<u>Collateral</u>
Waterfowl	Over Shell Limit ¹	Christenson	\$25.00
Archery	Late Hunting ¹	Flanders	\$25.00
Gun	Loaded Gun In Vehicle ²	Flanders	\$25.00
Gun	Failure To Wear Blaze Orange ¹	Christenson	\$50.00 ³
Gun	Failure To Wear Blaze Orange ¹	Christenson	\$50.00 ³

¹Violation of Special Refuge Regulations.

²Violation of State Regulations.

³New Forfeiture of Collateral Scale in effect.

A new Forfeiture of Collateral Scale for the Western District of New York was issued in February, 1991, but wasn't delivered to the refuge until midway through the deer hunt in December. For most of the sections enforced on refuges, collaterals were increased by 100% or more. Most common hunting violations are now \$50.00, but some range up to \$300.00.

Again this year we were concerned about the strong possibility of anti-hunting protests on the refuge during deer season. Christenson met with Special Agent Lisenbee to once again develop a variety of contingency plans in the event a protest was staged. Despite strong feelings against our hunt by some members of the local community, no protests occurred this year on the refuge. We will continue to plan for that eventuality, however, as anti-hunting protests in upstate New York have increased in recent years.

Our usual excellent working relationship with the Division of Law Enforcement continued in 1991. Special Agents Leonard Lisenbee and Terry Tarr worked with us throughout the year on a variety of small issues, and once again provided much-appreciated assistance during the lengthy hunt

seasons. Flanders and Christenson also provided reciprocal assistance when requested during the waterfowl season.

Senior Resident Agent Bill Donato and Special Agents Sam LiBrandi and John Meehan also assisted at various times during the hunting season. They were working the waterfowl season in the Finger Lakes, and frequently assisted on-refuge when time allowed.

As in past years, we received excellent support from the New York State Police and the Seneca County Sheriff's Office.

I. EQUIPMENT AND FACILITIES

1. New Construction

1991 was a very busy year for new construction at Montezuma as ideas became reality on a variety of projects ranging from informational kiosks to the large Cayuga Lake Connector Project (The Ditch).

The Ditch

With all the funding elements firmly in place (see E.5), final plans for completing the 7,000 foot long ditch connecting Main Pool to Cayuga Lake were underway as the year started. Additional soil borings were taken to supplement water control structure design, and a small amount of tree clearing was completed by the Butler Shock Camp to widen the right-of-way in a few areas. Numerous delays were encountered in finalizing the engineering specifications, but they finally went to Contracting and General Services in June. Our final site preparation was also completed in June with the installation of 4,200 feet of soil erosion control fencing along the west side of the right-of-way. Following that, all remaining stumps were excavated and buried and survey stakes reestablished. Bid award was made to Villager Construction of Fairport, New York for \$549,849, well under our original contract estimate of \$900,000.

This final project contract included construction of all remaining water control structures and rip-rap as the base bid item. Completion of the 25 foot wide channel was divided into several sections as additive items. The lower than expected bids (believed due to the poor economic situation) allowed issuance of the full contract. Our ditch entered the final phases following eight years of planning and one and a half years of limited construction.

Highlights of the final contract on the Cayuga Lake Water Connector Project are summarized below:

- The preconstruction conference was held on October 8 and work began on October 9 with installation of 13,000 feet of erosion control fencing.
- Channel construction proceeded at a rapid pace due to unusually dry conditions, and roughly 90% of the channel was complete by October 30. Channel slopes were hydro-seeded and mulched.

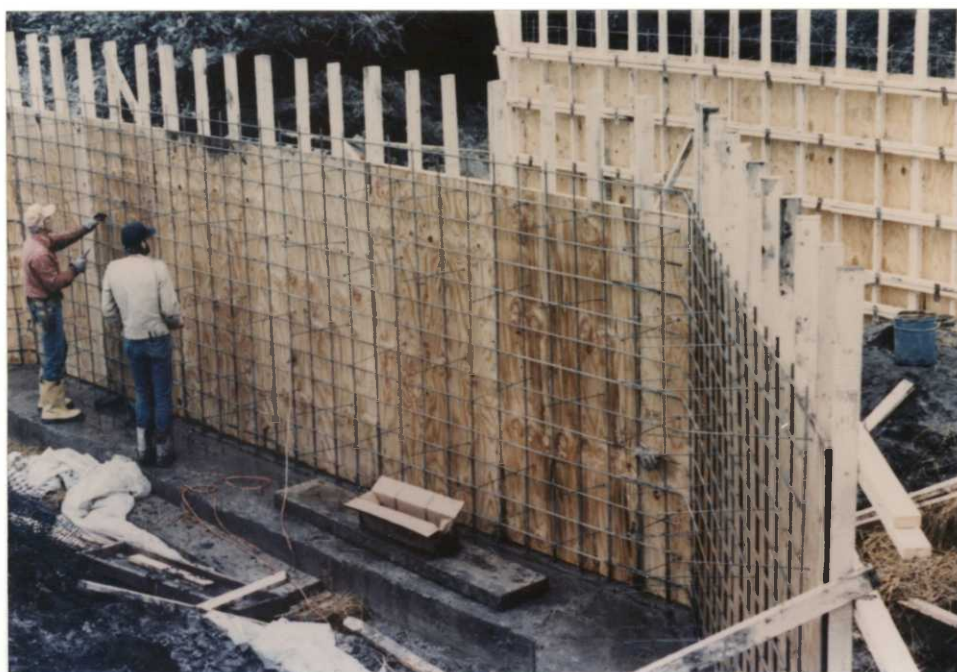
- All excess channel spoil not used to bring the project "dike" or "berm" to elevation 387 BCD was distributed along the slopes of the Unit 17 north and south dikes.
- Two 60-inch corrugated metal pipes were set to carry ditch water under the Unit 17 south dike and a 48-inch corrugated metal pipe riser was set to connect the ditch to the Unit 17 south channel.
- Two 150-foot, 60-inch corrugated metal pipes with risers were set in the ditch at the Unit 17 north dike to transport the water under the dike and over the second of two channels.
- The first channel at the north dike was connected to the ditch via two 40-foot, 48-inch corrugated metal pipes with risers.
- The ditch was cut through to Cayuga Lake in late November, and the shoreline was stabilized with medium rip-rap.
- The Unit 17 east side dike road was brought to rough grade, but all final project grading and seeding will be completed in spring, 1992.



Use of laser levels (note receiving mast on front of dozer) greatly facilitated the channel excavation. Nearly all of the 7,000-foot channel was completed within three weeks. This photo shows the channel just as it intersects the South Dike (91-21; SLF).



North side of the Unit 17 South Dike showing pipes under the South Dike and the water control structure feeding or draining the Unit 17 southeast drainage ditch. Background shows use of the South Dike for excess spoil deposition (91-22; SLF).



Forming the two large containment walls which will support the pipes carrying water over the Unit 17 drainage ditch on the north side of the North Dike (91-23; SLF).



Setting the final pipes which will carry the water over the second of two ditches draining the northeast section of Unit 17 (91-24; SLF).



Finished channel showing approach to the North Dike area. Slopes were hydroseeded late in the year, but unseasonably mild weather prevailed and good germination resulted in most areas (91-25; SLF).



Channel opening into the north end of Cayuga Lake showing intermediate rip rap as slope protection. The barge in the background was part of a neighboring State construction project (91-26; SLF).

Benning Marsh

This new unit was named in honor of Walter E. Benning, a local birder who provided years of observations here on the refuge.

The marsh, an 8-acre triangular area between the Tour Route, the Thruway, and the old channel of the Clyde River, has been dominated by loosestrife and increasing amounts of reed canary grass in recent years. At one time limited water management was possible on the area, but the small screw gate structure fell into disrepair many years ago. Our goal was to reestablish water management capability specifically for shorebird habitat.

Construction of the new 1,200-foot, low-head dike was begun by Maintenance Mechanic Flanders in July and finished in August. Tractor Operator Colton assisted with several phases of the project. The major phases of the project are outlined below:

1. Sod removal from dike area (1,200 x 70 feet) - 10 hours.

2. Key center dike using on-site materials (marl) and excavate dike from borrow pit - 38 hours.
3. Form dike top and side slopes to grade - 18 hours.
4. Seed, fertilize, and mulch dike - 10 hours.
5. Install 12" CMP and riser between Main Pool and Benning Marsh (under Tour Route) - 15 hours.
6. Install 4-foot plastic water control structure and 12" CMP in dike, draining into canal - 12 hours.



Excavation of the core for the Benning Marsh Dike. Marl for the core (good clay was not available) was borrowed from the area to the left of the trench (91-27; TAG).

We contracted with a neighboring farmer, Ed Lawson, to disc approximately three acres of the marsh to set back the extremely dense growth of loosestrife and reed canary grass, and to prepare the site for shorebird use following flooding.

The marsh management regime has not been finalized, but with two water sources (gravity flow from Main Pool and pumping from the canal) and good drainage capability, numerous options are available to maximize bird use.

Public Use Kiosks

Using Service blueprints from Region 6, Maintenance Mechanic Norsen constructed a new informational kiosk at Esker Brook and another at Tschache Pool. Both kiosks were framed around four main 6x6 posts and finished with tongue-in-groove cedar, creating an attractive, rustic appearance. The Esker Brook kiosk was designed as two full-size panels (capable of holding a sign or display panel 3' x 4' in size) connected by a smaller middle panel. Overall dimensions were roughly 14' x 4' x 8' for Esker Brook and 12' x 4' x 7' for Tschache Pool. Separate, detachable display panels were constructed for Esker Brook and held in place by lag bolts. Although slightly smaller overall, the Tschache Pool kiosk incorporated a full-size middle panel and all three panels were redesigned to be 6" deep with back opening doors for access. Safety glass was installed as the fronts for all three panels. Construction of both kiosks cost \$1,700.00 for materials only, with the Tschache Pool structure costing significantly more than the other due to numerous design and construction changes. The addition of the kiosks to both areas greatly enhanced our ability to provide information to the public while simultaneously upgrading our facilities.

2. Rehabilitation

Public Restrooms

The plumbing in our public restrooms near the Main Pool Observation Tower has been troublesome over the past few years, but noticeably worsened after our barge canal pump was reset in 1990. Heavy boat traffic and low water levels in the canal in late summer further combined to greatly increase turbidity into our system. The dirty water combined with low water pressure in a self-feeding cycle: dirty water clogged the filters within hours of cleaning, causing a drop in water pressure; slightly reduced pressure caused toilet valves to improperly seat and leak, further reducing the pressure; further use of the toilets resulted in complete lack of flushing. These problems were particularly acute on the weekends or whenever large groups placed heavy demand on the system.

Numerous lengthy discussions were held with Pete Elliott, R5 Engineering, and with a local pump contractor who was hired as a consultant. A new system was devised to eliminate the canal and use clean water pumped at a consistently higher pressure. In September, Myers Construction of Waterloo, New York, installed a H.P. submersible pump with a low water cutoff switch in our 10,000 gallon potable water cistern. This was connected to the existing line with 230 feet of rigid 2" PVC pipe. Five hundred feet of new electrical

wiring for the pump was run from the restrooms underground. An 84-gallon pressure tank with accompanying gauges, valves, and relay switches completed the job. The new system worked extremely well through the busy fall season.

-Contract costs for this project totalled \$5,800.00. Due to the emergency nature of the repairs needed, CGS authorized us to secure bids and issue the purchase order over our procurement authority of \$5,000.00. All bids incorporated Davis Bacon Act Wage Rates which were forwarded by CGS.

Refuge Residence

Our long-term efforts to upgrade the quarters continued in 1991, and many major improvements were completed.

- The dining room was completely redone with new wood trim, plaster walls repaired and wallpapered, and a new overhead light installed.
- Deteriorated wooden porch steps were replaced with new precast concrete steps.
- The furnace was improved through minor changes which increased efficiency from 62 to 79%.
- The septic tank was cleaned and new stainless steel baffles installed.
- Asbestos siding was removed by Zeon Corporation of Buffalo, New York; ½" polyisocyanurate insulation and light grey vinyl siding with white trim were installed.
- The overhead electrical service for the quarters and subheadquarters was put underground from the pole to the house and again from the house to the barn.
- The quarters garage received new asphalt roof shingles, a new metal overhead door, and a new personnel door in addition to vinyl siding to match the house.
- Monroe Tree Company performed major thinning of the six Chinese elms and box elder trees around the quarters.
- The old "sunken" sidewalk along the south side of the quarters was removed and all areas around the house were raised using imported topsoil to improve drainage away from the foundation.



Removal of the asbestos siding from the refuge quarters (91-28; MJN).



Same view of the quarters with the new vinyl siding in place (91-29; BLC).

Subheadquarters Barn

Electrical service was upgraded to 100 amps when the service was put underground in October. A new circuit breaker panel was installed and minor changes made to wiring to improve safety. The electrical line feeding the Check Station was put into a conduit where it exits the barn.

Siding on all four sides of the barn is badly deteriorated and needs complete replacement. We were able to use some end-of-year funds to cover two sides of the barn with vinyl siding. The old wooden sliding door was replaced with a new metal and wood frame door and new upper and lower rails.

3. Major Maintenance

The Office's ailing Hydro-Pulse boiler was replaced in January after several costly service calls. Our nearest service representative (who travels from Syracuse) finally determined that yes, it could be repaired - for \$2,500.00 or so. Our poor track record with that unit convinced us to switch to a conventional boiler. We purchased a new Weil-McLain GV-5 (a 140,000 BTU unit) for \$3,000.00 installed by Brand Plumbing and Heating of Seneca Falls.

Carryover items from last year's major work on the Visitor Center were completed during the summer. The last exterior wall was stained, all the top hand railing (200 feet) was replaced, and 30 deck boards replaced with 2" x 16" x 16' pressure-treated boards. To help orient visitors, new directional signs were put on the exterior wall near the approach to the steps and ramp.

The public restrooms (comfort station) near the Observation Tower received their annual mid-winter touch-up painting. The floor, painted with grey deck paint, deteriorates due to moisture and needs yearly scraping and repainting. Stalls and walls are painted as needed.

A variety of repairs were completed on water control structures throughout the year. Hemlock planks were purchased and cut into stoplogs for White Brook, May's Point, and the new structures in the Cayuga Lake Connector.

The Seneca Spillway rails were modified and reattached where they loosened from the concrete. Modifying and improving on a design from earlier years, new carp screens were installed at White Brook Spillway. Welded wire screens were hung from the walkway and counter-balanced with concrete-filled jugs to keep them closed against water pressure, yet still allowing them to open to allow passage of floating logs. A new dimension of the screening was added with construction

and installation of heavy aluminum grates behind the stoplogs. Now we will be able to discharge water and prevent carp from coming into the pool from the canal. Previously, as the canal waters rose due to flooding, the head differential gradually lessened, and the fish were able to overcome the discharge water pressure and swim into the pool by the thousands. All four discharge bays were fitted with the 30" x 40" aluminum grates; all nine larger openings between the sill and walkway were fitted with the 2' x 7' welded wire screens. Total costs for this were: 150 staff hours for construction and installation, and \$3,119.00 for materials.



Maintenance Mechanic Flanders installs the new aluminum carp control grates in the White Brook Spillway (91-30; BLC).

Clark's Ridge Parking Lot was improved for hunter parking by spreading concrete chips from Chemung Construction at Mud Lock (about 50 yards). A final topping of 2" of run of crusher stone greatly enhanced the parking lot's usefulness during wet weather.

A rusted 12" corrugated metal pipe and old slide gate were removed from May's Point Dike in April when a large area of standing water was noticed on the outboard side of the dike. The old forgotten structure had probably leaked for years, but something worsened, making it bad enough to be noticed.

Leaking chlorine from our potable water system chlorinator caused the pump motor to short out due to excessive corrosion in the pressure switch. A new motor and switch were installed and the chlorine leak repaired to prevent further damage. A large "drip" tray was also placed under the chlorine tank as added protection for the pump, motor, and switch which are located directly under it.

Inmates from the nearby Butler Shock Incarceration Camp worked extensively on the refuge from January through August. "Shock Camps" are run by the New York State prison system for youth who are first-time offenders of nonviolent crimes. The majority of inmates at Butler chose six months with the Shock Camp instead of one to three years in prison for drug-related offenses. Shock crews work in groups of 12 inmates with one unarmed guard supervising. Through April they also worked with personnel from the New York State Department of Environmental Conservation because all their projects tend to be outdoors and conservation-related in some way. We worked with the Department of Environmental Conservation representative on refuge project development, and he became the on-site supervisor ensuring that the project was properly completed. A serious State budget cutback resulted in those Department of Environmental Conservation personnel being laid off in April, so job supervision of our Shock crews fell to the guard (for simple tasks) or to refuge staff. Because the program was so successful, we decided to commit the staff time and continue to work with the Shock Camp as much as possible through the summer. Tractor Operator Colton worked with them most extensively over the summer, but ORP Caslick took over for the Esker Brook Trail work. In late summer increasing demands from other agencies drew our crews off and we were unable to bring them back for the remainder of the year. Overall, we were very pleased with the program and hope to complete more labor-intensive projects in 1992 using this excellent free source of labor. Projects completed in 1991 are outlined below:

- Hand cut the remaining trees along the Cayuga Lake Connector right-of-way.
- Constructed a foot path of crusher run stone lined by small rip-rap at the May's Point Fishing Area; the 80' x 4' path leads to a popular fishing area which was also cleared of downed trees and extensively cleaned.
- Renovated the Armitage Fishing Area by cutting and removing unwanted trees and brush.
- Cleared trees and brush from the Tschache Pool tower area to improve visibility for refuge visitors.

- Weeded and improved landscaping around headquarters buildings.
- Cut trees and brush along Unit 17 dikes - about two miles total.
- Renovated Esker Brook Trail by widening and rerouting a closed section; installed fencing; installed drainage pipes in several locations; installed water bars; and covered the trail with chips to improve visitor safety.
- Washed and waxed the refuge vehicle fleet.
- Installed 4,800 feet of sediment control fence in Unit 17.
- Cut brush and trees growing in rip-rap along May's Point Dike.

In conjunction with scheduled vehicle maintenance, washing and waxing, and safety inspections, the following list of major repairs was accomplished by refuge staff:

- 1980 LUV - Replaced clutch plate and disc, and entire brakeline system.
- 1980 Dodge 4x4 - Replaced carburetor, muffler and tailpipe, alternator, battery, starter, and steering pot coupler.
- 1989 Jeep - Installed cruise control, snow tires on rear, and rear brake light.
- 1982 Dodge Ram - Replaced carburetor, heat shield, rear emergency brake cables, and exhaust manifold gasket.
- 1984 K-Car - Replaced rear bearings and scales, all four tires, rear emergency brake cables, muffler and tailpipe.
- 1987 Dakota - Replaced battery, distributor pick up, rear emergency brake cables, front shocks, and installed class II trailer hitch and spare tire carrier.
- JD 550A Dozer - Replaced two links and master pin on left side track, and water pump.
- JD 4040 Tractor - Rebuilt fuel injector pump and installed polycarbonate sheeting on rear.

15-Ton Trailer - Rewired electrical system and replaced rear lights and wood on ramps.

Airboat - Rebuilt left side magneto and replaced seat covers.

Simplicity 9020 - Rebuilt engine (rehone, new rods, pistons, rings, and bearings).

JD 570A Grader - Adjusted valves, rebuilt rotary manifold, replaced bushings on moldboard lift and saddle seat, and replaced rear steering hoses.

JD 690C Excavator - Replaced boom/stick bushings and fuel gauge.

1991 W150 Dodge 4x4 - Installed box liner, trailer hitch, light bar, winch bumper, and tool box, and had truck rustproofed by dealer.

4. Equipment Utilization And Replacement

As part of the Regional effort to better utilize refuge equipment throughout all refuges, we loaned and, in turn, borrowed several pieces of equipment during the year.

<u>Equipment</u>	<u>Loaned To</u>	<u>Borrowed From</u>	<u>Dates</u>
John Deere 690 Excavator	Back Bay NWR		April - May
John Deere 690 Excavator	Iroquois NWR		September - October
Wood Chipper		Patuxent Research Center	May - September
Ford Farm Tractor		Iroquois NWR	August - September
Heavy Farm Disc		Back Bay NWR	May - June
Gator Pump	Iroquois NWR		January - July

Additionally, to facilitate phragmites mowing in July we rented a JD 4450 four-wheel drive tractor from a local equipment dealer. Even in a dry year like 1991, a four-wheel drive tractor is essential to mow the phragmites in many areas near the refuge pools.

One of our aging 1980 Chevrolet LUV pickups was replaced with a new 4x4 Dodge 150 pickup in August. Using regional year-end money we were also able to order a replacement for our second 1980 LUV. That vehicle will be delivered in 1992.

Other new items purchased in 1991 include:

- Spectra physics laser level with attachments for our dozer blade.
- 14" chop saw.
- $\frac{3}{4}$ " torque wrench for heavy equipment maintenance.

5. Communication Systems

Only routine, minor maintenance was completed on our radio system this year. Six portable units received new batteries, and minor lightning strike damage was repaired on the base station and shop monitor.

6. Computers

A fourth computer was purchased in an attempt to keep up with their ever-increasing use in refuges. The new unit is a Knight Computer Systems 33 MHz 386 with 4 mb RAM, 130 mb hard drive, a 1.44 floppy drive, a 1.2 floppy drive, 15" VGA monitor (noninterlaced 1024 x 768), DOS 5.0, and a 1 mb video card. Knight was the lowest bidder using open market procurement authorized by R5 CGS. The complete unit cost only \$2,173.00. This computer is linked to our Hewlett Packard Laser Printer through a two-station switch box.

7. Energy Conservation

Minor duct changes and improved servicing raised efficiency of the quarters furnace from 62% to 79%.

The results of our New York State Electric and Gas Corporation energy audit were received in late April. Appropriate recommendations for energy savings were developed into IPW's, where considerable costs will be involved (i.e., lighting conversion). Recommendations

involving little or no cost, such as night and weekend temperature setbacks, were implemented as soon as possible.

A new programmable thermostat was installed in the office to improve setback capabilities and to consolidate heating and cooling functions. Previously, the air conditioner and furnace were on separate thermostats; and every spring and fall we would have several days where the two competing systems would both run because one was not shut off. The new system eliminates that, and, with daily programming, allows weeknight and all weekend setbacks to occur automatically.

J. OTHER ITEMS

2. Other Economic Uses

-One permit was issued for commercial carp fishing. The fish are actually removed from the adjacent canal (state waters) as they attempt to swim through our water control structures to the pools to spawn. We consider it appropriate to charge a small fee for using our control structures as fish traps. Fishing conditions were average this year, and the Service received \$702.00 (\$.03 per pound for 23,400 pounds of carp).

Beehive permits were not issued in CY 1991.



Fred Martin and associates with another load of carp from May's Point Pool. He transports the fish to ponds for eventual resale to the New York City markets (91-31; TAG).

3. Items of Interest

In April Hocutt and Flanders provided a tour of refuge work projects for Major John Craig, Engineering Branch Chief for all U.S. Army Reserve and National Guard units in the state. Several projects were identified (ditch clean-outs, potholes in grassland units, additional low head dikes, etc.). Major Craig's visit was arranged by Colonel Frank Cochran, Commanding Officer of the Seneca Army Depot Army.

In May the refuge again hosted the Seneca County Postmasters Association for a cook-out, refuge tour, and wildlife film. This third reincarnation of an effort which started in 1985 was designed to educate the postmasters about the importance of their support in handling and selling duck stamps. Eighteen people representing Seneca and Wayne Counties attended the evening program. We discussed annualizing the event and inviting a variety of postal employees and their families. The program has been very successful in educating and soliciting support from a politically highly-visible group of constituents.

In July Hocutt met with and conducted a refuge tour for Rob Brown, Chief of the Ithaca Sub-District Office of the U.S. Geological Survey, and his wife Sherry Middlemis-Brown. Sherry recently joined the Cortland Field Office (FWE) as an educational/interpretive specialist.

In August Hocutt met with Dr. Richard Young, Chairman of the Geology Department of the State University of New York College at Geneseo, to discuss glaciation investigations in Unit 17 during construction of the Cayuga Lake Connector. Dr. Young proposed use of the site as a field location during construction this fall for his graduate-undergraduate class in sedimentary geological formation. The relationship was arranged by Bill Kappel of the U.S. Geological Survey in Ithaca, New York.

In September Mike Haramis, Research Biologist at the Patuxent Wildlife Research Center, visited with Hocutt and Gingrich to assist with planning research needs as we move further into restoration of refuge marshes. In late September, Dr. Guy Baldassare of the College of Environmental Science and Forestry, the State University of New York at Syracuse, visited twice for the same purpose.

During September, considerable time was spent in EEO career counselling with Ms. Jennifer Ford (a matriculating graduate student in wildlife management, and a friend of Congressman Walsh), Ms. Tracy McClain (a former attorney for Seneca Meadows Landfill), and Ms. Julie Lundgren (a former refuge staffer/botanist now with the Connecticut Department of Natural Resources). Very positive discussions were held with Dr. Guy Baldassare about recruiting a female/minority graduate student from the College of Environmental Science and Forestry of the State University of New York at Syracuse.

Christenson and Caslick journeyed to Iroquois NWR in October for a planning meeting with Laffin, Comish, Wright, Frickie, and others. This meeting, the last part of Iroquois' Refuge Management Evaluation, focused on items of mutual interest

to all refuges in western New York and Erie NWR in northwestern Pennsylvania.

On October 20-26, Hocutt was in Arlington, Virginia to participate in the DEIS/Planning Workshop for Refuges 2003. He wrote the Waterfowl Management and Water Hunting sections. The guaranteed controversy of the subject surfaced early when Migratory Bird staff "crashed" the waterfowl issue brain-storming session and interposed their views into the proceeding. Hocutt spent most of the period from Thanksgiving until year's end in preparing the national questionnaire, in personal contacts, research, and writing for Refuges 2003.

As a result of a contact from the Greater Rochester Film Society, the refuge became involved with a Japanese nature video group from TV Asahi and TV Man Union. The group is doing a three-hour documentary which will be aired nationally in Japan in 1992. TV Asahi is Japan's third-largest network. In negotiations with producer-broker Susan Milano in New York City, we agreed to meet Director Masamichi Tsuchihashi, his interpreter, and an aide on October 10. "Mr. T" has numerous "naturing" awards in Japan, especially with regard to his work with eagles and sea birds. The October 10 meeting occurred in a driving rain, but they saw lots of critters, including three eagles. Since they will be filming each season in New York State, we suggested fall goose cannon-netting and the Sullivan County eagle "roost", along with spring migration and the banding of next year's eaglets in June.

Ms. Milano called two days later and asked if "Mr. T" and a crew of seven could return on October 17 to film. Our level of support turned into more than we had anticipated because their large van developed a flat tire. They secured excellent footage of eagles in trees, with hundreds of geese passing in front and behind. At sunset, they got beautiful footage of thousands of geese coming back into the marsh. Through his interpreter, "Mr. T" expressed his gratitude and said they would see us in mid-January.

Benning Marsh was dedicated on November 3rd. A veritable "who's who" of New York State birders gathered at the refuge to dedicate the new marsh and to honor Mr. Benning and his wife Hazel. Mr. Benning had been the refuge's "official" shorebird counter and technical expert for over 30 years until his retirement in the mid-1980's. He also wrote for the Kingbird, a publication of the New York State Federation of Bird Clubs, and published definitive papers on shorebirding in New York State. The crowd of birders at the dedication literally represented clubs from Buffalo to Syracuse to the Pennsylvania border. It was a fitting tribute to a wonderful person and a dedicated

conservationist. Several newspapers carried stories about the event, and also ran photos. (See Section I-1 for more information about Benning Marsh.)



Refuge Manager Hocutt and Mr. and Mrs. Walter Benning at the dedication of the new Walter Benning Marsh (91-32; KSC).

In December the refuge hosted the New York State Department of Environmental Conservation Wood Duck Monitoring Workshop. Approximately 35 participants from throughout the state were present to review 1990's efforts and plan for the upcoming season. Dr. Paul Sherman (Cornell University, Section of Neurobiology and Behavior) presented a talk/slide show on his work at Montezuma and elsewhere regarding wood duck nest box placement. The message from Dr. Sherman's work is that boxes should be placed at densities and in locations that mimic the natural cavities where the birds evolved to nest. If we as Managers want wood ducks to behave normally and to maintain their populations near the environmental carrying capacity, we must strive to preserve the birds' natural habitat and use what we know about wood duck behavior to position artificial nesting structures judiciously in that habitat.

Dr. Richard Young, Chairman of the Geology Department at SUNY College at Geneseo, visited the refuge and later returned with his upper level/graduate class in sedimentary geology to conduct field exploration in Unit 17. Dr. Young plans to carbon-date the peat materials and large white

cedar logs unearthed by excavation in Unit 17 by the connector project. He believes the area's geology, etc., results directly from the last glaciation period (10-12 thousand years ago). All white cedars unearthed to date were pushed downward to the south-southwest. The Geneseo group will also provide core borings, fixed (preserved) log cross-sections, and other materials to the refuge for use in our I and E program.

Training in 1991 included:

Caslick -

"Meeting the Needs of the Disabled: Program Accessibility",
Minneapolis, Minnesota
7/8/91 - 7/12/91
(40 hours).

"Strategies: Supervising Your Deaf or Hard-of-Hearing Student",
Gallaudet University,
Washington, DC, 5/23/91
(8 hours).

"Interpretive Skills Training Workshop",
Harpers Ferry, West Virginia, 6/9/91 - 6/16/91
(66 hours).

"American Red Cross Standard First Aid",
Seneca Falls, New York,
7/2/91 (8 hours).

Christenson

Region 5 Law Enforcement In-Service Training, Cape Charles, VA, 4/1/91 - 4/5/91
(40 hours).

"Community CPR Refresher",
Montezuma NWR, 3/5/91
(5 hours).

Attended IPW Meeting In Region 5 Regional Office,
5/2/91 (8 hours).

"Improving Performance Plans", Durham, NH,
7/31/91 - 8/1/91
(16 hours).

"Annual Region 5 Project Leader Conference", Easton, Maryland, 9/10/91 - 9/13/91
(40 hours).

Colton -

"Pesticide Training And Certification", Waterloo, NY, 8/14/91 - 8/21/91
(16 hours).

"Heavy Equipment Training", Cape Charles, Virginia,
5/6/91 - 5/10/91 (40 hours).

"Wetland Restoration Workshop - Basic Surveying And Site Identification. St. Lawrence County, New York,
8/22/91 (8 hours).

Flanders -

Region 5 Law Enforcement In-Service Training, Cape Charles, VA, 4/1/91 - 4/5/91
(40 hours).

"Community CPR Refresher", Montezuma NWR, Seneca Falls, NY, 3/5/91 (5 hours).

Gingrich -

"Community CPR Refresher", Montezuma NWR, Seneca Falls, NY, 3/5/91 (5 hours).

"Wetland Restoration Workshop - Basic Surveying And Site Identification. St. Lawrence County, New York,
8/22/91 (8 hours).

Hocutt -

Attended Region 5 General Office Meeting with Supervisors to discuss Farm Bill Projects and Heavy Equipment Training, Newton Corner, MA,

1/14/91 - 1/15/91
(12 hours).

"Annual Region 5 Project
Leaders' Conference",
Easton, MD, 9/10/91 -
9/13/91 (40 hours).

Refuges 2003 Planning Team
Training (Included 32-hour
NEPA Document Writing
Course -- Shipley
Associates), Arlington,
Virginia 10/10/91 - 10/26/91
(50 hours).

McMahon -

"Region 5 Administrative
Workshop", Laconia, NH,
3/25/91 - 3/29/91
(40 hours).

"How To Manage Multiple
Priorities", Laconia, NH,
3/27/91 (8 hours).

Sheehan -

"Annual Wingbee", Laurel,
MD, 1/28/91 - 1/31/91
(32 hours).

Smith -

"Community CPR Refresher",
Montezuma NWR, Seneca Falls,
NY, 3/5/91 (5 hours).

"Interpretive Skills
Training Workshop", Harpers
Ferry, WV, 6/9/91 - 6/16/91
(66 hours).

Outdoor Recreation Planner Fred Caslick and Recreation Aide Marva Smith participated in the week-long, Region 5-sponsored Interpretive Training at the National Park Service Interpretation and Training Center in Harpers Ferry, West Virginia in June. Also, the refuge hosted Ms. Mary O'Connor, Region 5 Visual Information Specialist, for a three-day training session in December on the use of our newly acquired PageMaker desktop publishing software. Personnel from Iroquois National Wildlife Refuge and the Cortland, New York Fish and Wildlife Enhancement Field Office attended.

Special Assignments/Details:

Christenson - Participated in the 1991 Farm Bill Project in the Watertown/Canastota/Lafayette/Cazenovia, New York area during the 4/16/91 - 4/26/91 period.

Colton - Participated in the 1991 Farm Bill Project in the Watertown, New York area from 8/16/91 - 8/26/91.

Flanders - Heavy Equipment Instructor for the 1991 training session held in Virginia Beach, VA, 3/25/91 - 3/29/91, and in Cape Charles, VA, from 5/2/91 - 5/10/91. Instructor for Hydrq-Axe Training Course held in Guys Mills, PA on 5/29/91.

Smith - Served as Acting Region 5 Outdoor Recreation Planner in the Regional Office for the period 7/1/91 - 7/3/91.

Awards

The following employees received Special Achievement Awards in 1991 for their work performance:

- Grady Hocutt
- Steve Flanders
- Judy McMahon
- Marva Smith

4. Credits

Typing and Proofreading - Estes
 Climatic Conditions - Christenson, Norsen
 Planning - Hocutt, Christenson, Gingrich
 Administration - Hocutt, Christenson, McMahon, Smith
 Habitat Management - Gingrich
 Wildlife - Gingrich
 Public Use - Caslick, Smith
 Equipment and Facilities - Christenson, Flanders, Norsen
 Other Items - Hocutt, Christenson, McMahon
 Editing - Hocutt, Christenson, Estes

Photograph #2 was taken by YCC Group Leader Mary Jo Antonacci.

Photograph #10 was taken by Michael Allen of the New York State Department of Environmental Conservation.

Photographs #7, 11, 18, and 19 were taken by Refuge Volunteer Kevin Holcomb.

Montezuma

National
Wildlife
Refuge



New York

Welcome to Montezuma

Montezuma National Wildlife Refuge lies at the north end of Cayuga Lake, in the heart of the Finger Lakes Region of New York State. Located 5 miles east of Seneca Falls, in Seneca County, Montezuma Refuge serves as a major resting area for waterfowl and other waterbirds on their journeys to and from nesting areas in northeastern and east-central Canada. Refuge management benefits wildlife and provides a place for people to visit and enjoy wildlife in its natural habitat.



Once Extensive Marshes

The Finger Lakes Region was shaped during the last glacial period, some 10,000 years ago. The retreating glacier created a vast system of lakes. In time, the shallower northern and southern ends of the lakes developed into extensive marshes.

The earliest known inhabitants of this region were Algonquin Indians. They were succeeded by the Cayugas of the Iroquois Nation. These early Americans derived part of their livelihood from the wildlife and plants of the area's bountiful marshes.

Prior to the turn of the century, the Montezuma Marsh extended north from Cayuga Lake for twelve miles and was up to eight miles wide. The marsh was one of the most productive in North America. As with most wetlands during that era, the importance of the marshes went unrecognized. Construction of the dam at the outlet of Cayuga Lake and changes made to existing rivers during the building of the New York State Barge Canal contributed to the loss of the marsh. By the early 1900's all but a few hundred acres had been drained.

In 1937 the Bureau of Biological Survey, which later became the U.S. Fish and Wildlife Service, purchased 6,432 acres of the former marsh. This land would become the Montezuma National Wildlife Refuge. The Civilian Conservation Corps began work on a series of low dikes which would hold water and restore part of the marsh. Efforts to restore and preserve the marsh continue today. The Service, working cooperatively with New York State, several conservation organizations, corporations, and private landowners, is seeking to protect even more of the original Montezuma Marsh. The project which joins all of these organizations together is the North American Waterfowl Management Plan. The Plan is an international agreement between the United States and Canada to conserve, restore, and enhance wetlands and waterfowl habitat.

Why a Refuge?

Montezuma National Wildlife Refuge was established in 1938 as a refuge and breeding ground for migratory birds and other wildlife. The Refuge provides resting, feeding, and nesting habitat for waterfowl and other migratory birds. Montezuma is situated in the middle of one of the most active flight lanes in the Atlantic Flyway.



Careful management of the Refuge's 3,500 acres of diked pools ensures that migrating birds will find suitable food in a mix of emergent and submergent plants along with open water and mudflats. Water levels are carefully manipulated throughout the year to provide habitat and food for many bird species.

Wooded areas, grasslands, and wetland habitat are also managed to provide a healthy, self-sustaining population of many wildlife species including mammals, resident birds, reptiles, amphibians, and insects which are normally found in Central New York.

In 1976, the Refuge cooperated with the New York State Department of Environmental Conservation on a bald eagle release program at Montezuma. Over a period of four years, 23 eagles were released through a "hacking" program. Since the program's inception, bald eagles have returned to Montezuma and have successfully reared young.

The Refuge has been a study site for learning about the impacts of the pest plant purple loosestrife on marsh ecosystems and establishing techniques to control its spread. The Refuge has worked with Cornell University on these studies.

The Refuge also provides compatible wildlife-oriented educational and recreational opportunities for thousands of visitors each year. Recreational opportunities are carefully planned to complement the management of the Refuge.

Wildlife Calendar



Fall Migration

Waterfowl - Mid-September to freeze-up; Canada goose numbers peak (50,000) in mid-November; duck numbers peak (150,000) late November. Best viewing times are early morning and late afternoon.

Shorebirds/Wading Birds - Mid-August through mid-October; peak mid-September. Sandpipers can be seen on exposed mudflats, while herons and egrets use the shallow water areas throughout the day. Shorebird watching is best at May's Point Pool, where water levels are managed seasonally for their benefit.

Winter

The self-guided Auto Tour Route is generally closed to traffic (depending upon snow/ice/road conditions). Cross-country skiing and snowshoeing on the Tour Route and Esker Brook Trail provide an excellent opportunity to see white-tailed deer, small mammals, and resident birds such as blue jays, woodpeckers, nuthatches, and black-capped chickadees.



Spring Migration

Waterfowl - Late February through April - varies as to weather and thaw - 85,000 Canada geese, 12,000 snow geese (both color phases are present). Many species of ducks are present though not as numerous as in the fall. Best viewing times are in early morning and late afternoon.

Shorebirds - Shorebird migration is less spectacular than in the fall, but birds are common early May to mid-June.

Warblers - The peak of warbler migration is mid-May. Best viewing is on Esker Brook Trail from dawn until mid-morning.

Wildflowers - From April through June; peak is in May. Violets, trilliums, mayapples, vetches, mustards and others can be seen along Esker Brook Trail.



Summer

Waterfowl Nesting - Canada geese and several duck species nest on the Refuge beginning in early March. Broods first appear in early May and can be seen throughout the summer.

Heron Rookery - Great blue herons nest in the flooded timber area of Tschache Pool. Black-crowned night-herons may also be seen in Main Pool.

Flowering Plants - Throughout the summer flowering plants may be seen from the Auto Tour Route. Purple loosestrife, iris, mallow, and white water lily peak in late July.

Year-Round

White-tailed deer, rabbits, foxes, and other resident wildlife can be seen throughout the year. Best viewing times are early morning and late afternoon. You may wish to plan your trip accordingly.

With advance notice, educational programs are available to organized groups throughout the year. The Refuge provides area teachers and students with three outdoor classroom sites for environmental education. Teacher workshops are held at various times during the year which enable teachers to effectively utilize the Refuge for scheduled field trips.

The Refuge provides an extensive assortment of 16mm wildlife films and videos (free of charge) to area educators. Films are also available for viewing in the Visitor Center.

Enjoying the Refuge

Recreational and educational activities abound at Montezuma throughout the year. The Refuge is open daily during daylight hours. Since Montezuma is a National Wildlife Refuge, collecting, disturbing, injuring or damaging plants or animals is prohibited.



The Visitor Center, staffed on weekends from 9:00 am to 5:00 pm (summer), 9:30 am to 4:00 pm (winter), most Tuesdays and holidays, contains exhibits, leaflets and restrooms. The Observation Deck and Tower provide excellent opportunities to see wildlife.



The self-guided Auto Tour Route provides opportunities to observe and photograph wildlife from your car. Please stay in your vehicle since it serves as a "blind" and minimizes disturbance to wildlife. Snow, ice and poor road conditions generally keep the road closed during the winter and early spring months.



Esker Brook Trail, a two-mile walking trail, is open year-round. The Trail and Auto Tour Route are open for cross-country skiing and snowshoeing during the winter. All hiking, skiing, etc. is limited to established trails.

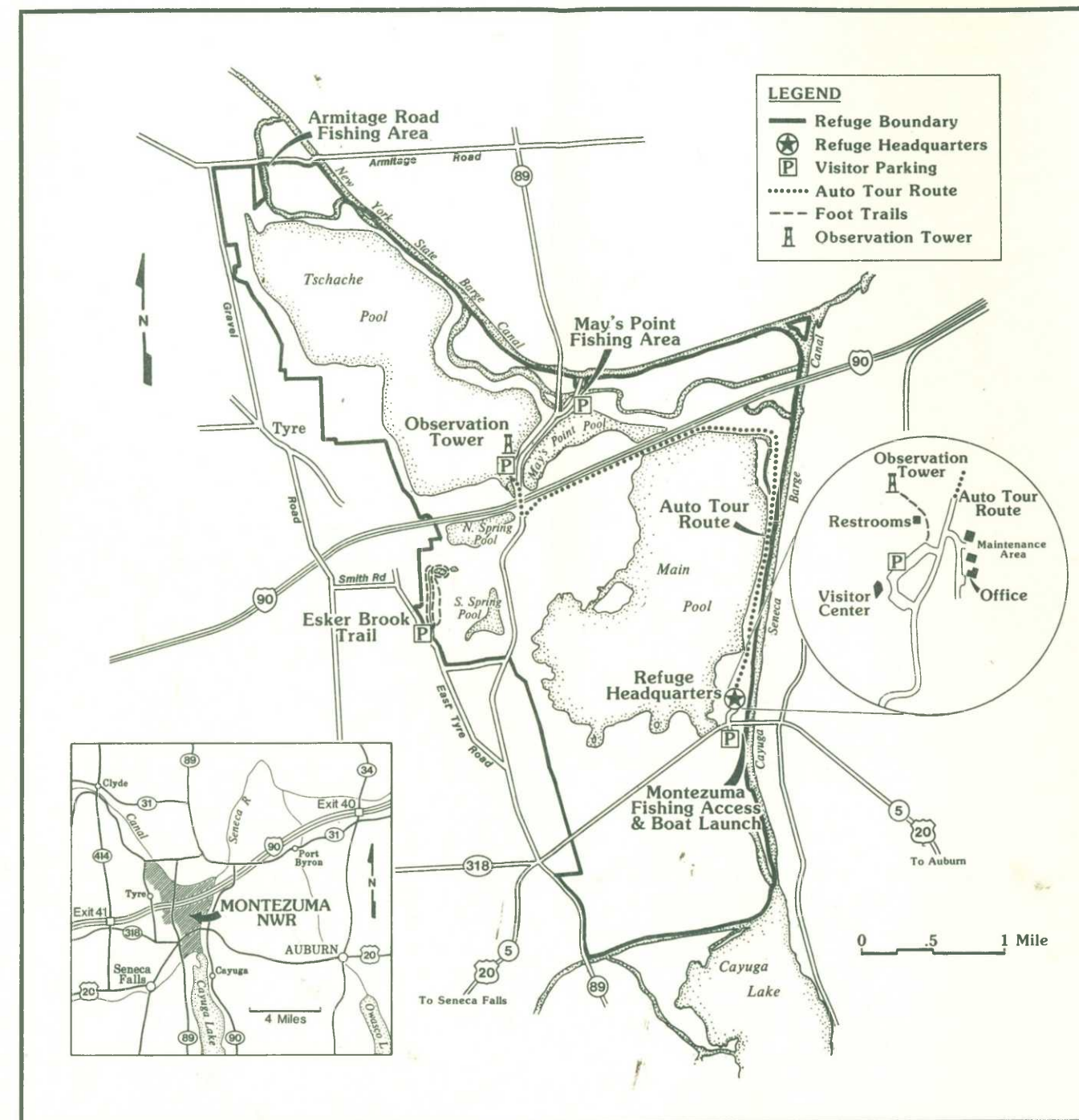


Although fishing and boating are prohibited in Refuge waters, the Refuge maintains a boat launch providing access to the State-owned Barge Canal. Three public fishing sites provide bank fishing access to the canal.



Public hunting, primarily for waterfowl and deer, is permitted under special regulations on portions of the Refuge during the State seasons. Contact Refuge Manager for additional information.

Montezuma National Wildlife Refuge



Mission: As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic 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 promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. 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 further information, contact:

Refuge Manager
Montezuma National Wildlife Refuge
3395 Routes 5 & 20 East
Seneca Falls, New York 13148
Telephone: (315) 568-5987

☆U.S. GOVERNMENT PRINTING OFFICE: 1990-0-701-715

Illustrations by Julien D. Beauregard



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

RL-51530-1

July 1990

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 areas for ducks, geese, and many other water birds and songbirds. This refuge contains 6,432 acres of widely diversified habitat, from extensive marshes to upland hardwoods. In addition to meeting habitat requirements for tens of thousands of spring and fall migrant birds, the refuge annually provides wildlife education and recreation to a quarter of a million visitors.

Public uses include a 3.5 mile self-guiding auto tour around the Main Pool, a Visitor Contact Station, a 2-mile hiking trail and ample opportunities to photograph wildlife.



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 315 species of birds that have been identified on Montezuma Refuge since its 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

† - Birds known to nest on or near the refuge
Italics indicate threatened/endangered species

RELATIVE ABUNDANCE

Relative abundance indicates how frequently you might see a bird in its favored habitat.

a - abundant	a species which is very numerous
c - common	likely 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	may be present but not every year

LOONS - GREBES - CORMORANT

	s	S	F	W
Red-throated Loon	r			
Common Loon	o		o	
Pied-billed Grebe †	c	c	c	
Horned Grebe	o		o	
Red-necked Grebe	r		r	
Double-crested Cormorant	o	c	c	

BITTERNS - HERONS - IBIS

American Bittern †	o	c	c	
Least Bittern †	o	o	o	
Great Blue Heron †	c	c	c	o
Great Egret	o	c	o	
Snowy Egret		r		
Little Blue Heron		r	r	
Cattle Egret	r			
Green-backed Heron †	o	c	o	
Black-crowned Night-Heron †	o	c	c	
Glossy Ibis	r	r		

SWANS - GEESE - DUCKS

Tundra Swan	o		r	o
Mute Swan	o		o	
Snow Goose	c		o	
Brant			o	
Canada Goose †	a	c	c	c
Wood Duck †	c	c	c	
Green-winged Teal †	c	o	c	
American Black Duck †	a	c	a	o
Mallard †	a	c	a	o
Northern Pintail †	c	o	c	
Blue-winged Teal †	c	c	c	
Northern Shoveler †	c	o	c	
Gadwall †	c	c	c	
Eurasian Wigeon	r		r	
American Wigeon †	c	o	c	
Canvasback †	c	o	c	
Redhead †	c	o	c	
Ring-necked Duck	c	o	c	
Greater Scaup	c		c	
Lesser Scaup	o	o	o	
Oldsquaw	o		o	
Black Scoter	r		r	
Surf Scoter	r		r	
White-winged Scoter	r		r	
Common Goldeneye	c		c	
Bufflehead	c		c	
Hooded Merganser †	c	o	a	o
Common Merganser	a	o	a	c

	s	S	F	W
Red-breasted Merganser	o	r	o	
Ruddy Duck †	o		o	

VULTURES - HAWKS - FALCONS

Turkey Vulture	c	c	c	c
Osprey †	c	c	c	
Bald Eagle †	o	o	o	o
Northern Harrier †	o	o	o	o
Sharp-shinned Hawk †	o	o	o	o
Cooper's Hawk	o	o	o	o
Northern Goshawk	o	o	o	
Red-shouldered Hawk	o		o	
Broad-winged Hawk	o		o	
Red-tailed Hawk †	c	c	c	c
Rough-legged Hawk			o	c
Golden Eagle		o	o	
American Kestrel †	c	c	c	o
Merlin	r		r	
Peregrine Falcon	r		r	

PHEASANT - GROUSE

Ring-necked Pheasant †	u	u	u	u
Ruffed Grouse †	u	u	u	u

RAILS - CRANES

King Rail	r	r	r	
Virginia Rail †	c	c	c	r
Sora †	c	c	c	
Common Moorhen †	c	c	c	
American Coot †	c	c	c	

PLOVERS - SANDPIPERS

Black-bellied Plover	o	o	o	
Lesser Golden-Plover	r	o	o	
Semipalmated Plover	o	c	c	
Killdeer †	c	c	c	
Greater Yellowlegs	c	c	c	
Lesser Yellowlegs	c	c	c	
Solitary Sandpiper	r	o	o	
Spotted Sandpiper †	c	c	c	
Upland Sandpiper		r		
Whimbrel	r		r	
Hudsonian Godwit		r	o	
Ruddy Turnstone	o	o	o	
Red Knot	r	r	r	
Sanderling	r	r	r	
Semipalmated Sandpiper	c	c	c	
Western Sandpiper		r	r	
Least Sandpiper	c	o	c	
White-rumped Sandpiper	o	o	o	
Baird's Sandpiper			r	o

	s	S	F	W
Pectoral Sandpiper	c	c	c	
Dunlin	c		c	
Stilt Sandpiper	o	c	c	
Ruff		r	r	
Short-billed Dowitcher	c	o	c	
Long-billed Dowitcher			c	
Common Snipe †	o	o	o	
American Woodcock †	o	o	o	
Wilson's Phalarope	r	r		
Red-necked Phalarope	r	o	o	

GULLS - TERNS

Bonaparte's Gull	o	o	o	
Ring-billed Gull	c	c	c	o
Herring Gull	c	o	c	c
Great Black-backed Gull	o	o	o	u
Caspian Tern	o		o	
Common Tern †	o	o	o	
Black Tern †	o	o	o	

DOVES - OWLS - HUMMINGBIRDS

Rock Dove †	o	o	o	o
Mourning Dove †	c	c	c	o
Black-billed Cuckoo †	o	o		
Yellow-billed Cuckoo †	o	o		
Barn Owl	r	r	r	r
Easter'n Screech-Owl †	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
Northern Saw-whet Owl	r		r	r
Common Nighthawk		r		
Whip-poor-will	r			
Chimney Swift †	o	o		
Ruby-throated Hummingbird †		o		
Belted Kingfisher †	c	c	c	o

WOODPECKERS - FLYCATCHERS

Red-bellied Woodpecker †	o	o	o	o
Yellow-bellied Sapsucker	o		o	
Downy Woodpecker †	c	c	c	c
Hairy Woodpecker †	o	o	o	o
Northern Flicker †	c	c	c	o
Pileated Woodpecker †	o	o	o	o
Red-headed Woodpecker	o	o	o	
Olive-sided Flycatcher	r		r	
Eastern Wood-Pewee †		c		
Alder Flycatcher	o	o		
Willow Flycatcher	o	c		

Least Flycatcher †		c		
Eastern Phoebe †	c	c	c	
Great Crested Flycatcher †	o	c		
Eastern Kingbird †	c	c	o	

LARKS - SWALLOWS - JAYS - CROWS

Horned Lark †	o	o	o	o
Purple Martin †	c	c		
Tree Swallow †	c	c	c	r
Northern Rough-winged Swallow	o	o		
Bank Swallow †	c	c		
Cliff Swallow †	r	r		
Barn Swallow †	c	c	c	
Blue Jay †	c	c	c	c
American Crow †	c	c	c	o

TITMICE - NUTHATCHES - WRENS

Black-capped Chickadee †	c	c	c	c
Tufted Titmouse	o	o	o	
Red-breasted Nuthatch †	o		o	r
White-breasted Nuthatch †	c	c	c	c
Brown Creeper †	o	o	o	o
Carolina Wren	r	r	r	
House Wren †	c	c		
Winter Wren †	c	c	c	
Sedge Wren †	r	r		
Marsh Wren †	c	c	c	

KINGLETS - THRUSHES - THRASHERS

Golden-crowned Kinglet	c		c	
Ruby-crowned Kinglet	c		c	
Blue-gray Gnatcatcher	o		o	
Eastern Bluebird †	u	u	u	r
Veery †	c	c	o	
Gray-cheeked Thrush	o		o	
Swainson's Thrush	o		o	
Hermit Thrush	c		c	
Wood Thrush †	c	c	o	
American Robin †	c	c	c	o
Gray Catbird †	c	c	c	
Northern Mockingbird	r	r		
Brown Thrasher †	o	o	o	

WAXWINGS - SHRIKES - STARLINGS

Water Pipit	c		c	
Cedar Waxwing †	o	o	o	o
Northern Shrike				o
Loggerhead Shrike	r	r		
European Starling †	a	a	a	o

VIREOS - WOOD WARBLERS

Solitary Vireo	o		o	
----------------------	---	--	---	--

	s	S	F	W
Yellow-throated Vireo †	o	o		
Warbling Vireo †	c	c	c	
Philadelphia Vireo	r		r	
Red-eyed Vireo †	c	c	c	
Blue-winged Warbler	r			
Golden-winged Warbler	o	o		
Tennessee Warbler	o		o	
Orange-crowned Warbler	r			
Nashville Warbler	c		c	
Northern Parula	o		o	
Yellow Warbler †	c	c	c	
Chestnut-sided Warbler	o		o	
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	
Blackburnian Warbler	c		c	
Pine Warbler	o		o	
Prairie Warbler	o		o	
Palm Warbler	o		o	
Bay-breasted Warbler	o		o	
Blackpoll Warbler	c		c	
Cerulean Warbler †	c	o	c	
Black-and-white Warbler	c	o	c	
American Redstart †	c	c	c	
Prothonotary Warbler †	o	o		
Ovenbird †	c	c	c	
Northern Waterthrush	o	o	o	
Louisiana Waterthrush	o	o	o	
Connecticut Warbler	r		r	
Mourning Warbler	o	o	o	
Common Yellowthroat †	c	c	c	
Hooded Warbler	r		r	
Wilson's Warbler	o		o	
Canada Warbler	c		o	
Yellow-breasted Chat	r	r		
TANAGERS - SPARROWS				
Scarlet Tanager †	c	o	o	
Northern Cardinal †	c	c	c	c
Rose-breasted Grosbeak †	c	c	c	
Indigo Bunting †	c	c		
Rufous-sided Towhee †	c	o	c	
American Tree Sparrow			c	c
Chipping Sparrow †	c	c	c	
Field Sparrow †	c	c	c	o
Vesper Sparrow †	o	o	o	

	s	S	F	W
Savannah Sparrow †	o	o	o	
Grasshopper Sparrow †	o	o	o	
Henslow's Sparrow †	o	o	o	
Fox Sparrow	c		c	
Song Sparrow †	c	c	c	o
Lincoln's Sparrow	o		o	
Swamp Sparrow †	c	c	c	
White-throated Sparrow	c		c	
White-crowned Sparrow	c		c	
Dark-eyed Junco	o	o	o	
Lapland Longspur				o
Snow Bunting				o
BLACKBIRDS - FINCHES				
Bobolink †	o	o	c	
Red-winged Blackbird †	a	a	a	o
Eastern Meadowlark †	c	c	c	o
Rusty Blackbird	o		o	
Common Grackle †	a	a	a	o
Brown-headed Cowbird †	c	c	a	o
Northern Oriole †	c	c	c	
Purple Finch †	c	o	c	o
House Finch †	o	o	o	o
Common Redpoll				r
Pine Siskin				r
American Goldfinch †	c	c	c	o
Evening Grosbeak	r		r	r
House Sparrow †	c	c	c	c

NOTES

Date _____ Time _____

Observers _____

Weather _____

Tides _____

ACCIDENTALS

The following species have been seen on the refuge one or two times:

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



U.S. Fish and Wildlife Service

Montezuma is one of more than 445 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife and wildlife habitat and represents the most comprehensive wildlife management program in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys and include small islands in the Caribbean and South Pacific. The character of the refuges is as diverse as the nation itself.

The Service also manages National Fish Hatcheries, and provides Federal leadership in habitat protection, fish and wildlife research, technical assistance and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

For further information contact:

Refuge Manager
Montezuma National Wildlife Refuge
3395 Rts. 5 & 20 East
Seneca Falls, New York 13148
Telephone: (315) 568-5987



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

RL-52550-2

January 1991