


OTTAWA NATIONAL WILDLIFE REFUGE COMPLEX
(OTTAWA, CEDAR POINT, WEST SISTER ISLAND NWR'S)

Oak Harbor, Ohio

ANNUAL NARRATIVE REPORT

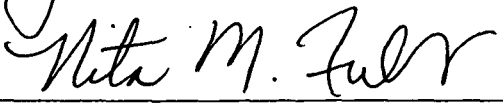
Calendar Year 1995


Refuge Manager *(Acting)*

1-12-2001
Date


Refuge Supervisor Review

3-6-01
Date


Regional Office Approval

3/7/01
Date

INTRODUCTION

The Ottawa National Wildlife Refuge Complex is made up of three refuges: the Ottawa Refuge which has three divisions: Ottawa, Navarre, and Darby; Cedar Point Refuge; and West Sister Island Refuge.

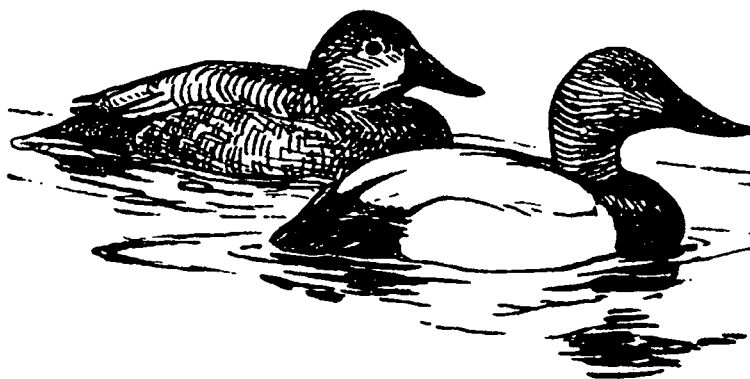
The Ottawa Division was established in July 1961 with land acquired under the authority of the Migratory Bird Conservation Act to preserve a portion of the remaining Lake Erie marshes. West Sister Island was established as a refuge in August 1938 by Presidential Order. Cedar Point was donated to the Service and accepted by the Interior in December 1964. Darby was acquired in 1966 in exchange for Navarre, with the agreement that most of Navarre would remain under management for wildlife under conditions of a 25- and 50-year lease.

The cities of Toledo, Detroit, and Ann Arbor are within 2 hours drive of Ottawa National Wildlife Refuge (NWR). At between 2 to 3 hours driving distance are Cleveland, Akron, Columbus, and Dayton. The refuge is within the bounds of an 8 million person megalopolis. Currently, it is receiving about 75,000 visitors per year who primarily visit the refuge for bird watching and wildlife observation.

The total refuge acreage is 8,318 acres of which 5,350 acres are either open pools, marsh, or moist soil units. Water levels in 3,306 acres of wetland and 794 acres of moist soil units are controlled by pumping. The remaining acreage of 2,968 is a mixture of grassland, forest, cropland, and administrative areas.

Wildlife use of the refuge is high and is approximately as follows: (use days) ducks, 1 to 5 million; Canada geese, 1 to 2 million; marsh and water birds, 1 million; shorebirds, gulls, and terns, over 1 million. Production is: ducks and geese 500 to 2,000 each; marsh and water birds, 4,000 to 6,000; shorebirds, gulls, and terns, up to 500; bald eagle, 6 to 10, and wetland mammals 6,000 to 10,000.

West Sister Island, located 9 miles out in Lake Erie, is a wilderness area and is the site of the largest colonial nesting bird colony in the Great Lakes chain.



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*NTR - Nothing to Report

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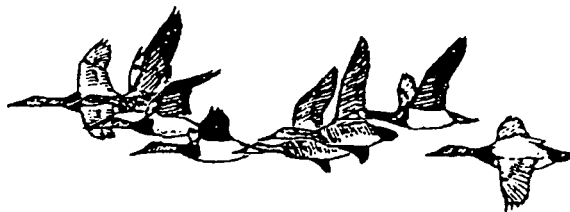
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*NTR - Nothing to Report

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*NTR - Nothing to Report



A. HIGHLIGHTS

Ottawa Refuge hosted a signature ceremony to formally include the Toledo Young Scholars and Ohio State University in the Partners for Cultural Diversity Program. (Section E2)

Ottawa Refuge hosted the junior Duck Stamp Contest in Ohio and judged over 500 entries. (section H1)

Refuge staff restored 82 wetlands totaling 592 acres on private lands in northwest Ohio and southeast Michigan. The Refuge celebrated its 500th wetland restoration. Six sites totaling 84 acres were restored to native prairie. (Section F14)

Habitat improvement projects on the refuge include planting 40 acres of bottom land hardwoods and vegetation manipulation in moist soil units. (Section I)

International Migratory Bird Day, Fifth Grader Day, National Fishing Day, and National Wildlife Refuge Week were successful events held for the public at the refuge. (Section H5 and 6)

The Refuge was impacted by the loss of 5 staff members in 1995. (Section E1)

The contractor completed construction of the Metzger Marsh dike. (Section I1)

A Preliminary Project Proposal presented to the Land Review Protection Committee for acquisition of the 21,000 acre Ravenna Arsenal in northeast Ohio was approved. (Section C3)



B. CLIMATIC CONDITIONS

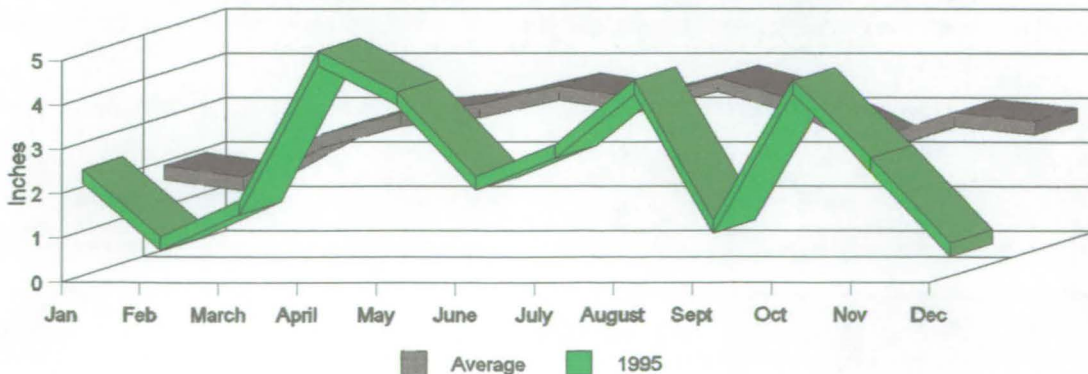
Annual Precipitation and Temperature, CY-1995

Month	Precipitation		Snowfall		Temperature			
	CY-1995	Average	CY-1995	Average	Max.	Ave. Max.	Min.	Ave. Min.
January	2.24	1.75	7.55	9.03	60	51	2	-4
February	0.74	1.50	0.00	8.21	45	53	-1	-1
March	1.53	2.46	1.00	6.21	70	70	11	11
April	4.91	2.94	0.00	1.77	73	82	14	22
May	3.99	3.14			85	87	40	34
June	2.10	3.54			90	93	50	45
July	2.81	3.26			100	95	51	51
August	4.26	3.72			99	93	60	47
September	1.13	3.22			90	89	34	38
October	4.25	2.36			83	80	33	27
November	2.51	2.95	0.50	3.05	67	68	20	18
December	0.61	2.77	1.75	6.41	51	56	2	3
Totals	31.08	33.61	10.80	28.91				
Extremes					100	95	-1	-4

An official National Weather Service station is located at the refuge headquarters and is monitored daily for precipitation and temperature. An automatic temperature recorder has lessened the need for recording temperatures daily.

Precipitation received was slightly below the average. Most months had close to average precipitation for the year, with April (+1.97), September (-2.09), and December (-2.16) the only months with any great deviance from the norm. Snowfall was just over 18 inches less than normal years.

Precipitation - 1995 vs Average



C. LAND ACQUISITION

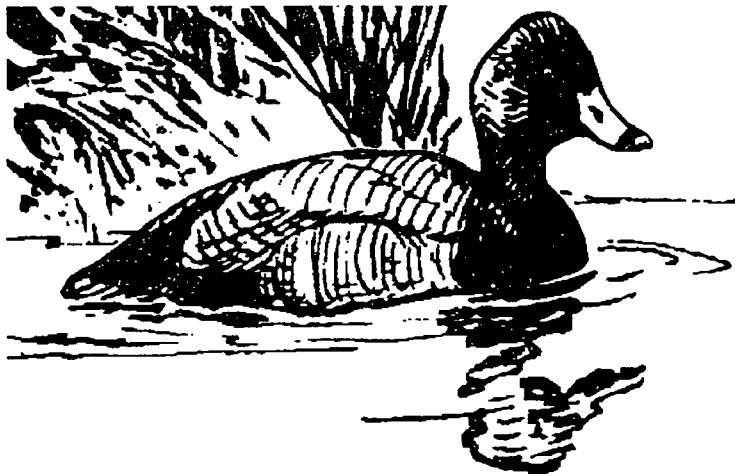
1. Fee Title

The Trust for Public Lands offered owner John Gradel \$2 million for the Howard Farm. Mr. Gradel rejected the offer. Mr. Chuck East of the Conservation Fund and Project Leader Adams met with Mr. Gradel to discuss possible acquisition of Howard Farm. An updated appraisal was requested to determine the value of the property to facilitate further negotiations.

The Nature Conservancy expressed interest in possibly transferring a 920 acre open coastal wetland just west of the Sheldon Marsh near Sandusky. A adjacent owner of 340 acres is a willing seller.

3. Other

The Ecological Service Office, Reynoldsburg, submitted a Preliminary Project Proposal to the Regional Office for acquisition of the 21,000 acre Ravenna Arsenal in northeast Ohio. Project Leader Adams, at the request of Refuges and Wildlife, revised the Proposal and presented it to the Land Protection Review Committee. The Committee approved the Proposal and forwarded it to the Washington Office for approval. The habitat on the Arsenal supports tremendous biological diversity and hosts rare species such as nesting Cerulean warblers and Henslow sparrows. The refuge wetland team restored 5 wetlands on the property. Hydrology could be restored elsewhere on the 7,000 acres of hydric soils by plugging ditches and closing storm sewers built to provide drainage for the operation of the Arsenal. The U. S. Army expects to divest interest in the Arsenal in 1998.



D. PLANNING

5. Research and Investigation

Ottawa WMS19 - "Migrational Movements and Habitat Usage of Passerines on the Ottawa NWR, Ohio" Julie Shieldcastle, Black Swamp Bird Observatory.

The long term study to monitor the status of neotropical migrant populations was continued on both Darby and Navarre Divisions at Ottawa NWR. Breeding bird monitoring was conducted in conjunction with the national Monitoring Avian Productivity and Survivorship (MAPS) program. The purpose of this national program is to gather information on passerine reproductive success and survivorship.

In spring, the Navarre and Darby banding stations handled 7,630 and 1,192 birds, respectively. From conducting this research it has been documented that neotropical migrants move through Ohio in three "waves" or general movements during the spring. These waves are species associations migrating together. The three waves occur generally around April 25-30, May 7-12, and May 25-30 with each having two pulses five to seven days apart. The top ten species banded included: magnolia warbler (760), myrtle warbler (618), yellow warbler (575), gray catbird (467), common yellowthroat (383), American redstart (351), white-throated sparrow (337), chestnut-sided warbler (260), Swainson's thrush (251), and Nashville warbler (207).

In the breeding season, a total of 252 birds were banded representing 32 species at the MAPS station. To coincide with constant effort mist netting, point count surveys were conducted during the first 3 periods of operation. The two survey methods complement each other by compensating for inadequacies of each. Of the 32 species banded, yellow warbler, gray catbird, red-winged blackbird, common grackle, and house wren comprise the 5 most common species.

During fall migration a total of 6,252 birds were banded at Navarre Site. Top ten species banded include: magnolia warbler (693), yellow warbler (520), myrtle warbler (518), gray catbird (417), common yellowthroat (340), American redstart (304), white-throated sparrow (299), Swainson thrush (251), chestnut-side warbler (231), and Nashville warbler (207). At Darby Division, a total of 610 birds were banded in fall. The top ten species included: Swainson thrush (77), blackpoll warbler (53), white-throated sparrow (34), magnolia warbler (16), gray-cheeked thrush (31), red-eyed vireo (15), American redstart (15), ovenbird (14), gray catbird (10), and northern cardinal (8).

Total banding numbers for this project was 16,693 birds of 114 species and 98 birds captured per 100 net hours. This compares to 1994's numbers with 14,792 individuals, 117 species and 83 birds captured per 100 net hours. The following table shows a summary of this years banding efforts.

Area	Sample Days	Net Hours	Birds Banded	Birds/ 100 Net Hr	Total Captured	Total/ 100 Net Hr	% Change from 1994
Navarre	120	14,672	14,137	96.4	17,143	116.8	+12
Darby	26	1,914	1,802	94.1	1,906	99.6	+42
Season	Sample Days	Net Hours	Birds Banded	Birds/ 100 Net Hr	Total Captured	Total/ 100 Net Hr	% Change from 1994
Spring	77	8,238	9,709	117.9	11,388	138.2	+24
Fall	80	8,795	6,984	79.4	8,429	95.8	+18
Breeding	9	540	255	47.2	338	62.6	+40

Ottawa WMS42 - "Spring Migrational Movements of Raptors on the Ottawa NWR and Surrounding Lake Erie Marshes," Julie Shieldcastle, Black Swamp Bird Observatory.

The Objectives of this study are: 1) to monitor long term trends in migrating raptors utilizing the region and to examine for spatial and temporal differences in migration among the various age and sex classes of individual species and between species; 2) to analyze energetic condition of a sample of raptors to assess habitat quality; 3) to allow for environmental education to improve the public's perception of these avian predators.

Raptor counts were conducted on 76 days with 460 individual trips involving 1,064 observer hours and 1,734 volunteer hours. A total of 7,517 raptors were counted. Much is to be learned about the raptor flight paths and their variability along Lake Erie. Counts in 1995 (7.06 birds/hour) were 29% below 1994's 11.63 birds/hour. In 1995, high count dates again appear to be positively correlated with southwest quadrant winds. Southwest winds allow raptors to tack into the wind as they migrate along the western basin. The five most abundant species in the observations were: Turkey Vulture (3,603), Red-tailed hawk (1,323), Broad-winged hawk (803), Sharp-shinned hawk (556), and Red-shouldered hawk (440).

Ottawa WMS46 - "Migrational Survey and Habitat Usage of Shorebirds in the Lake Erie Marsh Region" Julie Shieldcastle, Black Swamp Bird Observatory.

Objectives for this study are: 1) to survey the populations of shorebirds along the southwestern coast of Lake Erie during spring and fall migrations; 2) to explore the effects of weather on migration and year to year differences; 3) to relate migrational data to habitat conditions 4) to relate migrational data to management of marsh unit; 5) to utilize project data to fulfill requirements for site identification of the Western Hemisphere Shorebird Reserve Network.

The 1995 field season was the second full year of data collection for shorebird migration. Data were

gathered following the International Shorebird Survey protocol with additional habitat parameters collected. Information was gathered on individual marsh units with species, numbers, and habitat conditions recorded. Fifteen different marshes were sampled at least once in the spring and eleven in the fall. Primary sampling areas included Ottawa NWR, Metzger Marsh Wildlife Area, Magee Marsh Wildlife Area, and Pipe Creek Wildlife Area.

Spring Migration

A total of 34,331 birds of 26 species were counted during 116 trips. Dominant species counted and their peak movements were Dunlin (May 11-20); Pectoral sandpiper (April 11-20); Killdeer (June 11-20), Lesser Yellowlegs (April 11-30); Semipalmated plover (June 1-10); Greater Yellowlegs (April 21-30), and short-billed dowitcher (May 11-20). The pectoral sandpiper appears to be the dominant of early April followed by both yellowlegs and snipe in late April. Dunlin become the dominate shorebird in May with subdominates in late May of semipalmated sandpiper, semipalmated plover, and sanderling.

Fall Migration

A total of 17,396 birds of 28 species were counted in 82 trips during fall. Dominate species observed and peak movements in fall included: semipalmated sandpiper (Aug. 11-20); lesser yellowlegs (Sept. 1-10), killdeer (Aug. 11-20); pectoral sandpiper (Sept. 1-10); short-billed dowitcher (July 11-20); dunlin (Sept. 11-20); and greater yellowlegs (Sept. 1-10). Fall migration is more drawn out then spring, running from early July into November. As in the spring, do to breeding birds there has been no attempt to determine a peak migration for killdeer.

Total Number of Birds Observed by Species and Season.

Species	Spring	Fall	Total	Species	Spring	Fall	Total
Semi. Plover	1136	331	1467	Black-necked Stilt	0	2	2
Killdeer	1273	2036	3309	Gr. Yellowlegs	506	233	739
Gold. Plover	98	19	117	Less. Yellowlegs	901	1447	2348
Bl.-bell. Plover	0	1	1	Marbled Godwit	1	0	1
Piping Plover	0	1	1	Snowy Plover	0	7	7
Spotted Sandpiper	183	48	231	Wilson Phalarope	0	3	3
Solitary Sandpiper	83	35	118	Red-neck. Phalarope	12	9	21
Pectoral Sandpiper	4975	1473	6448	Ruddy Turnstone	32	0	32
Wh.-rump Sandpiper	4	28	32	Willet	5	7	12

Species	Spring	Fall	Total	Species	Spring	Fall	Total
Baird's ~ Sandpiper	14	21	35	Ruff	1	0	1
Least Sandpiper	218	338	556	Sanderling	35	68	103
Stilt Sandpiper	1	109	110	Am. Avocet	25	6	31
Semi.-palm, Sandpiper	282	5653	5935	Common Snipe	190	22	212
Western Sandpiper	1	11	12	Am. Woodcock	0	3	3
Dunlin	23953	1420	25373	Unident. Peep	149	31	180
Sh.-billed Dowitcher	60	3151	3211	Unident. Dowitcher	4	132	136
Lo-billed Dowitcher	38	715	753				
Total Birds	34,331	17,396	51,727	# Trips	116	82	198
# Observer Hrs.	146.6	180.9	327.5				

Ottawa WMS28 - "Movement and Habitat Use of Black-Crowned Night Herons of West Sister Island Rookery" Mark Shieldcastle, Ohio Division of Wildlife.

This survey monitors the nesting habitat usage and population status of various colonial nesting birds of West Sister Island. Two to 3 annual nest counts are conducted between June and July to count active nests (15% of island is surveyed). The number of breeding birds by species are then estimated by extrapolation.

Presently there are 2 concerns confronting colonial waders at the island. Habitat loss, as canopy height increases, continues to pressure black-crowned night herons to compress towards the western end of the island. The second concern involves habitat degradation by cormorants white wash while nesting and roosting. Highly acidic guano produced by cormorants degrade lower shrubs and understory. Breeding pair information for 1991 - 1995 is as follows:

Species	1991	1992	1993	1994	1995
Great Blue Heron	1547	2444	2393	1591	1380
Great Egret	1047	774	742	1036	1120
Bl. Crn. Night Heron	1113	844	746	726	560
Double-Cr. Cormorant	N/A	186	307	580	1480
Snowy Egret	10	7	8	10	10

E. ADMINISTRATION

1. Personnel



N. Ross Adams, GS-12, PFT, Project Leader
Transferred to Mark Twain NWR 12/10/95

Steven J. Lenz, GS-11, PFT, Supervisory Refuge Operations Specialist
Transferred to Leopold WMD 11/12/95

Stanley S. Cornelius, GS-11, PFT Refuge Operations Specialist (ROS)
Acting Refuge Manager 12/10/95

Thomas P. Roster, GS-9, PFT Refuge Operations Specialist (ROS)

Charles E. Marshall, GS-9, PFT Outdoor Recreation Planner
Transferred to Back Bay NWR 06/25/95

Marjorie L. Miller, GS-6, PFT Administrative Technician

David L. Day, WG-8, PFT Engineering Equipment Operator

Robert Reynolds, WG-8, PFT Maintenance Worker

Jeffrey A. Jaeger, WG-5, PFT Maintenance Worker

Laurie A. Miller, GS-5, TPT, Office Assistant (OA)
Resigned 11/08/95

James A. Schott, GS-5, TFT Biological Science Technician (Wildlife)

Kenneth L. McConahay, WG-8, FTI Engineering Equipment Operator

Jorge L. Coppen, GS-9, PFT, Wildlife Biologist
Transferred to Loxahatchee NWR 07/30/95

Judy A. Flood, GS-4, TFT, EOD 06/18/95 Social Services Aid
Terminated 09/02/95

Kenneth Adams, GS-4, EOD 06/18/95 Student Trainee (Biology)
Terminated 10/03/95

2. Youth Programs

Junior Duck Stamp Program

Ottawa National Wildlife Refuge completed contest judging on April 27, 1995 for Ohio's first annual Federal Junior Duck Stamp Contest. Over 550 entries from over 60 schools throughout Ohio were received from 4,000 advertised school mailings. Artwork entries were received from kindergarten through twelfth grade students. The judging process was hosted by staff members from the Toledo Edison/Davis-Besse Nuclear Plant, Environmental Compliance Office. Artwork was judged and displayed in the Energy Education Center of the main administrative complex building. Ottawa Refuge Staff and affiliated sponsors coordinated efforts conducting the contest.

Maria Eisma, a 16-year old student from East Knox High in Howard, Ohio won "Best of Show" out of twelve first place talented artwork entries. The "State Best of Show", a pair of wood ducks (drake and hen), were forwarded to the National competition in Washington, D.C.

Youth Conservation Corps

The Ottawa National Wildlife Refuge 1995 Youth Conservation Corps (YCC) Camp began on June 12 and ended on August 11. The camp was non-residential and lasted for eight weeks. Four enrollees were selected. A crew leader was also hired to provide direct field supervision of enrollees. Refuge staff assisted the crew leader on projects as needed.

Enrollees selected for the 1995 camp included three males and one female: Jessica Cisneros, 16, from Helena, Ted James, 16, Gibsonburg, Abelando Vidal, 17, Rocky Ridge, and Corey Wodrich, 16, Graytown. Judy Flood of Oak Harbor was the crew leader for the third consecutive summer.

Work Accomplishments

Projects accomplished included: assisting with an environmental education fishing clinic, clearing brush from signs and water control structures, facility and vehicle cleaning, bird banding, bird box maintenance, boundary posting. Several of these projects were on-going and accounted for a large number of enrollee hours.

Environmental Education

In addition to their exposure to the Ottawa NWR, enrollees had the opportunity to visit and observe 5 sites for educational purposes. Areas visited included: Crane Creek Wildlife Research Station, Oak Harbor; Oak Openings Metro park, Toledo; Maumee Bay State park Nature Center, Oregon; Ohio State University-Stone Laboratories, South Bass Island; and The National Park Service - Perry's Victory Monument, South Bass Island. Enrollees also had the opportunity to observe an eagle banding project. Enrollees gained a great deal of knowledge and information through the day to day projects and working with refuge staff.

Safety

The importance of work safety was stressed to enrollees at the time of orientation. Enrollees also

attended staff safety meetings held during the course of the camp. All enrollees remained conscious of the safety issues involved with work projects. As a result, there were no injuries or accidents.

Summary

Ottawa's YCC operated successfully, with Judy Flood returning as the crew leader this year. There were many worthwhile projects carried out throughout the summer.

The YCC program was identified again this year as a method to introduce the natural resource management field to high school students of color. Two of the students were of Hispanic origin. The four young people came to the YCC program with genuine interest in wildlife management and the Service. This was evidenced by their respect for the refuge and desire to learn more about natural resource management. Enrollees worked hard and were able to recognize that their accomplishments were of value and importance.

4. Volunteer Program

Volunteers continued assisting refuge staff with many management programs during the year. Volunteers helped coordinate International Migratory Bird Day and Open House activities. They led tours, assisted with environmental education programs, and conducted various maintenance, administrative, and biological duties. The volunteer coordinator, Outdoor Recreation Planner, Charles Marshall, transferred to Back Bay NWR in June. With his absence the refuge was not able to take full advantage of all volunteers available and did not have the traditional volunteer banquet. Despite this set back, there were 47 active volunteers in 1995 working a total of 2,027 hours.

Junior Duck Stamp Program



Left to right: Charles Marshall, Laurie Miller, Ross Adams, Jorge Coppen, and member of ODNR

5. Funding

Funding Breakdown for the Last Five Year Fiscal Period

	FY 91	FY 92	FY 93	FY 94	FY95
Oper.&Maint	396,824	356,500	352,573	419,189	504,955
Core Maint.	80,000	80,000	77,683	78,893	74,893
Base Funds	476,824	450,256	430,256	498,082	579,848
Flex/Maint Mgmt	308,000	105,000	154,500	50,000	30,000
Fire Mgmt	400	1,000	6,200	1,500	3,000
Private Lands	117,500	159,000	107,000	120,000	120,000
Threat/Conf. ⁽¹⁾		0	0	0	0
Special Proj. ⁽²⁾		0	0	0	0
Drug Intervention		1,010	3,500	0	1,000
Non-Game	3,000	0	4,500	14,100	6,300
Special Funding ⁽³⁾		52,500	15,000	6,500	5,000
Totals	906,734	757,500	717,456	690,182	745,148

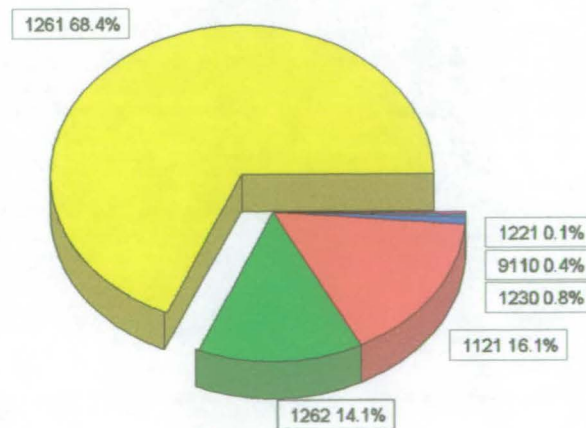
(1) Threats & Conflicts - Includes contaminants and purple loosestrife control.

(2) These are special funds for the study of Lake Erie Wetlands from a special congressional appropriation.

(3) Generally 1260 funds for watchable wildlife, wetland education, cultural diversity, etc.

FY95 FUNDS

PERCENTAGES



6. Safety

Six safety meetings were held in 1995. Safety officer Charles Marshall transferred out in June and he was replaced by Jeff Jaeger in December. Topics of safety meetings included:

- Ticks and Lyme Disease
- Equipment Operator / Tractor Safety
- Carpal Tunnel Syndrome
- Oil Storage / Pesticide Containment
- Stress in the Job Place
- Electrical Safety
- Winter Safety Tips

Staffing Levels

	<u>Permanent</u>	<u>Part-Time</u>	<u>Temporary</u>	<u>FTE's</u>
FY 1990	7	0	2	7.9
FY 1991	9	0	1	10.0
FY 1992	11	0	5	14.2
FY 1993	11	0	5	13.25
FY 1994	11	0	3.25	13.00
FY 1995	10	1	4	10.0

F. HABITAT MANAGEMENT

1. General

Habitat at Ottawa NWR consists of a variety of wetland types (65%), grasslands (20%), cropland (8%), forest and brush lands (4%), and dikes and roads (3%). Marshes are managed to provide year-round food, cover, and nesting habitat for waterfowl and other migratory birds. Moist soil and cropland units are managed to provide food for migrating waterfowl and grasslands supports nesting cover for waterfowl, feeding areas for raptors and food and cover for resident species.

2. Wetlands

Ottawa Refuge contains approximately 3,500 acres of marsh and 800 acres of moist soil areas which are managed for a wide range of food, cover, and nesting needs. Ottawa's wetland complex is managed to provide a variety of wetland types throughout the year. The individual units are manipulated to maintain emergent marshes and to produce moist soil plants and provide invertebrate populations.

A series of pools are established throughout the refuge and intermixed with moist soil units. The pools are maintained as emergent marshes and drawn down as needed to reestablish vegetation. The pools provide a variety of habitat from shallow water areas for shorebirds to deep pools utilized by diving ducks.

Moist soil units are managed to provide annual growth from early successional mudflat species, such as smartweeds, millets, etc. Annual drawdowns cause the unit to progress through a series of successional stages from early smartweed/millet stage through the beggars tick/perennial stage, to the woody vegetation or cattail stage. The early stages are the most productive and are maintained by prolonged flooding or tilling for problem species.

This year wetlands were drawn down for renovation of the facilities or moist soil/emergent plant production or enhancement. Following is a small description of activities in the units and their results.

Ottawa - Pool 1

Water levels were maintained throughout the year. The impoundment has open water in the middle with cattail surrounding the edges. Smartweeds and millets were prevalent in the impoundments northern and western edges. Waterfowl use was consistent during the fall hunting season and large numbers of scaup were seen during the spring migration.

Ottawa - Pool 2A

This unit was drawn down in mid- to late-April to establish moist soil plants and to start building up some organic matter. The drawdown went well and the majority of the unit was exposed by May. Smartweed germinated over about 30 percent of the unit. The management of this unit over the past couple of years was directed to improve the substrate and build up some organic, thus Japanese millet

was broadcasted over approximately 25 percent of the unit. The millet got a good start and was hit hard by Canada Geese, but the majority of the millet was allowed to mature and go to seed. Excellent teal use in this unit during September.

Ottawa - Pool 2B

This unit was drawn down partially to maintain current vegetation and entice more permanent emergent vegetation throughout the entire unit. Water smartweed remains to be the dominate vegetation with sedges increasing on the eastern side and moist soil annuals intermixed throughout the unit. Mudflats were exposed in late summer due to evaporation creating foraging opportunities for shorebirds. Water was then added in September increasing foraging areas for shorebirds and green-winged teal. At times 3,000 - 4,000 green wings could be observed in this unit.

Ottawa - Pool 2C

This unit was partially drawn down to retain current marsh vegetation and be managed as a semi-permanent marsh. A good hemi-marsh condition was maintained and this unit allowed for excellent wildlife viewing for the visiting public.

Ottawa - Pool 3

The unit was at full capacity during the winter and water was released in the spring. Water elevation slowly dropped from evaporation. The western side is higher and choked with cattail while the eastern side is lower and contains mainly open water and in between the two areas is a composite of sedges, rushes, and other marsh plants. This pool is a major loafing/resting area during the fall migration, especially for swans.

Ottawa - Pool 6

The pool fluctuates with precipitation and evaporation. This unit consists mainly of open water and cattail zones. Evaporation reduced the amount of water in the unit creating foraging areas for shorebirds, teal, and other ducks during late summer and early fall. The dikes are riddled with muskrat holes and in dire need of renovation.

Ottawa - Pool 9

Pool 9 is almost a solid stand of cattail and reed canarygrass with some sedge areas. Water was removed in April of 1994 to facilitate borrow removal for dike construction of Metzger's Marsh dike. Essentially, no marsh benefits were received, however, the dry conditions is stressing the cattail.

Ottawa - Entrance Pool

Water levels were dropped starting in April and continuing in May to facilitate planting of hardwood trees along the eastern side of the unit. The unit was not completely dewatered. The eastern third is still dominated by cattail and the remainder was moist soil and emergent marsh vegetation. Purple loosestrife has taken off in this unit and because of that was a release site for biological control measures. Both the *Galerucella spp.* and the *Hylobius spp.* were released in this pool thanks to the Ohio Division of Wildlife who donated the bugs.

Ottawa - Show Pool

This pool has an island/remnant dike in the middle which most times is a moist meadow. The open water areas are devoid of vegetative growth. Cattail, phragmites, purple loosestrife are the dominate species. Some smartweed grew amongst the cattail. This pool has limited use by ducks, geese, and herons.

Ottawa - Mini-Marsh

This unit was dewatered in May. Millet, smartweed, and cattail are the dominate vegetation. A portion of the unit, composed mainly of cattail, was disced in fall prior to flooding to create some openings in the dense vegetation. The unit was then flooded and received use by waterfowl and wading birds.

Ottawa - MSU 3

The water level in this unit was maintained throughout the year. This was the second year of maintaining the water level in order to flood out reed canarygrass and cattail. Muskrat populations grew and started cutting the cattail and opening up the unit. The deep water started to stress out the reed canarygrass, a lot of the grass grew but did not develop a seed head. It will be a year or two too really see a difference.

Ottawa - MSU 4

The water level was dropped starting in late-April and early-May to induce moist soil plants. This unit has a history of problems with willow and reed canarygrass. Moist soil plants responded well to areas disced and/or planted in 1994. There was still some problems with reed canarygrass and willow, which control efforts were conducted. Discing with the heavy offset disk was conducted in late-August and early-September on reed canarygrass problems and portion of the unit with willow were wiped with chemical by way of a wick applicator. Excellent response from shorebirds were observed when flooding the disced areas.

Ottawa - MSU 5

Water was taken off of this unit slowly over April and May. This forth consecutive drawdown produced some moist soil annuals that was intermixed with cocklebur and willow and cottonwood seedlings. The higher ground to the west produced more stunted millet and bidens, whereas the lower area to the east produced mostly smartweed and millets. Two - three acres of problem species were disced up and planted to Japanese millet. The majority of the millet was eaten by geese just as it matured. Some of the millet did not grow very well probably due to dry conditions just after seeding. Waterfowl use was excellent during fall, this is traditionally a highly used area during fall and winter.

Ottawa - MSU 6

After having all the work done in the unit in 1994 this unit was kept with water on it during 1995 to help reduce the amount of vegetation in the unit. Muskrat house number increased during the fall and started to open up areas in the vegetation. A small amount of water was lost during the spring and summer which allowed the edge to be lined with moist soil plants of smartweed and common millet. Black ducks have been using the south side of the unit, which borders Crane Creek, and moving back and forth between these two areas.

Ottawa - MSU 7A

This unit is gradually regaining its wetland characteristics by holding water longer into the spring and early summer. The unit consists of a mosaic of barnyard grass, panic grass, sedges, smartweed, and others. This year the water was brought off in early April to facilitate planting of trees on the high ground in MSU 7B. The early drawdown produced maintained current vegetation and produced some additional moist soil plants, however, cocklebur was very prevalent along the eastern portion of the unit. This cocklebur was mowed in July and some water put back on the unit to allow the underlying barnyard grass to mature.

Ottawa - MSU 7B

This unit was brought down in early April to facilitate the planting of trees on the higher ground elevations. The shallow areas came in with a lot of spikerush and the lower ground elevations had an

Ottawa - MSU 8A

This unit was mostly flooded in 1994 in order to promote vegetation in 1995. Most of the water was taken off during late-April early-May and then some water was held in the lower areas until later in the summer. The areas that were under water in 1994 produced an excellent stand of smartweed, millet, and bidens the remainder of the area had spikerush covering it.

Ottawa - MSU 8B

This unit was held until May and then slowly dewatered through May. Once again this unit produce a nice stand of barnyard grass through approximately 40% of the unit. Cocklebur and drier site species were starting to increase in the unit. During September small patches of these areas were treated by discing. Another couple of acres of milkweed and cocklebur was mowed to kill these plants but allow the millet that was underlying to grow. Shorebird use in the disced areas was fabulous along with green-winged teal.

Ottawa - LL

This unit was held at maximum pool as much as possible throughout the spring, but water was released to remove standing water off of a nearby woodlot. The majority of the unit is still roughleaf dogwood and some upland flora. Sedges and rushes are starting to increase from the north side (lower ground elevation) and along the borrow area. Moist soil plants - barnyard grass and yellow nutsedge - were scattered throughout.

Cedar Point - Pool 1

Water was maintained in this unit during the year with only removal associated with spring run-off and evaporation. After 1994's drawdown this unit responded with an excellent hemi-marsh condition with a variety of cattail, bulrush, pickerel weed, wild rice, etc.

Cedar Point - Pool 2

Pool 2 water levels are directly related to pool 1 through a water control structure, however, this unit is slightly higher in elevation. The higher elevation reduced water depth and the emergent vegetation was maintained. Water was removed from this unit only by evaporation. During fall water was put back via pool 1 and precipitation. This unit still remains heavily vegetated and could use sustained water to reduce the vegetation.

Cedar Point - Pheasant Farm

Pheasant farm was brought down in April and May to prepare the area for construction work during the summer. A large area of annuals responded on the mudflat areas along with purple loosestrife. This unit has always had a loosestrife problem and measures have been under taken to reduce it. This area was sprayed with Rodeo herbicide during the summer. The borrow pits were also sprayed with Rotenone to kill the carp present. The construction was not completed during the summer and the unit was not flooded.

Darby - Pool 1

This unit is managed as a semi-permanent marsh, with a drawdown conducted every few years to maintain the emergent vegetation and wetland productivity. The majority of the vegetation present is water Lilly and cattail. Purple loosestrife has a strong hold in this unit and precautions have to be made and if this unit is drawdown. Scaup, ring-necked, canvasbacks, and other divers flock to this unit during the spring migration.

Darby - Pool 2

This unit was brought down in 1992 and 1993 so work could be performed on the existing dikes. The results were an excellent stand of moist soil annuals including Walter's and common millet and smartweeds. In 1994, the water was brought down again and the result was more emergent vegetation like cattail and bulrush and rice-cutgrass on the earlier exposed soils. This unit was then left with water on it during 1995 to open up the area and to rejuvenate the marsh for a drawdown in another year.

Darby - Pool 3

This unit was brought down in 1992 and 1993 so work could be performed on the existing dikes. The result was a tremendous respond from moist soil annuals both years and emergent vegetation the second year. During 1995 the water level was maintained to allow muskrats to knock back some of the emergent vegetation and to put the unit under water and prepare it for a drawdown another year. Vegetation consisted of cattail, bulrush, and water smartweed.

Darby - Pool 4

This unit was drawdown in 1992 and 1993 to add a small dike on the south side of the pool to divert drainage water from private lands into a ditch system instead of going through the unit. Unit remained flooded the entire year and had a excellent hemi-marsh condition with cattail, bulrush, pickerel weed, arrowhead, etc. The cottonwood trees that got a start during the drawdowns are starting to die back from being flooded.

Navarre Pools 1,2, and 3

Navarre marshes are managed in cooperation with the Davis-Besse Nuclear Power Station personnel. Refuge personnel play a consulting role over these marshes that are part of the lease with Davis-Besse. Over the past year the environmental division at the power station had personnel changes and at times it was difficult to coordinate efforts. All three pools are managed as semi-permanent marshes with a drawdown conducted every 4-5 years to rejuvenate the unit. Pool 3 was attempted to be drawn down, however, fear of a major fish kill by plant officials delayed the drawdown and by the time that differences were worked out by Davis-Besse personnel and refuge staff it was past the optimum time to dewater a unit. Pools 1 and 2 were dewatered a little to enhance current vegetation and to get new vegetation to sprout along the higher edges of the marsh. This little bit of dewatering produced excellent results from common and Walter's millet and smartweeds. Pool 3 will be scheduled for a drawdown in 1996.

3. Forests

Hardwood forest restorations continued during 1995 in MSU 7b, unit 11, and unit 13. Total acreage planted was almost 60 acres and 30,000 trees. Two tree planters were borrowed from the Ottawa County and Wood County Soil and Water Conservation Districts. The refuge staff contributed much time to planting the trees. The areas that were planted were farmed with buckwheat the prior fall to prepare the seed bed for planting. This worked well in contrast to 1994 when the areas were worked up in the spring just prior to planting. The seedbed was not very fine due to moisture in the ground, which created air pockets when trying to plant seedlings.

In 1994, 4-inch perforated plastic tile was cut into 8-9" lengths and placed around the planted seedlings for protection from rodents etc. In 1995 these protectors were not placed around the trees because it was found that these tubes, even being anchored to the ground, still toppled over taking the seedling with them.

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4. Croplands

Ottawa's cropland program is administered to support migrating and wintering waterfowl by providing high energy foods during the colder weather and before spring migration as well as supporting the refuge hunting program and providing some rotational crops in the moist soil areas.

The cropland program in 1995 was similar the past two years. Approximately 36 acres of standing corn in fields 11B and 11D were mowed in February and were heavily used by Canada Geese. Most of this corn was utilized before major duck migrations began.

Refuge personnel planted 29 acres of clover in fields 2D, 6B, and 11B. Our cooperative farmer seeded an additional 23 acres of clover into the wheat in 2B by broadcast application with liquid fertilizer. Both methods worked equally well and produced good stands. Clover is being planted between a rotation of soybeans and corn to provide nitrogen to the following corn crop. Additional benefits are received in weed and insect control and geese benefit substantially in using the fields as browsing areas. The Berseem Clover which was planted in 1994 did not appear to do real well as far as producing good quantities of nitrogen.

Our co-op farmer planted 45 acres of corn in fields 2A, 9C and 10B primarily using conventional methods although some fields were sprayed with Roundup before tillage to kill grasses. An additional 26 acres of corn was planted via no-till methods by refuge personnel. These fields contained large amounts of quackgrasses and clover and were sprayed by a commercial applicator with Roundup and Banvel just before the planting of corn. However, very little kill of the grasses occurred, probably due to the cool weather, although we suspect the applicator may have used a much lesser chemical rate than called for. To later control these grasses, the fields were sprayed with Accent. An application of 2,4-D/Banvel was applied to control thistles and cocklebur and additional nitrogen was applied as liquid in July. In spite of the high cost of the extra spray, fertilizer, etc. the yield was still low at an estimated 50 bu./acre. Our experiment in no-till corn was not considered a success and we must question its value on our flat, level, and high clay content fields when one considers the extra cost, extra herbicides, etc that are required, especially for fields where erosion is not a problem. Yields in the cooperative corn were good and estimated at 90 Bu/acre. All costs of the cropland program, except the seed corn, were supported by the excess soybeans from the refuge share of the cooperator soybeans.

Approximately 150 acres of soybeans were planted by a cooperator in units 2, 6, 9, 10, and 11. The soybeans produced approximately 25 bushel/acre with the refuge share amounting to approximately 1250 bushels.

Waterfowl use of the cooperator's strip harvested corn fields was good during the fall months primarily by geese. All of this stripped corn was utilized by waterfowl by the end of the year. An estimated 400,000 waterfowl use-days, primarily geese, were supported by the 1995 croplands program as compared to the 1.1 million use-days in 1994.

Ottawa NWR --- 1995 Croplands

Legend

- Moist Soil Flooding
- Clover, New
- Clover, Old
- Refuge Corn
- Coop-Corn
- Soybeans

2B - 20.72 ac
2A - 20.74 ac
2C - 26.13 ac
2D - 7 ac
2E - 10.14 ac
2F - 26.38 ac

6A - 14.5 ac
6B - 10.5 ac
6C - 8.35 ac
6D - 3 ac

9A - 11.67 ac
9B - 15.2 ac
9C - 12.9 ac

9D & E - 19.22 ac

9F - 6.82 ac
10B - 11.5 ac
10C - 11.7 ac
10D - 6.5 ac
10E - 9.8 ac

10A - 10.3 ac

11A - 13.5 ac
11B - 13.0 ac
11C - 12.7 ac
11D - 22.4 ac

5. Grasslands

Division of Wildlife Biologist Mark Shieldcastle stationed at Crane Creek Wildlife Experiment Station has offered to submit a grasslands establishment plan for Ottawa NWR that complements other refuge habitat components. Any planned grassland restorations are expected to occur in large, contiguous blocks that reduce edge and fragmentation.

10. Pest Control

A. Gypsy moth

Gypsy Moth monitoring continued again this year, the following table shows trend over the last 5 years.

Year	No. of Traps	Total Caught	No. Traps w/ Catch
1991	7	15	all
1992	7	19	all
1993	7	43	all
1994	7	28	all
1995	7	?	all

B. Purple Loosestrife

Purple loosestrife spraying by staff was minimal with only 15.5 hours of staff time used. The majority of the time was spent in goose pen. Scattered plants are starting to show up in moist soil units and pools 2B and 2C. These areas will need to be monitored and control efforts concentrated here to ensure that large stands of loosestrife do not get started. The Division of Wildlife once again aerial sprayed patches of loosestrife for the refuge. They used a 1% solution and sprayed 55 acres -- 50 at Cedar Point, 3 at show pool, and 2 at Darby. In addition, biological control measures were taken by releasing 1,000 of the *Galerucella spp.* (beetles) and 300 of *Hylobius spp.* eggs (weevil) at the southeast corner of entrance pool. The insects were received from the Division of Wildlife. The beetles were placed on adult plants and screened in for approximately a week. The weevil eggs were placed in a cutoff loosestrife stem and then the stem covered with clay. Hopefully this will be the answer to the loosestrife problem!

14. Private Wetland Restoration (Farm Bill Activities)

During the 1995 field season refuge staff were again involved with the Partners for Wildlife Program restoring wetlands on private lands. Working in a total of 2 states and 9 counties we were able to restore 65 wetlands for 269 acres with our own crew and equipment. Ottawa cost shared on 17 other wetland projects for 323 acres (see section) increasing the total to **82 sites for 592 acres.**

This year Ottawa NWR began a major dike rehabilitation project on the refuge. Manpower and equipment use was very limited for the Farm bill program. Instead of the typical 4 man crew used in the past, Ottawa was forced to use a 2 man crew. Biological Technician Schott viewed and surveyed the wetland sites prior to the 1995 construction season (March, April, May). This work schedule allowed Biological Technician Schott to operate equipment (backhoe) during the construction season rather than meeting with landowners. Therefore, no hours of construction time were lost during the 1995 field season, despite the reduction in manpower.

Assistance from Seney NWR in the form of equipment operators was also invaluable. Equipment Operators Terry Pappel and Lawrence Zellar were a vital asset to this years Farm bill success. Their dedication and perseverance in 90+ degree heat in 12-13 hour days has made this a very successful program.

Weather was very cooperative in the months of June, and July. Rain in August impeded construction. However, Ottawa rented a wide track dozer for the 1995 field season. This dozer proved again to be the most versatile piece of machinery for the Farm bill program. Many sites were completed due to this dozers' ability to work in very wet conditions.

Williams County recorded the most restorations for the first time ever with 23 sites. Hillsdale County, MI and Lenawee County, MI recorded 19 wetland sites each. Northwestern Ohio and southeastern Michigan prove again that it is full of wetland restoration potential. Each day more and more wetland restoration contacts pour in as the word gets out. Many restoration contacts are made through county wildlife habitat seminars, news articles, and local county fairs. But the majority of the contacts are from "word of mouth" from previous Partners for Wildlife cooperators.

Repairs on previous restored wetlands prove to be another time consuming event. Muskrat damage takes its tolls on the small low level dikes constructed. Several different construction techniques were done this year to see if these little varmints will leave our dikes alone, only time will tell. A total of 14 repairs were done this year, most of which the dike needed totally re-topped.

This year wetlands were restored on the recently obtained Don Muckensturm easement, located in Lenawee County and the Ralph Cline easement, located in Monroe County. Simple tile cuts were done to restore the natural hydrology to the FmHA easements.

In June of 1995, Ottawa's wetland restoration crew restored its 500th wetland on the Bill Daub farm near Hudson, Michigan. To commemorate the occasion a "tile breaking" ceremony was conducted along with a partnership sign along M-34 just outside of Hudson in Lenawee County. Ottawa has restored over 60 acres of wetlands on Mr. Daub's farm since 1988. Mr. Daub was recently accepted into the Wetland Reserve Program (WRP) preserving over 174 acres of excellent wetland and upland

habitat. Ottawa's hard work and cooperation with Mr. Daub, Lenawee Soil and Water Conservation District, Lenawee Natural Resources Conservation Service, and Lenawee Chapter of Pheasants Forever will remain forever.

1995 Lenawee County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Mukensturm easement	2	3
Christine Royer	2	13
Robert Caplon	1	1
Todd Chatfield	6	23.5
Robert Chatfield	2	10
Jeff Thompson	2	7
Bill Daub	3	35
Bob Mickel	1	4
Total	19	96.5

1995 Hillsdale County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Steven Terrill	1	1
William Rupnow	3	5
Mary Chetkovich	3	26
Mike Whitehead	2	10
John Fry	2	18
Dan Leaders	1	3
Richard Bragg	1	5
Jack Anderson	3	10
Avin Riddle	1	4
Steve Schaeffer	1	3
Priscilla Prophet	1	2
Total	19	87

1995 Williams County Wetland Restorations

<u>Cooperators</u>	<u>Sites</u>	<u>Acres</u>
Marlin Cummins	14	46
Chris Baker	1	2
John Gres	1	8
Kermit Dietsch	1	10
La-Su-An	3	10
John Granger	2	3.5
LaVon Armstrong	1	72
Total	23	151.5

1995 Defiance County Wetland Restorations

Dale Dreher	1	5
James Hitchcock	2	12
Total	3	17

1995 Huron County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Don Parsons	1	5

1995 Fulton County Wetland

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Northwood Education Center	1	2

1995 Monroe County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Brighton Easement	2	2

1995 Sandusky County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Ken Buehler	1	6
Franklin Rose	1	24
Troy Ayers	1	6
Demars Hunting Club	1	4
Don Baltes	1	40
ODOW Wildlife Production Area	2	5
Total	7	85

1995 Ottawa County Wetland Restorations

<u>Cooperator</u>	<u>Sites</u>	<u>Acres</u>
Jeff Nehls	1	28
Don Helle	1	19
Westlake Sportsmens Club	1	18
Bob Lesniewicz	1	5
Rich Johlin	2	74
Jess Burdine	1	2
Total	7	146

15. Challenge Grants

Cost Shares and Challenge Grants again played an important role restoring wetlands in Sandusky and Ottawa Counties. Wetlands restored through the program totaled 14 sites for 231 acres. These projects were completed with the cooperation of the private landowner, U.S. Fish and Wildlife Service, the Ottawa County Soil and water Conservation District, the Sandusky County ASCS and the Ohio Division of Wildlife.

G. WILDLIFE

1. Wildlife Diversity

The 8,318 acres of the refuge complex maintains a variety of habitat from croplands, wood lots, and grasslands to several types of wetlands. A wide range of species can be found. The bird list contains 267 normally observed species and an additional 45 that are accidentals. The refuge supports 32 mammal species along with 53 amphibian and reptile species. Volunteers conduct bird species counts on all the units once a month. Ohio DNR flies refuge units every-other week for waterfowl census in the fall and winter. Refuge personnel conduct an on-land waterfowl population census biweekly, and weekly during the spring and fall migrations.

2. Endangered and/or Threatened Species

A. Bald Eagles

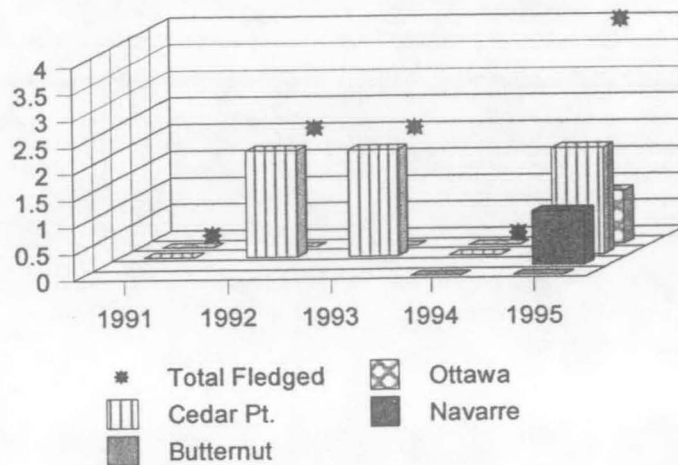
The 1995 nesting season was an excellent year for Ohio eagles with 25 out of 29 nests being active and producing 38 eaglets. One of the best production years ever. Lake Erie marsh region had 15 successful nests with 21 young produced. The complex has several active bald eagle nests; 1 at Cedar Point NWR and 4 on Ottawa NWR, 2 on Ottawa Division, 1 on Navarre Division, and 1 on Darby Division (has not been active for 2 years). The number of eaglets produced every year fluctuates depending mainly on winter conditions and weather during the incubation period. During 1995 the refuge

had 4 active nests and ended up fledgling 3 young from two nests (Cedar Point - 2, Ottawa - 1). The Ottawa pair has had reproductive problems in the past, but have appeared to turn things around with producing one young. The first in seven years. It appeared this year that the female was a different female from past years, predictions are that she is four years old. The eaglets estimated hatch date was April 16.

The Butternut nest failed again this year, for its second consecutive year. The pair abandoned the nest March 8 for unknown reasons. Last years failure consisted of the young dying after hatch, but attempts to climb up to the nest were unsuccessful to recover any remains.

The Navarre nest was in its first year of nesting on the refuge. The pair was spotted last fall bring nesting material to the tree and personnel from Davis-Besse watched as the pair setup house just a few hundred yards from their nuclear power plant. This pair is an older pair and they moved over from

Bald Eagles Fledged





Immature Eagles



Wood Duck

Camp Perry where they had been for several years. The pair hatched one young on April 20.

The Cedar Point pair started incubating on March 26-28 and had an estimated hatch date of May 4. This nest has been very productive over the past few years producing 8 young in 7 years. This year was no exception with the pair fledgling 2 young.

3. Waterfowl

The Ottawa Complex is mainly a waterfowl migration resting and feeding area. However, the refuge maintains a small population of ducks (mainly mergansers, mallards, and black ducks) and few thousand geese throughout the winter. Waterfowl numbers peak in the fall with large concentrations of dabblers, especially mallards and black ducks. It is not uncommon to have 20,000 mallards and black ducks staging during the fall migration.

A. Ducks

The Complex's objective is to provide 4.2 million duck use days and 1.5 million goose use days. For 1995, an 5.1 million and 1.0 million use days were estimated for ducks and geese, respectively. This estimation is from mainly surveys conducted in the fall by the Ohio Division of Wildlife. Waterfowl surveys were not completed due to other refuge priorities, reduction of staff, and other factors. The Ohio Division of Wildlife conducts aerial surveys on the 1st and 15th of each month from September thru January. Numbers in waterfowl use reflect only these numbers and its worth mentioning that the total number of birds with just fall use is over the objective levels what would they have been if surveys were conducted the entire year? Even though these numbers are not complete they are impressive compared to the last ten years of refuge waterfowl use days. The refuge hit a peak number of birds at 110,000 in the middle of November which surpassed 1994's peak of 68,800 and blew away 1993's peak of 34,700. And the first time the refuge was above 100,000 birds in a decade or two. The fall flight forecast as right on!

Species	Use Days	Peak Number
Mallard	2,515,900	91,900
Black Duck	530,000	19300
Gadwall	156,000	6,300
Wigeon	402,500	7,700
GW Teal	710,000	6,700
BW Teal	78,500	2,700
Shoveler	19,400	1,360
Pintail	234,500	10,200
Wood Duck	15,000	110
Com. Merganser	19,600	900
Red-B. Merganser	500	30
Hood. Merganser	3,500	100
Redhead	160	10
Canvasback	800	40
Scaup	400,800	15,000
Ring-necked	400	20
Com Goldeneye	300	20
Bufflehead	5,000	100
Ruddy Duck	14,000	700

B. Geese

Canada goose days were 900,000 for the year a decrease from previous years, but this number includes only surveys conducted by the Ohio Division of Wildlife in from September through

December. Peak population of Canada geese was 12,900 which occurred during the last week of December. The use by Canada geese are distributed throughout the refuge complex, however, Ottawa Division receives the majority of use and had over half (460,000) of the recorded use days. This year the peak number for snow geese was 68 and total use days were 1,707.

C. Swans

Swan numbers and use have been increasing rapidly over the past few years and 1995 was no exception. Total number of use days by swans were 13,187 and the peak number was just over 700. This is a dramatic increase over 1994, which had a peak of 250 birds and use days totaled 4,240.

4. Marsh and Water Birds

Great blue herons, great egrets, and black-crowned night herons are abundant throughout the spring, summer, and fall seasons. Ottawa and Cedar Point Refuges provide much of the feeding areas for the nesting colony on West Sister Island. The colony contains approximately 4,500 nests and is the largest heron/egret rookery in the Great Lakes chain. Studies have shown that these birds will fly 9 miles from the island to the main refuge complex several times a day to feed their young. Very heavy feeding occurs in the marshes, drawdown areas, and mudflats created by Lake Erie wind tides. Species found less common in the area include snowy and cattle egrets and little blue herons.

Refuge personnel again assisted Ohio Division of Wildlife staff in collecting data for the annual colonial bird nesting study conducted at West Sister Island NWR. See research project WMS28 for more information on banding at West Sister Island.

5. Shorebirds, Gulls, Terns, and Allied Species

A common tern restoration project initiated in 1987 to establish a colony within the refuge was put "on hold" this year. The last two years there was a graduate student working to determine why the colony is not producing any young. An artificial nesting platform was constructed during the project and showed potential for producing the common terns, however, over the course of the winter weather had taken its toll on the platform and very little remained of it. An island has also been used in the past by terns with little success. During the breeding season the island's vegetation grew to beyond that tolerable by terns, hence no nesting was done on here either. The colony on the refuge is one of only two known in the State of Ohio.

The refuge does not contribute much to shorebirds except for units in a drawdown state or tracts that are open to Lake Erie which expose mudflats during such events. The spring shorebird migration tends to be quick with many birds here during a short period of time (peak May 1-15). In contrast, the fall migration tends to be smaller number of birds but is more drawn out. Many of the refuge water impoundments are drawn down during this time period provide optimum habitat. Pools that have not been drawn down for several years and are devoid of vegetation have considerable amount of mudflats available for foraging shorebirds. The major contributor to use is the dunlin with as many as 4,000 birds observed at one time. A pilot study was initiated in 1993 by the Black Swamp Bird Observatory to relate shorebird use and needs to water management regime. The study is providing phenological data and habitat use. For more information see Section D.

6. Raptors

In spring, a migrational study of raptors through the western Lake Erie area was continued. The Black Swamp Bird Observatory personnel are observing raptor movements over the Ottawa Complex which includes trapping and banding birds. See WMS42, Section D for more information on this study.

8. Game Animals

Muskrat house inventories were initiated in 1991 to provide indices for muskrat populations from year to year. Within the local area, the muskrat is the most important furbearer to trappers. Cedar Point NWR was closed to trapping in 1989 through 1991 to allow muskrat populations to build and cut open areas in the cattail dominated marsh. The muskrat population exploded from 1991 to 1992. Trapping has since been allowed at Cedar Point to harvest the prolific rodent. Hut numbers fluctuate greatly by unit from year to year depending on the regime.



Muskrat House Count Totals for 1993 - 1995

Ottawa Division	1993	1994	1995	Darby Division	1993	1994	1995
Pool 1	517	252	150	Pool 1	48	12	20
Pool 2a	16	1	5	Pool 2	0	5	6
Pool 2b	8	21	7	Pool 3	0	20	54
Pool 2c	46	64	20	Pool 4	68	199	53
Pool 3	8	35	10				
Pool 6	0	101	5				
Pool 9	0	0	0				
Ent. Pool	15	14	5	Navarre Division			
Show Pool	0	0	2	Pool 1	77	45	10
Mini-Marsh	0	9	5	Pool 2	141	100	50
MSU 3	8	328	400	Pool 3	486	39	10
MSU 4	5	17	6				
MSU 5	66	33	55	Cedar Point			
MSU 6	0	26	225	*Pool 1	8500	698	150
MSU 7a	0	18	8	Pool 2	185	38	20
MSU 7b	0	18	3	Pheasant Farm	256	62	10
MSU 8a	7	1	2				
MSU 8b	36	11	35				
MSU LL	4	0	3				

*Muskrat house counts are estimates

WHITE-TAILED DEER SURVEY

Wildlife Biologist Coppen conducted a mid-winter white-tailed deer ground surveys and arranged for a helicopter survey with the Ohio Division of Wildlife personnel. The 1995 estimates were 91 deer and 271 deer counted by spotlight surveys and helicopter, respectively. Unlike the 1994 data, where the counts were similar to each other, the 1995 data showed significantly different estimates between the two methods.

White-tailed deer population estimates for 1994-95.

Year	Total estimated deer on Ottawa		Estimated deer / mi ²	
	Helicopter	Spotlight	Helicopter	Spotlight
1994	n = 147	n = 151	25.6	26.3
1995	n = 271	n = 91	47.3	15.9

Our 1995 winter spotlight surveys estimates indicate that we have dropped to 15.9 deer/mi² while the 1995 helicopter count increase by 1.8 times from 25.6 deer/mi² in 1994 to 47.3 deer/mi² in 1995. Our habitat may sustain less deer than other areas although at present no evidence of significant habitat degradation exists other than the potential future impacts on tree seedlings.

Wildlife Biologist Coppen completed and submitted a white-tailed deer special management plan and environmental assessment for Ottawa Division of the Ottawa Complex. All supporting documentation was included including a letter of concurrence from the State of Ohio Division of Wildlife. The framework of the proposed hunt plan includes a January primitive weapons deer hunt to reduce disturbance to migratory wildlife and minimize potential conflicts between public use groups. The management plan and EA were approved on 11/30/95 and work began for the first hunt to be conducted in January 1996.

16. Marking and Banding

Once again the refuge assisted the Ohio DOW in rounding up and banding Canada geese on the refuge and along the Sandusky Bay marsh region. The two day affair was conducted on June 27 and 28 utilizing the YCC crew, Coop Student Ken Adams and other staff. A total of 1,003 geese were banded, with an additional 249 recaptures. Refuge total was Ottawa Unit 196 geese and Navarre Unit 98 geese banded.



White-Tailed Deer

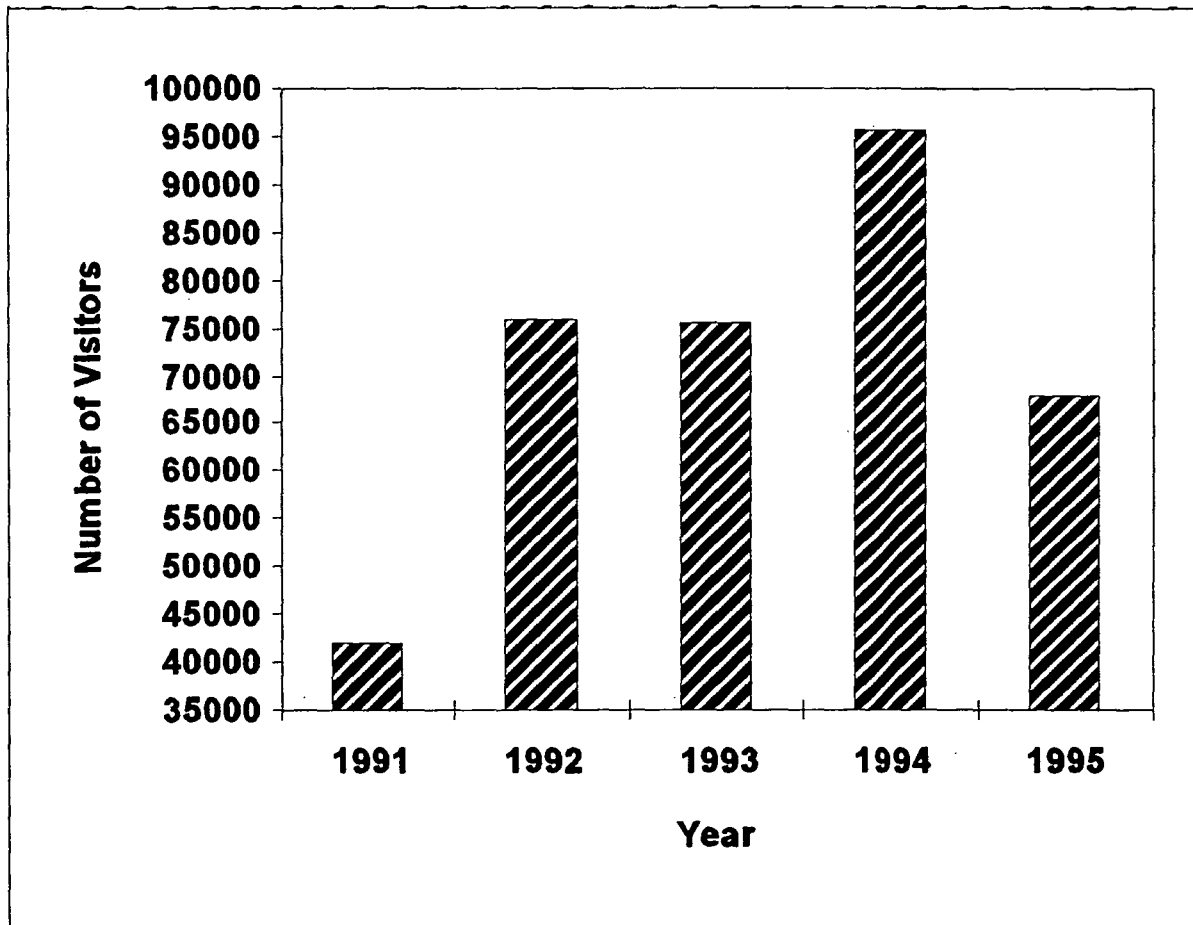


Canada Geese

H. PUBLIC USE

1. General

Ottawa's visitation in 1995 was 67,764. A vehicle road counter on the entrance road provides visitor traffic data. Peak visitor use occurs on the weekends during spring and fall bird migration periods. ORP Marshall coordinated environmental education programs for teachers and students, conducted interpretive programs, led tours, and gave off and on-site presentation. Upon his transfer in June other staff members took over as much of this as possible. However, with the small staff left it was impossible to reach the same number of people.



4. Interpretive Foot Trails

The self interpretive foot trail visitors totaled 42, 789. Refuge staff and volunteers conducted interpretive tours for 1,471 visitors. A 7-mile interpretive trail system is available for visitors to hike, bicycle, and cross-country ski. Wildlife observation and photography are two activities most visitors participate in during a visit. The visitor parking lot has an informational kiosk at the trail system head for all wildlife and non-wildlife oriented activities. The trail system visitor access is composed of dike-top roads surrounding moist soil units, open pools, and foot trails meandering through forested woodlots, including historical segments of a remnant swamp (The Great Black Swamp). Five interpretive panels and bench sites provide management and wildlife information to the visitor. An observation platform with viewing binoculars, benches, and an interpretive bald eagle panel overlooks an impoundment not far from the trail head. This year a foot bridge was built connecting the visitor parking lot to the refuge office. Other plans to upgrade the trail system include: upgrading low, wet segments along forested trail areas, and installing interpretive panels describing the history of The Great Black Swamp.

5. Interpretive Tour Routes

No year-round interpretive tour route exists at Ottawa. Twice during the year an interpretive auto tour route was set up through a 5 mile closed section of the refuge. A self guiding leaflet and corresponding numbered signs guided visitors through the refuge.

6. Interpretive Exhibits/Demonstrations

The refuge participated in the International Migratory Bird Day in May. Participating groups coordinated events for the full day. Approximately 1,180 visitors drove the 5 mile auto tour route. A similar event was scheduled for the October open house.

Presentations were given to approximately 730 people on various topics, and more than 1000 people viewed exhibits set up by refuge staff.

7. Other Interpretive Programs

Davis-Besse Environmental Compliance Office continued to lead educational tours into the Navarre Marsh to observe bird banding operations and conduct wildlife observation tours in the unit.

8. Hunting

A. Waterfowl

Canada, snow, and white-fronted geese along with ducks are hunted by permit on portions of the Ottawa Refuge. Snow and white-fronted geese occur in such small numbers on the refuge that they are rarely taken during the hunt. The hunt is conducted from blinds in and around agricultural fields and a few moist soil units. Hunting occurs four days a week from half-hour before sunrise to noon. The Ohio Department of Natural Resources administers the hunt including publicity, receipt and handling of permits, applications, preparation and distribution of special one-day permits, collections of hunting data, and operation of a mandatory check station. Personnel from the adjacent Magee Marsh Work Unit oversee the hunting operations. This year marked the 20th and 10th year that refuge hunting of geese and ducks, respectively, has occurred.

The refuge has 26 blinds of which 14 were used in 1995. Blinds 11, 12, 14, and 15 were closed again this year due to construction activities associated with Metzger's Marsh Restoration Project. Fifteen

blinds are pit blinds with flip tops to allow for better hunter concealment. A handicapped accessible blind is available and was used on five occasions. Ohio regulations for a goose season was a 30-day split season with open dates of November 10-25 and December 16-29, 1995. Ottawa's managed hunt is conducted Monday, Wednesday, Friday, and Saturday of the week. Ottawa's hunting season was open during the first split. Hunters are selected through a pre-season registration with a computerized drawing.

The opening day of the refuge hunt is reserved for a special youth hunt. The youth are selected and can bring one partner (adult) to hunt with them. This year 16 people (8 youth and 8 adults) harvested 8 geese and 7 ducks. This season 2,873 hunters applied to hunt the refuge and 192 permits were distributed. Of the 192 permits, 145 were used for a total of 286 (2 hunters per permit allowed) individuals participating in the hunt. Forty-seven (25%) of the permits were not used.

Canada goose populations on the refuge during the hunt were down and can be attributed to a low population of geese and unusually mild winter, resulting in a late migration. Hence, a lower harvest of geese and a slightly lower success rate from last year. The 287 hunters harvested 75 geese for a success rate of 26%. In addition, 38 ducks were harvested. Mallard (24) dominated the harvested. The following tables show goose population in the fall and winter on Ottawa and hunter harvest and success rates.

Ottawa Waterfowl Hunter Success for the Last Five Years					
	1991	1992	1993	1994	1995
No. Hunters	519	520	360	247	287
Geese Harvested	120	181	111	63	75
Goose Hunter Success Rate	.23	.35	.30	.25	.26
Ducks Harvested	71	81	36	48	38
Duck Hunter Success Rate	.14	.16	.10	.19	.13

Canada Goose Populations, Ottawa NWR September 1, 1991 to January 1, 1996					
	1991	1992	1993	1994	1995
09/01	140	1,050	300	260	450
09/15	1,100	3,200	520	500	2,570
10/01	2,850	600	495	2,550	2,050
10/15	5,510	14,450	1,170	2,060	3,540
11/01	6,250	6,350	1950	1,000	3,500
11/15	7,900	1,100	1,450	5,175	2,875
12/01	5,335	3,900	2,645	4,570	4,075
12/15	8,320	4,550	6,910	4,300	6,500
01/01	8,255	4,070	9,120	4,800	8,900
01/15	8,050	2,500	2,500		

9. Fishing

Refuge sport fishing is limited to a 15-acre borrow pit at Cedar Point NWR from June through August. Anyone fishing over the age of 15 years must possess a valid state fishing license. Random license checks were conducted during the season to monitor visitor compliance for regulations. Maximum use seems to occur during weekends and generally in June. Sport fish harvested were blue gill, crappie, bass, and channel catfish.

10. Trapping

The refuge is divided up into 13 adults and 3 youth trapping units. Harvesting of muskrat, raccoon, mink, fox, opossum, and skunk is permitted following State of Ohio trapping regulations and special conditions set forth by the refuge. The refuge allows trappers on the refuge after the closure of the waterfowl hunting season through March 15 the following year. The adult trapping units are awarded to the highest bidder through a sealed bid process. Youth units are awarded by a lottery system.

Four adult and one youth trapping units were opened during the 1995-96 season. This year's trapping season was from January 8, 1996 to March 15, 1996. The refuge trapping season was delayed this year due to the long waterfowl season and the Government shutdown. Because of this some trapping funds were returned back to the successful bidders. For this year, trapping units 6, 10, 12, and 13 were trapped by adults and unit 8 was open for youth trapping. Trapping units 2, 3a, and 3b were open for trapping, but there was not any interest in them. Trapping units 1, 4, 5, 7, and 9 were closed due to lack of muskrat activities and/or construction activities.

The reported harvest for the 1995-96 trapping season showed a decline in total number of furbearers harvested. Muskrat numbers showed the largest decline and the lowest number harvested since the 1989-90 trapping season. The decrease in harvest is probably a combination of reduced number of units available for trapping and a decrease in muskrat populations in the opened trapping units. Additionally, over the past five years only trapping units that are in need of having muskrats removed are open instead of just opening the areas for recreation purposes.

Revenues received for the adult units totaled \$1,673.30. Overall interest in refuge trapping was low for a few reasons including short trapping season due to longer waterfowl season, low number of muskrat, and trappers already had areas on State property. Reported harvest by unit for 1995-96 was as follows:

Trapping Unit	Muskrat	Mink	Raccoon	Fox	Opossum	Skunk
6	1,020	3	0	0	0	0
10	107	0	1	0	0	0
12	0	0	0	0	0	0
13	350	0	0	0	0	0
Y1	28	0	0	0	0	0
Totals	1,505	3	1	0	0	0

The following is a five year comparison of trapping efforts:

	91-92	92-93	93-94	94-95	95-96
Muskrat	6,521	14,612	7,372	2,251	1,505
Raccoon	40	27	43	42	1
Mink	16	24	31	11	3
Skunk	0	0	3	4	0
Opossum	11	17	17	8	0
Fox	0	3	5	1	0
Income \$	5,151.38	6,757.69	6,269.27	4,176.00	1,673.30
No. Units	5	6	7	6	5

11. Wildlife Observation

Public access into refuge units for wildlife observation is permitted on public trails at the Ottawa Division. Refuge policy requires a special use permit or a letter of authorization to enter Cedar Point NWR and the Darby Marsh Division. The Navarre Marsh Division public access is limited by the Davis-Besse Nuclear Power Plant operations. Public use activities are restricted on West Sister Island NWR to prevent disturbance of colony nesting birds and its wilderness area status.

17. Law Enforcement

Ottawa Refuge Law Enforcement Officers Lenz and Marshall completed the annual law enforcement refresher requirements in March at Fort Dodge in Iowa. Officers then completed semi-annual firearms qualifications in Michigan in September.

Refuge law enforcement capabilities were reduce significantly during 1995. Refuge Operations Specialist Roster "sat out" a year due to a physical injury. Outdoor recreation Planner Marshall transferred in June to Back Bay NWR and ROS Lenz transferred to Leopold Wetland District in November. Hence the months of November and December the refuge was without an LE Officer.

One violation was written during the year on 2/3/95. The violation was " Trespass on a NWR," the violator paid a \$100.00 fine.

EQUIPMENT AND FACILITIES

1. New Construction

Ducks Unlimited, Ohio Division of Wildlife, and the Fish and Wildlife Service conducted the final inspection of the Metzger marsh dike on December 7. The dike is co-owned by the Service and the Division. Ducks Unlimited provided engineering and contracting service for the project. E. S. Wagner was the contractor and performed well with the exception of leaving the job for a month during good construction weather.

The 7,700 foot dike required 14,733 truck loads of soil and approximately 9,000 loads of riprap to protect it from the erosive forces of Lake Erie. The borrow area for the soil was designed to provide 60 acres of marsh habitat on the refuge once the project is complete. Refuge roads were rebuilt after hauling was complete and far exceeded their original condition.

The fish access/water control/pump structure will be advertised for bid in December. Construction is expected to begin in the spring of 96 and be complete by the fall of 96. The research group will monitor and document changes in the marsh resources.

The refuge maintenance team had the frame and trusses up on a 40 X 100 foot equipment storage building. They will wait for milder weather to begin roofing.

The refuge maintenance team constructed a foot bridge connecting the visitor parking lot with the visitor center. The Ohio Audubon Council donated \$2,000 for materials for the project.

2. Rehabilitation

A culvert and screwgate was placed from the moist soil pump ditch into Farm Unit 6 to allow drainage of this unit into the moist soil pump facility. This will also allow flooding in the future.

Major renovation of the dikes along the southwest and east sides of the Pheasant Farm Marsh unit at Cedar Point NWR was started. A self-loading scraper was rented and dirt hauled on to the southwest dike to raise the dike and repair the eroded slopes. Dozers were used to push dirt to the inside slope of the east dike. Dirt work for the southwest dike and the south half of the east dike were completed by year-end. Approximately 4500 ton of rip-rap was purchased (\$25,000.00) and stockpiled on-site. Rip-rap was placed on the outside of the southwest dike by year-end.

Rip-rap was placed on the inside slope of MS-7A & MS-7B south dike.

4. Equipment Utilization and Replacement

After searching across the country unsuccessfully for a large dump truck box or similar item to dump rip-rap into so it can be placed with the excavator, the highly skilled refuge maintenance team bought the materials and constructed the "rock box" in the shop. The box should serve well by eliminating the need to dump rip-rap on the ground and then picking it up with the excavator to place on the dike slope. This eliminates the loss of rock and makes a cleaner looking dike.

The Northwest Dragline was declared surplus and sold.

A large quantity of 24" steel pipe was obtained from the NASA station at Sandusky, Ohio and was transported to the refuge during December, 1995 and January, 1996. The pipe has ½" walls with a thin concrete lining and will be used for various water control structures. Several adapters were made to allow the attachment of standard screwgates.

6. Computer Systems

A Dell Optiplex 5100 and a Dell 466/L computer systems were purchased. Both have CD drives, large hard drives, and MS-Dos - Windows Systems.



Dedication of footbridge



Maintenance team on new footbridge
left to right: Jeff Jaeger, Bob Reynolds, Dave Day, Ken McConahay



New pole barn



Rock Box built by maintenance team

J. OTHER ITEMS

1. Cooperative Programs

Memorandums of Understanding conducted between the Ohio Department of Natural Resources and the U.S. Department of Interior, U.S. Fish and Wildlife Service active during the calendar year is as follows:

1. Cooperation in the production of Canada Geese in the State of Ohio (banding operations),
2. Cooperation in the managed hunt program of Waterfowl on the refuge,
3. Research management study of the heron rookery on West Sister Island National Wildlife Refuge.

A cooperative program continues to exist between the Toledo Edison Electric Company and the U.S. Fish and Wildlife Service for management of the Toledo Edison Owned Navarre Marsh unit as part of the Ottawa Refuge Complex. Refuge personnel provide a management plan for water manipulation of the unit, and Toledo Edison personnel are responsible for overseeing the regulation of water levels.

The Ohio Audubon Council donated \$1,500.00 for the procurement of interpretive panels to be installed on the walk trails. The theme of the panels related to the history of the Great Black Swamp. The Audubon Council has also assisted the refuge with other projects through the adopt-a-refuge program in past years.

The Partners for Cultural Diversity is a cooperative program between Ottawa National Wildlife Refuge, Shiawassee National Wildlife Refuge, National Fisheries Research Center - Great Lakes, University of Michigan-Ann Arbor, and Gibsonburg and Buena Vista High Schools. Additionally, the Partners program has expanded to include a new initiative involving the Toledo Young Scholars and the Ohio State University. This new initiative will allow students of color an opportunity for continuing education within state tuition alleviating the high dollar admission for Ohio students attending the University of Michigan. With all "Partners" signing the Action Plan, this signifies an opportunity to make advancement towards a diversified work force and to advise women and people of color for recruitment possibilities, but more importantly to bring an awareness of our natural resources.



4. Credits

We would like to thank everyone who helped put this report together:

Adams	Section A; C1 & 3; D4; J1 & 3
Lenz	Section Introduction, A; D3; E7; I1, 2, 3, 4, 5, 7, 8; J1 & 3
Roster	Section B; D2; F; G1,3,4,5,6,10; H8;
Roster	Cedar Point NWR and West Sister Island NWR
Cornelius	F4; I;
Coppen	Section D5; F3,5,10; G1,2,3,7,8,11,14,16;
Schott	Section F14,15;
Marshall	Section E2,4,6; H1-11 & 17
Miller, L.	Table of Contents, Typing and organization
Miller, M.	E1,5; J4; Information Packet; Typing, editing and organization

CEDAR POINT NATIONAL WILDLIFE REFUGE

Cedar Point NWR is administered as a unit of the Ottawa Complex. The refuge contains approximately 2,500 acres and is entirely marsh except for the dike system and a few acres of remnant beach covered with hardwoods. The dike system isolates the marsh from the adjacent Lake Erie and divides the refuge into three pools. All pools are predominately cattail, bulrush, and other emergent vegetation. The pools are managed to provide stable water levels which are lowered during the summer months only to the extent necessary to encourage and maintain aquatic vegetation.

The refuge provides habitat for migrating waterfowl and other marsh waterbirds and marsh nesting habitat for a variety of birds. Herons and egrets make extensive use of the area for feeding.

The bald eagle pair was successful in producing young in 1995 (Section G-2).

The Ohio Division of Wildlife aerial sprayed purple loosestrife (Section F-10).

A 15-acre borrow pit near Yondota Road gate is open for fishing from June through August.

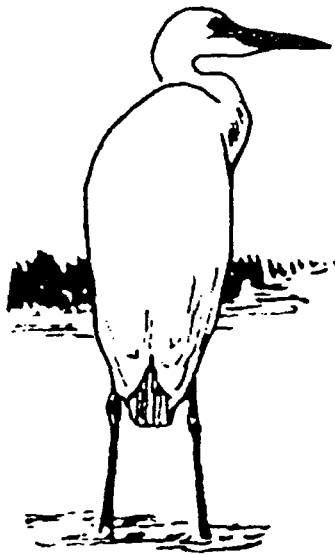


WEST SISTER ISLAND NATIONAL WILDLIFE REFUGE

West Sister Island NWR is an 80-acre island located in the western basin of Lake Erie. It is jointly owned by the U.S. Coast Guard and the U.S. Fish and Wildlife Service. Three acres, including a lighthouse, are owned by the Coast Guard but managed along with the other 77 acres by the Service as a wilderness area. Tall hackberry trees with an understory of abundant poison ivy 12 feet tall dominate most of the island. Great Solomon-seal reaches 7-9 feet in height and a great variety of ferns, wild flowers, mushrooms, and other plant life abound.

The island is composed of glacial fill over a limestone shelf. The limestone shelf protrudes along the island showing where large coves have been eroding by hydrological forces. There are no sand beaches but rather two rocky shoals for access to the island. The soil contains a great amount of clay, loam, and humus layers which annually receives a topically applied layer of nitrogen supplied by the thousands of nesting colonial birds.

West Sister Island is noted for having the largest heron/egret rookery in the Great Lakes. Great blue herons and great egrets comprise 65 percent of the nesters.





Imm. Pied-billed Grebe