

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

Oak Harbor, Ohio

ANNUAL NARRATIVE REPORT

Calendar Year 2003

Dot GB
Refuge Manager

2-8-05
Date

Don Kaufeld
Refuge Supervisor Review

3-18-2005
Date

Nita M. Zwr
Regional Office Approval

3-18-2005
Date

TABLE OF CONTENTS

INTRODUCTION.....	II
HIGHLIGHTS	IV
CLIMATE	V
1. MONITORING AND STUDIES	1
1a. Surveys and Censuses	1
1b. Studies and Investigation	6
2. HABITAT RESTORATION	14
2a. Wetland Restoration.....	14
2b. Upland Restoration.....	17
3. HABITAT MANAGEMENT	20
3a. Water Level Management.....	20
3b. Moist Soils Management	20
3c. Graze/Mow/Hay	21
3d. Farming	21
3e. Forest Managemen.....	22
3f. Fire Management.....	23
3g. Native Pest Plant Control.....	24
3h. Invasive Plant Management.....	24
4. FISH AND WILDLIFE MANAGEMENT	25
4a. Bird Banding	25
4b. Disease Monitoring and Treatment	28
4c. Reintroductions	28
4d. Nesting Structures	28
4e. Native Predator/Pest Animal Control	30
4f. Invasive Animal/Non-Plant Management	32
5. COORDINATION ACTIVITIES.....	33
5a. Interagency Coordination	33
5b. Tribal coordination.....	33
5c. Private Lands Activities.....	33
6. RESOURCES PROTECTION	36
6a. Law Enforcement.....	36
6b. Permits & Economic Use Management	36
6c. Contaminant Investigation.....	36
6d. Contaminant Cleanup	36
6e. Water Rights Management	36
6f. Cultural Resources Management.....	37
6g. Land Ownership Support	37
7. PUBLIC EDUCATION AND RECREATION	38
7a. Visitors Services	38
7b. Outreach	47
8. COMPREHENSIVE CONSERVATION PLANNING.....	47
9. PROVISIONS UNIQUE TO ALASKA	47
10. PLANNING AND ADMINISTRATION	48
CEDAR POINT NATIONAL WILDLIFE REFUGE.....	53
WEST SISTER ISLAND NATIONAL WILDLIFE REFUGE.....	54



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.

Before European settlers, the location of Ottawa NWR was part of a 300,000 acre area called the Great Black Swamp. In 1794 the last Native Americans, known as the Ottawas, were forced to flee the area. This allowed the settlers to move in and drain most of the swamp for farming and to provide pasture for livestock. Fortunately, in July 1961 with land acquired under the authority of the Migratory Bird Conservation Act, the Ottawa Division was established to preserve a portion of the remaining Lake Erie marshes. Soon after, Cedar Point was donated to the Service and accepted by the Department of Interior in December 1964.



Darby consists of 640 acres of wetland impoundments managed for migratory waterfowl and other wetland dependent species. 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. Navarre is 591 acres consisting of marsh and valuable beach-ridge habitat heavily used by migrating songbirds and nesting bald eagles.

West Sister Island was established as a refuge in August 1938 by Presidential Order. Located 9 miles out in Lake Erie, the island is designated as a wilderness area and is the site of the largest colonial nesting wading bird colony in the U.S. Great Lakes chain.

The total refuge acreage collectively is nearly 9,000 acres. It is made up of: marshes, open water, wooded wetlands, coastal wetlands, shrub lands, grasslands, cropland, and an estuary. The refuge is intensely managed through a system of dikes, ditches, pumps, and valves to manage water levels. The refuge is highly used by: migrating waterfowl, wading birds, shorebirds, rails, terns, gulls, neotropical migrant songbirds, various raptors including bald eagles and numerous mammals such as white-tailed deer. Crane Creek estuary on the refuge is one of the few remaining open systems to Lake Erie and it provides valuable habitat for spawning fish and native mollusk species.

The cities of Toledo, Detroit, and Ann Arbor are within a 2 hour drive of Ottawa National Wildlife Refuge (NWR). Cleveland, Akron, Columbus, and Dayton are between 2 to 3 hours driving distance. The refuge receives hundreds of thousands of visitors per year who primarily visit the refuge for bird watching and wildlife observation on our 7 miles of hiking trails.

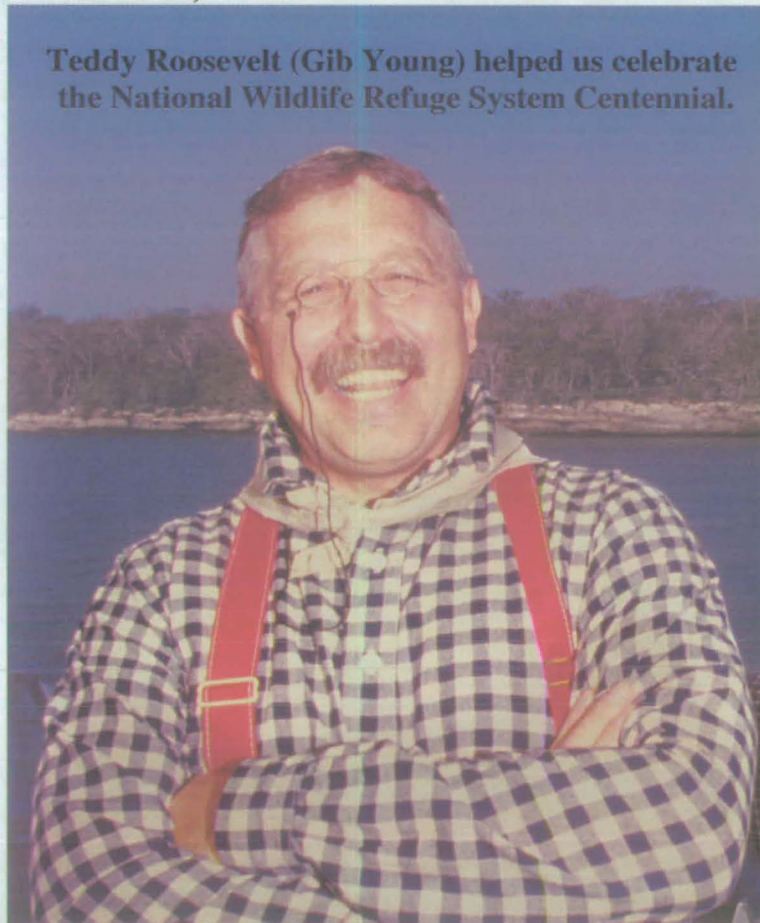


Refuge headquarters

HIGHLIGHTS

- Ottawa NWR celebrated the National Wildlife Refuge System Centennial (see **7a. Visitor Services**).
- Refuge visitation totaled 160, 258 people (see **7a. Visitor Services**).
- Ottawa NWR was awarded \$1.95 million for a new visitor education center and \$600,000 for additional land acquisition (see **7a. Visitor Services**).
- Ottawa NWR conducted its first controlled burn (see **3f. Fire Management**).
- Private lands restored 26 wetland sites for 81.8 acres, 8 grassland sites for 131 acres, and 8 miles of stream open to fish passage (see **5c. Private Lands Activities**).
- Five trumpeter swans were released at Cedar Point NWR during IMBD (see **4c. Reintroductions**).
- Forty-seven acres of Refuge Cooperative farmed agricultural fields were planted to warm season grasses to expand on 35 acres of previously existing warm season grasses. (see **2b. Upland Restoration**).

Teddy Roosevelt (Gib Young) helped us celebrate the National Wildlife Refuge System Centennial.



CLIMATE

Table 1. Annual Precipitation and Temperature, CY-2003

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ambient Temp.												
Max (F)	41.7	50.4	72.3	81.3	74.6	88.9	88.4	89.2	82.4	78.7	77.0	50.4
Min (F)	-5.5	-6.4	1.0	27.6	44.4	48.2	59.7	58.1	39.9	33.5	26.3	18.1
Ave Temp	20.9	23.4	35.7	47.3	56.7	66.5	72.0	72.6	63.4	51.5	45.3	33.1
Precipitation												
Total (inches)	0.35	0.77	2.32	1.6	3.99	2.5	2.59	2.44	2.65	3.03	3.09	2.23

Monthly temperatures were obtained from Davis-Besse Nuclear Power Plant located on the Navarre Division of the refuge.

The yearly average ambient temperature for 2003 was 50.53°F. Total precipitation for the year was 27.24 inches. It is likely that precipitation totals recorded in colder months are somewhat less than actual due to snow/sleet blowing across the collection unit rather than accumulating in the gauge.



1. MONITORING AND STUDIES

1a. Surveys and Censuses

Owl surveys

Surveys were conducted in 2003 by refuge volunteers Jack and Janet Volker. Four Species of owls were present on Ottawa NWR during 2003. Great Horned Owls and the Eastern Screech-owls were year round residents. Winter visitors included Short-Eared Owls and Long – Eared Owls.

The Great Horned Owls were extremely difficult to find compared to the three previous years. The three known nest sites were not used to fledge young. They were never seen in pairs. Previously, the “reckless juveniles”, were abundant and highly visible towards the end of October. They were not so in 2003. This brings forth concerns of West Nile Virus possibly taking a toll on the Great Horned Owls.

The Eastern Screech-owls seem to be thriving. Up to 7 screech-owls were heard one evening. Three boldly approached surveyors. This was in August which seems to be their most active time outside of the mating season. Possibly being cavity nesters has given these little owls some protection from the virus.

Short-eared Owls were reported up to April 12th. Their return was noted on December 8th. They were often seen in the open fields along Veler Road, but have been seen elsewhere.

It is a joy to report Long-eared Owls were seen for the second year. On December 26th, five of these owls were found roosting in a single tree. There may have been more but we did not want to disturb them so the area was left immediately. Likely, it was only with the help of a heavy snow cover to muffle our footsteps that we were able to approach these owls.



Long-eared owl

Butterfly Surveys

19 different species were observed for a total of 1,035 individuals. The 5 most common found were: Cabbage butterfly (857), Summer Azure (52), Red Admiral (48), Least Skipper (16), and Spring Azure (15). Surveys were completed by Black Swamp Bird Observatory on the Navarre division of the Ottawa NWR Complex. Four transects are walked twice a month.



Eagles

Ottawa NWR Complex had a total of 5 active bald eagle nests, with 4 out of 5 nests producing young (Table 3).

Table 2. Bald eagle nests on Ottawa NWR complex: CY 2003

Location	Nest	Incubation initiation	Estimated hatch date	# Young fledged
Ottawa NWR	Butternut	2/18/03	4/14/03	1
Ottawa NWR	Ottawa	3/17/03	4/10/03	2
Ottawa NWR	Magee			0
Navarre Marsh Unit	Davis Bessie	3/26/02	4/28/03	2
Cedar Point NWR	CPNWR East	3/16/03	4/22/03	2
Cedar Point NWR	Cedar Point	3/23/03	Tree down 4/4	0

Waterfowl

The Ottawa NWR Complex is primarily a stopover for migratory waterfowl in both spring and fall. However, the refuge maintains a small population of ducks (mainly mergansers, mallards, scaup and black ducks) and a few thousand Canada geese throughout the winter. Waterfowl numbers peak in the fall with large concentrations of dabblers, mallards, and black ducks. Throughout the months of September through April, two aerial counts per month are conducted by the Ohio Division of Wildlife. Waterfowl data presented below is based on these surveys.

A total of 1.35 million duck use days and over 520,000 goose use days were recorded in 2003 based on 243 use days. A cold spring left the Refuge marshes frozen over during the spring survey period accounting for low overall use days.

Table 3. Selected Waterfowl Populations on Ottawa NWR Complex during migration and over winter, 2003.

SPECIES	AVERAGE POP. ¹	PEAK POP. ¹	USE DAYS ¹
Mallard	2342	6385	569009
Black Duck	212	924	51516
Gadwall	654	2965	158873
Pintail	131	525	31914
Green-winged Teal	953	6200	231611
Blue-winged Teal	29	180	6966
Wigeon	700	3895	170181
Shoveler	29	280	6966
Wood Duck	10	100	2430



Table 3. continued

SPECIES	AVERAGE POP. ¹	PEAK POP. ¹	USE DAYS ¹
Scaup	1	15	243
Merganser	1	15	243
Ruddy duck	0	0	0
Ringneck	8	100	1944

¹ Calculated over 7 months

Marsh Birds

Marsh birds are surveyed using protocols of the ODOW for the Ohio Breeding Bird Survey. For general marsh bird counts, evening surveys are conducted by volunteers following the protocol of the Long Point Bird Observatory in Canada. Both protocols require the use of taped calls but each differs by the amount of time spent at each station, the extent and layout of survey routes and the selection of morning versus evening surveys. Virginia rails, soras and moorhens are abundant throughout the refuge complex. Least and American bitterns are found in a few units of the refuge each year.



Black-crowned night heron



Amphibian Surveys

Amphibian night-call surveys are conducted each spring on Cedar Point NWR, Ottawa NWR, Darby Division of Ottawa NWR, and Crane Creek on Ottawa NWR to determine species richness and relative abundance of each species. The survey is done following the Marsh Monitoring Program protocol. The three most numerous species on Ottawa include bullfrogs, green frogs and northern leopard frogs.

White-tailed Deer Spotlight Surveys

Pre-harvest deer spotlight surveys were conducted during October-November, 2003. Spotlight surveys were conducted at night, starting approximately ½ hour after sunset. Deer survey data are entered into an Excel worksheet that extrapolates observed deer to the total expected deer population for the entire refuge. Three surveys were conducted prior to the 2003 deer hunt season. Deer observed are recorded into 4 categories: bucks, does, fawns, and unknown. Most deer are observed at a distance, from eye reflections from the spotlight. Since these deer cannot generally be identified, most deer are placed in the unknown category. Also, the late timing of surveys makes it difficult to distinguish between fawns and does.



White-tailed deer

For the 2003 pre-hunt survey, the number of deer observed per square mile ranged from 21.2 to 31.0, with an average of 27.3 (Table 4). Using a total area for the Refuge of 4,677 acres, this extrapolates to a total deer population of 200. For comparison, during the 2002 pre-hunt survey, the number of deer observed per square averaged 36.8 with an estimated population of 269. This indicates some success in the effort to reduce the deer population on the Refuge.

Table 4. Pre-harvest deer spotlight survey results, Ottawa NWR, October-November 2003.

Survey Date	Deer Observed					Estimated Population	Deer/square mile
	Bucks	Does	Fawns	Unknown	Total		
29-Oct	1	10	2	22	35	155	21.2
17-Nov	7	13	9	22	51	227	31.0
19-Nov	7	11	4	27	49	218	29.8
Average	5	11.3	5	23.7	45	200	27.3



Only 2 post-hunt surveys were completed. For the post-hunt survey, the number of deer observed per square mile ranged from 7.9 to 18.8, with an average of 13.4 and an estimated population of 98 (Table 5). Post-hunt surveys are considered less reliable than pre-hunt surveys. Post-hunt surveys occurred during periods when activity patterns may be altered due to weather or lingering hunting disruption and some deer may still be displaced off Refuge as a result of hunting pressure.

Table 5. Post-harvest deer spotlight survey results, Ottawa NWR, February 2004.

Survey Date	Deer Observed					Estimated Population	Deer/square mile
	Bucks	Does	Fawns	Unknown	Total		
10-Feb	0	0	0	31	31	138	18.8
18-Feb	0	0	0	13	13	58	7.9
Average	0	0	0	22	22	98	13.4

Woodcock surveys

A woodcock survey route was established in 1999 on Ottawa. There are 13 count stations along the route spaced 0.4 miles apart. The 2003 survey was completed and recorded 13 peenting woodcock. Thirteen peenting woodcock were recorded in the 2002 survey as well.

Bird Censuses

The Toledo Naturalist Association began its second year of conducting a bird census at Cedar Point NWR. Census information was collected monthly or bimonthly from the end of March through November with the exception of June, in which no survey was completed. Point count data collection totaled 10 days with 185 species recorded. The most individuals recorded in the spring occurred on March 30th with 8,392 birds and for the fall on September 28th with 32,234 birds. The spring count was considerably lower than last years which had 23,018 as the most individuals recorded on April 14th. This is likely the result of a cold spring in which all the water was froze up until late spring. Fall counts were more similar to 2002 which reached 31,485 birds on the September 28th survey of that year.

Indigo bunting photo by Michael Williams



Passerine/Neotropical Migrants

Neotropical and other passerine migrants are monitored each spring and fall through a combination of point counts and mist net stations located on two units of the refuge. The data is collected by Black Swamp Bird Observatory (BSBO), a local conservation organization that receives funding through Challenge Cost Share grants and local support. BSBO also operates a Monitoring Avian Productivity and Survivorship (MAPS) site which is located on the Navarre Division of Ottawa NWR. See section 1b – Ottawa SUP# 31540-03002 for more details.

1b. Studies and Investigations

Reports were received in 2003 for the following studies:

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 use and population status of various colonial nesting birds on West Sister Island. Annual nest counts are conducted between June and July to count active nests (15% of island). The number of breeding birds by species is then estimated by extrapolation. High Double-crested cormorant numbers continue to be of concern, while numbers of great blue herons and great egrets are currently stable.

Table 6. West Sister Island Breeding Pair Information 1993 - 2003

Species	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Great Blue Heron	2393	1591	1380	1225	920	1160	1107	1180	906	1007	987
Great Egret	742	1036	1120	687	705	807	840	840	640	733	700
B.C. Night Heron	746	726	560	500	480	467	387	453	427	393	460
Double-Crested Cormorant	307	580	1480	1467	1380	1513	2073	2200	2607	2787	2613
Snowy Egret	8	10	10	10	13	10	13	14	13	13	14

Presently there are 3 concerns confronting colonial waders on the island. Two of them addressed by this study are habitat loss and habitat degradation from double-crested cormorant fecal deposition. Habitat loss, due to canopy height increase, continues to pressure black-crowned night-herons compressing them toward the western end of the island. It was decided that hand cutting trees would encourage shrubby regrowth of the vegetation and may allow expansion of night heron nesting. A goal of 5 acres over 5 years is to be cut. About a half acre was cut in 2003. Last year was the first year the night herons responded to our efforts at cutting. There was excellent nesting use in the trunk-sprouted hackberry trees. The second concern involves habitat degradation from white wash by cormorants nesting and roosting in the same areas. Highly acidic guano produced by cormorants degrade lower shrubs and under story. At the present time, there



is no clear cut solution to the cormorant issue. A third concern involving contaminants found in herring gull chicks is being investigated.

Ottawa WMS19, SUP# 31540-03002. Migrational Movements and Habitat Usage of Passerines on the Ottawa NWR, Ohio - Julie Shieldcastle, Black Swamp Bird Observatory.

This long-term study by the Black Swamp Bird Observatory to monitor the population status of passerines in the Great Lakes region and to better understand the relationship between enroute habitat and their breeding ecology was continued on the Ottawa NWR complex. Lake Erie may present a barrier that most passerines will not cross when migrating north. Large build ups of migrants occur along the southwestern shoreline of Lake Erie, creating excellent opportunities for study and attracting large numbers of birding tourists. Monitoring Avian Productivity and Survivorship (MAPS) station information is also included in this report.

yellow warbler

photo by Michael Williams

Spring

The 26th spring season began April 12th at the primary passerine banding station, Navarre Division of Ottawa NWR. This site is a barrier beach ridge along the southwest shore of Lake Erie. Operations are conducted daily weather permitting from mid-April to early June.



One advantage of long term studies is that of determining longevity of species. Generally the Navarre site will have between 200 and 300 birds (previously banded) return to the site. Some highlighted returns this year are listed on the following table.

Table 7. Neotropical Migrant Bird Recapture Highlights for 2003

Species	Minimum age
yellow warbler	11 years
indigo bunting	7 years
prothonotary warbler	7 years
prothonotary warbler	5 years
Eastern Kingbird	5 years
Baltimore oriole	5 years
common yellowthroat	4 years (4 different birds)

Ottawa site-

This is the fifth spring migration surveyed at this site. The area consists of dogwood thicket habitat approximately 3/4 mile south of the Lake Erie coast and adjacent to marshland. This site will be used to compare bird use of the general area in relationship to the primary site at Navarre. It provides the ability to look at lake effect and ridge versus block habitat types. See Table 8 for banding results.

Fall

Navarre site-

The 14th fall season began August 2nd at Navarre. Operations are conducted daily weather permitting from mid-August to mid-October. Twenty-six nets are run from ½ hour before sunrise to at least 11:00 AM.

Ottawa site -This is the second fall migration surveyed at this site. Results are shown on Table 8.

Table 8. Bird banding summary

Season/ Location	2003 total birds banded	2002 total birds banded	1989-2002		
			Total	High	Average
Spring					
Navarre	7,835	9,764	110,336	10,111	7,881
Ottawa	317	456	818	456	204
Fall					
Navarre	5,237	6,708	58,297	7,232	4,484
Ottawa	254	651	1,315	664	657

Ottawa SUP#31540-02008. Differential Habitat Use by Two Native Turtle Species in a Lake Erie Wetland. Susan Tran, Kerry McKenna, and Daryl Moorhead, University of Toledo, OH.

Patterns of distribution and habitat use, for the midland painted (*Chrysemys picta*) and map turtle (*Graptemys geographica*) were examined at the Ottawa NWR during the summer of 2002 and 2003. Basking traps were used in the study, and netted a total of 317 turtles (284 midland painted turtles and 33 map turtles) across both years. Traps were only placed in managed marshes during the summer of 2002, but in 2003, traps were also placed in adjacent channels. Painted turtles and map turtles showed significant habitat preference between marshes and channels. With one exception, map turtles were captured only in channels whereas painted turtles were captured in both habitats. Painted turtles tracked by radiotelemetry spent 82.2% of the time in marshes, confirming results of ANOVA and isodar analysis. However, map turtles spent 55.0% of their time in marshes, contradicting trapping data suggesting little use of marshes. Data generated isodars (plotted lines representing species distribution between 2 habitats) describing significant habitat preference for painted turtles in 2 of 3 habitat pairs. Painted turtles were again shown to prefer marsh habitats in both cases. Our results indicate that



differences in habitat use exist between species and that behaviors of the species also differed between habitats.

This study will continue in 2004 to: complete emergent vegetation surveys and analysis,



Painted turtle

collect and analyze 2004 trapping and radio telemetry data, and to expand isodar analysis. The ultimate goal of this project is to develop a predictive model that can be used to forecast the individual and combined effects of interspecific competition and habitat characteristics (or manipulation) on patterns of habitat use by native turtle species.

Ottawa WMS46, SUP# 31540-03001. 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 populations of shorebirds along the southwestern coast of Lake Erie during spring and fall migrations; 2) to explore 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 units; 5) to fulfill requirements for site identification of the Western Hemisphere Shorebird Reserve Network (WHSRN).



Lesser Yellowlegs
photo by Michael Williams



BSBO compiled data from the first 5 field seasons of this study for submission of the Western basin Lake Erie marsh as a WHSRN site. In September 2000, the Western basin marshes of Lake Erie were designated a WHSRN site of Regional importance.

The 2003 field season was the 9th full year of data collection for shorebird migration. A total of 28 species were recorded on Ottawa Refuge with dunlin (51,046), killdeer (3,574), lesser yellowlegs (2,303), pectoral sandpiper (2,281), and long-billed dowitcher (1,452) being the top five recorded for the entire year. Individuals of all shorebird species counted totaled 64,796.

Ottawa WMS - Metzger Marsh

Metzger Marsh is a 650 acre Lake Erie coastal wetland jointly managed by Ottawa NWR and the Ohio Division of Wildlife. Until the 1970's, the marsh was protected from Lake Erie by a naturally occurring barrier beach, which reduced the effects of storm damage, but still allowed water and fish passage. High Lake Erie water levels eroded the beach in the 1970's and exposed the marsh to wave action, greatly reducing wetland vegetation. In 1996, a 7,700 foot dike was built to protect the marsh and reestablish vegetation. The dike incorporates a fish passage and sampling structure to allow water, fish, and nutrient exchange between Lake Erie and the marsh. After dike construction was completed, the passage was closed from 1997-1998 for vegetation establishment. The Army Corps of Engineers permit specified that the marsh remain open to Lake Erie for 4 years, from March 1998 to March 2002. One year prior to construction, and from 1998 through 2002, surveys and studies were completed to document the effects of the project on invertebrate, fish, bird, and plant communities. In March of 2003, the results of these research projects were compiled and put into a final report that was then submitted to the U.S. Army Corps of Engineers. The Corps found that The U.S. Fish & Wildlife Service and the Ohio Division of Wildlife were in compliance with the mitigation terms and conditions of permit 93-001-2, and that no further coordination with the Corps be required of the Service and Division.

Ottawa WMS. Evaluation of invasive species control techniques at Crane Creek wetland, Western Lake Erie. Kurt Kowalski, Doug Wilcox, and Martha Carlson, USGS Crane Creek is a drowned-river-mouth wetland along the shore of western Lake Erie within the boundaries of Ottawa National Wildlife Refuge (ONWR) in which wetland plant communities have been degraded by high lake levels and anthropogenic effects. As a result of recent low lake levels, emergent plant communities are becoming established along portions of the shoreline with exposed wetland sediments, and invasive species such as common reed (*Phragmites australis*) are dominating localized areas. Existing literature and previous research in ONWR suggest that early attention to these invasive species could have long-lasting effects on the success of restoration. This study evaluated the effectiveness of five management treatments targeting *Phragmites* that were applied following aerial spray of herbicide. In one growing season, treatments of cutting, raking, and hand-sprayed herbicide for control of *Phragmites* were assigned to fifty plots in the *Phragmites*-dominated areas. Quadrat sampling of wetland vegetation within the plots was performed prior to and following treatments. Soil samples were collected for bulk-



density and seed-bank analyses. Preliminary results indicated that raking was a key component for increasing species richness, and a combination of cutting and spraying led to decreased *Phragmites* biomass and increased biomass of other wetland species.

Ottawa SUP# 31540-03010. Floristic Composition of Cedar Point NWR. Rick Gardner, TNC.

Three hundred and eighty-one species representing 92 plant families were found during the study, of which 281 species or 74% are considered as native to Ohio. A floristic summary for the refuge is shown in Table 9. The flowering plants or Angiosperms composed nearly 99% of the flora. The plant family Poaceae was the most represented with 45 followed by the Asteraceae with 44, Cyperaceae with 30, and Polygonaceae with 15 species. The largest genus was *Carex* with 15 species, followed by *Polygonum* with 10 species.

Table 9. Summarizing the floristic diversity of Cedar Point National Wildlife Refuge.

	Families	Genera	Species	Species & lesser taxa
Fern & Fern Allies	4	4	5	5
Gymnosperms	0	0	0	0
Angiosperms				
Monocotyledons	17	56	109	110
Dicotyledons	71	178	267	268
Grand Total	92	238	381	383

*Includes subspecies, varieties, & hybrids

The majority of the non-native species occurred on the dikes and are not invasive to natural plant communities. There are 31 species occurring within the refuge that are considered by the Ohio Division of Natural Areas and Preserves as invasive to natural areas. The most common of these 31 species are *Ailanthus altissima*, *Alliaria petiolata*, *Butomus umbellatus*, *Cirsium arvense*, *Lolium pretense*, *Lythrum salicaria*, *Myriophyllum spicatum*, *Phalaris arundinacea*, *Phragmites australis*, *Potamogeton crispus*, *Rhamnus cathartica*, and *Typha angustifolia*.

A total of 18 state rare species were found during this survey (Table 10). The majority of the rare species occur in the beach-dune communities and marshes at or near Little Cedar Point with a few scattered localities in other parts of the refuge. There were some previously reported rare plant populations that were not relocated in this study.

Table 10. List of rare species found during the 2003 study of Cedar Point National Wildlife Refuge.

Scientific Name	Common Name	State Status	# of Records
<i>Apocynum sibiricum</i>	Clasping-leaved Dogbane	T	1
<i>Artemisia campestris</i>	Beach Wormwood	E	3*
<i>Cakile edentula</i>	Sea Rocket	P	3
<i>Carex aquatilis</i>	Leafy Tussock Sedge	P	3**
<i>Carex atherodes</i>	Wheat Sedge	P	3
<i>Cyperus schweinitzii</i>	Schweintz' Umbrella-sedge	T	1
<i>Euphorbia polygonifolia</i>	Seaside Spurge	P	2
<i>Lophotocarpus calycinus</i>	Southern Wapato	P	1
<i>Oenothera oakesiana</i>	Oakes' Evening-primrose	T	1
<i>Panicum tuckermanii</i>	Tuckerman's Panic Grass	E	2
<i>Potentilla paradoxa</i>	Bushy Cinquefoil	E	1
<i>Sagittaria cuneata</i>	Northern Arrowhead	E	2*
<i>Sagittaria rigida</i>	Deer's-tongue Arrowhead	T	2
<i>Schoenoplectus americanus</i>	Three-square Bulrush	E	2
<i>Smilax herbacea</i> var. <i>lasioneura</i>	Pale Carrion-flower	P	1
<i>Triplasis purpurea</i>	Purple Sand Grass	P	3
<i>Zizania aquatica</i>	Wild Rice	T	1

*1 population not relocated in 2003

**2 populations not relocated in 2003

Ottawa SUP# 31540-02016. Testing Flora and Fauna Indicators of Coastal Wetland Health in Lake Erie. Ference DeSzalay, Kent State University.

This research was done as part of a larger effort to develop procedures to accurately measure aquatic ecosystem integrity to gauge the success of management strategies. Methods are being developed to monitor habitat quality by sampling fish and other vertebrates, macroinvertebrates and plants, and using these data to calculate metrics (e.g., taxa diversity, abundance of indicator taxa or guilds, health of individual organisms) that are correlated with environmental integrity of these habitats. These metrics are used to calculate multimetric Indices of Biotic Integrity (IBI), which are a composite score of several metrics of the sampled community. This particular project involved sampling various flora and fauna and comparing the applicability of different sampling methods. Their conclusion in sampling is that richness of plants, fish, and invertebrates in these wetlands were not correlated with each other. This indicates that the different groups are responding differently to the physical characteristics in the wetland (i.e., a wetland with low plant biodiversity may still support high fish biodiversity). If this pattern is generally true, IBIs that only sample one group of species (e.g. plants) may not provide information on the biodiversity of other groups (e.g. fish or invertebrates). Therefore, IBIs based on more than one taxa group may provide a better picture of the overall habitat quality in the wetland.



Ottawa SUP# 31540-03003. Migrational Movements and Habitat Usage of Rails on Ottawa NWR. Tom Kashmer, Black Swamp Bird Observatory.

A pilot project was initiated in 2000 to determine migrational timing and habitat use of rails in the marshes of western Lake Erie for both spring and fall. This secretive group of birds holds special interest to bird enthusiasts of many kinds. Rich in hunting tradition of a bygone era where wild birds were staples in the markets of the country, these species have seen considerable population declines, not due to the market hunters, but severe habitat loss and degradation. These wetland obligate species are some of the first that have declined with the vast wetland loss of the past century but also may be responding to the recent increase in wetland restorations across their range. Little information is known about migratory timing and habitat use in Ohio by these secretive webless wetland birds known as rails and it is a major objective of this study to acquire a better understanding of the habitat needs of this group and to refine the migrational timing as they pass through Ohio. This group, made up of sora, Virginia rail, and King rail has received little study, but are highly sought after as watchable wildlife. Identification of habitat use and when the majority of the population migrates through Ohio will enhance the recreational opportunity for those citizens interested in observing this group of species. While this group of birds has proven to be difficult to observe, let alone count, recent studies along the east coast have developed cost-effective methods to sample adequate sample sizes to identify migrational timing and some habitat preferences. This study incorporates that methodology using lead traps with electronic callers. Lead traps are walk-in traps with long fence like leads that funnel moving rails towards the trap. An electronic caller using a loop CD of the Virginia rail and sora calls are utilized to attract birds to the area to increase the capture rate.

In spring 2003, the Darby traps were run 18 April to 23 May. Fifty-one rails were captured and included 39 sora and 12 Virginia rails. The Ottawa NWR trap was operated 8-18 May and captured 21 rails (16 Virginia rail and 5 sora). The single trap in Navarre was operated from 20 April to 6 May. The Navarre trap was placed in 15-20 inches of water that held consistent throughout the study period. The Darby and Ottawa traps started in 1-2 inches of water which eventually evaporated to a moist soil condition.

Additional years of data will address peak migration periods, better delineate the onset of the breeding cycle, gather information on the habitat preferences of these species, and to identify spatial requirements for the species in habitat use. Identification of the termination of migration and onset of breeding will be useful to improve survey criteria for breeding populations trends presently being conducted and reviewed.

The following studies took place during 2003

Ottawa SUP# 31540-02008. Migratory Shorebird Habitat Use and Availability in the Southwest Lake Erie Marsh Region. Tara VanWyck, The Ohio State University.



Ottawa SUP# 31540-03007. The effects of Environmental Contaminants on the Health of Fish-Eating Birds of the Great Lakes. *Keith A. Grasman, Ph.D. ,Wright State University.*

Ottawa SUP# 31540-03018. Competition for Pollination Amongst Native Purple Loosestrife and Non-native Purple Loosestrife. *Anthony Kinyo, University of Akron, OH.*

Ottawa SUP# 31540-03017. Effects of Habitat and Pollution on Fish Community Structure. *Roger Thoma, Ohio EPA.*

Ottawa SUP# 31540-03014. Purple Loosestrife Genetics. *Nicolas Jelinski, University of Wisconsin*

Ottawa SUP# 31540-03013. Metzger Marsh's Fish Assemblage. *Eugene Braig, Ohio State University.*

Ottawa SUP# 31540-03006. Identifying Quality Stopover Sites for Migrating Neotropical Passerines. *Paul Rodewald, Ohio State University.*

Ottawa SUP# 31540-03012. Wetland Classification and Satellite Mapping Project. *Nathan Torbick and Phil Haney, University of Toledo.*

Great Lakes Coastal Wetlands Indicators program

The US Environmental Protection Agency has given monies to the Great Lakes Commission's grant program to fund studies that will assist in the development of an index of biotic integrity (IBI) of Great Lake coastal wetlands. Researchers from various agencies and institutions are collaborating to concurrently develop IBI's for coastal wetlands in the other Great Lakes. Once this IBI has been developed it will be used to assess wetland health and measure changes in habitat quality from restoration efforts.

The following studies involved sampling on Ottawa Refuge as part of this project's goal.

- SUP# 31540-03016. Benthic Invertebrates. *Jan Ciborowski, Univ. of Windsor, Canada.*

- SUP# 31540-03015. Water and Sediment Core Samples from Crane Creek. *Michael Ferguson, John Carroll University.*

-SUP# 31540-03011. Metzger Marsh Fish Sampling. *Danny Tanner, US E.P.A*

2. HABITAT RESTORATION

2a. Wetland Restoration

On-Refuge

A project to restore 75 acres of wetland on the refuge was initiated this year. A dike along the north side of what is known as Pool 9 on the refuge was rebuilt by contractors. The second phase of the project is to rebuild the west side dike in 2004. For the past few years, pool 9 habitat has been degraded and characterized by a monoculture of reed



canary grass, with a few patches of *Phragmites*. It is hoped that by reconstructing the 2 dikes, management will regain its ability to manipulate water levels to control the invasive species, and encourage more plant diversity.



Pool 9 North dike

Off-Refuge

This season the Partners for Fish and Wildlife Program once again performed wetland restorations and established grasslands on private lands. This year all of the wetland restorations were performed by private contractors. Several contractors have been utilized over the last few seasons in an attempt to find one or two that suit the needs of our program. We now have at least three we use on a regular basis with more wanting to give restoration work a try every year. Wetland restorations were completed in two counties in Michigan (Lenawee and Hillsdale) and in two counties in Ohio (Ottawa and Hancock). Twenty-six sites were restored for a total of 81.8 acres.

Most of the wetland basins restored in 2002 were still not full through summer due to the lack of rainfall. An abundance of rainfall from September through December 2003 however, has filled all of our basins to capacity. This may be a problem next spring as the basins now have no flood storage capacity to handle the spring rains and snowmelt. We have had no reported problems as of yet. Beginning in the 1999 field season we required landowners to place chain-link fence on the face of newly constructed berms and dikes in an attempt to try and reduce muskrat damage. The use of chain-link fence on the face of every berm that is built has proved to be a tremendous success in keeping muskrat damage from occurring.



Due to changes in the Conservation Reserve Program (CRP) and the popularity of the Wetland Reserve Program (WRP), the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA) are completing an ever increasing number of wetland restorations on their own. In addition, areas within the River Raisin watershed (most of Lenawee county) were eligible for the United States Department of Agriculture's new Conservation Reserve Enhancement Program (CREP). These programs are sometimes in direct competition with the Service's wetland restoration efforts. The popularity of the CREP program in Lenawee County, Michigan and the financial incentives associated with it reduced our wetland projects by over 50%. The River Raisin CREP is complete and we hope that we will see an increase in wetland projects in that area. In addition, the Michigan Department of Environmental Quality is requiring permits on an ever increasing number of wetland restoration projects. These factors, in conjunction with the vast number of sites we have already restored, are making potential "quality" restoration sites more difficult to find.



Dombrowski wetland restoration

With the new "HabITS" reporting system and the new filing and documentation requirements, the Partners Program has finally turned the corner to a more process intensive program. The benefit is that there is much more documentation to justify our biological decisions and actions. The drawback is that there is ultimately less product (in the form of much needed wildlife habitat) being put on the ground.

In 2001, our partner, Ducks Unlimited was awarded a North American Wetlands Conservation Act (NAWCA) grant for southeast Michigan. The Partners for Fish and Wildlife Program's role in the grant is to deliver the private lands portion of the grant. Wetland restorations will be completed through this grant through the 2003 field season to fulfill our commitment to all of our partners involved in the NAWCA grant

Hillsdale County, Michigan

The weather during the field season was hit or miss. Storm systems with large amounts of rainfall would periodically shut down projects but the ground seemed to recover quickly due to the extreme dry conditions from the previous summer. It required several large downpours before the soil in the 2002 wetland projects was even saturated. The wet conditions during summer made it the best grass growing year we have ever seen.



All of our grassland projects are off to a great start. Some resembled three year old stands of mature native warm season grasses. Toward late summer, early fall, the ground became so wet that several of our projects had to be postponed until 2004.

One of the blessings about using contractors is that I do not have to spend time working on down equipment. The drawback is that the contractors have other jobs to complete and must fit the restorations in when they can. Due to all of the above mentioned factors, the field seasons seem to produce less restoration projects. Eighteen wetland restorations were completed for a total of 47.5 acres in Hillsdale County.

Lenawee County, Michigan

Again this year in Lenawee County the U.S. Fish & Wildlife Service extended the cooperative agreement with the local Soil and Water Conservation District to implement the Partners for Fish and Wildlife Program. This was the sixth year that we worked through an agreement with the district. The local chapter of Pheasants Forever is also very instrumental in carrying out the cooperative agreement. Through this agreement, 4 wetland basins were restored for 9.5 acres.

Since the 1997 field season, landowners are being held responsible for maintenance of wetland restoration projects. I am happy to report since 2000, no wetlands were repaired due to poor design and/or construction flaws at the time they were built.

Ottawa and Hancock County, Ohio

Through partners like Ducks Unlimited, we are finding more wetland projects in Ohio. Although most of the projects in Ohio are not typical wetland restoration projects, we will still contribute funding if it is available. Due to the flat nature of this part of the state, most projects require extensive dike work sometimes requiring dikes on all four sides to pool and contain the water. These projects can be quite expensive and would be very cost prohibitive if it were not for contributions from partners such as Ducks Unlimited and the Ohio Division of Wildlife. There were four such projects in 2003 for a total of 24.8 acres. Several projects are pending waiting for permit approval and other process related snags. Several others are still in the construction phase.

2b. Upland Restoration

On Refuge

Native Warm Season Grasses

47 acres of Refuge Cooperative farming agricultural fields were planted to warm season grasses to expand on 35 acres of previously existing warm season grasses. Inclement weather prevented staff from being able to get farming equipment into fields for planting in early May, which was the targeted time to plant our grasses and forbs. The last crops planted in FU 9 were 31 acres of Roundup ready beans and 15 acres of Roundup ready corn. Ideally, beans would have been the last crop planted in both fields, but in order to



take advantage of outside funding through a Ducks Unlimited and Pheasants Forever's NAWCA grant obligation, the fields were chosen for restoration immediately this year before adequate planning. The fields were sprayed by refuge staff with 4 oz/ac of Plateau and 22 oz/ac of Roundup WeatherMax on 6/23/03. The fields were then planted with a grass and forb mix from Ossenbaugh Grass & Wildflower Seeds, Iowa, on June 1 and 2, 2003 by Mark Witt and Jim Schot from Pheasants Forever. The grass seed was purchased by Pheasants Forever and the forbs were paid for out of station funds in addition to the cost of herbicides used.

The thirty-five acres of already existing warm season grasses located adjacently to FU 9, planted by Pheasants Forever 3 or 4 years ago, were burned April 24th, 2003 for the first time. The grasses responded extremely well to the burn, which seemed to kill most of the shrubs that were coming up. Wildflowers were ordered from Ossenbaugh that were intended to be planted after the burn by Pheasants Forever. However, inclement weather and time kept this goal from being achieved. By the time the fields were dry enough to seed, vegetation had grown too tall. The seed will be stored in a freezer and then planted in the spring of 2004 after a second burn.

The Adam Grimm grassland planting that took place in 2002 has yet to come up very well, especially in the southern half of the unit where there was very little if any warm season grass germination. Fox tail barley, dandelion, thistle and wild carrot were the dominant species according to refuge staff. In hopes of encouraging prairie germination, 12oz/ac of Plateau were applied June 2nd and 6th, 2003. The Plateau appeared to have worked and grasses were found growing in the northern half of the unit as well as the southern half. For the first time the grasses even seeded out in late summer. However, although seed heads reached a height of 3ft, the clump size and leaf height were very minimal. This could be explained by a number of reasons. One, is that dandelion, thistle, and wild carrot, although stunted, still were very abundant and out competed the prairie grasses in nutrient and water consumption. Another explanation is potential poor soil conditions. The unit had been farmed for years and this may have taken a toll on the richness of the soil. In an attempt to rule out these two possibilities, the unit was sprayed with 2-4D amine salt October 24th and will likely be sprayed again in the spring with a broadleaf killer, and soil testing will be done to determine the condition of the soil.

Off-Refuge

Native Warm Season Grasses

In 2001 the U.S. Fish and Wildlife Service with cost share assistance from the Joint Venture Coordinator purchased a Truax no-till rangeland drill for planting native warm season grasses. The drill is stored by Pheasants Forever in Lenawee County, Michigan and is on loan to them whenever they need it. The purchase of the drill will allow the Partners for Fish and Wildlife program to plant better nesting cover around our wetland sites.



Lenawee, Hillsdale, and Monroe County, Michigan

With the addition of the new no-till rangeland drill and the conventional-till drill restored in 1999, we continue with our partners Pheasants Forever, to plant better nesting cover for waterfowl and other migratory birds. Due to the financial incentives offered by the CREP program, there was a sharp reduction in the number of grassland sites that were planted in the River Raisin CREP area. Landowners in Lenawee County only planted 15 sites to native warm season grasses for a total of 26 acres. In Hillsdale County Michigan, most of which is not in the River Raisin CREP area, landowners planted 4 sites for a total



of 47 acres. After three years of planning with many partners, the City of Monroe finally planted the native warm season grasses at Munson and Mill Race Parks. The project, which is less than a mile from the River Raisin, will provide nesting habitat for migratory songbirds as well as waterfowl. The two grassland sites totaled 80 acres.

Grass planting at Munson property

Ottawa, Erie and Sandusky County, Ohio

In 2003, the only Ohio grasslands that were planted were associated with the wetland projects we completed. Two such sites were completed for a total of 4.2 acres.

Riparian Corridor

In 2002, Private Lands Biologist Steve Dushane began to assist Fisheries Biologist Susan Wells on a dam removal site she had been working on at the Boy Scout camp "Camp Miakonda". The dam was on the Ottawa River in Toledo, Ohio and seemed to be put in for aesthetic purposes only. The dam was finally removed in the early winter of 2003. While rubble was still being removed from the site, the river had returned to a more normal flow showing riffles and the gravelly substrate. The removal of the dam opened up eight miles of the Ottawa River to fish passage.

In 2002 Private Lands Biologist Steve Dushane and Fisheries Biologist Susan Wells began work on some stream bank work on the Ottawa River as well. The project consisted of debris removal, re-sloping and reshaping of banks, as well as reestablishing native vegetation along the banks of the river. The project improved 5480.4 ft of stream



bank as well as opened up 5.2 miles of stream to fish passage. The final stages of the project were wrapped up in early spring 2003.

3. HABITAT MANAGEMENT

3a. Water Level Management

Water levels are managed on Ottawa NWR to allow for impoundment rehabilitation, moist soil plant production, and spring and fall migrations. The goal is to ensure a diversified habitat for a variety of wildlife species throughout the year.

All of our management capabilities revolve around gravity flow and pump structures on diked wetland impoundments. To maintain water level management, dikes must be fully functional and intact. With Ottawa NWR complex having nearly 35 wetland impoundments spread over approximately 9,000 acres, maintaining dikes is not a simple task. Reconstruction and general maintenance projects can require large amounts of time, manpower, and equipment. Our maintenance crew does an excellent job of ensuring that structures, pumps, and dikes are fully functional and working.

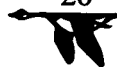
Water level management activities for 2003 were as follows:

Early spring snow melt and rain usually fill many of the units higher than the desired water level. Mid to late March gates were opened as needed to draw units down slightly to a more desirable level. MS 8a and MS 8b were the only units drawn down completely in the spring for construction purposes. Pumping water back into units began July 17th for the Entrance pool, MS3, MS4, MS5, Pool 6, 7A, 7B, and Mini Marsh. Water levels in these units had dropped significantly throughout the summer. All units were full by August 4th. Pool 2a was drawn down starting August 11th for fall shorebird migration. This drawdown began too late and minimal shorebird use was observed. Waterfowl hunt units and MS 8a and MS 8b were pumped up from September 22 through October 9th. Pumps were occasionally turned on in these units throughout the season to maintain desirable water levels.

3b. Moist Soils Management

Moist soil unit 8b was drawn down so that construction on the south dike of the unit could continue. The south dike of the unit was in very poor condition and no longer functioning. In 2002, the old dike was pushed up next to Krause Road, eliminating part of a refuge ditch, but providing an area for a public walking trail off of Krause Road. A new ditch was dug on the south side of Krause Road to replace the eliminated ditch. The north dike in MS 8b is also in need of repairs. Steep slopes and cave-ins make the edge of the dike top hazardous to visitors and staff. To begin the construction process trees were cleared from the dike slope. Construction will continue in 2004.

MS 8a was originally drawn down because it was going to be a place to borrow dirt from for the north dike of MS 8b. However, it was decided that this wouldn't be necessary and buckwheat was planted in this unit and then flooded in the fall.



3c. Graze/Mow/Hay - NTR

3d. Farming

Farming on Ottawa NWR is done primarily on a cooperative basis, with farmers taking a share of the crop and leaving a share for wildlife. Fields are normally planted on a two or three year rotation with corn, soybeans and wheat being the primary crops.

Cooperative farming on Ottawa Refuge headquarters continued in 2003 with 3 cooperative farmers, Wade Sharlow, Paul Blausey, and John Brough. It is standard at Ottawa NWR for each farmer to purchase seed, fertilizer, and herbicides in addition to giving the Refuge a share on some of the crops. An exception to this is a special low ear placement, early tipdown species of corn that was planted in units FU6, 93A and 93B which was not harvested and was flooded in the fall for waterfowl. To compensate the cooperative farmer for his efforts and money in planting nearly 30 acres of this special corn on the refuge, he was able to plant 90 acres where he'd receive 100% of the harvest. Compensation was determined by estimating the cost to the farmer of planting the corn at \$150/acre, totaling \$4,500. Average cost of renting agricultural land in this area is \$50/acre, therefore 90 acres free of rent (in other words, refuge takes no share of the crops) would compensate the farmer for his \$4,500. Another exception to the Refuge standard was on the Blausey tract. Paul Blausey agreed to plant warm season grasses on part of the refuge property he farms in exchange for the refuge share on crops. And finally, in addition to cooperative farming, refuge staff planted 71 acres of buckwheat on the refuge for wildlife use. Table 11 shows the breakdown of crop acreage totals and what units where planted.

MS 8a buckwheat in flower



Following in accordance with the Ottawa NWR CCP, some of the fields that were planted in crops previous years will be restored to grasslands or left undisturbed to allow for succession. For 2003, 104 acres have been taken out of farm production. This includes units 9A, 9B, 10E, 11A, and waterfowl blind 151 area of Woodies Roost. By restoring crop fields back to more natural vegetation, we are able to provide a more diverse habitat to accommodate a wider range of species. Pheasants Forever is partnering with the Refuge to accomplish grassland restoration.



Table 11. Farm units, Crops, Acreages, and Harvest for 2003

CROP	UNITS	TOTAL ACRES	Average Harvest for 2003
Harvest Corn	2F, 2A east	37 acres	117 Bu/Ac
Refuge Corn	6A, 6C, 93B	29 acres	--
Soybeans	2B, 2C, 10B, 9D, 11C, Schneider	136 acres	35 Bu/Ac
Buckwheat	93A, 6B, 6D, MS 8A	71 acres	--
2002 Wheat	9E, 10C, 10D, 11B, 11D, 2E Blausey	213 acres	
2003 Wheat	2B	20	--
Total Acres Farmed:		486 acres	

3e. Forest Management

Approximately 1/2 acre of trees on West Sister Island was hand cut to a four foot height in 2003. These cuts are adjacent to black-crowned night-heron nesting habitat. These cuttings encourage regeneration of shrubby vegetation, which is preferred nesting habitat for black-crowned night herons. The cuts re-sprouted as predicted and in 2002 for the



Wildlife biologist Ron Huffman and volunteer Monty Kauffman

first time night herons responded to our efforts at cutting. There was excellent nesting use in the trunk-sprouted hackberry trees. Original plans called for 1 acre cuts annually for 5 years, after which success of the program would be evaluated. Unfavorable weather conditions and lack of a suitable boat for transport resulted in no cuts being completed in 2001.



A 20' by 30' fenced in deer enclosure was placed in the woods north of Krause Road in April of 2002. The purpose of the enclosure is to determine how much the deer are affecting the succession of the woods by over grazing. In spring of 2003 there was a clear difference in presence of vegetation within the enclosure compared to outside the enclosure. However, by late summer the difference was less obvious.



3f. Fire Management

Biologist Steve Dushane with assistance from Biologist Ron Huffman completed work on a burn prescription for the native grass areas of the Schoonover WPA. The burn was conducted in April of 2003 and was a complete success. The response of the grasses was amazing. The grasses are planned to be burned again in 2004.



The thirty-five acres of already existing warm season grasses located adjacent to FU 9, planted by Pheasants Forever 3 or 4 years ago on Ottawa NWR, was burned April 24th, 2003 for the first time. The grasses responded extremely well to the burn, which seemed to kill most of the shrubs that were coming up.



3g. Native Pest Plant Control

Ottawa NWR Complex manages an extensive system of diked wetlands. Diked wetlands are very expensive to build and maintain. Refuge staff face a continual battle to maintain the integrity of this system. Trees such as willows and cottonwoods are rapid colonizers along dikes, and as they grow in size, represent significant threats to dike integrity. As these trees age, they cause dike damage by providing flow channels along root systems, or extensive damage and subsequent erosion when they are blown over during high wind events. Dike maintenance is much easier and more economical when dikes are maintained while trees are still small shrubs. Shrubs are controlled by a combination of mowing and spraying with pesticides. During 2003, no dikes were sprayed with pesticides.

3h. Invasive Plant Management

Galerucella sp. beetles were reared on the refuge for a third year. Staff built a second enclosure similar to the one constructed in 2002. Nearly 200 pots were filled with purple loosestrife plants in the early spring and placed in the enclosures. Beetles were then collected from near by established *Galerucella* sp. populations and put into the enclosure to lay their eggs. Once larvae hatched, the majority of pots were placed in show pool with the help of a local girl scout troop. Additional pots were placed at Darby on pool 1 and pool 2. It is estimated that approximately 142,500 beetles were released.



Above: Biologist Huffman explaining to the girl scouts their mission and purpose.

Beetle enclosures



Biologist Huffman marking beetle release site



Monitoring of beetle populations at Cedar Point and Darby found that in 2002, Cedar Point NWR had *Galerucella* sp. beetle populations significantly expanding. Colonies had been found at least half way through the main pool and Pheasant Farm. In 2003 the beetles seem to be persisting in these areas still. The beetles are likely originating from the Mallard Club State Wildlife area that borders Cedar Point on its west side where sustainable beetle populations have been established.



Between the Division of Wildlife helicopter, refuge staff, and volunteers, approximately 77 acres of purple loosestrife and phragmites were sprayed with pesticide.

Left: Volunteer Jack Volker VS Purple Loosestrife

Purple loosestrife infestations were mapped on Ottawa, Cedar Point, and Darby. Refuge staff visually inspected units, mapping areas on aerial photos. These areas were then input into a GIS database.

4. FISH AND WILDLIFE MANAGEMENT

4. Fish and wildlife Management

4a. Bird Banding

Duck

This was the third year in a row Ottawa NWR staff teamed with the Division of Wildlife staff at Crane Creek Research Station to band wood ducks. Although wood ducks are the target species, mallards and other waterfowl are banded as well. Several sites were chosen; two on Ottawa Refuge (MS6 and Crane Creek) and one at Darby (Pool 4). Sites are baited with corn and ducks are captured with ground launching rocket nets that are manually detonated.



Refuge manager Dan Frisk



Table 12. 2003 Ottawa NWR wood duck banding results.

Species	Individuals Banded	Individuals w/ Reward Band
Mallard	259	49
Blue-wing teal	4	
Black duck	1	
Wood duck	96	

Canada Goose

For several years The Ohio Division of Wildlife has banded Canada geese throughout the state of Ohio by flying with a helicopter to round geese up, while people on the ground assist with herding the geese into a net to be banded. Canada geese are abundant on the refuge and a good source for the state to reach banding quota. To assist the state and foster interagency coordination, Ottawa NWR staff assists with this banding project on the refuge.



Above: Refuge Operations Specialist, Sara Mason



Left: Herding geese into the net during the goose roundup



Trumpeter swans

A pair of trumpeter swans nested on Ottawa NWR and fledged 8 signets. Division of Wildlife banded and collared 5 of the young Trumpeter swans as part of their reintroduction program (see section 4c.). Trumpeter swans are a state endangered species.

Common Terns

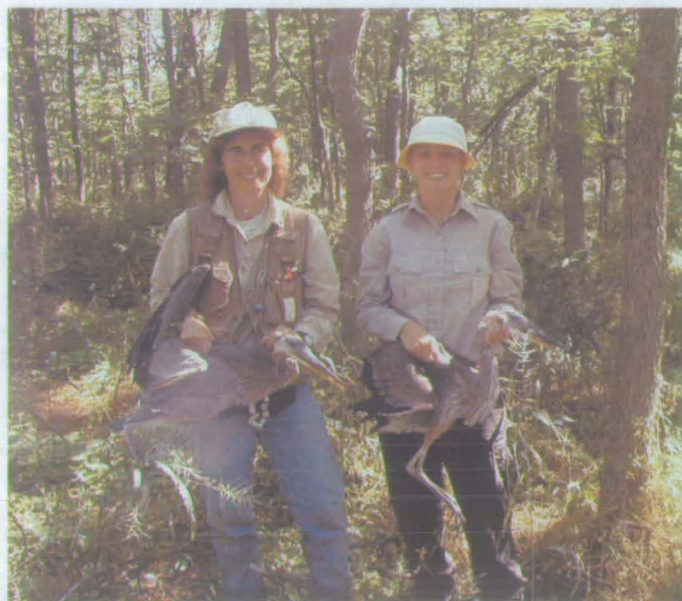
One hundred and eleven common terns were banded from the nesting platforms discussed in section 4d - Nesting structures.

Wading Birds

In coordination with the **Ottawa WMS28** (see section 1b.) various colonial wading birds were banded on West Sister Island. The number of individuals banded are listed by species in table 13.

Table 13. Banding results for West Sister Island NWR

Species	Number of Individuals banded
Double crested cormorant	4
Great egret	43
Great blue heron	6
Snowy egret	4
Black-crowned night heron	26
Herring gull	73
Total birds banded	156



L-R: Volunteer and BSBO president Julie Shieldcastle and Sara Mason, Refuge Operations Specialist with immature Great blue herons



Diana Shuler from Big Oaks NWR climbing a hackberry tree to retrieve an immature Black-crowned night heron from its nest



Rails

Rails are banded on Ottawa NWR and its' Navarre Division as part of project Ottawa SUP# 31540-03003 (see section 1b.). Navarre had 4 sora and 6 Virginia rails banded.

4b. Disease Monitoring and Treatment

4c. Reintroductions

Ohio's Trumpeter Swan Reintroduction Plan calls for the release of about 150 trumpeter swans in selected Ohio wetlands through the year 2006. The goal is to establish a breeding population of at least 15 pairs. The project will enhance the diversity of wildlife in the state and promote wildlife enjoyment opportunities. The Ohio Division of Wildlife administrators and coordinates the program.

Five swans were released at Cedar Point NWR during IMBD. Special guest Ohio Senator Voinovich took part in the reintroduction by releasing one of the swans himself.

Senator Voinovich with trumpeter swan



4d. Nesting Structures

Blue Bird Boxes

Bluebird nest boxes were re-established on the Ottawa and Navarre Divisions of Ottawa NWR in 1998. Nest boxes are monitored weekly by volunteers. Currently there are 70 nest boxes on Ottawa, and 56 boxes on Navarre. Boxes are primarily used by tree swallows, and occasionally by house wrens. House sparrow use is discouraged by regular cleaning of the boxes and removal of adults when possible. As an eagle scout project, one young man placed predator guards on all the nest boxes on Ottawa NWR, and replaced approximately 15 boxes.

Tern Platforms

Common Tern nest

Although the state-endangered common tern occurs statewide during migration, nesting colonies have always been restricted to the western basin of Lake Erie. Artificial nesting structures have been successful in attracting nesting birds to more secure nesting areas. Two



platforms were built in 1994 to provide nesting habitat for common terns in Crane Creek on the Ottawa Division of Ottawa NWR. The platforms had little success during the first three years due to predation by great horned owls. The numbers of nests ranged from 48 to 60 with only 2 or 3 fledglings surviving each year. Modifications to the platforms that allowed young terns to escape and hide under raised structures on the decks of the platforms have greatly improved the fledgling survival rate in the past 10 years (Table 14). In 2000, the platforms were moved from Crane Creek to Pool 1 due to lower water levels in Lake Erie. In 2001, 3 more platforms were built providing a total of 5 nesting platforms. In 2002 one more was added to Pool 1 totaling 6 platforms in addition to 2 more placed at Navarre division of Ottawa NWR. This year 2 more were added to the 6 creating 9 platforms total. This was the first year a platform was placed at Cedar Point NWR and attracted terns, but had no nesting. However, overall production increased 64% from 2002 and was a record for the restoration program.

Table 14. Common Tern Platform Nesting History on ONWR 1997 - 2003.

Year	Pairs	Nests	Young	Young/Nest
1997	34	36	27	0.75
1998	30	40	23	0.58
1999	40	61	47	0.77
2000	50	70	91	1.3
2001	55	63	103	1.63
2002	50	71	54	0.76
2003	50	60	117	2.34

Table 15. 2002-2003 Common Tern Platform Nesting on Navarre Division, ONWR.

Year	Pairs	Nest	Young	Young/Nest
2002	1	1	2	2
2003	1	1	3	3

Common tern
photo by
Michael Williams



Wood duck nesting boxes

There are 32 wood duck boxes on the refuge that are checked periodically during nesting to count eggs and count egg membranes to determine how many fledge. Common mergansers nest in the boxes as well, and screech owls can be found roosting inside during the cool winter months.



Above: Kathy Huffman checking wood duck box



Left: Hatching wood ducks

4e. Native Predator/Pest Animal Control

Muskrats are important management tools of wetlands, since they help to maintain open water in otherwise dense vegetation. However, they also cause losses of time, money and habitat when they burrow into dikes and roadways. Therefore, muskrat numbers are monitored through hut survey counts. Hut numbers fluctuate greatly from year to year depending on water management within the units. Excess muskrats are controlled through a refuge trapping program.

Muskrat house counts were conducted from dike roads throughout Ottawa NWR Complex during October 17th and 21st to provide an index of muskrat populations. House counts were as follows: Ottawa-349, Navarre-Not surveyed, Darby-4, Cedar Point-295. House counts underestimated the true number of houses because 1) roadside surveys are inadequate in large and/or densely vegetated units, and 2) counts occurred early in the season when many houses were just beginning to be constructed. Casual observations later in the season, after vegetation had died back and house construction was completed, indicated that a substantial number of houses were not recorded during the October survey. The early survey period means that numbers of houses observed are not comparable to years prior to 2001-2002, when earlier Refuge trapping seasons began. Prior to 2001-2002, surveys were conducted later in the season due to the late Refuge trapping opener, following the end of waterfowl season.



Trapping units were selected based on number of observed houses, and the habitat condition of the units. Trap units this year had relatively low number of houses observed, but had a high proportion of open water to vegetated areas. Thus, it was deemed desirable to trap these units to prevent further reduction of vegetation.

Immature bald eagle resting on muskrat house



Trapping was conducted at Ottawa and Cedar Point. Ottawa consisted of 4 units. Unit 1 (total house count 11) was Pool 9 and the unmanaged marsh area of Crane Creek between the Stange Road bridge and Diefenthaler's. Unit 1 was set up to target primarily raccoons. Unit 2 (total house count 79) was MS4. Unit 3 (count 66) was MS 5. Unit 4 (total house count 63) was the walking trails area, consisting of MS 8a, MS LL, Woods, and Pools 2a, 2b, and 2c. Two youth trapping units were awarded by random draw of interested youths in the local commuting area. Youth Unit 1 (total house count 36) was at Ottawa, consisting of MS 7a. Youth Unit 2 (total house count 36) was at Ottawa, consisting of MS 7b. Cedar Point Pool 1 was trapped as 1 unit, with 256 houses observed during surveys. No trapping was conducted at Darby due to the

low number of houses observed. Navarre was not considered a feasible trapping unit due to security concerns at Davis-Besse Nuclear Power Plant.

Minimum bids for each unit were set at \$100.00. Awarded bids were \$420 for Ottawa Unit 1, \$859 for Ottawa Unit 2, \$844 for Ottawa Unit 3, \$460 for Ottawa Unit 4, and \$2227 for Cedar Point. Total income from the trapping program was \$4810.00. No fee was charged to the youth trapper.

The trapping season ran from November 18, 2002 to March 15, 2003. Pool 9 of Ottawa Unit 1 and Youth Units 1 and 2 were closed to trapping until December 25th, due to waterfowl hunting season. Trappers at all Ottawa units were restricted to access until after 12 noon during waterfowl hunting days. All Ottawa units were closed, and traps tripped or removed, during the Refuge deer hunt. Bald eagle nesting exclusion zones were closed to trapping beginning on February 1, 2003.

Trapping was greatly hindered by early freeze up of Refuge marshes in November. Thick ice cover persisted through most of the trapping season.



Table 16. Reported harvest by unit for 2002-2003 was as follows:

Unit	Muskrat	Mink	Raccoon	Fox	Opossum	Skunk
Ottawa 1	96	4	18	0	4	0
Ottawa 2	350	1	4	0	0	1
Ottawa 3	170	0	0	0	0	0
Ottawa 4	207	1	23	0	10	0
Youth 1	21	0	0	0	0	0
Youth 2	124	4	0	0	0	0
Cedar Point	873	0	5	0	0	0
Totals	1841	10	50	0	14	1

Table 17. The following is an 8 year comparison of trapping efforts:

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03
Muskrat	2,251	1,505	3,131	3143	442	3600	1928	5406	1841
Raccoon	42	1	22	4	0	64	32	66	50
Mink	11	3	3	4	0	12	4	4	10
Skunk	4	0	0	0	0	0	2	5	1
Opossum	8	0	11	0	0	21	7	24	14
Fox	1	0	0	0	0	0	2	2	0
No. Units	6	5	5	4	2	6	4	5	7

4f. Invasive Animal/Non-Plant Management

Gypsy Moth

A gypsy moth trapping program has been conducted on Ottawa NWR since 1983. The purpose of the trapping program is to monitor low-level gypsy moth populations and help determine when more intensive survey methods should be employed. Seven gypsy moth traps were placed throughout Ottawa NWR this year. This year a total of 103 moths were trapped, with all 7 traps catching gypsy moths. Trap catches at Ottawa NWR averaged 15 moths per trap in 2003. This is a slight increase from 13 moths per trap in 2002. Based



on these results, gypsy moth populations are not expected to impact forest resources in the immediate future.

5. COORDINATION ACTIVITIES

5a. Interagency Coordination

Magee Marsh Wildlife Area administered by the Ohio Department of Natural Resources, Division of Wildlife borders Ottawa NWR. However, wildlife does not acknowledge invisible human boundaries and will move freely between both marshes. Staff at Magee and here at Ottawa have agreed that it is in the best interest for the resource and for each agency to combine our efforts and coordinate with each other on various management activities. Some of these activities include: controlled waterfowl hunt, controlled deer hunt, wildlife surveys, and water level management. Coordination for these activities involves meetings and in some cases sharing man power or equipment.

Agencies involved with the Partners for Fish & Wildlife Program include: Natural Resources Conservation Service, Farm Service Agency, Michigan Association of Conservation Districts, Lenawee County Soil and Water Conservation District, Hillsdale County Soil and Water Conservation District, Monroe County Soil and Water Conservation District, Ottawa County Soil and Water Conservation District, Sandusky County Soil and Water Conservation District, Monroe County Planning Department, City of Monroe, Monroe Public Schools, Boy Scouts of America, Greater Toledo Area Metroparks, Hillsdale County Drain Commission, Lenawee County Drain Commission, Michigan Mountain Bike Association, Pheasants Forever, Ducks Unlimited, The Nature Conservancy, Michigan Department of Natural Resources, and Ohio Division of Wildlife.

5b. Tribal coordination - NTR

5c. Private Lands Activities

More than 100 individuals were contacted by mail or telephone to encourage involvement in the Partners for Fish & Wildlife Program. Many individuals learned about the program through the Partners for Fish and Wildlife Display. The display was exhibited at various presentations as well as at several USDA workshops. The best Partners for Fish and Wildlife outreach tool still remains word of mouth.

Site evaluations were conducted on over 60 parcels of land. Technical assistance was provided to many landowners who had areas that were not restorable but still wanted to help benefit wildlife and/or the environment. Technical assistance was also provided to landowners having projects that were too costly for the program to restore with our available funding.

Wildlife Biologist Steve Dushane continues to participate in the East Fork Advisory Group. This group was started by the Nature Conservancy to help guide conservation practices on the East Fork of the West Branch of the St. Joseph River. This stretch of the St. Joseph River is one of most biologically diverse streams in the Midwestern United



States. It's inhabitants include more than 17 different species of mussels including the Federally Endangered club shell mussel.

Farmers Home Administration (FmHA) Conservation Easement Program

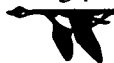
The Ottawa National Wildlife Refuge manages a total of 29 conservation easements in three different states. There are 16 easements in Michigan, 11 in Indiana, and 1 in Ohio. During 2003, many of the easements were not visited. Refuge Manager Dan Frisk and Refuge Operation Specialist Doug Brewer did visit several sites in Indiana to try to resolve resource issues. Private Lands Biologist Steve Dushane worked with the Farm Service Agency (FSA) and a surveyor to have an inventory property proposed for easement surveyed. The parcel of land was on the Saline River in Monroe County, Michigan. Establishment of the new easement is still pending while FSA works out the details with the East Lansing Ecological Services Field Office. Several easements still need to be re-posted and some need to be posted for the first time.

Schoonover Waterfowl Production Area

The Ottawa National Wildlife Refuge manages one waterfowl production area (WPA) located in Lenawee County, Michigan. The WPA has a 53-acre wetland that was finally restored in 1997. In the spring, the wetland holds high numbers of redhead and ringneck ducks with an occasional canvasback mixed in. In 1999, 20 acres of the WPA were planted to a native warm season grasses mix. The mix consisted of big bluestem, Indian grass, Eastern gamma grass, switchgrass, and a mixture of native forbs. In 2000 the grasses really began to show and many even went to seed. In 2001 however, the grasses became a little more crowded with competition. An application of Plateau herbicide seemed to help reduce competition.

An additional wetland restoration was completed on the WPA in 2002. A small basin that drains into the main 53 acre wetland was restored and enhanced by removing tiles and constructing a low level berm. Installation of a water control structure will aid in the management of the wetland.

Biologist Steve Dushane with assistance from Biologist Ron Huffman completed work on a burn prescription for the native grass areas of the WPA. The burn was conducted in April of 2003 and was a complete success. The response of the grasses was amazing. The grasses are planned to be burned again in 2004.



2003 Private Lands Habitat Numbers

Michigan Wetland Restorations

	<i>Sites</i>	<i>Acres</i>
Lenawee County -	4	9.5
Hillsdale County -	<u>18</u>	<u>47.5</u>
MICHIGAN TOTALS:	22	57

Ohio Wetland Restorations

	<i>Sites</i>	<i>Acres</i>
Ottawa County -	3	22.6
Hancock County -	<u>1</u>	<u>2.2</u>
OHIO TOTALS:	4	24.8

Michigan Warm Season Grass Restorations/Establishment

	<i>Sites</i>	<i>Acres</i>
Hillsdale County -	4	47
Monroe County -	<u>2</u>	<u>80</u>
MICHIGAN TOTALS:	6	127

Ohio Warm Season Grass Restorations/Establishment (PF Challenge Grant)

	<i>Sites</i>	<i>Acres</i>
Hancock County -	1	1.9
Ottawa County -	<u>1</u>	<u>2.3</u>
OHIO TOTALS:	2	4.2

Ohio Riparian Area Restoration

	<i>Sites</i>	<i>Units</i>
Lucas County -	1	8 Miles of Fish Passage

Wetland Totals: 26 Sites for 81.8 Acres

Grassland Totals: 8 Sites for 131.2 Acres

Riparian Totals: 8 miles of stream opened to fish passage



6. RESOURCE PROTECTION

6a. Law Enforcement

Refuge Officer Frisk attended LE refresher training in Des Moines, IA in March. Due to a conflict with other training, RO Brewer attended LE refresher with R5 officers at NCTC in April. One NOV was written in 2003 during the controlled deer hunt. The violation was for hunting in violation of a State law, using radios to aide in hunting.

A potential baiting case occurred on property adjacent to the refuge during the waterfowl season. A landowner was seen spreading bait near one of the waterfowl blinds on his property. Refuge officers and Special Agents investigated, but did not see any hunting occurring over the bait throughout the season. The incident did cause several blinds on the adjacent refuge to be closed for several weeks do to the presence of the bait. The landowner was contacted and informed of his impact on public hunting. No further action was taken.

A woman was abducted by her ex-boyfriend in Toledo and driven to one of the refuge gates. She was then lead into the refuge and taken about a mile into the refuge by the man, who possessed a shotgun. At some point the woman was able to free herself and ran out of the refuge. The man turned the shotgun on himself and committed suicide on the refuge. County Sheriffs investigated, but did not contact refuge officers or management. Refuge personnel saw television reports the next morning. The County Sheriff was called and a report was faxed to the refuge. Updated contact information was sent to the Sheriff so that notification can be made in the future.

6b. Permits & Economic Use Management

Letter of Authorization

Letters of Authorization are issued to volunteers for wildlife or economic monitoring and surveys, and activities relating to public use. Letters of authorization are no longer issued for studies conducted on the refuge, special use permits are issued for this purpose. On occasion, letters of authorization may be issued for alternative purposes. Twelve letters of authorization were issued for the CY 2003.

Special Use Permit

Special Use Permits are issued to researchers conducting studies on the refuge and for wildlife photography in closed areas. Eighteen permits were issued in CY 2003 and 2 permits were still active from CY 2002.

6c. Contaminant Investigation

6d. Contaminant Cleanup

6e. Water Rights Management

6f. Cultural Resources Management

Archeological surveys were completed by contractors on the Diefenthaler tract, Pool 9 project site, and the future visitor education center site.



Archeological surveyor at Diefenthaler

6g. Land Ownership Support

Appraisals were conducted on 12 properties in 2003 for possible land acquisitions from willing sellers. Offers were made to all land owners and Hemminger and Kontz accepted.

<u>Landowner/Tract</u>	<u>Acres</u>
Kontz	73
Cornell	41
Reau	1.3
Woodhaven Club	28
Johlin	71
Suchora	41
Blausey	132
Price	112
Helle	88
Finkin	57
Hemminger	14
Boucher	2
Sub-total	660.3



7. PUBLIC EDUCATION AND RECREATION

7a. Visitors Services

Public use on the refuge remained high and increased slightly, possibly because of the centennial events. Visitation for FY03 was 160,258 people. Many programs were held throughout the year for the public and groups interested in the refuge. 365 students attended educational programs, the annual 5th Grade Conservation Tour which brings about 600 students to the refuge was cancelled this year due to bad weather. In April the refuge hosted the 2003 Northwest Ohio Envirothon Competition. 310 students representing 62 high schools in 20 northwest Ohio counties attended. The students answered questions on aquatic ecology, land use and the environment, forestry, wildlife and soils. Bowling Green High School won the competition and will continue on to the state competition in June.

The Ohio Junior Duck Stamp Program received 487 entries from students across the state. Erin Anderson, 15 from Waterville, Ohio received the Best of Show award in this years contest. The judging was held at the Carroll Township Hall due to heightened security at the Davis Besse Nuclear Power Station. Judges this year were Adam Grimm, 2000 Federal Duck Stamp Artist; Harold Roe, Wildlife Artist; Mike Crofts, refuge volunteer; Tom Kashmer, refuge volunteer; and Chris Dwyer, Ohio DNR – Biologist. Private Lands Biologist Steve Dushane and the many members of the committee did a terrific job with the judging while coordinator Rebecca Hinkle was on maternity leave. An award ceremony was not held this year due to staff conflicts.

The refuge office was open weekends during peak visitation times, specifically in April, May, September, and October. This would not have been possible without the many refuge volunteers that staffed the front office and ran the Ottawa National Wildlife Refuge Association bookstore which opened in the spring. In March the refuge expanded the number of auto tours offered from two each year to one a month. This was received with great enthusiasm by the visiting public and many good comments were passed on to the refuge staff. The refuge office and bookstore are also open on auto tour days and this too was seen as an improvement by the public.

IMBD

Ottawa NWR celebrated IMBD on May 10th, 2003 with numerous festivities and plenty of migratory birds on site. The morning kicked off with an open house and auto tour of the refuge. Hay rides were given throughout the afternoon with staff members and volunteers along to interpret and answer questions. Various wildlife and conservation organizations took part in this national celebration by providing tables set up under tents with informative handouts, displays, and volunteer presenters. A special trail continuation dedication took place mid morning with Senator Voinovich and Mrs. Voinovich; Nita Fuller, Region 3 Chief of Refuges; Sam Speck, Director Ohio Department of Natural Resources (ODNR); and John Daugherty, District Manager, ODNR Division of Wildlife as the guest speakers invited to celebrate the occasion. The trail provided a connection from Ottawa NWR to Magee Marsh Wildlife Area



administered by the ODNR, Division of Wildlife. The day was made even more special with the release of 5 trumpeter swans at Cedar Point NWR. This event gave congressional representatives and media an opportunity to not only visit Cedar Point NWR (which normally has very limited public access) but to also release such a magnificent bird into the wild. Total visitation for the day reached approximately 4,000 visitors.



Trumpeter swan
release at Cedar Point
NWR

Trail dedication

Left to Right: Dan Frisk,
Sam Speck, Nita Fuller,
Mrs. Voinovich, Senator
Voinovich, John
Daugherty



Other events held on the refuge during the year included the refuges Annual Fishing Day event. Approximately 20 people attended a day of fishing, contests and educational activities. The refuge was again the host location for the Maumee Valley Girl Scout - Wind, Waves and Wildlife Camp. Girls ages 11-13 attend this day camp for one week in June. Activities teach the girls about birds and birdwatching, fishing, their relationship with the lake, geology, butterflies and water. For their service project the girls released Gallarucella beetles as part of our purple loosestrife control on the refuge.

Another Open House was held in October in celebration of National Wildlife Refuge Week. The event included displays by many local nature organizations, wagon rides, auto tour and a refuge centennial display. As always the event was enjoyed by all who attended.

Many events were held by the refuge in celebration of the centennial of the National Wildlife Refuge System. The first event included a weekend long celebration beginning on Friday, March 14th that included the interment of the refuge time capsule. Speeches were made by many supporters and employees of the refuge system including Charlie Wooley, ARD for Ecological Services; Manager Dan Frisk; Assistant Manager Doug Brewer; John Hinkle, President of the Ottawa NWR Association; Steve Gray, Ohio DNR, Division of Wildlife; Congresswoman Marcy Kaptur and Scott Noyes for Senator Dewine and Dennis Fligor for Senator George Voinovich. All contributed an item to the time capsule. The event moderator was Steve Pollick, Outdoor Editor for the Toledo Blade. A ceremonial groundbreaking was held for the new visitor center. Participants included many refuge supporters and partners. Due to difficulties with weather we could not get to the planned site so a refuge snow shoveling was held instead. The spirit was the same and all celebrated the meaning behind the event. Congresswoman Kaptur, Manager Dan Frisk and the other speakers then cut the refuge birthday cake and it was enjoyed by all attending. On Saturday, March 15th the refuge held a Centennial Open House and Auto Tour. Visitors could view displays about the refuge complex, the refuge system and centennial and the



Arctic National Wildlife Refuge. The Oak Harbor Post Office participated in a second day of issue ceremony, set up a table to sell the Pelican Island Centennial Stamp and the refuge offered cachets which could be postmarked with the second day of issue stamp.



Refuge Staff L-R back row: Steve Dushane and Dan Frisk; Front row: Sara Mason and Doug Brewer
Pelican Island Centennial Stamp

On Sunday, March 16th the Ottawa National Wildlife Refuge Association held its annual meeting with guest speaker Refuge Supervisor Barry Christenson. The meeting was well attended and everyone enjoyed meeting our new refuge supervisor.

The next large centennial event was held on August 20. Through a grant and generous contributions the refuge was able to charter a local ferry to take a cruise to West Sister Island NWR. Though the state's oldest refuge and Ohio's only designated wilderness area many don't know much about the island. Our congressional representatives, senators, media and partners were all invited to attend the event, the invitation included mention of a special surprise guest. Prior to cast off awards were presented to our refuge partners who assist in the protection of West Sister Island NWR. Refuge Chief Nita Fuller presented awards to Ducks Unlimited, Ohio DNR, Division of Wildlife, Black Swamp Bird Observatory and the Ottawa NWR Association. The Centennial Pendleton Blanket was also presented to Ohio DNR representing Governor Bob Taft. Special Guest Teddy Roosevelt (Gib Young) spoke briefly and welcomed all to the event. This was a rare opportunity for many of those who attended to view the island, the lighthouse, the many birds inhabiting the island and to speak to service representatives and others knowledgeable about the island.





L-R: Dan Foote, aid for Congress woman Marcy Kaptur; Dennis Fligor, aid for Senator Voinovich; Teddy Roosevelt (Gib Young); and Scott Noyes, aid for Senator Dewine



L-R: Steve Dushane and Teddy Roosevelt



All refuge staff members assisted in another centennial event at the newly created Detroit River International Wildlife Refuge. Many refuge staff participated on committees, assisted with setup, participated in the educational activities or the big event itself.

Hunting

Youth deer hunts were held on November 22nd and 23rd, 2003 during the statewide youth deer hunt weekend. Youth hunters continued to hunt 11 units (Figure 1), with 1 additional unit at Ohio DOW Magee Marsh Wildlife Area. There was 1 youth hunter per unit, accompanied by a licensed adult partner, who was allowed to hunt if so desired. Both the youth hunter and their adult partner were allowed to harvest 2 deer. The youth



hunter was initially issued an either sex permit, and the adult partner was required to harvest and check in a doe before being issued an either-sex permit. Youth hunter participation rate was 100%, with 24 youths hunting. For the adult partners, 23 of 24 adults participated in the hunt. Overall, 20 deer were taken during this hunt, for a hunter success rate of 43% (Table 18, results include Magee unit). Youth and adult hunters split the harvest at 10 each; however youth hunters harvested 5 of the 6 bucks taken. One youth and 1 adult hunter each had 2 deer.



Adult hunts were held from December 1st to 5th, 2003, during the regular statewide deer shotgun season. The number of adult hunt units was 9, with 1 alternate hunt group drawn (Table 18). This year, the alternates were guaranteed to hunt, in either the alternate hunting unit, or in an empty unit if another unit had hunters not show up. All hunters were allowed to take 2 deer in 2003. The first deer was restricted to antlerless only. Following check in of an antlerless deer, the hunters were issued a second permit for either-sex. Adults were allowed to use any legal weapon; most used shotguns, although a few hunters choose to use either muzzleloaders or handguns.

Two additional units (D1 and D2) during the adult hunt were set aside for wheelchair hunters. Wheelchair hunters were also allowed to have 2 hunting partners, as well as a non-hunting assistant. Three camouflaged ground blinds were placed in each of these units 1 month prior to the hunt season. The wheelchair hunter was initially issued an either-sex permit, and their hunting partners were required to harvest and check in a doe before being issued an either-sex permit. Wheelchair participation rate was 9 out of 10 possible hunters. Overall adult hunter participation rate was 159 (includes both disabled and alternates) out of 180 possible hunters. Adult hunter success rate was 34% overall, but decreased markedly over the last 2 days of the hunt. Only 4 hunters harvested 2 deer.

Table 18. 2003 Deer Harvest Information, Ottawa National Wildlife Refuge.

Date	Hunt	Number of Hunters	Does	Button Buck	Buck	Total Deer	Hunter Success
11/22/2003	Youth	24	8	0	5	13	0.54
11/23/2003	Youth	23	3	3	1	7	0.30
Youth Sub-Total		47	11	3	6	20	0.43
12/1/2003	Adult	30	10	3	1	14	0.47
12/2/2003	Adult	33	12	3	0	15	0.45
12/3/2003	Adult	29	12	3	0	15	0.52
12/4/2003	Adult	32	5	0	2	7	0.22
12/5/2003	Adult	35	3	0	0	3	0.09
Adult Sub-Total		159	42	9	3	54	0.34
Totals		206	53	12	9	74	0.36
Percent of Harvest			0.72	0.16	0.12		

For the first time the Refuge held an archery deer hunt. Archery hunters were allowed 3 days to hunt, Tuesday-Thursday of their assigned week. Hunt dates were January 6-8, January 13-15, January 20-22, and January 27-29, 2004. Five units were available during each hunt period, with 2 hunters per unit. Each hunter was issued an either-sex permit initially, and allowed to take a second deer upon checking in their first deer. On the Monday before their hunt, archery hunters were allowed to preview their unit, check-in, and set up tree stands if desired. Hunters were not required to check in or out after their



first day. Both long bows and crossbows were allowed. Hunters were required to return a post-hunt survey to the Refuge.

Archery participation rate was 27 out of 40 possible hunters. Low participation rate was attributed to unfavorable weather conditions, with very cold and windy weather occurring throughout the hunt period. No deer were taken during the archery hunt. Lack of hunter success is likely due to 2 factors: unfavorable weather conditions, and the timing of the hunt after the deer gun season, which had significantly reduced the deer herd and altered behavior patterns. Although hunters were not successful, the majority of the hunters were pleased with the opportunity and enjoyed the hunt. Hunters liked the freedom of coming and going without restrictions. Most hunters recommended an October hunt to increase chances of taking a deer.

A total of 74 deer were harvested during all deer hunts, with an overall hunter success rate of 36%. While the number of deer harvested increased over previous years, the success rate decreased from 40% in 2002. The increased number of deer harvested was a result of more hunters in the field, both from allowing youth partners to hunt, and ensuring that alternates were able to hunt. The increased harvest helped meet Refuge goals of reducing the deer population, in order to alleviate habitat impacts from an over population of deer. Spring 2004 observations of annual plant understory in the woodlots showed lush growth, indicating that the deer population is approaching an acceptable population level. Observations inside and outside of the walking trails deer enclosure showed no difference in spring 2004, the first time this has occurred since the enclosure was erected in April 2002 (Figures 4 and 5).

The rule change to allow 2 deer, but require a doe be taken first, increased the percentage of does taken to 72% of the total harvest. This compares favorably to 2002, when only 58% of the harvest were does. The rule change enabled the Refuge to progress towards the goal of obtaining a more balanced sex ratio in the deer herd.

Waterfowl Hunting



The Lake Erie Western Basin marsh region has a long standing history of waterfowl hunting. As part of the Refuge System's "Big" 6 public use activities and to preserve part of our local heritage, Ottawa strives to provide optimal quality hunting opportunities. To enhance the waterfowl hunt program at Ottawa,



carts were purchased with 2003 money. The carts will be provided at selected blinds to assist the hunters in carrying their gear and decoys to the blind.

Canada, snow, and white-fronted geese along with ducks are hunted by permit on portions of the Ottawa Refuge. The hunt is conducted from blinds in and around agricultural fields, wetlands and moist soil units. Hunting occurs



four days a week from one half-hour before sunrise to noon for a total of 35 days. 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 and collections of hunting data. Ottawa NWR staff assists DOW in the operation of a mandatory check station and oversight of all hunting operations. Ottawa's managed hunt is conducted Monday,

Wednesday, Friday, and Saturday of each week. Total participation this season was 647 hunters harvesting 646 ducks and 55 Canada geese.



The opening day of the refuge hunt is reserved for a special youth hunt, October 11th, 12th, and 18th. The youth are selected and can bring one partner (adult) to hunt with them. This year 47 people (38 youth and 9 adults) harvested 12 geese and 90 ducks.



7b. Outreach

The refuge also participated in many outreach events, these all included a centennial theme. Refuge staff manned a booth at the Toledo Zoo Earth Day event in April, over 5,000 people attended this event. The refuge volunteers and friends group had a display at Lake Erie Wing Watch Weekend in Erie County. Bird watchers from around the state attend this annual event to learn tips on bird watching and the best placing to view birds in the area. The refuge again participated in the Oak Harbor Apple Festival Parade. The float had a centennial theme and focused on refuge wildlife and the six priority public uses of the refuge. Fortune cookies were passed out with a centennial themed fortune. The float received third place in the general category.

In looking ahead at improvements to visitor services on the refuge, planning began for the new visitor center. Refuge staff met with the design firm and regional office staff to plan the building and discuss improvements throughout the refuge. Many new ideas were brought out and everyone is excited about the improvements that will be made. A consistent theme has been to remember the past and honor it as we move ahead into the future.

- 8. COMPREHENSIVE CONSERVATION PLANNING - NTR
- 9. PROVISIONS UNIQUE TO ALASKA - NTR



10. PLANNING AND ADMINISTRATION REFUGE STAFF

Dan Frisk, GS-0485-13, PFT

Refuge Manager

Doug Brewer, GS-0485-12, PFT

Primary Refuge Operations
Specialist

Sara Mason, GS-0485-05, PFT
Entered on duty 1/13/03

Refuge Operations Specialist

Marjorie Miller, GS-0303-7, PFT

Administrative Technician

Ronald Huffman, GS-0486-11, PFT

Wildlife Biologist

Steven Dushane, GS-0486-11, PFT

Wildlife Biologist, Private Lands

Rebecca Hinkle, GS-0025-9, PFT

Park Ranger (Public Use Specialist)

David Day, WG-5716-8, PFT

Engineering Equipment Operator

Kenneth McConahay, WG-5716-10, PFT

Engineering Equipment Operator

Eric Smith, WG-4749-8, PFT

Maintenance Worker

Nelson Reau, WG-5716, Temporary employee
Converted to Permanent position 8/10/03

Engineering Equipment Operator

Joseph E. Taylor

Student Intern

**The following are people who work at Ottawa NWR, but are not employed by
Ottawa NWR.**

Susan Wells, GS-0482-7
Transferred back to Alpena April 2003

Fishery Biologist – Alpena FRO

Kathy Huffman, intermittent

Fisheries Aid



Back row L-R: Dan Frisk, Refuge Manager; Steve Dushane, Private Lands Biologist; Doug Brewer Assistant Manager; Sara Mason, ROS; Dave Day, Equipment Operator; Susan Wells, Fishery Biologist.
Front row L-R: Marge Miller, Admin Tech; Ken McConahay, Equipment Operator; Ron Huffman, Biologist; Eric Smith, Maintenance Worker



Rebecca Hinkle, Public Use Specialist





Kathy Huffman,
Fisheries Aid and
Nelson Reau,
Equipment Operator

Fish Day 2003

Joe Taylor, Student Intern,
with Immature Great Egret

Banding at WSI



Volunteer Program

The refuge has an active and steady volunteer program. This year the volunteers worked on many new projects and some continued to work on projects they have done for the last 20 years. Volunteers worked 3,506 hours this year. Some new projects included working in the office on weekends and keeping the bookstore open. Volunteers contributed to the refuge invasive plant control program, surveys, and public education program. Volunteers constructed, installed and monitored nest structures. We would not be able to provide the number of outreach programs or services to visitors that we do without the volunteers. The Ottawa NWR Association sponsored a series of programs each month, April through October, on a variety of subjects. These were all presented by the volunteers and have inspired many to broaden their areas of work.

Seven individuals from Ottawa National Wildlife Refuge's Friends group along with Refuge Operations Specialist, Sara Mason, traveled to Washington D.C. to participate in the Centennial Refuge Friends Conference that was held Friday, January 31st through Monday, February 3rd. Refuge Friends groups and Fish & Wildlife Service Employees from all over the country participated in the conference to exchange ideas and to learn from each other. Also, various notable speakers such as Secretary of the Interior, Gale Norton, and Chief of Refuges, Dan Ashe, gave recognition to the outstanding accomplishments friends groups have made to the refuge system and expressed gratitude for their efforts.



Ottawa NWRA President John Hinkle and Secretary of the Interior Gale Norton

The highlights of the weekend were the breakout sessions held throughout the day Saturday and Sunday. These sessions were led by various presenters and gave the Ottawa friends (Ottawa NWR Association) an opportunity to both gain and share ideas that could be useful and beneficial to friends groups across the country. Sessions offered included: fundraising, the CCP process, environmental education, and public relations, among others.

The weekend wrapped up with the Ottawa NWR Association traveling to Capital Hill where they met with their members of Congress. During these meetings, the friends were



able to urge their delegates to support Ottawa National Wildlife Refuge and encourage fellow congressionals to do the same. Their efforts proved to be fruitful - Ottawa NWR was awarded \$1.95 million for a new visitor education center and \$600,000 for additional land acquisition.

Each person representing Ottawa NWR at the conference came back with ideas, new friends, and excitement. Freshly energized, Ottawa's friends are eager to share what they learned at the conference and start on new ideas and projects that will prove to enhance the richness of Ottawa National Wildlife Refuge.

11. FEEDBACK



CEDAR POINT NATIONAL WILDLIFE REFUGE

Cedar Point NWR, named for the rows of cedar trees that once grew at its northern tip, is administered as a unit of the Ottawa NWR Complex. Previously a popular shooting club, the land was donated to the U.S. Fish & Wildlife Service in 1965. The refuge encompasses approximately 2,445 acres and is entirely marsh except for the dike system and a few acres of remnant beach covered with hardwoods.

The refuge is divided into three pools, one being the largest contiguous wetland in the Lake Erie Marshes. Minimal water level management is used to encourage and maintain aquatic vegetation. All pools are predominately cattail, bulrush and other emergent vegetation highly valuable to wildlife. Herons, egrets, migrating waterfowl and shorebirds make extensive use of the area for feeding. The refuge also provides nesting habitat for a variety of birds including the bald eagle.

A 15 acre borrow pit off of the main entrance to the refuge is open to fishing from June through August. A permit is required to access any other parts of the refuge.



WEST SISTER ISLAND NATIONAL WILDLIFE REFUGE

West Sister Island NWR is an 82-acre island located in the southwestern basin of Lake Erie 9 miles north of the shoreline. The U.S. Coast Guard owns 5 acres of the island, which includes a lighthouse built in 1847. The last people to live on the island were a lighthouse keeper and his family. In 1937 the lighthouse was automated and the island has been uninhabited since. In 1938 the remaining 77 acres was designated a wildlife refuge, and in 1975 it became Ohio's only Wilderness area.

The island rises 35 feet above the high water mark. It is composed of glacial till over a limestone shelf. The limestone shelf protrudes along the island showing where large coves have been eroding by hydrological forces forming stoney cliffs 15-20 feet high. 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 receive a topically applied layer of nitrogen supplied by thousands of nesting colonial birds. West Sister Island is noted for having the largest heron/egret rookery in the U.S. Great Lakes. Forty percent of herons and egrets in the Great Lakes nest on this island. Great blue herons and great egrets comprise 65% of the nesters, followed by black-crowned night herons. Herring and ring-billed gulls also nest on the island along the gravel beach. See Studies and Investigations for more information.

Since 1998, 1 acre of trees a year is attempted to be cut by handsaws to encourage shrub growth for black-crowned night heron nesting habitat. The response to the cuts has been excellent. The vegetation on the island consists of 40-50 foot hackberry trees dominating the canopy, with poison ivy, some of it 12 feet tall, and Great Solomon's Seal dominating the under story. Other plants such as various ferns, wildflowers, and mushrooms are also found on the island.



1968



2003

