

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

Oak Harbor, Ohio

ANNUAL NARRATIVE REPORT

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MS 5 waterfowl



MS 6 Snowy egret



MS 5 ducks in flight

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 beech-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 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.



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HIGHLIGHTS

- Ottawa NWR was designated a Regional Shorebird Reserve in the Western Hemisphere Shorebird Reserve Network.
- Refuge visitation totaled 113,293 people (see **7a. Visitor Services**).
- For the first time at Ottawa NWR approximately 7500 *Galerucella* sp. beetles were reared by staff and volunteers and then released (see **3h. Invasive Plant Management**).
- In a study done in Crane Creek on Ottawa Refuge, 15 unionid species were found with four being state listed as threatened species or of special interest (see **1b. Studies and Investigations**).
- 61 acres of warm season grasses were planted and 44 acres of wetland were restored on the refuge with a special ceremony dedicating the Adam Grimm Habitat Restoration Area.
- A station evaluation team headed by Jim Leach along with other regional staff completed Ottawa's station evaluation.
- A 25' Justice Boston Whaler with a Mercury 250hp outboard motor was bought with 2001 money. With the purchase of this boat, the refuge will now have its own transportation to the island which will improve monitoring and management efforts.

Photo by © Sharon Cummings

Sunrays at Sunrise



CLIMATE

Table 1. Annual Precipitation and Temperature, CY-2001

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ambient Temp.												
Max (F)	45.8	59.7	52.5	79.4	84.3	90.4	91.2	92.3	87.8	79.9	68.1	67.9
Min (F)	4.8	14.7	12.8	29.7	47.9	47.6	56.4	41.2	41.9	34.2	30.6	11.1
Ave Temp	26.9	30.8	34.3	51.1	61.5	69.4	73.0	73.3	62.9	53.2	48.2	36.9
Precipitation												
Total (inches)	0.58	1.93	0.70	1.57	3.20	1.41	2.27	2.89	3.61	0.80	1.78	2.17

An official National Weather Service station is located at the refuge headquarters and is monitored for precipitation and temperature. The temperature gauge stopped functioning so the monthly temperatures were obtained from Davis-Besse Nuclear Power Plant located on the Navarre Division of the refuge.

The yearly average ambient temperature for 2001 was 51.86°F. Total precipitation for the year was 22.91 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: Wildlife Biologist Ron Huffman transferred to Ottawa NWR in 2001. Volunteer based monitoring projects continued in 2001, including small nest box monitoring, marsh bird and amphibian monitoring, and eagle nest monitoring.

Bird Censuses

The Toledo Naturalist Association began its first year of conducting a bird census at Cedar Point NWR. Census information was collected bimonthly from the middle of March through December, with the months of May, June, August, November, and December surveyed only once. Point count data collection totaled 15 days with 192 species recorded. The most individuals recorded in the spring occurred on March 31st with 21,883 birds and for the fall on September 23rd with 15,665 birds.

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 1.85 million duck use days and nearly 550 thousand goose use days were recorded in 2001.

Table 2. Selected Waterfowl Populations on Ottawa NWR Complex During Migration and Over Winter, 2001.

SPECIES	AVERAGE POP. ¹	PEAK POP. ¹	USE DAYS ¹
Mallard	3,328	9,000	808,745
Black Duck	684	1,800	166,131
Gadwall	1,033	3,150	250,999
Pintail	175	800	42,566
Green-winged Teal	1,357	6,075	329,670
Blue-winged Teal	106	1,146	25,738
Wigeon	514	2,045	124,841
Shoveler	30	180	7,391
Wood Duck	1	15	304
Canvasback	8	75	1,843
Redhead	6	75	1,519

Table 2 Continued

SPECIES	AVERAGE POP. ¹	PEAK POP. ¹	USE DAYS ¹
Ruddy duck	2	25	506
Ringneck	98	500	23,794
Scaup	136	1,632	33,048
Merganser	127	1,054	30,841

¹ Calculated over 7 months.



Canada Goose

Canada goose collar surveys are conducted annually by the Ohio Division of Wildlife. Surveys are conducted from September through early April. Many of the primary observation areas are located on the Ottawa NWR Complex. Surveys are designed to track the relative proportions of various Canada goose populations. Most collar observations are from locally banded giant Canada goose populations. Frequently these geese are permanent residents. The other geese frequently observed are from the Southern James Bay population (SJB) geese. These geese migrate to the area, with peak numbers occurring from November through February. Table 3 shows the observations for Lucas and Ottawa counties.

Table 3. Canada Goose Collar Observations, 2001.

County	Geese examined	Local giant collars	SJB collars
Lucas	9,533	77	58
Ottawa	38,131	382	320

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 **Studies and Investigations** for more details.



Magnolia warbler

Bald Eagle



The 2001 nesting season was excellent for Ohio eagles. There were 73 nests in the state, producing a record 104 young. Ottawa NWR Complex had a total of 5 active bald eagle nests, with 5 out of 5 nests producing young (Table 4). Historically the Butternut nesting pair has never produced successful fledglings until this year. It is believed that the female of the Butternut pair is not the same female from previous years.

Table 4. Bald Eagle Nests on Ottawa NWR Complex: CY 2001

Location	Nest	Incubation initiation	Estimated hatch date	# Young fledged
Ottawa NWR	Butternut	2/28/2001	4/3/2001	1
Ottawa NWR	Ottawa	2/25/2000	3/31/2000	2
Ottawa NWR	Magee Marsh	3/3/2001	4/7/2001	1
Navarre Marsh Unit	Davis Bessie	3/9/2001	4/13/2001	3
Cedar Point NWR	Cedar Point	2/27/2001	4/2/2001	2

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 2001 survey was completed on May 3rd and recorded 22 peenting woodcock. Eleven peenting woodcock were recorded in 2000 survey.

Reptile Surveys

Lake Erie coastal wetlands including Ottawa NWR and Cedar Point NWR were surveyed for reptiles. Surveys were sponsored by Ohio DOW. Special consideration was given to four state-listed species. These included the Fox Snake, Melanistic Garter Snake, Blanding's Turtle, and the Lake Erie Water Snake. Traps were set for turtles and cover sheets placed for snakes. Six species of reptiles were documented with two of the state-listed species (Fox Snake and Melanistic Garter Snake) being found. The following Table 5 lists the survey findings for Ottawa and Cedar Point.

Photo by © Sharon Cummings

Fox Snake



Table 5. *Ottawa and Cedar Point Reptile Observations.*

Property	Midland Painted Turtle	Northern Map Turtle	Eastern Fox Snake	Common Water Snake	Eastern Garter Snake Green morph	Eastern Garter Snake Melanistic
Cedar Point	11		1	6	7	5
Ottawa	1	9		1	2	

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 three most numerous species on Ottawa include bullfrogs, green frogs and northern leopard frogs. Species and peak survey number from 3 surveys were determined for each site and presented in Table 6.



Photo by © Sharon Cummings

Bull frog

Table 6. Amphibian Call Surveys 2001 – Species Richness and Peak Survey Number.

	Cedar Point East	Cedar Point West	Ottawa Hiking Trails	Ottawa Pool 1	Darby	Crane Creek
<i>Species Richness</i>	8	5	5	4	6	4
Wood Frog	7		3		1	
American Toad	3	2	5	3	4	
Chorus Frog	6	1	full chorus		2	1
Green Tree Frog	1					
Spring Peeper	2					1
Bull Frog	3	full chorus	full chorus	16	full chorus	6
Northern Leopard Frog	2	2		3	3	
Pickerel Frog	1					
Green Frog		2	2	19	13	12

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.

Muskrat

Musk rats 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 that allows local trappers to bid on open units. See 4e. **Native Predator/Pest Animal Control**

White-tailed Deer

An aerial survey conducted prior to hunting season by ODOW counted 240 deer on the Ottawa units and 16 deer on Navarre. Because there was no biologist for the refuge, no spotlight surveys were conducted. See **7a. Visitors Services** for 2001 hunt results.

Shorebird Surveys

Spring shorebird migration peaks in early May with birds remaining in the area for only a short duration. In contrast, the fall migration tends to have a smaller number of birds but lasts for a longer period of time. Some refuge water impoundments are drawn down



Photo by © Sharon Cummings

Dunlin

during the spring providing optimum habitat. The Black Swamp Bird Observatory is in its seventh year of data collection in an effort to relate shorebird use and needs to water management regimes on the refuge. The study is expected to provide valuable information to aid management. See **Studies and Investigations** for more information.

Water Birds

Ottawa and Cedar Point Refuges provide vital feeding areas for a colony of great blue herons, great egrets, and black-crowned night herons nesting on West Sister Island NWR. West Sister Island NWR is located on southwest Lake Erie, approximately 9 miles off shore from Ottawa NWR. The island colony contains approximately 5,000 nests and is the largest heron/egret rookery in United States waters of the Great Lakes. Studies have shown that these water birds will fly from the island to the main refuge complex several times a day to feed their young. Very heavy feeding occurs in the marshes, drawdown areas, and mudflats created by Lake Erie wind tides. Species found less commonly in the area include little blue herons and snowy and cattle egrets. See **Studies and Investigations** for more information.

snowy egret



1b. Studies and Investigations:

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 1999- to March 2003. During this time, many studies are underway to document the effects of the project on invertebrate, fish, bird, and plant communities. These projects are too numerous and varied to summarize annually. We plan to summarize the results of these research projects when final reports are received in 2003.

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

Long term monitoring of migrating passerines continued this year at the Navarre and Darby Units of Ottawa NWR in addition to a new site that was added in 1999 located on the main unit of Ottawa NWR. 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.

Spring

Temperature patterns were above the ten-year average for spring 2001. April weather patterns resulted in good bird movement. The month of May saw very good wave development but below normal volume. Total spring banding numbers at Ottawa NWR Complex include 8,609 individuals banded and 9,665 individuals handled.

Table 7. Top Ten Species Banded at Ottawa NWR Complex in Spring 2001.

Magnolia Warbler	867	Gray Catbird	674
Yellow Warbler	322	American Redstart	254
White-throated Sparrow	748	Red-eyed Vireo	281
Myrtle Warbler	345	Common Yellowthroat	322
Traill's Flycatcher	394	Wilson warbler	222

Spring point counts are conducted at Navarre in conjunction with mist net operations. Point count data collection totaled 47 days with 145 species recorded representing 20,581

individuals. The most abundant species recorded were red-winged blackbird (3,946) followed by blue jay (1,925), tree swallow (1,573), Canada goose (1,116), and cedar waxwing (863).

Fall

Fall migration starts in late July for many species and some breeding neotropicals such as the yellow warbler are practically gone from the study area by mid-August. Fall temperatures appeared similar to 2000. Temperatures tended to be slightly above in August and early-October. Fall bird migration is dominated by different stimuli than in spring. Weather appears less important and food availability appears to be a key factor. Total fall banding numbers at Ottawa NWR include 9,350 individuals banded.

Table 8. Top Ten Species Banded at Ottawa NWR in Fall 2001.

Swainson Thrush	1163	Gray Catbird	478
Myrtle Warbler	620	Cape May Warbler	446
Blackpoll Warbler	719	Common Yellowthroat	361
White throated Sparrow	715	Magnolia Warble	314
Golden-crowned Kinglet	495	Tennessee Warbler	175

Fall point counts are conducted at Navarre in conjunction with mist net operations. Point count data collection totaled 53 days with 118 species recorded representing 44,430 individuals. The most abundant species recorded were red-winged blackbird (29,612), European starling (4,412), white-throated sparrow (1,051), Canada goose (932), and common grackle (659).

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

Objectives for this study are: 1) to survey 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).

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

The 2001 field season was the seventh full year of data collection for shorebird migration. Fourteen marshes and estuaries were sampled at least once in the spring and 17 in the fall. Primary spring sampling areas included Ottawa NWR, Turtle Creek, Sheldon's Marsh, Point Mouillee State Game Area, Pipe Creek Wildlife Area, and Toussaint Wildlife area.

During spring migration on Ottawa NWR Complex, a total of 47,275 shorebirds of 25

species were counted during 21 trips. Dominant species counted were least sandpiper, killdeer, short-billed dowitcher, semipalmated sandpiper, lesser yellowlegs, stilt sandpiper, black-bellied plover, sanderling, and dunlin.

Fall migration is more drawn out than the spring, running from early July into November. Thirty-one species totaling 107,066 birds were recorded on 52 trips on Ottawa NWR Complex. Due to low lake levels on Lake Erie, extensive mudflats were provided throughout the fall migration.

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 are then estimated by extrapolation. Double-crested cormorant numbers continue to increase, while numbers of great blue herons and great egrets are currently stable.

Table 9. West Sister Island Breeding Pair Information 1993 - 2001.

Species	1993	1994	1995	1996	1997	1998	1999	2000	2001
Great Blue Heron	2,393	1,591	1,380	1,225	920	1,160	1,107	1180	906
Great Egret	742	1,036	1,120	687	705	807	840	840	640
B. C. Night Heron	746	726	560	500	480	467	387	453	427
Double-Crested Cormorant	307	580	1,480	1,467	1,380	1,513	2,073	2200	2607
Snowy Egret	8	10	10	10	13	10	13	14	13

Immature Black-Crowned Night Heron

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. This year as



a result of uncooperative weather and schedule conflicts with the U.S. Coast Guard a boat was not available to take Refuge staff and volunteers to the island for tree cutting. Approximately 2 acres of trees adjacent to black-crowned nesting habitat were hand cut

to a four foot height in 1998 and 1999. As of 2001, these areas have not yet shown nesting use by black-crowned night herons. 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 regarding contaminants found in herring gull chicks is being investigated.

Ottawa WMS- Use of Crane Creek by Unionids and Zebra Mussels- Rick Bowers and Ferenc de Szalay, Kent State University.

Surveys of unionids and zebra mussels were conducted on Ottawa NWR, in the Crane Creek Marsh, which is a coastal wetland. Results show zebra mussels are colonizing the wetland, but 15 unionid species were found as well (Table 10). Several unionid species were relatively abundant and four others were state listed as threatened species or of special interest. Low numbers of zebra mussels were found on most unionids. It was surprising to find a good population of unionids because a recent survey found few coastal marshes with abundant unionid populations.

It is not clear how unionids are surviving in Crane Creek Marsh. Recent research has demonstrated that unionids can smother attached zebra mussels when they burrow down into the soft benthic sediments. It was observed that unionids in areas with shallow sediments (3-5cm) had higher numbers of attached zebra mussels than in areas with deeper sediments (>20cm). These results suggest that Crane Creek Marsh may be a refuge for unionids, but the survival of zebra mussels on unionids may be affected by sediment depth within the marsh. A future study will be done to investigate the interactions of zebra mussel colonization with sediment depth.

Table 10. Percentage of Unionid Species Collected at Crane Creek Marsh

Unionidae Species	% of Total (N=1129)
<i>Quadrula quadrula</i>	42
<i>Leptodea fragilis</i>	24
<i>Amblema plicata</i>	18
<i>Pyganodon grandis</i>	8
<i>Potamilus alatus</i>	3
<i>Quadrula pustulosa</i>	2
<i>Toxolasma parvus</i>	1
* <i>Obliquaria reflexa</i>	1
<i>Fusconaia flava</i>	1
<i>Lasmigona complanata</i>	<1
<i>Lampsilis siliquoidea</i>	<1
* <i>Truncilla donaciformis</i>	<1
* <i>Truncilla truncate</i>	<1
* <i>Uniomeres tetralasmus</i>	<1
<i>Utterbackia imbecillis</i>	Observed

*State listed as threatened species or of special interest.

U. imbecillis was not collected as part of the survey but was observed after the survey was completed.

Ottawa WMS – An ecological assessment of invasive and aggressive plant species in coastal wetlands of the Laurentian Great Lakes: a combined field-based and remote-sensing approach –Ric Lopez, EPA.

The aquatic plant communities within coastal wetlands of the Laurentian Great Lakes are among the most biologically diverse and productive systems of the world. Coastal wetlands have been especially impacted by landscape conversion and have undergone a marked decline in plant community biological diversity in the past. The loss of biological diversity in coastal wetland plant communities coincided with an increase in the presence and dominance of invasive and aggressive plant species. The loss of biological diversity may be the result of the increased presence of invasive and aggressive plant species, and other ecosystem research suggests that such invasive and aggressive plant species may be the result of general ecosystem stress in coastal wetlands such as wetland conversion, fragmentation, etc.. The purpose of this study is to examine some of the landscape scale ecological relationships by quantifying the extent and pattern of invasive/aggressive plant species and testing for substantive relationships with local landscape disturbance in the past. Remote sensing technologies may offer unique capabilities to measure the extent of these invasive and aggressive species over a large area. This approach will utilize ground-based vegetation sampling to calibrate remote sensing data, to develop spectral “signatures” of invasive/aggressive species that may then be used to address the ecological vulnerability of coastal wetlands. The three plant species to be studied are purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), and cattail (*Typha* spp.) This study will involve Ottawa NWR.

2. HABITAT RESTORATION

2a. Wetland Restoration:

On Refuge

The refuge was able to restore a 9 acre wetland on its recently acquired Diefenthaler property. Historically a wetland along Crane Creek and bordering the refuge, the property had been pumped dry and farmed for years. By simply no longer running pumps to dry the field, water collected along the north end of the unit. After a couple of growing seasons this should encourage aquatic vegetative growth. This wetland is unique in that it is only diked in on two sides as opposed to the 4-sided dikes commonly found on the refuge. Upland restoration on the remaining 56 acres of the property will also enhance the quality of this marsh.

Off-Refuge

Most of the wetland basins restored in 2000 are now full and we have had no reported problems as of yet. In fact, most of the wetland basins restored in 2001 are now full due to heavy rainfall in the fall of 2001. Beginning in 1999 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.

This season the Partners for Fish & Wildlife Program once again performed wetland restorations on private lands. This year all of the wetland restorations were performed by private contractors. The refuge has an ever increasing maintenance need therefore there is less availability of equipment operators for use on private lands. Several contractors were utilized in an attempt to find one or two that suit the needs of our program. Restorations were completed in two counties in Michigan (Lenawee and Hillsdale). Thirty-three sites were restored for a total of 155 acres.

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. These programs are sometimes in direct competition with the Service's wetland restoration efforts. 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.

Hillsdale County, Michigan

The weather was quite dry this year with very few showers to affect work. The dry weather was a blessing for doing earthwork in the early summer months. Towards late summer, early fall, several large storms dumped large quantities of rain and postponed projects for weeks. Some of the projects were completed with the basins half full of water.

One of the blessings about using contractors is that staff 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. All this being said, the 2001 field season was very productive netting 17 restorations for 61 acres in Hillsdale County.

Lenawee County, Michigan

Again this year in Lenawee County the U.S. Fish & Wildlife Service entered into a cooperative agreement with the local Soil & Water Conservation District to implement the Partners for Fish & Wildlife Program. This was the fourth 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, 16 wetland basins were restored for 94 acres.

Since the 1997 field season, landowners are being held responsible for maintenance of wetland restoration projects. I am happy to report that in 2001, only two wetlands were repaired due to poor design and/or construction flaws at the time they were built.

2b. Upland Restoration

On Refuge

In cooperation with Pheasants Forever as part of a small NAWCA grant, the refuge was able to plant 56 acres of warm season grasses on the Diefenthaler property of Ottawa Refuge. The grassland will enhance the 9 acre wetland that it runs into and provide quality nesting habitat for waterfowl, harriers, and song birds.

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 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 2000, we continue with our partner Pheasants Forever, to plant better nesting cover for waterfowl and other migratory birds. Landowners in Lenawee County planted 17 sites to native warm season grasses for a total of 180 acres. Monroe County landowners planted 8 native warm season grass sites for a total of 31.5 acres. Hillsdale County landowners planted 2 sites for a total of 9 acres.

Ottawa, Erie and Sandusky County, Ohio

Again this year the Ottawa National Wildlife Refuge facilitated the establishment of native warm season grasses through the Service's Challenge Cost Share program. The recipient of the Challenge Cost Share Grant was the Erie-Ottawa Chapter of Pheasants Forever. Cost share dollars were used to purchase a native grass seed mixture consisting of big bluestem, little bluestem, Indian grass, and switch grass. Due to unfavorable planting conditions in 2000, many of the year 2000 proposed sites did not get planted and had to wait until the spring of 2001. In Ottawa County, 12 sites for a total of 165 acres were planted with the native grasses mix. In Erie County, 8 sites were planted for a total of 79 acres. In Sandusky County, 10 sites for a total of 159 acres were planted with the native grasses mix.

Riparian Corridor

Again in 2001, Private Lands Biologist Steve Dushane coordinated efforts with the East Lansing Private Lands Office and The Nature Conservancy of Indiana to reforest 39.4

Steve Dushane



acres of riparian corridor. The tree plantings were completed on the East Fork of the West Branch of the St. Joseph River in Hillsdale County, Michigan. The five riparian sites were restored in an effort to enhance and provide habitat for the federally endangered Clubshell Mussel.

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 to a variety of wildlife species throughout the year.

The entrance pool was drawn down which made for excellent shorebird habitat. However, large numbers of carp died in the process creating a ferocious stench. With the unit located next to the office and visitor parking area, refuge staff were forced to manually remove the dead carp. Normal water level management activities for the year included pumping up the waterfowl hunting units (FU6, 7A, and blind 93) in the fall before open season. Other units were only pumped up if water levels got too low late in the summer.

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. The following equipment was purchased with 2001 moneys to aid them in their efforts.

*JD6410 tractor with rotary boom mower (pictured on right)

*Ford dump truck with 5 cu yd bucket

*Chevy Silverado 2500 ¾ ton utility truck

*Chevy Silverado 2500 pickup with extended cab



3b. Moist Soils Management

MS 3 was drawn down and disked because of reed canary grass problems.

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. In 2001, this plan was followed, with some "refuge corn" (not harvested, but cut in winter) and buckwheat planted by refuge staff in waterfowl hunt units.

3e. Forest Management - NTR

3f. Fire Management - NTR

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 2001, approximately 70 acres of dike sides were treated with 2-4-D or Dicamba to control brush. Shrub control on treated areas was very good.

3h. Invasive Plant Management

To improve biological control success, *Galerucella* sp. beetles were reared on the refuge. Using a small children's swimming pool and some netting, 10 flower pots were filled with purple loosestrife plants in the early spring. Beetles were then collected from nearby established *Galerucella* sp. populations and put into the pot enclosures to lay their eggs. Once larvae hatched, the pots were then placed in show pool. It is estimated that there are 750 larvae per pot, so approximately 7500 beetles were released.

Refuge staff sprayed isolated plants of purple loosestrife along dikes at Ottawa and Cedar Point. Rodeo was applied using backpack sprayers to minimize drift to desirable plant species. Total area treated was about 6 acres. The Division of Wildlife aerial sprayed 50 acres of purple loosestrife with 25 gallons of Glyphosate.

Photo by © Sharon Cummings



In the past the Division of Wildlife aerial sprayed Phragmites on the refuge. However, as a result of the 9/11 national tragedy this was not able to be accomplished.

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

4a. Bird Banding - See Studies and Investigations, WMS19.

Wood Duck Banding

This was the first year Ottawa NWR staff teamed with the Division of Wildlife staff at Magee Marsh Wildlife Area to band wood ducks. Two sites were chosen; one on Ottawa Refuge (MS6) and one at Darby (Pool 4).

Table 11. 2001 State of Ohio Wood Duck Banding Quota

Adult female	Adult male	Hatch year female	Hatch year male
270	270	480	200



Table 12. 2001 Ottawa NWR Wood Duck Banding Results

Year	Refuge	Location	Species	Adult female	Adult male	Hatch year female	Hatch year male
2001	Ottawa	MS6	WODU	12	174	30	49
2001	Darby	Pool 4	WODU	2	94	4	16

4b. Disease Monitoring and Treatment – NTR

4c. Reintroductions

A trumpeter swan pair nested on the refuge this year for the second year in a row. Seven young fledged, however only 2 survived. The ODNR has been reintroducing trumpeter swans since 1996.

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. In 2001, 2 nests were started by bluebirds on Ottawa. Both nests failed for unknown reasons.

Tern Platforms

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 5 years (Table 13). In 2000, the



platforms were moved from Crane Creek to Pool 1 due to lower water levels in Lake Erie. This year 3 more platforms were built providing a total of 5 nesting platforms.

Table 13. Common Tern Platform Nesting History on Ottawa NWR 1997 - 2001.

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

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 hut counts were conducted from dike roads throughout Ottawa NWR Complex during the second week of November to provide an index of muskrat populations. The survey indicated normal to high muskrat densities.

Trapping was conducted at Ottawa, Cedar Point, and Darby. Ottawa consisted of 2 units: Unit 1 was moist soil units 3, 4, and 5; unit 2 was moist soil units 6, 7a, and 7b. Hut estimates for the 2 Ottawa units was 300 huts. Pool 1 and Pheasant Farm pool were trapped at Cedar Point. Pools 1, 2, 3, and 4 were trapped at Darby. The hut estimate for Darby was 97 huts. Minimum bids for each unit were set at \$100.00. Awarded bids were \$1177.87 for Ottawa trapping unit 1, \$327.99 for Ottawa trapping unit 2, \$517.77 for Cedar Point, and \$300.00 for Darby. Total income from the trapping program was \$2323.63.

The trapping season ran from December 31, 2000 to March 15, 2001. Bald eagle nesting exclusion zones were closed to trapping beginning February 1, 2001. The Ottawa units were trapped 10 of 11 weeks during the trapping season. Cedar Point was trapped during 8 of 11 weeks. Darby was trapped during the first 7 weeks of the trapping season. Trapping authorization was revoked for the Darby trapper on February 17, 2001, due to Refuge regulation and state law infractions by the trapper.



The average price for muskrat pelts in extremely good shape this year was estimated at \$3. Raccoon pelts ranged from \$10-12, fox \$5-20, opossum \$5-10, and mink \$5-10.

RMIS Total trapping days were **136** with the following breakdown:

Adult Trappers

Cedar Point	40 days
Ottawa	56 days
Darby	40 days

Table 14. Reported Harvest by Unit for 2000-2001

Unit	Muskrat	Mink	Raccoon	Fox	Opossum	Skunk
Darby	173	4	23	2	7	2
Ottawa 1&2	1240	0	0	0	0	0
Cedar Point	515	0	9	0	0	0
Totals	1928	4	32	2	7	2

Table 15. A 7 Year Comparison of Trapping Efforts

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

4f. Invasive Animal / Non-Plant Management

Gypsy Moth

Seven gypsy moth traps are placed throughout Ottawa NWR each year. This year a total of 69 male moths were trapped, with all 7 traps catching gypsy moths. 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, Michigan Association of Conservation Districts, Lenawee County Soil & Water Conservation District, Hillsdale County Soil & Water Conservation District, Monroe County Soil and Water Conservation District, Ottawa County Soil & Water Conservation District, Sandusky County Soil & Water Conservation District, Seneca County Soil & Water Conservation District, Morrow County Soil & Water Conservation District, Pheasants Forever, Ducks Unlimited, The

Nature Conservancy, The Michigan Department of Natural Resources, and The Ohio Division of Wildlife.

5b. Tribal Coordination: NTR

5c. Private Lands Activities

More than 130 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 54 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. The U.S. Fish and Wildlife Service, through the Partners for Fish and Wildlife Program has extended the cooperative agreement with the Nature Conservancy to plant trees along the East Fork. Landowners are still showing interest and the planting should continue in the spring of 2002.

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 2001, an attempt was made by Wildlife Biologist Steve Dushane and Assistant Manager Doug Brewer to visit all of the easement sites under Ottawa's control. All of the 16 easements in Michigan were visited in 2001. Many had not been visited in 3- 5 years. Most easement violations were minor and consisted of encroachment into the easement area by farming. Several easement will need to be re-posted and some need to be posted for the first time. Wildlife Biologist Ron Huffman and Public Use Specialist Rebecca Hinkle both assisted on several of the easement visits.

Several of the Indiana easements were visited by Wildlife Biologist Steve Dushane and Assistant Manager Doug Brewer. Violations were uncommon.

In addition to the easements administered by the Ottawa National Wildlife Refuge, Refuge Manager Dan Frisk agreed to assist Shiawassee National Wildlife refuge with their easement backlog. Refuge Manager Frisk agreed to visit all of Shiawassee's easements in Jackson County, Michigan.

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 forbes. 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. Also, the two parking areas that were constructed for public use in 1999 are scheduled to have split rail fence and gates placed around them for aesthetics as well as a prohibitive barrier. One sign was ordered to notify the public of the rules and one large sign was ordered for the highway. The installation of the signs is planned for 2002.

2001 Private Lands Habitat Numbers

Michigan Wetland Restorations

	<i>Sites</i>	<i>Acres</i>
Lenawee County -	16	94
Hillsdale County -	17	61
MICHIGAN TOTALS:	33	155

Ohio Wetland Restorations

	<i>Sites</i>	<i>Acres</i>
Ottawa County	1	9
OHIO TOTALS:	1	9

Michigan Warm Season Grass Restorations/Establishment

	<i>Sites</i>	<i>Acres</i>
Lenawee County -	17	180
Hillsdale County -	2	9
Monroe County -	8	31.5
MICHIGAN TOTALS:	27	220.5

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

	<i>Sites</i>	<i>Acres</i>
Ottawa County -	12	165
Erie County -	8	79
Sandusky County -	10	159
OHIO TOTALS:	20	403

Michigan Riparian Area Restoration (Cooperative Agreement With TNC)

		<i>Sites</i>	<i>Acres</i>
Hillsdale County	-	<u>4</u>	<u>39.4</u>
TOTALS:		4	39.4

Wetland Totals: **34 Sites for 164 Acres**

Grassland Totals: **47 Sites for 623.5 Acres**

Riparian Totals: **4 Sites for 39.4 Acres**

6. RESOURCES PROTECTION

6a. Law Enforcement

The main law enforcement effort focuses on the refuge hunt programs as well as special events such as IMBD. Rebecca Hinkle, is no longer a collateral duty officer. Dan Frisk transferred in as the new refuge manager and brought his LE credentials with him maintaining the number of collateral duty officers at Ottawa. All three attended LE refresher courses. Three tickets were issued in 2001. Two were for trespassing and one for a migratory bird violation.

6b. Permits and Economic Use Management

Letters of Authorization

Letters of Authorization are issued to volunteers for wildlife or economic monitoring and surveys, activities relating to public use, and studies conducted on the refuge. On occasion, letters of authorization may be issued for alternative purposes.

Thirty letters of authorization were issued for the CY 2001. Two letters were still active from CY 2000. One letter was issued for use of refuge roads to haul rip rap to a private jetty adjacent to refuge property, 6 letters were issued for field trips, and 5 letters were issued for studies completed on the refuge. All other letters were issued for monitoring and surveys conducted by volunteers.

Special Use Permit

Special Use Permits are issued to Researchers conducting studies on the refuge. Six permits were issued in CY 2001 and 3 permits were still active from CY 2000.

6c. Contaminant Investigation – NTR

6d. Contaminant Cleanup – NTR

6e. Water Rights Management – NTR

6f. Cultural Resource Management – NTR

6g. Land ownership support – NTR

7. PUBLIC EDUCATION AND RECREATION

7a. Visitor Services: Refuge visitation totaled 113,293 people in 2001. Refuge visitors come to enjoy the trails, spectacular wildlife viewing and many special events. This year these special events included National Wildlife Refuge Week where a week long celebration brought people to bike through the refuge, attend special programs and 980 people attended an open house and auto tour. 1087 people attended a similar open house and auto tour in May to celebrate International Migratory Bird Day. The refuge also hosted a Free Fishing Day and held special programs where visitors could learn about refuge night life and butterflies on the refuge and how to attract these insects to their own yards.

Waterfowl Hunting

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, wetland and moist soil units. Hunting occurs four days a week from one half-hour before sunrise to noon for a total of 16 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 collection of hunting data. Ottawa NWR staff assists ODOW 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 588 hunters harvesting 632 ducks and 57 Canada geese.

The week before opening day of the refuge hunt is reserved for a special youth hunt, October 13th, 14th, and 20th. The youth are selected and can bring one partner (adult) to hunt with them. This year 28 people (21 youth and 7 adults) harvested 48 ducks and 8 geese.

Table 16. 2001 Six Highest Harvested Species

SPECIES	NUMBER HARVESTED
Mallard	311
Wood duck	98
Gadwall	89
Canada Goose	57
American Wigeon	45
Green-wing Teal	25

Controlled White-tailed Deer Hunt

For the first time, a non-ambulatory, white-tailed deer hunt was conducted on Ottawa NWR during the Ohio shotgun season. Five hunters were drawn for two dates, November 1 and 2, 2000. Turnout on the hunt dates was disappointing, with only two parties checking in each day. All hunters were appreciative of the opportunity to hunt the refuge, and all saw deer.

Two youth deer hunts were conducted on Ottawa National Wildlife Refuge (Ottawa and Navarre Divisions) on the dates of December 29 and 30, 2000. Youth hunts were conducted on the Navarre Division of the Refuge with the cooperation of Davis-Besse Nuclear Power Station. Nineteen youth hunters participated in the hunts from a total of 28 that were selected. Regulations required that each youth hunt with a licensed, non-hunting adult. Youth hunters on Ottawa harvested a total of 13 deer; 5 antlered and 8 antlerless. The youth on the Navarre hunt were required to use primitive weapons only, no shotguns were allowed. One antlered and 1 antlerless deer were harvested. On 12/30, all youth hunted on Ottawa due to inclement weather and snow on Navarre roads.



Two trophy bucks were taken. The largest was taken by 16 year-old, Amanda Rice, on Friday morning after about an hour of hunting and had antlers measuring 24 inches in width.

The adult primitive weapons hunt was conducted over two weekends, January 5 & 6 and 12 & 13, 2000 on both the Ottawa and the Navarre Divisions (see appendix). Through a cooperative effort, the Ohio Division of Wildlife (ODOW) included the hunts on their list of controlled hunts again this year, so that individuals could be selected randomly by computer. A total of 40 parties (120 hunters) were selected for Ottawa. Sixteen parties (48 hunters) were selected for the Navarre hunt. A total of 44 deer were removed from the Refuge during the 2001 hunt.

The total number of persons entering the refuge for deer hunting in December 2000 and January 2001 was 175. On average each party of hunters remained out for approximately 8 to 11 hours, giving 1,750 total activity hours for the year of FY2001.

A pre-season survey by ODOW counted 240 deer on the Ottawa units and 16 deer on Navarre.

Table 17. 2000/01 Deer Harvest Information-Ottawa Division

	Number	Deer Harvested		Total	Hunter
Date	Hunters	antlerless	antlered	Deer	Success (%)
12/01/2000	2	0	1	1	50
12/02/2000	2	1	0	1	50
12/29/2000	8	4	4	8	100
12/30/2000	8	3	2	5	62
01/05/2001	25	6	0	6	24
01/06/2001	27	7	2	9	33
01/12/2001	27	3	2	5	19
01/13/2001	26	2	0	2	8
Totals	125	26	11	37	30

Table 18. 2000/01 Deer Harvest Information -Navarre Division

	Number	Deer Harvested		Total	Hunter
Date	Hunters	antlerless	antlered	Deer	Success (%)
12/29/2000	3	1		1	33
12/30/2000	0				
01/05/2001	11	1	0	1	9
01/06/2001	12	2	0	2	17
01/12/2001	11	1	0	1	9
01/13/2001	11	2	0	2	18
Totals	48	6	0	7	15

Fishing

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

7b. Outreach:

Environmental Education

Environmental education programs were held on the refuge for 1099 students, off-site students taught by refuge staff totaled 152. Environmental education field trips to the refuge ranged from second graders learning about soils to college students learning about wildlife management, home school groups have shown an increase this last year also. For the first time in years the 40th Annual 5th Grade Conservation Day was rained out.

Only thirty students were able to view presentations by refuge staff before the event was called due to rain. Refuge staff presented career information at 5 different events, a total of 346 people learned about the Fish and Wildlife Service and career opportunities available.

Refuge staff presented refuge information to approximately 400 teachers at COSI's Teacher Toolbox. This annual event brings together local resource and science based groups and agencies that provide services to teachers, scout groups and home school organizations.

Seventeen teachers attended a "Nature in Art" Workshop where the Ohio Junior Duck Stamp Contest was presented. This year 466 entries were received for the state of Ohio. The Best of Show was awarded to Kari Bengel from Eaton, OH. For the second year an award ceremony was held in conjunction with the Woodville Mall Earth Day Celebration.

Programs and Events

The refuge participated in a variety of outreach events where the refuge display was viewed by a variety of audiences. Events included Lake Erie Wing Watch (150 people), Woodville Mall Earth Day (600), Toledo Zoo Earth Day (700), Toledo Metroparks Earth Day (300) and the Waterfowlers' Festival (600). Programs and talks about the refuge were presented to 326 people and this year a number of nursing homes requested refuge staff present information to their residents.

In addition, the Lake Erie marshes, including Ottawa NWR, were designated a regional shorebird reserve in the Western Hemisphere Shorebird Reserve Network. The refuge celebrated with a small ceremony.



Julie Shieldcastle, Director of BSBO; Steve Gray, Assistant Chief of Ohio Division of Wildlife; Dan Frisk, Manager of Ottawa NWR; Jim Corven, Director of WHSRN, Manomet Center for Conservation Sciences

Senator Voinovich visited Ottawa NWR and gave a press conference on Energy and the Environment. The senator highlighted the great partnership between Toledo Edison's Davis-Besse Nuclear Power Station and Ottawa NWR in the cooperative management of Navarre Marsh surrounding the nuclear plant. After the press conference, the Senator and his wife, Janet, toured the refuge.



Dan Frisk, Doug Brewer,
Senator Voinovich



Senator Voinovich



Mrs. Voinovich, Senator Voinovich, and Dan Frisk

The refuge held a dedication ceremony for the Adam Grimm Habitat Restoration project on the recently required Diefenthaler property. Adam Grimm, of Elyria, Ohio, is the youngest person, at the age of 21, to ever win the Federal Duck Stamp competition.

The project includes 44 acres of wetlands, 61 acres of grasslands, and visitor facilities including hunting opportunities, trails, and a wildlife observation platform. The event was attended by representatives from many agencies, partners and the general public, including the previous landowner and many refuge neighbors. Representing the Fish and Wildlife Service were Nita Fuller, Chief of Refuges and Dan Frisk, Refuge Manager. Partners present were from Pheasants Forever, Ducks Unlimited, Division of Wildlife and Adam Grimm. A sign marking the restoration project was unveiled, however, due to inclement weather the ceremony was held indoors. In addition to

Adam's 2000 Federal Duck Stamp design, the sign lists partners and a description of the project



L-R: Tony San Gregory, State Chairman Ohio Ducks Unlimited; Dave Harlan, Habitat Chairman for Pheasants Forever; Adam Grimm, Wildlife Artist, 2000 Federal Duck stamp winner; Mike Budzik, Chief of the Division of Wildlife; Nita Fuller, Chief of Refuges; Dan Frisk, Manager Ottawa NWR

8. COMPREHENSIVE CONSERVATION PLANNING - NTR

9. PROVISIONS UNIQUE TO ALASKA - NTR

10. PLANNING AND ADMINISTRATION

PERSONNEL - 2001

Daniel W. Frisk GS-0485-13, PFT
Entered in duty 3/25/2001

Refuge Manager

Douglas G. Brewer, GS-0485-12, PFT
Acting Refuge Manager, 11/05/2000-3/25/2001

Refuge Operations Specialist

Stanley S. Cornelius, GS-0485-11, PFT

Refuge Operations Specialist

Marjorie L. Miller, GS-0485-7, PFT

Administrative Technician

Ronald Huffman, GS-0486-11, PFT

Wildlife Biologist

Steven D. Dushane. GS-0486-9, PFT

Wildlife Biologist, Private
Lands

Rebecca E. Hinkle, GS-0025-9, PFT

Park Ranger (Public Use
Specialist)

David L. Day, WG-5716-8, PFT

Engineering Equipment
Operator

Kenneth L. McConahay, WG-5716-10 PFT

Engineering Equipment
Operator

Jeffrey Enlow, WG-4749-8, PFT

Maintenance Worker

Sara A. Mason, GS-0404-3, TFT, EOD 6/11/00
12/1/2001 to 12/31/2001

Biological Science Aid

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

Susan Wells, GS-0482-7, PFT

Fishery Biologist - Alpena
FRO

Jacob Cordonnier

Fisheries Bio Tech



Left to Right: Dave Day, Ken McConahay, Jeff Enlow, Stan Cornelius, Doug Brewer, Ron Huffman, Rebecca Hinkle, Susan Wells, Steve Dushane, Marge Miller, and Dan Frisk

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 light house built in 1847. The last people to live on the island were a light house keeper and his family. In 1937 the light house 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 eroded by hydrological forces forming stone 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.

Approximately 2 acres of trees adjacent to black-crowned night heron nesting habitat were hand cut to a four foot height in 1998 and 1999 as part of an effort to encourage shrub growth for black crown night heron nesting habitat. This year as a result of uncooperative weather and schedule conflicts with the U.S. Coast Guard a boat was not available to take Refuge staff and volunteers to the island for tree cutting. As of 2001, these areas have not yet shown nesting use by black-crowned night herons. 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.



A 25' Justice Boston Whaler with a Mercury 250hp outboard motor was bought with 2001 money. With the purchase of this boat, the refuge will now have its own transportation to the island which will improve monitoring and management efforts.