

OTTAWA NATIONAL WILDLIFE REFUGE

Oak Harbor, Ohio

ANNUAL NARRATIVE REPORT

Calendar Year 1978

NATIONAL WILDLIFE REFUGE SYSTEM

Fish and Wildlife Service

U.S. DEPARTMENT OF THE INTERIOR

DEC 20 1980

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FISH AND WILDLIFE SERVICE
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(From left) Front Row: Herzberger, Hill, Walsworth, Boylan
Back Row: Behnke, Radsick, Holbrook

Permanent Personnel

1. Lee Herzberger - GS-11 Refuge Manager
2. Howard W. Hill, Jr. - GS-9 Ass't. Refuge Manager
3. Daniel Walsworth - GS-7. Ass't. Refuge Manager
4. Mike Boylan - GS-9 (EOD 3/25/78) . Outdoor Recreation Planner
5. Virginia Behnke - GS-5 Administrative Technician
6. Alson Radsick - WG-8 Maintenceman
7. Wood Holbrook - WG-8 Engineering Equip. Operator

Temporary Personnel

1. Mike Boylan - GS-5 Biological Technician
2. Laurie Patterson - GS-4. Cooperative Education Student

YCC Personnel

1. Charity Krueger - GS-9 Camp Director
2. Diane Deyonker - GS-7. Env. Awareness Coord.
3. Steve Yarsa - GS-5 Work Coordinator
4. Steve Brittian - GS-5. Group Leader
5. Theresa A. Dillon - GS-5 Group Leader
6. Thomas Kwiatkowski - GS-5. Group Leader
7. Louise Orr - GS-5. Group Leader



(From left) Front Row: Basinger, Allen, Patterson, Gardner
Back Row: Shryock

YACC Personnel

1. Kenneth Allen - GS-11 Camp Director
2. Rex Shryock - GS-9. Administrative Officer
3. Dave Vines - GS-7 Work Coordinator
4. Rick Basinger - GS-7. Group Leader
5. Carry Patterson - GS-7. Group Leader
6. Dennis Kirkpatrick - GS-5 Group Leader
7. Larry Gardner - GS-3. Clerk/Typist

YCC Enrollees
(1st Session)

1. Deborah Blair
2. Beverly Bokar
3. Laura Brenner
4. Mark Bryner
5. Carol Bult
6. Ray Curley
7. Lisa Fried
8. Darla Fudge
9. John Goins
10. Christi Hamilton
11. Charlotte Hammar
12. Mike Knight

13. Bob Kovach
14. Jon Meigs
15. Mandy Meyer
16. Mike Penry
17. Tom Prather
18. Jenny Taylor
19. Mario Teisl
20. Dave Turner
21. Cindy Weber
22. Bob Weyer
23. Beth Wright
24. Steve Zuchowski

(2nd Session)

1. Mary Baron
2. Lisa Buell
3. Bill Crump
4. Stephanie Damoff
5. Scott Debalski
6. Brian Donahue
7. Charlie Harrington
8. Payton Johnson
9. Mike Konzen
10. Janet Larson
11. Marie Linden
12. Theresa Malisheski

13. Mandy Meyer
14. Teri Parsons
15. Tanya Reed
16. Dan Roberts
17. Jim Schuknecht
18. Ken Smith
19. Kurt Triscori
20. Cindy Weber
21. Kieth Welch
22. Bob Weyer
23. Kari Wilson

Review and Approvals

L.E. Herzberger 10/30/80
Submitted by Date

John Topowski 11/26/80
Area Office Date

Ottawa NWR
Refuge

D.M. Williams 12-9-80
Regional Office Date

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I. GENERAL

A. Introduction

Ottawa National Wildlife Refuge Complex is located east of Toledo, Ohio, on the southwest shore of Lake Erie. The "complex" includes three National Wildlife Refuges: 1. Ottawa NWR, 2. Cedar Point NWR, and 3. West Sister Island NWR.

Ottawa NWR is comprised of three sub-divisions: Ottawa Division, Darby Marsh Division, and Navarre Marsh Division. Ottawa Division is 4,683 acres and includes the refuge complex headquarters, and maintenance facilities, the Butternut Lodge environmental study area, refuge housing and the Young Adult Conservation Corps headquarters. The Darby Division, 520 acres, is ten miles east of the Ottawa Division and is excellent waterfowl habitat. The Navarre Marsh Division, 591 acres, is five miles east of the Ottawa Division. It is jointly owned by Toledo Edison and Cleveland Electric Companies and leased by the Fish and Wildlife Service. The marsh is adjacent to the Davis-Bessie Nuclear Power Plant.

Cedar Point NWR sits six miles west of the main Ottawa Division and is 2,245 acres. It was a private hunting club earlier visited twice by former President Dwight D. Eisenhower. It is an excellent marsh managed primarily for waterfowl with a thriving population of muskrats.

West Sister Island NWR is 77 acres on an 82 acre island located nine miles out in Lake Erie. It is classified a Wilderness Area and a Research Natural Area and has a large rookery of Great Egrets, Great Blue Herons, and Black-crowned Night Herons.

The entire refuge complex is within reach of over eight million people and thus it will have to cope with the demands of increasing people pressure in the near future particularly more people become aware of the refuge's location and potential.



Five separate areas make up the Ottawa NWR Complex.

B. Climatic and Habitat Conditions

<u>Month</u>	<u>CY-78</u>	<u>Precipitation Normal</u>	<u>Snowfall</u>	<u>Temp.</u>	
				<u>Max.</u>	<u>Min.</u>
January	0.80	2.33	31.75	39	-6
February	3.00	1.88	36.00	35	-9
March	1.64	2.26		72	-5
April	5.08	2.77		81	28
May	3.50	3.04		88	31
June	5.95	3.79		92	45
July	1.20	2.59		95	45
August	1.52	3.33		95	48
September	2.27	2.13		96	48
October	1.97	2.39		78	28
November	2.30	2.04		70	18
December	1.48	1.95		56	-6
<u>Annual Totals</u>	30.71	30.50	67.75		
Extremes				96	-9

The worst blizzard in the history of Ottawa occurred January 26-28, 1978. 27 inches of snow fell in the period, tossed about with wind gusts up to 50 m.p.h. The refuge was closed for two days. Several people died in Northwest Ohio as a result of the storm. Another victim of the blizzard was the destruction of an eagle nest that was used for several years. The eagles built a new nest but the nesting attempt was unsuccessful.

March came in like a lion with temperatures averaging mid-20's but by mid-month they were in the 50's. The first major thaw occurred March 15. As waterways broke up, extensive local flooding occurred. YACC's temporary headquarters at Butternut Lodge was fortified with sand bags to prevent possible water damage from run-off. Migration was in progress mid-March with an estimated population of 6,000 Canada geese and 5,000 ducks.

Late melting snow and continuous heavy rains meant high water levels for the refuge throughout April. The threat of flooding had pumps going continuously and the south dike of Moist Soil Units #4 and #5 which border Crane Creek was overtopped. There was also severe inside dike erosion. Abundant rain also meant a

late start for the sharecropping program.

The first goose brood was seen on May 1. Excellent goose production occurred with over 1,000 goslings produced on the refuge.

Precipitation was a bit low in July and August but the total for the year was right on target with the area's normal precipitation.

A month of cool weather in August moved birds into the area early. At its peak in November the Ottawa Complex had 25,000 Canada geese, 35,800 ducks and 859 whistling swans.

C. Land Acquisition

A three and one-half mile strip along Cedar Point NWR's lake front dike was offered to the FWS as a donation through a private conservation organization in 1978. The proposed donation is under consideration.

D. System Status

1978 will be remembered as a year when intensive planning was conducted at the field station level and critical decisions made that will affect the development of the refuge for many years. Premier among the planning efforts undertaken at Ottawa NWR was updating the 10 year old master plan. The updated plan was prepared by the Indiana consulting firm of Miller, Wihry, and Lee. Input for the new plan required many mandays of refuge staff effort and contributions were made by the area and regional offices.

Refuge program schedules were rewritten twice during the year and project description worksheets prepared for projects that were simply pipe dreams before the reality of the Bicentennial Land Heritage Program (BLHP). The arrival of BLHP funding allowed the completion of long overdue operation, maintenance and rehabilitation projects. Twenty-two on-refuge projects were submitted for consideration for BLHP funding. This backlog of badly needed maintenance and rehabilitation work had an estimated one-time cost of 6.8 million dollars and an annually recurring cost of .45 million. The effect of BLHP was also evident in funding (table 1) and staffing (table 2) levels.

Table 1. Funding levels for Ottawa NWR, FY 76 thru FY 79.

<u>FY</u>	<u>1210</u>	<u>1220</u>	<u>1500/1240</u>	<u>1400</u>	<u>6810</u>	<u>Total</u>
76	65,300	300	12,000	-	8000	85,600
77	181,000	3200	16,900	-	7200	208,300
78	155,300	300	36,300	-	2000	193,900
79	179,000	300	30,000	700	2000	214,700

Table 2. Staffing levels for Ottawa NWR, FY 76 thru FY 79.

<u>FY</u>	<u>PFT</u>	<u>PPT</u>	<u>PFTS</u>	<u>Temp.</u>	<u>Total</u>
76	3	1	-	2	6
77	4	1	-	2	7
78	6	1	-	3	10
79	6	1	1	2	10

II. CONSTRUCTION AND MAINTENANCE

A. Construction

Ottawa NWR recieved its first slice of the BLHP pie in the form of a \$140,000 dike restoration project. The work involved the rehabilitation of 4200 feet of the west dike of pool 1. This badly eroded section was in immediate danger of failing and its loss would have opened Ottawa Division's largest remaining marsh (366 ac) to the destructive wave action and high waters of Lake Erie. Although the bid was let in May, actual construction was not initiated by the contractor until late August. Most of the dry weather had passed before the work was started and the onset of fall rains made progress painfully slow. In addition to dike repair the contractor excavated muck from 1700 feet of ditch and seeded 14000 square yards of dike slopes and road berms to grass. By December 60 percent of the project was complete although no stone protection for the bare dike slopes was in place by winter freeze up.

Another construction project was let in July for the YACC work center site preparation. A \$27,000 contract was awarded to Wagner Excavating Co. of Oregon, Ohio. Work completed under the contract for the 50 man YACC Center included grading, dike construction, road surfacing and installation of culverts and holding tanks.

YACC completed a force account riprapping project along the south side of pool 7. This dike was vulnerable to wave action when Lake Erie waters were high. Stone facing placed on the dike by the YACC afforded protection to the Butternut Lodge facility where most of the refuge's environmental education programs occur. The lodge area is YCC headquarters during the summer.

A force-account road surfacing project was undertaken and completed by the refuge staff in June. Some 2300 tons of road gravel were placed on the east portion of Krause road to assure all weather access to the Butternut Lodge. Additionally the small parking lot adjacent to the lodge received a layer of stone eliminating a seasonal quagmire.

B. Maintenance

Several major maintenance tasks were undertaken in 1978, primary among them were insulating and rewiring the refuge headquarters and the two residences, and ditch cleaning. All electrical work was completed under a formal contract funded by the regional office. The same fund supported the project to upgrade insulation in some buildings and install insulation in other buildings that were previously uninsulated. The effect of the insulating work was noted almost immediately after completion as the amount of fuel oil consumed decreased 10-25% from previous winters. A 3000 foot section of ditch was cleaned force account as part of an effort to convert farmland to a moist soil food production area.

C. Wildlife

Nothing to report.

III. HABITAT MANAGEMENT

A. Croplands

1978 was a poor year for cultivated crops on the main division of the Ottawa NWR. Above average rainfall flooded the fields late in spring and mid-summer and fall draught baked the clayey soil into hardpan. The refuge's share of the cropland was planted by cooperating farmers in field and sweet corn, grain sorghum, and buckwheat. Most of the corn fields were poor as was the buckwheat. The grain sorghum produced full heads. The soybeans planted and replanted by the farmers were stunted providing the local geese with a mixed blessing. Each short plant had several pods that were too close to the ground for combine, providing bushels of waste grain for birds. Unfortunately, late fall and winter moisture combined with a plentiful supply of beans brought about an unusually high occurrence of soybean crop impaction in geese. Several birds found dead were sent to the Wildlife Health Lab where testing confirmed that soybean impaction is a discreet, recognizable, pathological condition in Canada geese and apparently can occur without predisposing lead poisoning. This is something all refuges might ponder before establishing soybean fields in proximity to Canada geese concentration areas.

B. Grasslands

About 200 acres are maintained on the Ottawa division as grasslands. Some retired agricultural fields were seeded to fescue and clover and subsequently to control weeds and to provide green browse for geese. This first mowing is usually in late July and the fields are mowed again in September. If nesting waterfowl are flushed in front of the mower, the tractor operator leaves an "island" around the nesting site.

Although ducks do nest in these mowed grassland areas, significant numbers of offspring were not produced even though mowing was delayed until after the majority of nesting should have occurred. Seemingly, the refuge is located far enough north to have to the potential to serve as a duck producing refuge and programs are being redirected in an attempt to attract more nesting waterfowl.

Odd areas in agricultural fields were seeded to grassland species and are left unmowed. These small patches of cover provide cover for upland birds and mammals as well as prime nesting areas for a variety of birds.

Tentative plans were drawn in 1978 to establish 75 acres of dense nesting cover (DNC) in 200 foot wide strip; adjacent to existing agricultural fields.

C. Wetlands

The damage inflicted on the Ottawa dike system by the floods of 72 and 73 was partially repaired in 1978. BLHP, YCC, YACC and force account projects made headway in rehabilitating some of the eroded dikes. Manageable wetlands on the refuge prior to the storms amounted to 1919 acres. The storms removed management potential in 584 acres. By late winter repairs had been made reclaiming 100 acres, and in 1978 a total of 1435 acres of wetland were under active management. Obviously a great deal of work remains in order to regain control over areas whose breached dikes allow fluctuating Lake Erie waters to periodically flood the land. These areas were not without wildlife value however as shorebirds found the resulting mudflats much to their liking and waterfowl occasionally used the areas for loafing.

A 10,000 gpm crisafulli pump was purchased and used to control water levels on 494 acres. Pool 2c was pumped dry in May and even after 6 years of holding four feet of water, moist soil vegetation readily invaded the mudflat and produced excellent stands of smartweed. The pool was noted to have a 100-fold increase in duck-use and a ten fold increase in goose-use after reflooding the pool in Oct. to a depth of one foot pool. Pool 2a was also pumped down, but a combination of the late date at which pumping began (mid-July) and our inability to completely expose the bottom produced a less than desired vegetative response. Carp continue to be a problem in these pools as their food foraging habits greatly reduce the quality of the habitat for waterfowl.

Moist Soil Units four and five were flooded by spring storms and after pumping out the water in early May excellent stands of smartweed were obtained. Needed improvements for reflooding the area in the fall were not completed and thus reflooding did not occur. Canada Geese did use the area after 100' wide strips were mowed in the vegetation in early October.

A \$140,346 BLHP rehabilitation project was initiated in pool one in October. Work completed in 1978 included clearing and grubbing of 1.1 mile of dike, muck excavation along 3000 feet of ditch. Construction, cutting, and sloping included 6000 feet of dike, 1600 feet of ditch improvements and seeding of 40,000 sq. ft. the project was 90% completed before winter ice storms halted all activities. Rip-rapping 2,400 feet of lake front dike will be the only major activity to be done before spring storms erode the new earthen dike.

Pool six encompasses 122 acres of managable wetlands, and although the dikes are in need of repair, the area has some of the best waterfowl habitat on the refuge. Management of the area in 1978 involved manipulating water levels to effect desired vegetative responses. This managed marsh contains good stands of cattail, bullrush, sedges, arrowhead and smartweed. Aquatic plants such as soontail, water milfoil, and curly-leaf pondweed occur even though carp are known to infest the pool.

D. Forestlands

The Ottawa division contains 96 acres of wooded land. These 7 areas are scattered over the refuge and the largest woodlot is only 38 acres. The three largest woodlots are designated public use natural areas. Most trees of commercial value were removed from woodlots before the land was purchased by FWS. However, many mast-bearing species seem to be re-establishing themselves.

The YACC program provided the refuge with a graduate botanist in 1978 and the extra manpower and expertise was quickly put to good use. These Public Use Natural areas were sampled to determine species present and relative frequencies within each wood lot. A summary of those findings is presented in Table 1.

Table 3. Occurance and Relative frequencies of tree species found in woodlots on the Ottawa Division of Ottawa NWR.

<u>Species</u>	<u>Public Use Natural Areas</u>		
	<u>A (20)</u>	<u>B (13)</u>	<u>C (10)</u>
	<u>% Relative Freq.</u>	<u>% Relative Freq.</u>	<u>% Relative Freq.</u>
Black Walnut	-	-	3.85
American Elm	5.26	3.7	-
Ironwood	5.26	-	3.85

Table Continued

Table 3. Continued.

<u>Species</u>	A (20)	B (13)	C (10)
	<u>% Relative Freq.</u>	<u>% Relative Freq.</u>	<u>% Relative Freq.</u>
Shagbark Hickory	15.79	14.82	15.38
Red Ash	7.89	11.11	7.69
Hawthorne	7.89	25.83	7.69
Red Maple	7.89	11.11	7.69
Oak (spp)	36.84	25.83	11.54
Pin Oak	7.89	-	3.85
Basswood	5.26	3.70	7.69
Bitternut Hickory	-	7.41	-
Cottonwood	-	7.41	-
Sycamore	-	-	11.54
Beech	-	-	19.23

The woodlots provide habitat for deer, fox squirrels, rabbits, numerous songbirds, and Eagles. Public use natural area B has been designated as critical habitat for Ottawa's Eagles as the pair has historically nested there.

E. Other Habitat

The southern portion of the woodies roost area of the Ottawa Division is maintained as grassland and upland brush. The once agricultural land was last farmed in the early 1970's. Cotton woods and willows are common as they invade the area that was historically a lowland forest. The fields contain an abundance of field thistles, teasel aster, wild carrot, and burdock.

The area also contains goose hunting blinds where a 150 yard strip is mowed annually to provide green browse and shooting fields.

F. Wilderness and Special Areas

Management of West Sister Island NWR Wilderness Area, nine miles out in Lake Erie, continues to be basically "no management". Protection involves posting, litter cleanup, news releases relating to it being closed to the public and periodic law enforcement activities citing trespassers.

West Sister is also a Research Natural Area and selected research on nest-

ing colonies of herons and egrets is currently being conducted and is discussed in more detail elsewhere.

G. Easements for Waterfowl Management

Not applicable.

IV. WILDLIFE

A. Endangered and/ or Threatened Species

A number of state and federal endangered species were observed at Ottawa in 1978.

Ohio endangered species seen on the refuge included sharp shinned hawks, a king rail, upland sandpipers and common terns. Sharp shinned hawks (791 use days) were seen in spring and fall. Twenty-three upland sandpipers (3163 use days) were observed in August and a king rail was spotted in October. Common terns (160,860) noted throughout the year, reached a peak of 2677 in September.

An American peregrine falcon, a federally endangered species, passed through Ottawa during spring and fall migration. Two injured falcons, found by area residents, were sent from the refuge to the University of Minnesota for treatment. Both were rehabilitated and released. In January, a blizzard destroyed the bald eagle's nest, from which five eaglets fledged since it was built in 1974. In March, the adult female and immature male began to rebuild the nest 100 feet east of the previous sight, on the south dike of Pool 4. Unfortunately the nesting attempt was unsuccessful; possibly because the male was immature or the pair had initiated construction of the nest too late in the season. A dead eagle was found in July, 1978. It was thought to be the adult male of the pair that nested and raised seven young since 1968. Four eagles were seen in November and December on the Ottawa Division. Use days for eagles totaled 949 use days.



The remnants of an eagle were found in July, 1978. (MFB)

In February, 1978, Ohio's bald eagles were designated as federally endangered and placed under protection of the Endangered Species Act. This recognition will, hopefully, help to preserve the remaining habitat in Ohio and protect the raptors from further human disturbance.

B. Migratory Birds

1. Waterfowl

Population indices compiled by the US Fish and Wildlife Service and the Canadian Wildlife Service for the Mississippi Flyway suggested the 1978 goose population had declined since 1977. At Ottawa, however, goose population estimates were up from 1977. Use days showed an increase of 44% over 1977 figures. A total of 1,862,625 use days were recorded. This number exceeds objective levels (1,500,000) for geese.

A record 1250 goslings were produced on Ottawa this year. This is the largest recorded number of goslings produced since annual production censuses began at Ottawa in 1967. Production doubled from 1977 levels alone. This year also reversed a downward trend in production from the previous high of 979 in 1973.

Duck usage, in contrast, decreased 24% from 1977 levels. Duck use days totaled 2,220,295. This useage represents 53% of the objective level. A peak population of 35,743 was reached in November. Estimates indicate 75 mallards, 20 Blue-winged teal and 200 wood ducks were produced at the refuge.

Whistling swan use days totaled 24,364. This is an 88% increase in useage over 1977, but these swan numbers are only 48% of objective levels. A peak number of 850 was observed in November.

Goose and swan increases may be related to a greater ability to maintain water depths at levels which are attractive to waterfowl. Excellent patches of smartweed appeared in several areas of the refuge because of increased water level control. Waterfowl production will be further encouraged if plans are finalized for establishment of Dense Nesting Cover (DNC) near agricultural fields.



A record 1250 goslings were produced at Ottawa in 1978. (MFB)

In November, numerous geese were observed with the distended neck and breast characteristic of soybean crop impaction. Several specimens were sent to FWS Health Lab for examination.

This year, 660 geese and 80 black ducks were banded by Ohio Department of Natural Resources, Refuge personnel and YACC.

2. Marsh and Waterbirds

Use days for marsh and waterbirds totaled 116,526 in CY-1978. Four unusual marsh birds, for Ottawa, were sighted this year: a double-crested cormorant, sandhill crane, white pelican, and a yellow-crowned night heron. The yellow-crowned night heron is one of a total of three seen on the refuge since Toledo Naturalist Association censusing began in 1970.

3. Shorebirds, Gulls, and Terns

Shorebirds, gulls and terns accounted for 748,645 use days. This is a 38% decrease from 1977 and only 23% of the objective level. This year's overall decrease could have been a result of extensive spring flooding which eliminated shorebird feeding areas. Shorebird numbers will probably remain below levels at Ottawa until a number of the pools can be drawn down to mudflats each year on a rotational and continuing basis. These draw downs are presently being limited because of broken dikes and high water levels on Lake Erie, inability to gravity discharge water from controlled pools and the rapidly rising cost of energy to pump water out.

Several species, usually not found east of the Mississippi; were seen on Ottawa this year - a willet, Hudsonian Godwit, and American avocet. A red phalarope was also seen. This is an uncommon pelagic species, usually seen only along US Coastlines during storms. This is one of two sightings for a red phalarope at Ottawa since Toledo Naturalist Association census records began in 1970.

4. Raptors

The primary raptors found at Ottawa include the following in approximate order of occurrence: Red-tailed hawk, sparrow hawk, Great-horned owl, Marsh hawk, broad-winged hawk, screech owl, sharp-shinned hawk, long eared owl, and turkey vulture. These birds accounted for 8,638 use days on the refuge. This group birds is only at 12% of objective levels.

5. Other Migratory Birds

The eighth annual Christmas Bird Count was held on the refuge December 23, 1978. Nineteen people participated and 56 species were observed. A glaucous gull was sighted during the count. This is an uncommon bird and the usual range is the extreme north of North America.

The Fish and Wildlife Service Research Field Station at Sandusky has been conducting a research project on blackbird depredation on sweet corn on some fifteen four-acre plots on the refuge. This is the fourth and final year for the sweet corn study.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

A total of sixty white-tailed deer were estimated to be on the refuge complex. This is an increase over last years's numbers. Numerous fawns were seen this year. An eight-point buck was seen on the refuge in November.



The Refuge's deer population is increasing. (MFB)

Furbearer habitat on the Ottawa NWR Complex was somewhat limited. As a result, populations were low; with the exceptions of the Navarre Division and Cedar Point NWR. Peak populations of muskrats were estimated at 5,000. Quotas for harvest were originally set at 1500 for Navarre and 1000 for Cedar Point.

Trappers at Navarre reached their quota in the first two weeks of trapping. After another census, quotas were raised an additional 1500 muskrats. A total of 2452 muskrats were taken from the Navarre Division and 747 from Cedar Point.

2. Other Mammals

Feral dogs continue to be a problem at the refuge. Reports of harassment and killing of wildlife have been received.

3. Resident Birds

Resident birds seen on the refuge included ring-necked pheasant, belted kingfisher, and an unusual sighting of a ruffed grouse. Ring-neck pheasant numbers appear to be increasing.

4. Other Animal Life

Nothing to report.

V. INTERPRETATION & RECREATION

A. Information & Interpretation

1. On-Refuge

Ottawa's I & R program took on increased emphasis in 1978 with the addition of a PFT Outdoor Recreation Planner to the staff when Mike Boylan EOD on March 25. The new position, coupled with the refuge's current master planning process, suggest a promising public use program for Ohio's only unit of the National Wildlife Refuge System.

Some important cosmetic changes were made early in 1978. The Butternut Lodge, a former hunting cabin, was cleaned-up and designated as the future Environmental Study Area. The refuge garbage dump, located near the lodge was re-located to a distant part of the refuge away from public use areas. Interpretive trail signs which were faded, damaged or generally illegible or inappropriately placed were removed. The shell of an old hunting lodge that had been an eye sore on the foot trail was removed by YACC and Refuge Personnel. The first phase of the refuge sign plan was submitted in 1978 and Ottawa was allocated an additional \$2,000 by the RO to purchase much needed entrance, information and recreation symbol signs. Four refuge leaflets were submitted for production in 1978, including a new general refuge leaflet, a new EE leaflet, a revised bird list and a revised hunting leaflet.

Ottawa's increase in personnel was reflected in the more than 3,000 persons who were presented on-refuge interpretive programs in 1978, and increase of some 2,000 over 1977.

The refuge EE program continued to emphasize getting students and teachers involved in field activities. EE activity hours were recorded only for those classes conducting field investigations. The Butternut Lodge EE area saw over 1,000 students accumulate over 5,000 activity hours of field activities during 1978. To familiarize teachers with EE methods, Ottawa hosted a teacher's workshop in September conducted by refuge personnel with YACC assistance. The 30 teachers in attendance rated the workshop "very successful" on feedback forms required by the school system. Five of the teachers who attended this workshop returned with their classes later in 1978.

New EE
program
should
lead from
this...



to this. . .
(MFB)



As a result of our fall workshop, Ottawa has been requested to provide similar workshops in 1979 for the University of Akron and a regional workshop for the Northwest Ohio Education Association. In addition to workshops, consultations were held with a number of individual teachers in 1978. Ottawa increased its EE materials to include the OBIS (Outdoor Biology Instructional Strategies) activities, National Wildlife Federation series and Ohio DNR materials in addition to the FWS "We Can Help" lessons. These are part of our growing "lending library" of EE materials available to teachers.



Refuge Workshop Was Rated A Success by Participating Teachers. (MFB)

Nearly 14,000 persons used the refuge's foot trails in 1978, an increase of almost 20% over 1977. This was also the ninth year that Ottawa participated in the annual Conservation Field Day in which all the fifth graders in the county tour the refuge and learn about various management techniques. This year, 600 children visited the refuge in the event which is sponsored by the local SCS office.

Twenty-four news releases were sent to some 40 news media in 1978. Ottawa received television coverage on stories dealing with the destruction of the Bald Eagle nest, during the "Blizzard of '78", the Refuge muskrat trapping and Program Conservation Field Day.



Assistant Manager Dan Walsworth during Field Day Activities. (MFB)

2. Off-Refuge

During National Wildlife Week 1978, refuge personnel visited 26 schools in three counties and presented programs to over 7,000 students and teachers. The extra manpower enabled refuge personnel to expand NWR presentations to include several Toledo inner-city schools which later accepted our invitations to visit the refuge for EE field activities.

In April, ORP Boylan attended the FWS "Cynosure I" Meeting in Tucson, Arizona for I & R personnel and the AIN annual meeting. In May ORP Boylan attended the Region 3 EE Workshop in Minnesota. Refuge personnel presented programs to nearly 3,000 other persons off-refuge in 1978. These programs were significant in that they represent special-interest groups who specifically requested a presentation, indicating a renewed interest (awareness of Ottawa by the general public). Such groups ranged

from garden clubs and Toledo Fraternal Order of Police to civic organizations including Kiwanis and the ever-present scouts.

The most significant off-refuge presentations during 1978 were a series of three public meetings on Ottawa's master plan. The meetings were conducted by the planning agency Miller, Wihry & Lee/EDAW during January, July and October. Total attendance was disappointing with only some 125 people attending the three meetings. The lack of attendance reflects the general public's lack of awareness of and interest in Ottawa and subsequent indifference as to the refuge's fate. Hopefully, the combination of a sound master plan, adequate funding, adequate staffing, and a good I & R program can cure Ottawa's "Identity Crisis."



Refuge Mgr. Herzberger (green suit) & Region 3 BLHP Leader Ed Crozier (brown coat) participate in a Master Plan Meeting. (MFB)

B. Recreation

1. Wildlife Oriented

Ottawa's recreation program took shape in 1978 in its three major forms of hunting, trapping and wildlife/wildlands observation, specifically, birding.

In the third year of Ottawa's controlled goose hunt, 798 hunters harvested 302 geese for a .38 success rate. The hunt was extended to 28 days this year instead of the usual 25. Some two dozen violations were reported but none were major (see "Enforcement").



Two of Ottawa's successful hunters. (MFB)

In October, Ottawa offered a "Waterfowl Workshop" at the Butternut Lodge prior to hunting season. Using slides, a waterfowl identification film, literature, windboards and pre- and post-tests, refuge personnel assisted participants in improving their identification skills. Pre-registration was necessary due to limited space. By popular demand, three workshops were offered and total attendance reached 125 persons. In addition to identification, each workshop included a segment on lead poisoning and steel shot. The FWS film, "A Closer Look" was shown and an ODNR authority handled questions. The "Waterfowl Workshop" proved very popular and will hopefully remain an annual event. We have received requests from the local Ducks Unlimited chapter to run a similar workshop off-refuge next year.

Ottawa personnel conducted two hunter safety instruction courses on the refuge in 1978 and assisted at another off-refuge. Ass't Manager Hill and OPR Boylan conducted courses for Ottawa's Explorer Post and YACC, respectively. Hill and Boylan later participated in sessions on wildlife management and hunting techniques during another instructor's off-refuge course.

Ottawa's trapping season concluded March 15, 1979. Trappers working the Navarre Marsh unit and Cedar Point NWR harvested a total of 3199 muskrats. Marsh management and water control on all units has resulted in a healthy muskrat population. Trapping is now recorded as a recreational activity at Ottawa in addition to being a management technique.

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October of 1978 saw the initiation of Ottawa's newest recreation program as 26 members of the Black River Audubon Society from Lorain, Ohio drove 80 miles to spend their weekend living at the Butternut Lodge site. The birders arrived Friday afternoon and left Sunday afternoon. On Saturday evening, ORP Boylan presented a slide program on the National Wildlife Refuge System. It is anticipated that in the future the Butternut Lodge and its three cabins will be used for similar residential birding weekends by groups from throughout Ohio and Michigan. The logistics of finding accommodations in this area makes weekend visits by groups difficult. By allowing existing facilities to be reserved by responsible groups, the refuge can earn the interest and support of Ohio's large network of birding groups and environmental organizations. Likewise, regular use of these facilities by responsible persons reduces the chances of vandalism.

These weekend activities persisted throughout the fall of 1978 with visitors including Black River Audubon, Bowling Green State University's biology class, Hocking Technical College's Waterfowl Management Class, and a Boy Scout Troop working on the Wildlife Merit Badge.

Future weekend permits will encourage birding groups, colleges and universities and discourage all scout groups. The lodge site is not a camping facility but merely a temporary accommodation for those who have specific use of the Wildlife Refuge and who live so far from Ottawa as to make a one-day trip impractical. Ottawa's controlled goose hunt is one successful component of the recreation program; hopefully, the Butternut Lodge can do the same for the birding effort. By improving Ottawa's trails and actively encouraging birders, we hope to attract an audience that many refuges have too long ignored.

C. Enforcement

Ottawa's muskrat trapping program was the target for the more serious violations in 1978. On March 30, 1978, an investigation was initiated into the disappearance of 408 refuge muskrat pelts from the shop area. The FBI was notified but was unable to assist. The investigation was turned over to SA's Rick Leach and Jeff Lang from the Detroit LE office who were assisted by refuge personnel. There was probable cause to believe that nine individuals, all YACC enrollees were involved in the theft, transportation and/or sale of these muskrat pelts. All nine signed a statement admitting guilt and were subsequently dismissed from the YACC program. Ninety-five percent of the stolen pelts were accounted for with 37% of them recovered. Initial loss of revenue from the 408 stolen pelts was estimated at \$2,000. Of the nine defendants, six were placed on two years probation while five paying restitution totalling \$1314.00. Prosecution was declined on two of the defendants.

On December 22, 1978, two refuge permittees and their helper were charged and apprehended taking muskrat pelts in violation of their permits. One trapper pleaded guilty to permit violations and forfeited most of the muskrats while the case against the other trapper was still pending. Charges against the helper were dropped.

Fifteen other citations were issued by refuge personnel during 1978 but none were prosecuted. Three involved allegedly unplugged shotguns while twelve involved trespass during hunting season. As a result, Ottawa's 1978 goose hunt resulted in no violations being prosecuted.

VI. OTHER ITEMS

A. Field Investigations

1. Characteristics of Common Gallinule Breeding Habitat Along Southwestern Lake Erie. (Alan Brackney)

The objectives of this study were: 1.) to estimate the size of the breeding population of common gallinules along southwest Lake Erie, 2.) to find out more about their habitat, 3.) to document nesting range and breeding population in the region, and 4.) to compare habitat needs with current management practices and make suggestions to better the habitat.

Gallinules were censused by using a tape recording of a territorial call. The responses within a 40-m range were counted. Ten to twenty of these 0.5 ha circular plots were placed randomly in each of 16 homogeneous marsh habitats. The frequency of nonresponse was estimated from responses by known pairs either through a sighting or the location of a nest.

Although a positive match between vocal tone and sex could not be positively made, gallinules showed very different vocal tones between sexes. The low-voiced sex showed more aggression and territorial defense and was thus believed to be the male. Low-voiced individuals responded 93% of the time, with the high-voiced individuals answering only 21% of the time. Estimates were made for population based on calling males.

Nest density estimates from strip transects on five marshes and a complete search made on one marsh were compared with census estimates. Nest success was calculated to be 66%. The population for the southwestern Lake Erie marshes of Ohio was estimated to be $1,198 \pm 520$ pairs. Densities ranged from 4.63 pairs per ha of vegetated habitat at Navarre Marsh to 0.71 pair per ha on an area of Cedar Point.

2. Great Blue Herons As Environmental Indicators (Gerald Grau - BGSU)

The primary objective of this study was to locate the feeding sites for the herons from the island and mainland heronries. Also, the relationship between heron social behavior and heron distribution over the feeding area was studied.

The field season data showed that the herons did not disperse evenly around the heronry while feeding mainly due to the location of prime feeding habitat. Some flightlines (or directions) from the heronries consistently were followed by a greater number of herons than others.

The feeding distribution appeared to be influenced by social behavior. Herons from closely spaced nests were more likely to enter and leave the colony in the same directions and in the same flock. Thus birds from one section of a heronry are likely to have clumped feeding distribution. The great blue herons did not maintain feeding territory but repeatedly fed in the same general area.

3. The Role of Navarre Marsh to the Bird Populations Common to the Sister Islands. (Robert Meeks and Robert Hoffman)

The main objective of this study was to watch the movements and feeding of bird populations common to the Sister Islands, and the role of Navarre Marsh as a common feeding ground.

The study included an evaluation of the actual movements of the bird populations. It also included feeding activities with specific regard to Navarre Marsh.

4. Floristic Analysis of the Aquatic Vascular Plants at the Navarre Marsh, Ottawa County, Ohio (Todd Curry - BGSU)

The main purpose of the research was to investigate the aquatic vascular and marginal marsh flora in the Navarre Unit of the Ottawa National Wildlife Refuge near the Davis-Besse Nuclear Power Plant, Ottawa County, Ohio.

Collections of plant specimens were obtained throughout the entire marsh. Weekly collections were made by hand or the use of a small shovel in order to obtain entire plant specimens. Preserved plant specimens were identified using various plant keys. Substrate samples were obtained by the utilization of HACH portable water-test kit.

5. The Epiphytic Diatom Flora of Three Species of Aquatic Vascular Plants Common to Three Lake Erie Marshes. (David Millie)

The objective of this study was to analyze the specificity of the epiphytic diatom assemblages in terms of community structure and standing crop among three macrophytes and an artificial substrate. A secondary objective was to observe the composition, abundance, and seasonal periodicity of the epiphytic diatom flora in three Lake Erie marshes.

Progress to date indicates that diatom communities did not differ among substrates. The presence or absence of a diatom taxon was variable according to substrate and sampling date. Diatom cell density varied among sampling locations. Variability in cell density in a natural substrate was attributed to different growth rates of the host macrophytes. 157 of the 247 diatom taxa identified were new distributional records for Lake Erie. Each sampling site had its own plantlife and successional pattern. Community differences were attributed to chemical and/or physical factors.

B. Cooperative Programs

Ottawa was the primary camp for YACC units in Ohio and Indiana in 1978. YACC satellites under Ottawa were located at Muscatatuck NWR, West Lafayette ES, Princeton ES, Senecaville NFH, Hebron NFH, Columbus ADC and Sandusky ADC.

At its peak, Ottawa's total YACC enrollment for all units approached 80 enrollees and 10 staff. Refuge YACC enrollment fluctuated with a maximum of 50 enrollees on board in late March. Early YACC projects included extensive brushing of dikes in preparation for BLHP construction projects. Enrollees also built a third cabin for the Butternut Lodge Environmental Area. This will be used by Ottawa's residential YCC camp during summers as well as weekend birding groups spring and fall.

Much of the enrollee's time was spent rehabilitating refuge buildings for use as temporary field headquarters. In the later part of the year enrollees began constructing a permanent YACC headquarters/shop building.

The YACC year at Ottawa was marred in April when nine enrollees were charged with theft for some \$2000 worth of muskrat pelts from the refuge. The nine enrollees were found guilty and received sentences ranging from restitution to probation. All were discharged from their YACC duties.

In March, the entire YACC camp participated in First Aid training conducted by Eleanor Holbrook, wife of Ottawa's engineering equipment operator, Wood Holbrook.



YACC enrollees built a third cabin for the Environmental Study Area. (MFB)

C. Items of Interest

Ottawa's bald eagle population took a turn-for-the-worse in 1978. One of the two adults has been missing since late summer of 1977. It's carcass was found on July 17, 1978. The adult female and an immature male attempted to re-nest after the previous nest was blown down January 26 during the blizzard but were unsuccessful. (Carcass shown in previous picture)

Ottawa's YACC camp went into operation in early 1978 with five staff members and maximum enrollment of 50. While numerous work projects were completed, the large enrollment adversely affected the camp's efficiency. In April, several YACC enrollees were implicated in the theft of over \$2,000 in muskrat pelts from the refuge. After a long investigation, nine enrollees were found guilty and given sentences ranging from restitution to probation.

Laurie Patterson, a University of Minnesota undergraduate, became Ottawa's first cooperative education student in 1978. Working at the refuge during winter and summer quarters, respectively, Laurie was a welcome addition to our work force.

Ottawa's major BLHP projects began in 1978 with the Pool one repair and rehabilitation and Stange ditch cleaning contract awarded to Gill Asphalt and Construction of Sylvania, Ohio for \$140,346.

In connection with Ottawa's BLHP projects, staff of RO-Engineering were frequent visitors to the refuge in 1978. The technical expertise of Fred Beauvais, Bill Miller and others proved invaluable.

Plans were underway for the creation of the Maumee Bay State Park to be adjacent to Cedar Point NWR. ODNr has sought a cooperative agreement with FWS regarding a foot trail into the refuge from the park.

Two injured peregrine falcons were sent to the University of Minnesota for rehabilitation in 1978. One bird was obtained from a citizen to whom it had been given for safe keeping by the ODNr while the other was given to refuge personnel by a citizen who obtained it from a vessel visiting the port of Toledo. Both birds were treated and ready for release.

Assistant Manager Howard W. Hill, Jr. was notified in December that he was selected as Project Leader for McNary NWR, Burbank, Washington. Dan Walsworth, GS-5 Assistant Manager Trainee became a GS-7 in December. In March, Virginia Behnke was promoted from GS-4 Clerk to GS-5 Administrative Technician.

D. Safety

The Safety Program at Ottawa NWR continued as usual with monthly meetings conducted by Refuge Personnel throughout the year. A topic is picked by each staff member and a film is shown relating to that topic. The film is then discussed by the staff along with other safety problems on the refuge.

There was one work related accident on the refuge in 1978. On May 31, Mike Boylan the Outdoor Recreation Planner, while climbing the eagle nest tree, fell the last 20 feet on his way down. The strap on his climbing harness broke. The harness was old but appeared to be in good shape when checked before climbing. Mike suffered 5 cracked ribs, however no time was lost.

He went to the hospital that evening for x-rays, was taped up and returned to work the next day. The climbing harness was discarded, albeit, a bit too late.

Several safety improvements were made on the refuge this year. They are as follows:

- (1) Gates were installed at the end of foot bridges that lead onto dike that is used by vehicular traffic.
- (2) Installed signs at end of foot bridges indicating "caution, vehicular traffic".
- (3) Installed safety fence around open ditch at parking lot.
- (4) Ordered and recieved new regulatory signs indicating pedestrian crossing, speed limit, etc.
- (5) Conducted a Hunter Safety Course for YACC and Explorer Post.
- (6) Conducted a Red Cross First Aid Course to YACC Staff.
- (7) Rewired office and two residences to State and FWS Standards.
- (8) Checked and serviced all fire extinguishers.
- (9) Installed ROPS on new road grader.
- (10) Cleaned slash from woods surrounding office for fire protection.
- (11) Screened flourescent lights in YACC trailers.
- (12) Ordered new equipment for prescribed burning program.

Plans are to increase efficiency of safety program by instituting more periodic safety walk-throughs during the year.

DARBY MARSH

Darby Marsh is a 520 acre unit of the Ottawa NWR Complex located 14 miles east of the main Ottawa Division near the city of Port Clinton, Ohio.

With the completion of the \$1.2 million Dike Rehabilitation at Darby in 1976, the marsh vegetation has come back creating a duck paradise. Herons, egrets, and shorebirds also use the area and can be found in large numbers at certain times of the year.

The muskrat population is coming back with the increase in vegetation and stable water levels. Trapping was not allowed on Darby Marsh this year but maybe next year if the population show a satisfactory increase.

Trespass problems were not present to any degree at Darby. The primary management at Darby Marsh consists of water manipulation for proper interspersion of open water and emergent vegetation, maintaining proper water levels for muskrat populations, and maintaining sufficient water for aquatic vegetation for waterfowl.

NAVARRE MARSH

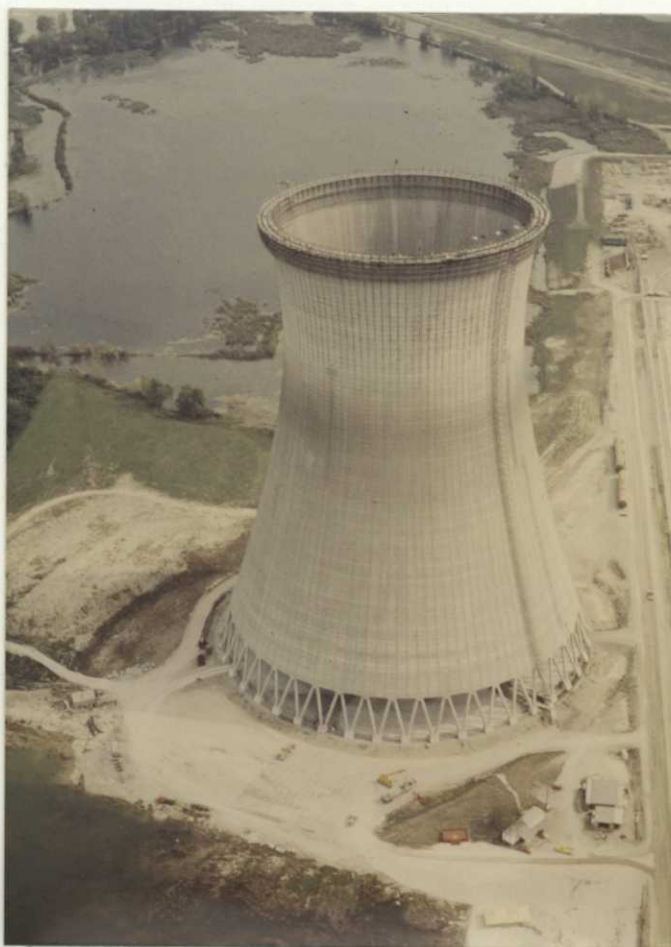
Navarre Marsh is a 591 acre marsh surrounding the Davis-Besse Nuclear Power Station which is jointly owned by the Toledo Electric and Cleveland Electric Illuminating companies. Ottawa NWR has full management control of the marsh under a cooperative agreement with the power companies, which maintain dikes and water structures.

This area is not open to the public although the trapping program allows two individuals to enter the area for trapping. An abundance of muskrats in 1978 at Navarre Marsh enabled the trappers on the unit to reach their initial quota of 1500 in the first two weeks of the trapping season. Subsequent censusing of the muskrat population of Navarre resulted in the trappers being allotted an additional 1500 muskrats.

A continuing Wildlife Management Study under contract to Toledo Edison through a Special Use Permit allows the taking of a number of wildlife species each year for radiation study.

Navarre Marsh is also the site of several research projects (see Sec. VI., "Field Investigations").

Trespass violations seldom occur at Navarre Marsh but this year individuals were apprehended trapping turtles in July.



Navarre Marsh sits in the shadow of the Davis-Besse Nuclear Power Station.

CEDAR POINT NWR

Cedar Point NWR, comprising 2,245 acres, is located six miles west of Ottawa NWR. The dikes were destroyed during wind generated floods in 1972 and 1973. Funds amounting to 1.6 million dollars enabled dike rehabilitation in 1976-1977. Rehabilitation included 4.2 miles of earthen dike rehabilitation, 2.1 miles of interior rip-rap, 1.6 miles of exterior rip-rap, 4.6 miles of gravel road top, and five miles of interior grass seeding on the dikes. Two water control structures were constructed which permitted filling or drainage of the marsh by gravity when the right conditions exist.

The stable water levels at Cedar Point brought about by rehabilitation of the dike and new water control structures enabled aquatic vegetation to reappear in abundance. The vast areas of open water present after the floods were replaced with an interspersed of emergent vegetation and open water. The tremendous "com back" of vegetation can be attributed to the fertile soil, shallow-stable water conditions, and an abundant seed source present in the marsh. The marsh is becoming a waterfowl paradise and the fall populations are witness to it. The refuge serves primarily as a resting and feeding place for migrating waterfowl although it provides nesting cover for some resident ducks and geese.

As the vegetation reestablished and stable water conditions were maintained, muskrats also returned to the area. By the fall of 1978 a population had built up enough to allow a harvest quota of 1,000 muskrats, although only 700 muskrats were removed.



Almost \$2 million has been spent rehabilitating Cedar Point NWR.

WEST SISTER ISLAND

West Sister Island is a 77-acre island located nine miles off the south shore of Lake Erie and is a rookery for great egrets, great blue herons, and black-crowned night herons. This refuge has been designated a wilderness area and as such receives limited public use and minimal management.

Refuge personnel visited West Sister in May and found the island was relatively undisturbed with minimal litter. Seven field reports were taken, however, for trespassing by local boaters. Several days later personnel revisited the island and took seven more field reports. This prompted a news release to the public that West Sister is off limits to the general public.



Even Lake Erie can be blue... sometimes. (MFB)

Ten students from Ohio State University spent a weekend on the island banding herring gulls, great blue herons, black-crowned night herons and great egrets at the nests. This is a continuing research project.

In August, the family of Gladys McMeans accompanied their mother to the island where she lived from 1908-1910 as the daughter of the lighthouse keeper. Mrs. McMeans subsequently provided the refuge with some historical records of the island, and an oil painting of West Sister as it appeared at the turn of the century.



Daughter of a former lighthouse keeper, Mrs. McMeans and her family returned to West Sister Island in 1978. (MFB)