

ERIE NATIONAL WILDLIFE REFUGE
Guys Mills, Pennsylvania

ANNUAL NARRATIVE REPORT
Calendar Year 1987

U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

ERIE NATIONAL WILDLIFE REFUGE

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Calendar Year 1987

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Refuge Manager

2/29/88
Date

G. A. Smith
Refuge Supervisor-Central

2-2-88
Date

Donald H. Huns
Regional Office Approval

3/4/88
Date

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INTRODUCTION

The 7,994 acre Erie National Wildlife Refuge consists of two divisions approximately ten miles apart in northwestern Pennsylvania in Crawford County.

1. Sugar Lake Division

The Migratory Bird Conservation Commission approved Erie NWR on March 11, 1958. Establishment of the refuge occurred on May 22, 1959 when the first tract was purchased. Under the original and subsequent approvals, 105 tracts totaling 4,966.66 acres were acquired at a cost of \$560,087.78. Approximately 167.8 acres remain to be acquired.

2. Seneca Division

The Seneca Division was approved by the Migratory Bird Conservation Commission on June 6, 1967. Nineteen tracts totaling 3,027.15 acres have been acquired at a cost of \$341,350.00. Approximately 1,321.85 acres remain to be acquired. The last land acquisition was in 1973.

The topography of northwestern Pennsylvania resulted from the retreat of the last continental ice age glacier. This hilly country in the upper reaches of the Allegheny River watershed is dotted with numerous lakes, swamps and marshes in association with meandering valley streams.

Historically, the area was an important nesting and resting area for waterfowl using the western portion of the Atlantic Flyway. During the 1800's, intensive logging and farming coupled with the near extinction of the beaver resulted in the loss of much valuable wetland habitat. The corresponding decline in waterfowl use eventually led to the creation of the Erie National Wildlife Refuge.

Contrary to popular belief, the refuge is not on the shores of Lake Erie. As the crow flies, the Seneca Division is twenty-five miles south and the Sugar Lake Division is thirty-five miles south of Lake Erie.

The name, Erie, comes from the Erie Indians. This small tribe resided along the shores of what is now known as Lake Erie. In the mid-17th century, the Seneca Indians defeated the Eries and the tribe ceased to exist as a distinct group. In 1969, the refuge was officially named after this extinct Erie Indian Tribe. Unfortunately, the name, Erie, is more closely associated with the area north of the refuge because of Lake Erie, the City of Erie and Erie County. This causes much confusion especially when the public is trying to locate the refuge for the first time.

A. HIGHLIGHTS

- Volunteer Howard Byham, Bluebird Coordinator, reported 118 bluebird boxes produced 197 nestlings. Byham banded 118 bluebirds.
- Volunteer Howard Byham took a second place honor in the "Take Pride in Pennsylvania" program for his work with Erie's Eastern bluebird population.
- This is the first year bald eagles were seen every month for the entire year. A pair of bald eagles were observed early in March and thereafter, however, no active eagle nests were found this year.
- Thirty acres of warm-season DNC was planted in early May using innovative planting techniques developed in Region 3 and Region 6. "Homegrown" NY4006 switchgrass seed harvested in 1986 provided the primary seed for the spring plantings.
- The hunting and trapping plans for both divisions were approved and successfully implemented during the fall seasons. The Seneca Division plans were met with little public opposition.
- Volunteers improved habitat for wild turkeys along Penelec right-of-way that crosses the refuge.
- A National Merit Award was presented to Kevin Murray for his winning poster in the National Hunting and Fishing Day Poster Contest.
- Pennsylvania Department of Transportation volunteers removed a mud-caked beaver tube and trucked away 32 tons of debris.
- United States Representative Tom Ridge was the speaker for the "Take Pride in America Awareness Week" program when the Presque Isle Audubon Society officially adopted Erie Refuge.

B. CLIMATIC CONDITIONS

Weather data was obtained from the U.S. Weather Bureau Station one mile south of Meadville, PA. The refuge is approximately 200 feet higher and 10 miles east of Meadville, which lies in the warmer lowland of the French Creek Valley. Next year, however, because the Weather Bureau has started to charge a fee for the report, the weather data will be obtained from the refuge weather station, which in effect should be more accurate.

The frost free day season ran from May 8 to October 9, totalling 155 days. Total precipitation amounted to 47.72

inches, 1.72" over the 46" average for this area. See table for temperature extremes.

Winter temperatures were typical, but winter was mild as far as the amount of snowfall. Impoundments opened up at the end of March. June was the wettest month with 7.15 inches of rain. The first snowfall was on October 21st. Three (3.0) inches of snow fell that day, however, it melted away the following day. Overall, climatic conditions during the year were favorable for wildlife.

Climatic Conditions

<u>Month</u>	<u>Temperatures</u>		<u>Total Precipitation</u>	<u>Days of Precipitation</u>
	<u>Min.</u>	<u>Max.</u>		
January	-10	51	2.86	21
February	- 5	47	.43	7
March	9	73	3.41	9
April	15	83	2.87	14
May	28	89	1.63	8
June	37	90	7.15	11
July	47	92	5.25	11
August	43	98	8.48	10
September	35	81	6.05	16
October	22	72	3.40	17
November	12	76	2.81	12
December	2	56	3.38	18

First Frost: October 9, 30°

Coldest Day: January 25, -10°

Hottest Day: August 16, 98°

C. LAND ACQUISITION

1. Fee Title

Steve Dyer, Realty, visited the refuge the week of September 21-25 to appraise the value of the Theodore Bogardus property. Mr. Bogardus had indicated to the Refuge Manager that he would be interested in an offer from the Fish and Wildlife Service to purchase approximately 160 acres of his property. This is the final remaining inholding in the Sugar Lake Division.

3. Other

A proposal to expand the present boundary of both divisions of Erie NWR was submitted to the Regional Office on August 19, 1987. The proposal includes approximately 4,700 acres of wooded swamp, agricultural land and forested upland. The

proposed area is included within the Priority Category 21-Lower Great Lakes/St. Lawrence River Basin. Realty's Ascertainment Section will review the proposed boundary expansion and coordinate any result and proposal with the state.

D. PLANNING

2. Management Plan

The Forest Management Plan/Prescription for Compartment #1 and the Environmental Assessment were reviewed by Biologist Leenhouts and submitted to the Regional Office for final approval on November 24.

The Hunting and Trapping plans were completed for both divisions and approved. The plans were implemented successfully during the fall seasons.

A Farming Review (grassland/cropland) was conducted September 3 and 4, 1986 by regional office personnel. The first annual progress report for the warm-season dense nesting cover (DNC) program was prepared and submitted to the regional office. A historical documentation of the warm-season grass DNC program at Erie NWR was initiated and completion is scheduled for 1988. A revised Cropland Plan was prepared and submitted to the regional office for approval. A revised Grassland Plan has been reviewed by Biologist Leenhouts and it is scheduled for completion in 1988.

The study proposal, "Habitat Management for American Woodcock on the Erie Wildlife Refuge," was approved and submitted to the Ruffed Grouse Society for funding. On November 2, a response was received from the Ruffed Grouse Society indicating monies were not available in 1988 from their general operating revenues to fund this study proposal, however, they were working on several significant grant proposals and if successful monies would then be available for the work. If the Ruffed Grouse Society is not successful in obtaining money through grant proposals, then financing the "Habitat Management for American Woodcock on the Erie National Wildlife Refuge," study will be reconsidered in the fall of 1988.

One public use progress report was submitted to the Regional Office which listed accomplishments required by the Public Use Development Prospectus.

5. Research and Investigations

Erie NWR NR87-"Investigations of Possible Effects on Fish and Wildlife of Road-Spraying of Oil and Gas Well Brines"
Cindy Rice, Ecological Services, State College, visited the refuge on September 30 and October 1 to gather information needed to prepare a study plan for brine spraying on refuge roads by township road crews. The plan was prepared and submitted to the Regional Office on October 14 for approval. Work is expected to start on the project in May 1988.

E. ADMINISTRATION

1. Personnel

Thomas L. Mountain, Refuge Manager, GS-11, EOD 7/8/84, PFT

James H. Wood, Assistant Refuge Manager, GS-9, EOD 9/2/84, PFT

Janet A. Marvin, Outdoor Recreation Planner, GS-7, EOD 11/6/66, PFT

Ruth A. Brugler, Secretary, GS-5, EOD 3/4/84, PFT

Robert E. Battin, Maintenance Worker, WG-8, EOD 3/14/77, PFT



Tom, Janet, Ruth



Jim and Robert

NPTPC Workers

- | | |
|---------------|-----------------|
| 1. Joseph Lew | 2. Wendy Bender |
|---------------|-----------------|

Volunteer Programs

- | | |
|---|--|
| 1. Scout Troop 303 (26 people) | 12. Tamara J. Backman |
| 2. Devin J. Wanner | 13. Lake Edinboro Sportsmen (5 people) |
| 3. Julie Ann Foulk | 14. William F. Schneider |
| 4. William Smith | 15. Robert Maloney (8 people) |
| 5. Pennsylvania Department of Transportation (6 people) | 16. Joyce Sliter |
| 6. Stephen C. Hazelwood | 17. Robert Bossard |
| 7. Diana Hartland | 18. Ed Werling |
| 8. Ted Fauceglia | 19. Howard Whiteman |
| 9. Tim Kimmel | 20. Thomas Terrill |

10. Presque Isle Audubon Chapter (13 people)
11. Chris Powell
21. Jennifer Arkett, Penelec Division Forester (6 people) and National Wild Turkey Federation (16 people) and Pennsylvania Game Commission
22. Howard Byham

	<u>Full-Time</u>	<u>Part-Time</u>	<u>Temporary</u>	<u>Total FTE</u>
FY87	5	0	0	5.0
FY86	6	0	0	6.0
FY85	5	1	0	5.9
FY84	5	1	0	5.9
FY83	5	1	0	5.9

3. Other Manpower Programs

Two people were employed from June 8 to August 14 under the Northwest Pennsylvania Training Partnership Consortium, Inc. summer youth training program. They took care of mowing lawns and parking lots, trimming shrubs and vegetation along trails, and did some other routine maintenance projects.

Diana Dronko, Monitor for the Northwest Pennsylvania Training Partnership Consortium, Inc. checked the work site and she determined the refuge was in compliance with Bureau of Labor and Industry Standards for the summer youth training program.



Every hard rain gravel washed from driveway to lawn.
JM 8/4/87

4. Volunteer Programs

The total number of volunteer hours contributed for Fiscal Year 1987 were 2,176 and an additional 427 hours were contributed during October through December 1987, the beginning of Fiscal Year 1988. The Regional FY 1987 Volunteer Report indicated that Erie Refuge was second in the region in using the greatest number of volunteers. The volunteer efforts of 94 people made this distinction possible.

Howard Byham continued to manage our bluebird program. He also answered letters and phone calls about the Eastern bluebird and presented programs about the bluebird to several groups. He contributed 1,320 hours of his time. On January 13, the refuge was notified that Volunteer Byham took second place honors in the "Take Pride in Pennsylvania" program for his work with Erie's Eastern bluebird population. He received a "Certificate of Merit" and a "Take Pride in Pennsylvania" lapel pin from Governor Thornburgh.



"Presented to Howard R. Byham, in recognition of outstanding contributions to the stewardship of Pennsylvania's public lands and cultural resources." RB 1/20/87

A cooperative volunteer project with Penelec, the National Wild Turkey Federation and the Pennsylvania Game Commission was started in May to improve the habitat for wild turkeys along a Penelec right-of-way that crosses the refuge.

Jennifer Arkett, Penelec Forester, developed the vegetation management plan and supervised the project. Penelec crews mowed the center of the right-of-way and treated brush along the edges of the corridor. Wild Turkey Federation members piled brush and planted seedlings along the edge of the right-of-way. The Pennsylvania Game Commission provided the seedlings and made recommendations about which species should be planted to benefit the wild turkey.



Penelec right-of-way. JM 5/30/87



Spot treating brush. JM 5/30/87



Amur Honeysuckle, Silky Dogwood, Scrub Oak and Bittersweet
were planted. . . JM 5/30/87



after getting the brush out of the way. JM 5/30/87

The project will require annual maintenance with additional spot treating of brush and planting of additional seedlings in 1988 and mechanical mowing of the right-of-way in future years.

The Pennsylvania Department of Transportation volunteered to assist refuge personnel in removing a mud-caked beaver tube from the culvert that runs under Route 173. Approximately 32 tons of debris were trucked away from the site in Pennsylvania Department of Transportation vehicles.



Easier than digging out. . . JM 7/29/87



mud-caked beaver tube by hand. JM 7/29/87



Water flows freely through new tube. JM 8/12/87

Devin Wanner staffed our visitor center on weekends during the period June 10 through July 11 and collected some data from visitors which we used in a needs assessment to explore the possibility of establishing a cooperating association.

Other activities performed by volunteers included: live-trapping nuisance beaver, cleaning trash from parking lots and roadways that transect the refuge, photographing wildlife, and general maintenance.

All volunteers received an orientation packet which includes maps, leaflets, regulations, a narrative history of the refuge and the refuge system, management topics, general information and a volunteer patch on their first day of work. Volunteers were also given a tour of the refuge and other training was in the form of reading assignments and questions and answer sessions when needed.

Volunteers were recognized at informed luncheons and were presented with "Certificates of Appreciation" and a "Take Pride in America" T-shirt for significant contributions to our program.



A token of appreciation for Devin Wanner's volunteer service. JM 7/10/87

5. Funding

The funding for the Erie Refuge for the past five fiscal years is as follows:

	'84	'85	<u>Fiscal Year</u>		
			'86	'87	'88
Migratory Birds (1210) O&M pay act funds end-of-year add-on					
Mammal & Non- Migratory Birds O&M (1220)					
Interpretation & Recreation (1240) O&M pay act funds					
Refuge O&M (1260)	216,000	207,000	259,400	207,029	359,519
Quarters O&M	3,500	6,000	5,850	7,600	6,309
Expenses for Sales	1,000	2,000	5,000	5,000	5,000
YCC	32,000	41,700	41,700		13,600
<hr/> Totals					
O&M	220,500	215,000	270,250	219,629	384,428
YCC	32,000	41,700	41,700		13,600

6. Safety

The safety committee met monthly. A safety topic that related to safety on-the-job and in-the-home was discussed at each meeting. Some other matters that the committee discussed and implemented during scheduled meetings included:

- annual and monthly fire extinguisher checks;
- vehicle safety checks;
- replaced wooden well cover at picnic area with a concrete cap;
- deer alert devices were installed on three refuge vehicles;
- the erosion gully at the Seneca Division farm field was flagged.

A couple safety items that were reported last year remain unresolved. The overhead garage door will be replaced with an automatic door opener. As an interim measure, a careful and steady pull on the chain-ball opener is required to open/close the garage door safely. The back drafting of the combination fuel oil/wood stove at the maintenance building has been identified for repair by the maintenance management team. The wood stove is not being used. There were also several other furnace room safety discrepancies noted by the inspectors that require repairing. As funds become available, these safety items will be corrected.

8. Other

A "Take Pride in America" T-shirt produced for Erie with funds contributed by local businesses was requested by Regional Office-Public Affairs. The shirt was sent to Public Affairs, Washington, D.C. for presentation to the Secretary of Interior.

Manager Mountain, Assistant Manager Wood and Maintenance Worker Battin attended the Western PA Tillage meeting on February 19. The meeting was sponsored by the Crawford County Agricultural Extension Service.

Refuge Manager Mountain attended the Advanced Manager Training Program in Washington, D.C. from March 8-27.

Assistant Manager Wood attended 40-hours Law Enforcement training from March 9-12 at the Eastern Shore of Virginia Refuge.

Jim Hall, PA Bureau of Forestry, visited the refuge on April 8 to review the cooperative fire weather station maintained during the fire season by Secretary Brugler.

Assistant Manager Wood and Maintenance Worker Battin attended the Heavy Equipment Training Class at Eastern Shore of Virginia, April 28-30.

Refuge Manager Mountain attended 40-hours Law Enforcement training from April 6-10 at Eastern Shore of Virginia Refuge.

Assistant Regional Director Young and Refuge Supervisor Gavutis visited the refuge on April 20-21. ARD Young and Supervisor Gavutis were given a refuge tour and an overview of refuge operations by Manager Mountain and Assistant Manager Wood.

On April 28 and 29, Refuge Manager Mountain and ORP Marvin delivered the Refuge Revenue Sharing checks to the Randolph, Richmond, Rockdale and Wayne Township secretaries.

On August 7 and 8, Manager Mountain and Refuge Supervisor Gavutis informally reviewed refuge water management activities.

Manager Mountain and Assistant Manager Wood attended the Project Leader's Meeting August 4-7. Secretary Brugler toured Montezuma NWR and attended part of Thursday's session.

Secretary Brugler was detailed to Contracting and General Services in the Regional Office from September 21-25 to assist with year-end fiscal work.

On May 21, ORP Marvin attended the Kodak Photographic Seminar taught by Jack Englert which was held in Meadville, PA.

ORP Marvin attended the Project Learning Tree Facilitators Workshop on June 8 and 9 held at the McKeever Environmental Learning Center, Sandy Lake, PA. The Pennsylvania Office of Environmental Education paid all costs for participants in the workshop.

Maintenance Worker Battin, Secretary Brugler, and ORP Marvin attended the Retirement Briefing (CSRS-FERS-SS) held June 18 at Lamar, PA.

"Common Ground," a documentary which takes a look at how regenerative farming methods boost farm profits and benefits wildlife populations was loaned to us by the National Audubon Society Mid-Atlantic Regional Office. Refuge Manager Mountain, ORP Marvin and Volunteer Byham previewed the tape.

F. HABITAT MANAGEMENT

1. General

The condition of the habitat on the refuge for 1987 was fair to good. Wet weather during the growing season somewhat retarded flowering plants in the wetlands. Fruits and berries were plentiful throughout the refuge. Mast crops in the woodlands were scarce forcing wood ducks to feed on waste grains in the farm fields during the breeding season.

2. Wetlands

Wetland habitat covers about 2,500 acres of the refuge. There are 15 impoundments with water control structures covering about 300 acres. These impoundments are manipulated in accordance with the station's Annual Water Management Plan. We try to manage these impoundments to enhance the refuge's waterfowl objectives by providing food, brood cover, nesting, and resting areas.

Beaver are by far the best wetland managers on Erie Refuge. They are also responsible, as are most managers, for most of the problems associated with management of a wetland complex. Beaver caused problems with water control structures on 12 of the 15 impoundments we/they control. The beaver also created excellent wetland habitat along, across and over several state and township roads during the year.

During late summer there were problems with the outflow pipe at Cooper's Marsh causing a worm-hole to develop just behind the water control structure. An attempt was made to dewater the marsh to inspect the pipe for damage, but beaver problems prevented us from getting this done. In October, a contractor was hired to excavate around the outflow pipe and cut through the dike to drain the marsh. Regional Office Engineer Peter Elliott inspected the site during the second week of November and is drawing up specifications to replace the water control structure and outflow pipe. (See photo in Section I.3.)

3. Forests

1984 Narrative - "A Forest Management Plan is in the planning stages."

1985 Narrative - "The plan was sent to several sources for review of content and returned with comments to be rewritten or incorporated into the plan."

1986 Narrative - "Although the refuge does not have an approved Forest Management Plan yet, . . ."

1987 Narrative - "Although the refuge does not have. . ."

The point is all great minds do not think alike. If it takes managers, biologists, foresters, and administrators this long to put together and agree upon a simple Forest Management Plan, we must have nothing but great adoration for our leaders in Congress who passed a budget only six months late.

1988 Narrative - The Forest Management Plan was approved and implemented, however, no funds are available to. . ., but we may get some inventory work done with the help of the State Forester.

Volunteer Howard Byham, working with instructions from Penn State is attempting to improve mast production in beech (*Fagus grandifolia*) trees. He began this experimental beech tree fertilization project because he noted a decline in Ruffed Grouse population in recent years and a decline in beech tree productivity and wondered if the two situations are related.

The beech is producing a good supply of Burs, but the hulls in the burs are empty and infested with a small larva. Information from the State Forester and Penn State Forestry Department indicates this condition is caused by malnutrition of the tree, therefore, he decided to experimentally fertilize two (2) good bur producing trees to see if fertilizer will correct the deficiency and enable the tree to produce healthy beech nuts.

Beech trees must be fertilized in the fall. On November 3, 1987, two (2) 18" diameter trees were fertilized using Agway 5-10-10 fertilizer. Starting four feet from the base of the trees a steel bar was used to make holes six to eight inches deep. The bar was rolled to make the holes cone shape. The holes were made in a pattern of every two feet square extending four feet from the base of the tree and to a point three feet beyond the drip line of the trees. After filling the holes with fertilizer they were covered with dirt and leaves. A summary of the results of this experiment will be prepared in October 1988.

4. Croplands

The cooperative farmers for the refuge farmed a total of 685.6 acres for 1987. All the cooperators adhered to the crop rotation system as specified in the Cropland Management Plan. Crops were as follows:

Hay	Corn	Oats	Wheat
277 ac.	248.6 ac.	121 ac.	39 ac.

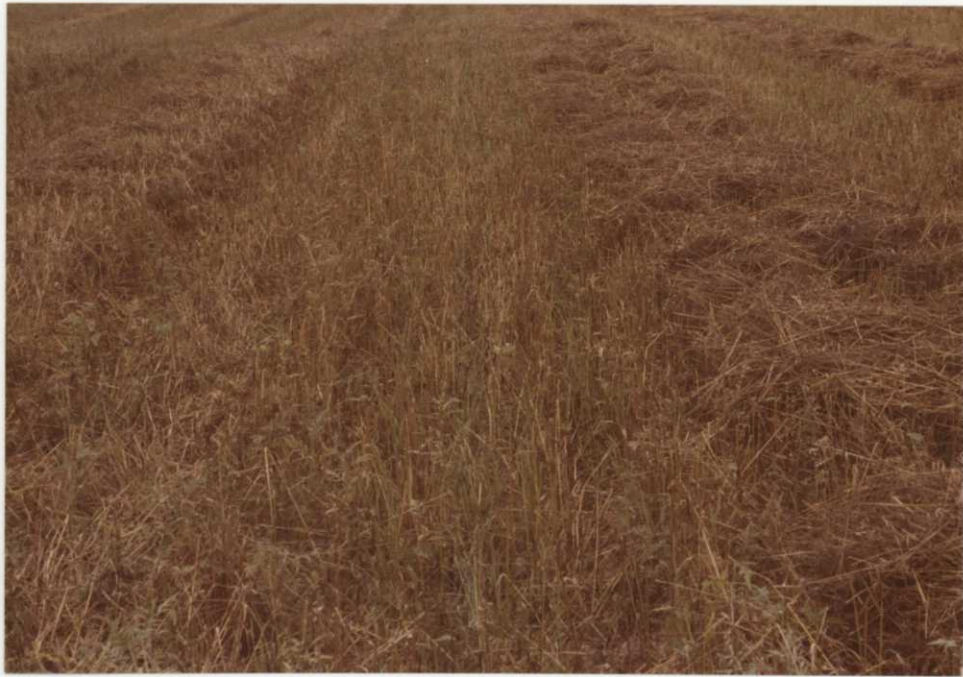
One cooperator plowed and planted 30 acres of oats and then refuge personnel interseeded the area to warm-season grasses. When the oats were harvested, the warm-season grasses started to grow. These fields should provide warm-season grass nesting cover in the near future.

Wet weather plagued farmers this year with heavy rainfall during the spring planting season and again at harvest time. Some of our cooperators were still trying to get into wet fields in late November to harvest corn crops before snowfall.

5. Grasslands

Thirty acres of warm-season DNC were planted in May. The seed source was our "home grown" Shelter and Blackwell and Shelter mix. Planting techniques common to the wetland districts of Region 3 and 6 were attempted to see if they would also work in Northwestern Pennsylvania. Spring dormant seedings were used. Two fields were prepared by a cooperative farmer and seeded to oats. Immediately after the oats were seeded by the cooperative farmer, the refuge interseeded the fields with native warm-season grass seed with the refuge Truax drill. All the field preparation was completed by the cooperative farmer, only the seeding was done by the refuge staff. This technique saves time/money, and if successful, will also provide us with an additional "window" of spring weather to plant native warm-season grass seed. An average of 46" of rainfall yearly severely limits field work.

In August, Leigh Bowes, Cooperative Farmer, combined the oats nurse crop from two refuge fields that were interseeded with warm-season grass seed in May. There appeared to be a good stand of warm-season grasses in both fields. The seedlings in these fields reached six to eight inches.



Warm-season grass seedlings in oat stubble-Shaffer Road field. JM 8/19/87



A good "catch" - Shaffer Road field. JM 8/19/87



Oats field planted by Cooperative Farmer Leigh Bowes was interseeded with warm-season grass seed by refuge personnel using the Truax drill. JM 5/7/87

The other technique employed was to "no-till" seed warm-season grasses in a corn stubble field. The corn stubble was brush hogged in the fall of 1986. This spring the field was quickly invaded by quackgrass. When the quackgrass was 6-8" in height an application of Roundup was applied to the field to kill this cool-season weed. Despite a Roundup application, prior to planting, the field was overrun with morning glory, foxtail, quackgrass, milkweed and other weeds that germinated from windblown seeds on the soil surface after the herbicide treatment. The field was mowed to help release the warm-season plants. The field will need additional herbicide treatment in 1988. Ten days after the chemical application, much to our surprise, the Truax drill did a good job of "no-till" seeding directly in the corn stubble. This "no-till" seeding provided us with a highly desirable firm seedbed. In July the "no-till" warm-season grasses seeded in the corn stubble were coming along, however, the catch looked spotty. Undoubtedly the corn stubble mulch from the previous growing season prevented the Truax drill (not a bonafide "no-till" seeder) from planting all the seed. Only time will tell if these two spring planting techniques will adapt to our climate and soils in Northwestern Pennsylvania. In August, the "no-till" corn

stubble planting of warm-season DNC had produced an excellent stand. The plants were 18" high, had good vigor and some plants produced seed heads. These fields were both experimental, never attempted before in the east, however, both techniques have been successful in the west. We are delighted, so far, with the first year results. Both techniques adapt well to our cooperative farming program so we hope the plantings are successful.



Light brown is first year seed head production. JM 8/12/87



The first field planted with our own "home grown" NY4006 switchgrass seed. JM 8/12/87

A small wildfire was reported on May 6. A 1.5 acre field of goldenrod/quackgrass was probably ignited by a refuge cooperative farmer burning seed bags after planting a farm field. The cooperative farmer was unaware of the fire as he had left the field prior to the fire being spotted by a refuge neighbor who reported it to the Randolph Fire Department. To make the most out of the unfortunate circumstance, a test plot of warm-season grass seed was directly no-tilled into the burned area. The strip will be monitored for signs of warm-season grass growth, however, hopes are not running high for a successful "catch."

Harvey Pinkerton, SCS, visited the refuge on August 11 to see the new warm-season grass fields established this spring.

Four warm-season DNC fields were limed in May with 90 tons of agricultural lime. Three fields were limed at 1.5 tons per acre and one field at 2.5 tons per acre. The lime applications will increase soil pH releasing soil nutrients. The Soil Conservation Service recommended lime as opposed to fertilizer applications.

On May 14 and 18 nest searches were completed with a cable-chain drag (Higgins et. al., J. Wildl. Manage. 33:1009, 1969). A sample of various grasslands: warm-season DNC, tame haylands, and farmland hay fields (timothy and red clover mix) were dragged in an attempt to evaluate upland waterfowl nesting.



Jim Wood and Robert Battin hook-up cable-chain drag to start waterfowl nest searching in warm-season DNC standing residual nest cover. JM 5/14/87



Spring stand of warm-season DNC stubble remaining after seed harvest in the fall of 1986. The height and density provided excellent nest cover. The heavy duty cable-chain drag is required in this heavy cover. JM 5/14/87

There was one blue-winged teal nest found in a warm-season DNC field and one mallard nest found in a clump of orchardgrass in a cooperative farm field of timothy and red clover mix during the waterfowl nest searches conducted on May 14 and 18. A hen turkey was also driven out of a warm-season DNC field. No nest was found. The DNC was too dense to see if she had a early brood "bugging" in the cool season (quackgrass) island located in the warm-season DNC. The warm-season DNC was infested with what appeared to be "black flies." Numerous small songbirds were flushed from the warm-season DNC fields. A blue-winged teal was flushed from a wet meadow in the Guys Mills bottoms. The nest was not found. The mallard nest in the photo below was found in an old field next to Quarters #9. The nest hatched successfully. Weather permitting, nest searches will be continued next year to more fully ascertain waterfowl upland nesting habitat preferences at Erie. A cool-season mix of intermediate wheatgrass "Oahe"/Alfalfa or orchardgrass may be more attractive dense nesting cover at Erie NWR. A planting of a small plot of cool-season mix located close to the successful mallard nest reported above is planned for 1988.



Well hidden nest in field next to Quarters 9. RB 6/87



Mallard nesting in dew berry. RB 6/87

Manager Mountain spoke with Ernst Crownvetch on June 12 regarding the outstanding refuge share of 1986 warm-season seed mix. Ernst has 220 lbs. of mix cleaned, however, the initial purity and germination tests were incorrect and Ernst has not retested the lot. Ernst wanted to give us the refuge share, however, we declined until the complete information is available. (It's interesting to note Erie's Shelter switchgrass was sold to three states: Michigan, Wisconsin and New York. New York Department of Environmental Resources was the only wildlife agency purchasing the seed.

In October, Ernst Crownvetch, Inc., harvested warm-season DNC on two refuge fields. On October 5, Field NG-10 was harvested. This 14 acre field was a 50% mix of Shelter and Blackwell switchgrass. Field NG-3, harvested on October 15, was an 11 acre pure stand of Shelter switchgrass variety (NY4006). This field was a bit late in maturing. The field was mowed in late June in an attempt to remove the goldenrod seed heads from the stand. At the time of the cut, the warm-season grass was further along than expected, so the late cut stressed the warm-season plants. In response, we had a proliferation of seed heads in a stunted field of Shelter switchgrass. The goldenrod did not recover from the mowing. The combine operator remarked to the refuge staff, "there is very little chaff and mostly seed in my combine." He was puzzled over the clean seed. The stunted field of Shelter switchgrass with the proliferation of seed heads probably resulted in the harvest of relative clean seed. The combine operator estimated about 50 bushels at 50 lbs./bushel of almost clean seed from this 11 acre stand. The results of mowing this field were interesting and could be duplicated at another refuge if seed production was an objective of their grassland program.

Turner's Mill Custom Sprayers applied the herbicide Atrazine at two quarts per acre on 23.51 acres of warm-season grasses on October 14. Another 50 acres will be sprayed in the spring to eliminate cool-season weeds and release the warm-season grasses to improve stands of grasses that have been poor in previous years.

This 1987 fall application will be compared with the spring 1988 application to see if there is a better visual response to either treatment. A small lime application is also planned for the spring of 1988 to raise the pH of the soil where the warm-season grasses exhibit poor plant vigor.

The second annual 1987 warm-season DNC progress report has a more detailed account of this year's management activities.

9. Fire Management

Pennsylvania State Forest Fire Warden, Harry C. Drury administered the step test for the refuge staff on April 13, in preparation for the prescribed burning season. The entire staff successfully met the minimum fitness requirement for prescribed burning. Three staff members met the necessary physical fitness requirements for a "red card."

A small wildfire was reported on May 6. A 1.5 acre portion of a goldenrod/quackgrass field was ignited in a nearly bare field by a refuge cooperative farmer burning seed bags. The farmer was unaware that wind blown sparks started the fire. The fire was reported to the Randolph Fire Department by a refuge neighbor and extinguished a few minutes after the fire department arrived.

In May approximately 16 acres of warm-season grasslands were burned by prescription.



Stunted stand of warm-season DNC, soil pH 5.0. Field NG-13, is located south of Pool 9 entrance road. See treatment series of photos that follow: JM 5/5/87



"Add a little fire!" Field NG-13 was prescribed burned on May 6. JM 5/5/87



"Spread some lime to sweeten the soil." JM 5/7/87



"A ninety-day wonder," the warm-season DNC response was incredible. JM 8/12/87

10. Pest Control

Herbicides were used on the croplands on the refuge to reduce grasses and broadleaf pest plants. These Environmental Protection Agency approved herbicides were used to enhance corn or oat crops and were applied by the cooperative farmer. Application rates and dates were formulated by the refuge staff and the Pennsylvania Cooperative Extension Agents for the County.

The cooperative farmers all used Atrazine at the rate of 1.5 quarts per acre to control grassy weeds, such as quackgrass and foxtail, when planting corn. MCPA Amine was commonly used to control broadleaf weeds such as bindweed, curly dock, mustard and ragweed when establishing an oats nurse crop for grass and clover plantings.

Turner's Mill Custom Sprayers applied the herbicide Atrazine at two quarts per acre on 23.51 acres of warm-season DNC on October 14.

Purple loosestrife was found about a half mile south and east of the Sugar Lake Division on the outflow of Lake Creek. The plant is located on private property. This

quarter of an acre of "purple" caused us a good deal of concern and a search was conducted for the plant on the upstream end of Lake Creek. No purple loosestrife was found during this search. In 1984, the refuge staff discovered that a farmer near the Seneca Division planted "Purple" for his bees. At that time the farmer was contacted by Manager Mountain and Assistant Manager Daryle Lons to remove the plants. The farmer declined. These purple loosestrife plants are still growing just beyond the refuge boundary, but do not appear to have spread onto the refuge.



The "Purple Plague" in wetlands downstream of the Sugar Lake Division. JW 8/4/87



"No thanks, I'll keep my purple loosestrife." JW 8/4/87

G. WILDLIFE

1. Wildlife Diversity

Habitat diversity is the key to wildlife diversity on Erie Refuge. The refuge hosts about 251 species of birds, 33 species of mammals, 6 species of turtles, 11 species of snakes, 12 different salamanders, 1 species of toad and 6 species of frogs. Some species are infrequent visitors while others are common every day residents.

2. Endangered and/or Threatened Species

Bald eagles were observed on the refuge throughout the year. Two adults and one immature bird were seen, however, we have not confirmed nesting on the refuge. The Refuge staff has been actively looking for eagle nests on the refuge for the past two years. There are two sites with large stick nests that will be monitored in the early spring of 1988.

There were several sightings of a single osprey during the year. The osprey are infrequent visitors and do not stay on the refuge.

3. Waterfowl

Spring migration started in March this year with 300 tundra swans observed flying over the refuge. It seemed as though most of the spring migration of ducks followed the swans and flew over the refuge. Nesting species on the refuge were Canada geese, wood duck, hooded merganser, and a few mallard and blue-winged teal.

Waterfowl production to flight stage during 1987 was estimated at:

Canada Goose	650
Mallard	125
Black Duck	0
Wood Duck	650*
Blue-winged teal	120
Hooded Merganser	75

*includes cavity nesting estimate

Refuge personnel installed 20 new wood duck boxes with predator guards in Pool N and behind the Pool 7 dike in March of this year.

Costs for the 1987 wood duck program were:

20 new boxes, pipes/predator guards	\$800
Labor to check and install boxes	552
Wood chips	<u>36</u>
Total:	\$1388



Assistant Manager Wood installing predator guards.
JM 3/16/87

Costs to produce wood ducks for the 1986 season are as follows:

Refuge Salaries, 60 hrs. @ \$12.00/hr.: \$720
Number of boxes checked: 195
Number of ducks leaving nest box: 989
Cost per bird: \$.73
Cost/bird assuming 50% mortality to flight stage: \$1.46

As reported in last years narrative in order to maintain a five-year wood duck management program the refuge needs to be funded at \$4,150 a year to upgrade and maintain the program. Lack of adequate funding will likely effect wood duck production in future years as old nest boxes are not replaced.

Ecological Services, State College, PA, reported that trace amounts of DDE was found in the wood duck eggs that were collected at Reitz Pond on the refuge in 1986. The report also said that the amount of DDE found would not inhibit egg fertility or reproduction in the wood duck. These results are interesting because we were looking for environmental contaminants associated with gas and oil exploration in Northwestern Pennsylvania and not past agriculture practices.

4. Marsh and Water Birds

In the spring several common Moorhen's were seen feeding in Meyers Pond. Two sora rails were found dead on the refuge this summer. One bird had been struck by a vehicle and the other hit a window at the quarters on Route 173. Great blue heron were common on the refuge during ice free months. American coot and pied-billed grebe were found in moderate numbers during fall migration. The great blue heron rookery on the Seneca Division grew from 18 nests last year to 28 nests in 1987. Sixty-one (61) young were estimated to have fledged from the heron rookery this year.

5. Shorebirds, Gulls, Terns and Allied Species

The first American woodcock returning to Erie NWR was noted on March 6. By March 24, numerous woodcock were heard peenting throughout the refuge as migration was well under way. The PA Game Commission woodcock route established in 1986 was run again this year by request of the PA State Biologist, John Kriz. The state route was completed on April 14, with ten birds being counted on the 2-½ mile route along Hanks Road.

The PA Game Commission is keenly interested in the status of Pennsylvania resident woodcock. In addition to establishing state singing ground counts in 1986, they started a woodcock banding program.

During the spring of 1986 and 1987, Manager Mountain volunteered as a Woodcock Cooperator attempting to locate refuge broods and band the chicks. The area of the refuge intensely searched was Compartment 1, of the Forest Management Plan. In 1986, no broods/nests were found on the refuge. The first returning woodcock was recorded on March 11, 1986. The peak migration was from March 16-31, 1986.

During this period 40 woodcock flushes were counted. A spring flushing rate of 2.5 woodcock per hour was recorded. Spring migration appeared to be completed by April 15, 1986. A determination was made that woodcock found after this date were probably resident woodcock. John Kriz, PA

Biologist, agreed that after the mid-April date any woodcock recorded are probably residents.

In 1987, a Woodcock Cooperator Work Form was provided to each cooperator to document woodcock flushed, time afield, nests found, broods found and chicks banded.

In 1987, refuge brood searching commenced on April 16 and ended on May 25. During this period, ten resident woodcock were found on the refuge. Seven of the ten woodcock were located in Compartment #1 of the Forest Management Plan. Ten singing males were also counted on the 2-½ mile Hanks Road route that passes through Compartment #1. Resident woodcock encountered provided a spring flushing rate of .42 birds/hour. After migration, resident woodcock are difficult to locate. One woodcock nest was found on April 21 with four eggs. On May 9, the eggs had all hatched, however, the brood could not be located to band the chicks.

The woodcock research proposal developed by the PA Cooperative Fish and Wildlife Research Unit at Penn State to study woodcock and habitat on the refuge was completed and presented to The Ruffed Grouse Society for graduate student funding. In November, The Ruffed Grouse Society notified the Penn State Wildlife Unit that funds would not be available in 1988. The proposal would be reconsidered for funding in 1989.



A hen with four eggs was discovered during the April 21 woodcock brood search. TLM 4/21/87

Ring-billed gulls are abundant during spring migration. They arrive in time for spring plowing and are often seen feeding on earthworms in the newly plowed fields. They stay for a few days feeding on earthworms and move north as the earthworms numbers are depleted.

6. Raptors

Assistant Manager Wood rehabilitated two hawks at his residence this year. The first hawk was a red-shouldered hawk fledgling which was fed a diet of venison, road killed passerine birds and mice. The bird was given to the PA Game Commission to have a qualified individual train the bird before releasing it. The second bird, a red-tailed hawk, was bumped by a vehicle and needed time to heal badly bruised muscles. This bird was released after two weeks and was seen hunting on its own a day later.

The public relations aspect of this type of work is far greater than the benefit to the birds. Most people have a great interest in wildlife and if they see an injured raptor they want to be able to call someone/anyone who can help the bird. If some interest is shown in rehabilitating injured birds, the refuge system benefits because people are happy and these people support the refuge in the local community.

7. Other Migratory Birds

The 1987 bluebird project on the Erie National Wildlife Refuge was coordinated by Volunteer Howard Byham. The Eastern bluebird project on the Erie National Wildlife Refuge is an ongoing program. One hundred and ninety-seven (197) nestlings fledged from one hundred twenty (120) houses. One hundred eighteen (118) nestlings were banded. During January and February thirty-five (35) new houses were built to replace old houses. Four (4) roosting boxes were built and placed in areas where birds suffocated from piling up in nesting boxes in the spring of 1986. By the last week of February all houses were cleaned and ready for the bluebirds to occupy. Reports of bluebird sightings came in the first week of March. On March 12, Volunteer Byham sighted 22 birds on the refuge. Due to mild conditions, with 60°-70° temperatures, by the 17th the migration was completed. Another factor causing this "month early" migration was cold temperatures and six to ten-inch snowfalls from West Virginia south to the Carolinas. The birds were active, but a check of the houses indicated no nests were being built. On March 31st, the refuge was hit with an eight-inch snowfall and 30° temperatures which lasted for one week. The birds disappeared, however, they reappeared when the storm was over. On the 13th of April another complete check of the houses revealed only four

birds died from the storm. On April 17th, Volunteer Byham found 26 nests being constructed with one nest completed. The summer was a busy one with checking houses and banding birds.

Plans for 1988 include building 50 new bluebird houses to eliminate all the old boxes on the trail and moving several houses to better locations.



A user fee system for Erie Refuge? JM 3/16/87

On April 29, Volunteer Byham started finding tree swallows dead in the bluebird nesting houses. Thirty-two (32) dead swallows were found and circumstances surrounding their death were similar. Each bird was found sitting upright with its head up in the corner of the house. The underside of the bird's body was smeared, full length, with yellow droppings. Suspecting some sort of disease, Manager

Mountain contacted the National Wildlife Health Center for advice. Seven dead birds were sent to Dr. T.J. Roffe at the center. He concluded, based on limited observations, that the birds may have been under nutritional stress at the end of migration. No disease was found. However, on June 19th, Volunteer Byham received a telephone call from the Health Center saying they felt something more must be wrong with the tree swallow because they had received reports from other areas of the same conditions. If swallows are found in the same condition in the spring of 1988 the Health Center wants specimens submitted to them immediately. Extreme caution should be used in handling these dead birds. Disposable rubber gloves and a face mask should be worn and these items should be burned after handling the dead birds.



A healthy pair of tree swallows. TF 5/20/87

It is probable a Sedge wren was spotted this summer just north of the SR# 173 bridge by the west pull-off along Lake Creek. Marsh wrens and Sedge wrens are similar and both species were reported to be using this area, however, it requires more than a casual observation to make a positive identification. The Sedge wren sighting is worth documenting so additional refuge staff attention can be directed to this area. A water gauge on the bridge requires monthly visits to obtain readings so incidental observation will require little staff effort. Sedge wrens do not necessarily return to the same nesting site each year. Several years may pass before the Sedge wren nests in the same general area again.

Ron Leberman, Pennsylvania Breeding Bird Atlas, Regional Coordinator, has records reporting that Sedge wrens have used this area on and off for the past 40 years. Refuge records do not span the 40-year period since the Sugar Lake Division was only established in 1959.

Frank Haas, Pennsylvania Breeding Bird Atlas, visited the site on August 24. Mr. Haas reported sighting or should it be hearing one Sedge wren, however, he did not see the Marsh wren. Mr. Haas plans a return trip in 1988 to see if perchance the Sedge wrens have returned to the refuge for nesting.

8. Game Mammals

The deer herd on the refuge appears to be healthy and in good physical condition. There is no evidence of browse lines or adverse effects on vegetation. Deer population levels appeared to remain at or slightly below carrying capacity. There were 12 deer/vehicle collisions on the Sugar Lake Division this year. The number of deer killed on the roadways at the Seneca Division is not known.

10. Other Resident Wildlife

Managers Mountain and Wood met with representatives of the Wild Turkey Federation, PA Game Commission Land Managers, and Pennsylvania Electric Company (Penelec) on March 5, in Oil City, PA, to discuss wild turkey habitat management on powerline right-of-ways. After the meeting in Oil City the group met in the field at the refuge and discussed an action plan to implement a wild turkey habitat improvement on the refuge. (See Section E.4. Volunteer Programs)

14. Scientific Collections

Howard Whiteman, a biology student at Allegheny College, completed a survey of salamanders on the Seneca Division of

the refuge. A single specimen of six different salamanders was kept for the Allegheny College collection. The refuge received slides of each of the species collected documenting the species found on the Seneca Division.

15. Animal Control

A Volunteer Agreement was signed in April with William Smith to trap nuisance beaver. This agreement was first approved by the local PA Game Protector.

Mr. Smith live trapped eight beaver and transferred them to different areas of the refuge.

In October, Refuge personnel live trapped one beaver and relocated it.

In 1987, because of continuing beaver problems, trappers were permitted to take 12 beaver on Units A and B of the Sugar Lake Division of the refuge. The state permits six beaver per trapper to be taken annually, however, we permitted the trapper plus his/her helper to take six additional beaver on these two units. If the problem persists and the beaver continue clogging township road culverts and refuge water control structures, a third partner will be permitted during the 1988-89 trapping season and beaver trapping limits will be raised on the troublesome units.

The refuge received several Canada goose damage complaints this year. We provided a few shell crackers to these folks to help move the geese to a more desirable location. In three instances there were farm ponds involved and people were hand feeding goose broods.

No permits were issued for turtle trapping this year. Turtle meat prices are down. A local fisherman fishing Pool #9 reported turtles taking young ducklings. Snapping turtles, undoubtedly, take a number of ducklings each spring. "Turtle soup" is a desirable end for this ancient predator.

16. Marking and Banding

The refuge had a pre-season banding quota of 25 wood ducks of each age and sex. Pre-baiting got under way in early August and traps were set in September. Low duck populations coupled with high water on the trap sites made trapping difficult.

In October, the wood ducks moved onto the Reitz Pond island site and the refuge staff was able to catch almost enough

wood ducks to meet the quota. The dog/raccoon problems experienced in 1986 banding operations were eliminated by moving the banding site to an island in Reitz Pond.

Pre-season wood duck banding:

HY-M	HY-F	AHY-M	AHY-F
22	29	40	22

Pre-season mallard banding quota was 200 birds.
Mallard banding:

AHY-F	HY-F
1	2

There were several problems on the Pool 4 mallard banding: high water levels that fluctuated daily, young beaver tearing up the traps and mallards feeding on an abundance of natural foods available to them made it impossible to achieve the banding quota of 200 birds. Banding three mallards was not a good showing for three months worth of effort.

17. Disease Prevention and Control

See Section G.7. Other Migratory Birds - tree swallows.

H. PUBLIC USE

1. General

Our staff continued to support the "Take Pride in America" initiative with special programs and exhibits. The "Take Pride" theme was featured in our talks, presentations and on all our letters to the public and in articles to the news media. Activities supporting the "Bicentennial of the Constitution" were also integrated into refuge programs.

During 1987, 38,568 people visited the refuge to participate in recreational and interpretative activities. The largest number of visitors to the refuge was during the month of November when 6,200 people participated in refuge activities. In March only 681 people visited the refuge, the smallest number of visitors for the year.

Eighty-two news releases were used by various forms of the news media: newspapers, magazines, radio and television. Six news releases focused on the stations management programs and were written to increase the public understanding of wildlife resources. News releases outlining the changes in the hunting and trapping program to include the Seneca Division of the refuge were printed in

area newspapers and the changes were a topic of discussion on Channel 13 TV (Meadville). Copies of refuge news releases were sent to the Regional Office to be included in the Public Affairs circulating news bulletin. A news article summarizing refuge management was prepared at the request of the Crawford Conservation District. This article was included in the Crawford Conservation District Annual which is a reference guide for the public. To promote a "team approach" to resource management, the Crawford Conservation District includes information from all their sister agencies in this publication.

A news release and maps of the Sugar Lake Division and the Seneca Division were published in the Sportsmen's Almanac published by the Crawford County Council of Sportsmen's Club, Inc.

Portions of the Winter Birds program was filmed by WICU Channel 12 (Erie) and the "Take Pride in America Awareness Week" program was covered by WICU, Channel 12 (Erie) and WSEE Channel 35 (Erie). A program about refuge waterfowl was filmed by Cable 7 TV (Upper St. Clair). Two front page feature articles appeared in area newspapers. One article recognized Volunteer Byham for his second place honors in the "Take Pride in Pennsylvania" program for his work with the Eastern bluebird, and another article featured Devin Wanner, a handicapped volunteer. The refuge was also included as an attraction on McDonald's placemats being used in their restaurants in northwestern Pennsylvania.

Outdoor Pennsylvania, a joint production of public television stations, was aired again during the week of December 7 on WQLN-Channel 54 (Erie). The segment on the Erie NWR was filmed on the refuge in 1985. The video features a trip through the refuge set to mood music. The photographers caught geese leaving a grain field, a Monarch butterfly lighting on a flower, blue-winged teal leaving a pond, muskrat swimming, an eagle soaring, shorebirds walking on mudflats, a great blue heron fishing and songbirds flying from bush to bush.

Meetings were held throughout the year with the Crawford County Commissioners, Meadville Main Street Project Manager, and the Meadville Chambers of Commerce Director to keep them informed about refuge management.

The Meadville Chamber of Commerce picked Erie NWR to be included as one of Crawford County's attractions in the Pennsylvania Oil Country Motor Coach Guide published by Crawford, Forest and Venango Counties.

Jody Bruckner, Congressman Tom Ridge's Meadville Aide, was furnished routine news releases, leaflets, and the circulating copy of the 1986 Narrative Report. During meetings in the Meadville office, management and public use events were discussed with her. In April, Congressman Tom Ridge's Washington Press Secretary Peggy Peterson let us know that the Congressman was planning to take part in the "Take Pride in America Awareness" program to be held May 17. Congressman Ridge has a tight speaking schedule when he is in his district and his Washington and Meadville staff were very cooperative working along with the refuge staff to arrange publicity and other details of the "Take Pride in America Awareness" program so that the event went smoothly. (See Congressman Tom Ridge's newsletter in Section L. Information Packet)

While Refuge Manager Mountain was attending the Congressional Operations Institute, he visited Congressman Ridge's Washington office to become familiar with the organization, function and resources of that office.

In compliance with the Public Use Development Prospectus all entrance signs were restrained and the lettering color was changed from yellow to white.

The general information leaflet was updated and redesigned to include the Seneca Division and was forwarded to the Regional Office for printing.

Activities to promote the sale of duck stamps were held throughout the year. The exhibit panels showing the top ten entries in the "Duck Stamp" contest and the leaflet, "The Duck Stamp Story" were used at festivals to emphasize the need for wetlands and to explain the use of duck stamp money. Hunters purchased 221 "duck stamps" and non-hunters purchased 56 "duck stamps" during the 1986-87 sales period. Interest in the "Duck Stamp" contest appeared to have increased locally. Several people, including two high school aged students, inquired about the rules for entering the contest.

2. Outdoor Classrooms-Students

There were several teacher led outdoor classrooms this year. One hundred two (102) Maplewood students studied wildlife and habitat. Twenty students from the University of Pittsburgh Ecology Class studied refuge management practices and reviewed refuge management plans in preparation for writing their own management plan when they return to the classroom.

Two separate Allegheny College Ornithology courses with 20 students in each class received instruction from Professor Kulesza in bird identification. Sixty-five students from Amish schools participated in outdoor classrooms led by their teachers. Heide Arnold, a graduate of this year's teacher workshop, put her newly learned skills to work immediately conducting her first environmental education class on the refuge for 20 sixth graders.

Some outdoor classrooms continued to be conducted by the refuge staff. A workshop with emphasis on refuge management programs was conducted by ORP Marvin and Volunteer Byham for 20 members of the adult education class for the Buffalo Museum of Science. After the formal program the class leader led the group on a birding tour of the refuge.

Twenty-five students enrolled in the Titusville Friends of Youth Program also participated in an environmental education class which concentrated on refuge wildlife that was taught by ORP Marvin and Volunteer Byham. An environmental education workshop on plant and animal adaptations was presented by ORP Marvin to 28 sixth graders from East End School.

Assistant Manager Wood instructed 40 students from the Crawford County Sportsmen's Council Youth Conservation Education Camp. Emphasis was placed on learning about the refuge system and how management programs at Erie fit into the National Wildlife Refuge System.

3. Outdoor Classrooms-Teachers

The teacher's workshop entitled "Teaching Environmental Education" was taught for the second year for five hours on Saturday, April 25, May 2, and May 9. The course is advertised by Intermediate Unit 5 and teachers received one In-Service Credit upon completion of this 15-hour course. Class enrollment was limited to 20 teachers in order to provide a quality experience and all 20 teachers successfully completed the workshop. The teachers came from 16 different area schools and were all teaching different subjects and grade levels. The evaluations filled out by the teachers who took the course the first year were used to make some changes in the curriculum for the 1987 workshop. The section on bird identification was changed by eliminating identification by song which the 1986 class said was too difficult. Volunteers Tim Kimmel, Ornithology Professor, and Howard Byham, Bluebird Coordinator, were added to the staff to do the unit on birds.



Knowing where to look is the first step in bird identification. JM 5/9/87

Refuge Manager Mountain, ORP Marvin, Assistant Manager Wood, and Special Agent Hart continued to teach the remainder of the course which deals with a variety of refuge habitats, the National Wildlife Refuge System, and the role of law enforcement in the refuge system. "Hands-on" activities were used to explore ways outdoor environmental education can be used in many disciplines such as science, social studies, art, etc.

The teachers filled out refuge evaluation forms when they completed the course and a follow-up questionnaire six months later. The responses on the initial evaluations were as varied as the teachers' backgrounds, however, on the six month follow-up questionnaire more than half the teachers said they used the bird unit in their classroom and one teacher explained how she adapted the marsh unit for use in the city. The teachers also indicated that they found the reference materials and loan materials useful and were more confident in trying to lead outdoor classrooms knowing they can call the refuge and receive some materials to aid them.

A workshop with emphasis on refuge management was held on May 11 for 20 Volunteer Guides from the Holden Arboretum in Mentor, Ohio. Instructors for this workshop were ORP Marvin and Volunteer Byham.

A two-day combination Project Wild/Project Learning Tree Workshop was held at the McKeever Environmental Learning Center on the weekend of October 3-4. ORP Marvin was an instructor for the Project Learning Tree sessions on Saturday, October 3. Fifty-five elementary and secondary teachers from Intermediate Unit IV attended the classes. Intermediate Unit IV is comprised of schools in the counties south of the refuge and these teachers do not usually have an opportunity to participate in our on-site workshop which is advertized through Intermediate Unit V.

The synopsis of materials available for use or loan developed for teachers and other groups was updated. Teachers attending the "Teaching Environmental Education" and the Project Wild/Project Learning Tree Workshop received a copy of the synopsis and the synopsis was distributed to 35 area school teachers who did not attend the workshop.

4. Interpretative Foot Trails

Woody vegetation on the Tsuga Nature Trail was trimmed by the NPTPC summer employees and they added chips to low spots on the trail.



Wet feet won't be a problem on the Tsuga Nature Trail.
JM 8/15/87

6. Interpretative Exhibits/Demonstrations

Photographs of National monuments and the buildings and grounds of Independence National Historic Park were used to design exhibits in celebration of the Bicentennial of the Constitution for the visitor center lobby and kiosks.

An exhibit was installed in the visitor center lobby and on the kiosks which illustrated the accomplishments of the "Pittman-Robertson Act," formally known as the "Federal Aid in Wildlife Restoration Act," to call attention to the 50-year anniversary of the Act.

An exhibit featuring information about careers in the Fish and Wildlife Service, volunteer opportunities and refuge management programs was set up for Allegheny College's Earth Day. ORP Marvin talked with students who visited the exhibit and tried to interest them in volunteering at the refuge.

The 1987-88 "Duck Stamp" winner and runner-up designs were exhibited at Northwestern Rural Electric Co-op Association's annual event and duck stamps were sold. This event was attended by 3,000 people.

Supplies were purchased and repairs made to the traveling "duck stamp" exhibit shared by several refuges. A packing case was constructed for the exhibit to prevent damage when it is shipped back and forth from refuge to refuge.

Farm-City Day was held on the Jon Reese farm and the refuge. ORP Marvin manned the refuge exhibit on "Take Pride in the Bald Eagles Returning." The Reese cooperative farm fields are in the area of the refuge where two or more eagles can now be seen frequently throughout the summer months. Refuge Manager Mountain was stationed in one of Reese's refuge farm fields (a stop on the wagon tour for visitors) to explain refuge objectives and the refuge cooperative farming program.



"Folks, Cooperator Reese planted corn in the refuge field to your right." JM 6/27/87

The theme for the refuge exhibit for the Crawford County Fair was "Take Pride in Erie National Wildlife Refuge." Wildlife mounts and photographs of people engaged in activities on the refuge were used to illustrate the theme. A rack where fairgoers could pick up informational leaflets was incorporated into the exhibit since it could not be staffed this year. This fair is the largest agricultural fair in the State of Pennsylvania and the paid attendance was 60,000 people.

Exhibit panels were developed for the topics which were identified as the refuge's five most important fish, wildlife and/or habitat resource issues. The original topics were:

1. Mission of the Fish and Wildlife Service;
2. The American Bald Eagle-An Endangered Species;
3. Wetlands for Wildlife and Man;
4. Acid Rain-Is there a Solution?;
5. Upland Habitat Management for Wildlife.

A rare and endangered exhibit was also designed. A draft of the designs of the exhibit panels and the rare and endangered exhibit was reviewed by the Regional Office staff and then discussed with the refuge staff. A decision was

made to eliminate the topic, Acid Rain-Is there a Solution?, and substitute the topic, The Wood Duck, Erie's beautiful native North American duck. Panels were developed for the new topic and quotations were solicited from three companies. Wilderness Graphics, Inc. was the low bidder and a purchase order was issued to their company for construction of the exhibits.

The 1987-88 "Duck Stamp" winner and runner-up designs and an exhibit of refuge wildlife were displayed at the Pymatuning Waterfowl Expo. Duck stamps were sold. WVCC (Linesville) did an on-the-spot interview with ORP Marvin about duck stamps. ORP Marvin and Secretary Brugler also explained refuge programs and promoted the Department of Interior "Take Pride in America" campaign at the waterfowl expo.

Displays in the visitor center lobby and refuge contact stations were changed each season to provide current public use information.

Informational posters, black duck identification posters and endangered species posters were displayed throughout the hunting season.

7. Other Interpretative Programs

Films, slide talks, graphics and "hands-on" activities were used to present the conservation message to on-site and off-site groups. Winter birds, nesting birds, the National Wildlife Refuge System and Erie National Wildlife Refuge, bluebird management, wild foods, warm-season grasslands and cooperative farming were some of the topics presented to twenty different groups with a total of 1,220 people in attendance.

"America's Wetlands" with the "Take Pride" logo and "Legacy for the Loon" were the features for a February film program. "A Design for Liberty: the American Constitution" was the feature for the March film program. This film discussed the idea of liberty as it was understood by the revolutionary generation and how concern for the preservation of liberty culminated in the writing of the Constitution in 1787. The film, "Pennsylvania Wild Turkey" was also shown. Sixty people, a full house, were in attendance for both programs. "Take Pride in America" leaflets were distributed to everyone at both programs.

"Endangered Species of Pennsylvania" was the topic of Volunteer Devin Wanner's presentation on July 4. Fifty-four visitors were present for our "Take Pride in America" Independence Day Celebration. In keeping with the spirit of

the day Volunteer Wanner devoted a portion of his program to the American Bald Eagle, our National symbol.



"Frontiersman often told tales of bear, cougar and wolf. . ."
JM 7/14/87

"The Pittman-Robertson Act-50 Years of Sportsmen Helping Wildlife" was the theme of the National Hunting and Fishing Day poster contest. Prizes for the local contest were provided by the Black Ash Sportsmen's Club. The posters were judged by ORP marvin and Black Ash Sportsmen's Club Representative Howard Byham. Kevin Murray, Guys Mills, won first place; Tonya Bradley, Centerville, won second place; Chad Donovan, Titusville, won third place and Teresa Brown, Townville, was awarded a special prize for artistic merit.



Happy winners in the local Hunting and Fishing Day poster contest. JY 4/17/87



I won in the National contest, too? JM 6/2/87

Kevin Murray, a sixth grade student at Maplewood Middle School, won a merit award of a \$50 U.S. Savings Bond in the 1987 National Hunting and Fishing Day poster contest. Entries were judged on how well the students illustrated the contest theme, "The Pittman-Robertson Act-50 Years of Sportsmen Helping Wildlife" and on artistic merit and originality. His award was presented to him during a school assembly by Howard Byham, representing the Black Ash Sportsmen's Club and ORP Marvin representing the refuge, local sponsors of the contest.

In 1986, the Western Pennsylvania Audubon Council opened the door to possible refuge adoption when they invited a staff member to attend a council meeting so the Council could become familiar with refuge programs. During 1986, the Bartramian Audubon Society explored the possibility of

adopting the refuge finally deciding that they were not ready to take on additional responsibilities. It looked like adopting Erie refuge was a dead issue, however, much to our surprise the Presque Isle Audubon Society Executive Committee met in January 1987 and voted to begin procedures to formally adopt the refuge. Meetings were held with Tim Kimmel, President of Presque Isle Audubon Society and the Chairman of the Adopt Erie Refuge Committee to exchange information and to determine if the refuge staff and society members could interact cooperatively and productively. There was agreement on the adoption decision between the Presque Isle Audubon Society and the refuge manager and plans were made for a formal adoption ceremony to take place during the "Take Pride in America Awareness Week" kick-off program held May 17. United States Representative Tom Ridge was the speaker for the program. His remarks were followed by the Presque Isle Audubon Society ceremony officially adopting the refuge. A plaque commemorating the event was presented to Refuge Manager Mountain by President Tim Kimmel. Erie Refuge is the first refuge to receive a plaque as a sign of the adoption, however, Presque Isle's idea regarding the plaque will now be used by National Audubon for future adoption ceremonies and will be given to those refuges previously adopted.

During this program a gift of a mounted pheasant for use in the visitor center was also presented in memory of Eric P. Rowe, who worked at the refuge as a Youth Conservation Corpsman in 1985 and a Conservation Corp Youth Leader in 1986. Eric was killed in an auto accident on September 20, 1986. Tours of the refuge conducted by Manager Mountain, Assistant Manager Wood and ORP Marvin concluded the days events. (See "Take Pride in America Awareness Week" bulletin and photo copy of plaque in Section L. Information Packet)



Beginning a mutual beneficial relationship. JM 5/17/87



A word of condolence to the Rowe family. JM 5/17/87

On Sunday, October 11, awards were presented to the winners in the photography contest. Prizes and judges for the contest were provided by the Presque Isle Audubon Society. Categories were wildlife, plants, scenic in color, and any nature related subject in black and white. There were 71 photographs entered and 10 of the photographs were taken on the refuge.

Winners in the wildlife category were: Robert Criswell, Saegertown, 1st place, "Did You Say Something, Dear?"; Lee Ann Reiners, Cambridge Springs, 2nd place, "Garter Snake"; and Gary Whitehead, Ted Fauceglia, John Bishop, Karen Bean, Kathy Tripp, Margaret Buckwalter and Darla Boyer-Locke, honorable mentions.

Winners in the plant category were: Ted Fauceglia, Sharpsville, 1st place, "Wild Bleeding Hearts"; Robert Criswell, Saegertown, 2nd place, "Queens"; and Fauceglia, Cindy Bonner and Babe Shelby, honorable mentions.

Winners in the scenic category were: John Bishop, Springboro, 1st place, "Morning Mist"; Cindy Bonner, Oil City, 2nd place, "Cedar Run Falls"; and Karen Bean, John Bishop, David Burns and Bonner, honorable mentions.

Winners in the black and white nature related were: Kathy Kelly, Pittsburgh, 1st place, "Break of Silence"; and David burns, Conneaut Lake, 2nd place, "Ominous Rock"; and Jeffrey Bish and Burns, honorable mentions.

Photographs were judged for composition and overall visual appeal and photographic technique. Judges were Tim Kimmel, nature photographer; Kent Armstrong, professional wildlife photographer; Robert Grubbs, photographer; Samuel Stull, nature photographer.

Forty people attended the awards ceremony. After the ceremony the judges conducted an outdoors workshop on what makes a good nature photograph and technical aspects of how to get a prize winning photo. Photos were on display in the visitor center through November 1.



"Matting is important," Judge Armstrong said. JM 10/11/87



Visitors were impressed with quality of show. JM 10/11/87



First place winner in scenic category. TK 10/11/87

Four meetings of the Crawford County Ag-Interest Council were attended. During the February meeting, Carl Pelino, Soil Conservation Service, outlined the conservation provisions of the Farm Bill. Refuge Manager Mountain explained the role the U.S. Fish and Wildlife Service will play in conservation easements. Preliminary plans were discussed during the March meeting for Farm-City Day which was held on refuge cooperator Jon Reese's farm with a tour stop on the refuge.

Seven meetings of the Black Ash Sportsmen's Club were attended. Manager Mountain and ORP Marvin presented either films or slide shows with an update on refuge activities at these meetings. Two special programs were presented this year. One program alerted the club members to problems associated with purple loosestrife explaining how habitat for native plants and animals can be destroyed if purple loosestrife is introduced into a wetland. The other program on September 10 featured the film, "A Design for Liberty: the American Constitution" and the celebration of the Bicentennial of the American Constitution was discussed.

Two Region I meetings of the Pennsylvania Alliance for Environmental Education were held in the refuge visitor center.

Meetings of the Crawford County Tourist Association were attended throughout the year. During the July meeting, Tourist Association Director Hanahan commented that refuge leaflets are some of the most frequently requested by visitors to Crawford County. ORP Marvin was elected to the Board of Directors of the Crawford County Tourist Association. The Crawford County Tourist Association Board is made up of individuals in business, industry, tourism, etc. She serves in the slot that represents State and Federal agencies in the county.

Secretary Brugler and Assistant Manager Wood attended the PA Bureau of Forestry Fire Warden dinner.

ORP Marvin and Secretary Brugler were guests at the Hen's Unlimited (Ducks Unlimited) Banquet.

Twenty Brownie Scouts from Troop 303 and six leaders participated in our "Take Pride in America Workfest." This group cleaned up the trash in six parking lots, at the handicapped fishing pier and along refuge roadways. ORP Marvin discussed the "Take Pride in America" campaign with the group and distributed "Take Pride" litter bags to everyone for their personal use as a token of our appreciation for helping with the refuge cleanup.



Picking up trash can be fun. JM 9/21/87



Collect litter at home - you're kidding. JM 9/21/87

The publicity we received from the Crawford County Commissioners signing the Public Lands Day Proclamation and the Brownie Scouts participation in our "Take Pride in America Workfest" renewed interest in our volunteer program.

We received inquiries about serving as a volunteer from six people immediately after these news stories appeared in the newspaper and one of the six people signed a volunteer agreement.



Commissioners voice their support for volunteer program.
RB 8/31/87

Slide shows, films, and educational packets were loaned to teachers in 21 different schools. Teachers were assisted in using these materials in the classroom and in planning field trips to the refuge. Approximately 2,715 students were reached through these educational activities.

Slides showing refuge headquarters, wildlife and the surrounding environment were loaned to Paula Weber, Rotary exchange student to Venezuela. Paula will be showing these slides along with others that she is collecting from farmers, businesses, etc., as she talks with various groups in Venezuela.

Bird and mammal slides were loaned to the Albion High School Team which is sponsored by the Albion Area Sportsmen's Club to prepare them for 1987 North American Hunter Education Championship. This year's contest was held in Logan, Utah and the Albion team returned with first place honors for the second year in a row. A Certificate of Appreciation and a letter signed by the Albion team and their coaches was presented to the refuge staff (see staff photo) by Dorian A. Monroe, Albion Sportsmen's Club Representative, and Shayne

A. Hoachlander, Pennsylvania Game Protector to thank the refuge staff for helping to make the Albion team number one.

8. Hunting

The Sugar Lake Division of the refuge has been open to controlled hunting since 1966. A revised Hunting Plan which includes the Seneca Division in the controlled hunting area was approved in January 1987. Three hunting units were designated on the Sugar Lake Division and two hunting units were designated on the Seneca Division of the refuge. These hunting units are distinguished according to species available for hunting and time periods for hunting are specified. (See hunting leaflet in Section L. Information Packet)

The refuge was opened to turkey hunting during the spring season and additional areas were opened to raccoon, fox, skunk, and opossum hunting. The revised Hunting Plan requires hunters to wear in a conspicuous manner on head, chest and back a minimum 400 square inches of solid-colored hunter orange clothing or material during the gun deer season.

A new hunting leaflet was designed to include the approved changes in the hunting plan and a leaflet box was erected on the Seneca Division to make hunting regulations accessible to the hunters using that area. Signing of the Seneca Division exterior boundary to distinguish the migratory bird hunting area from the area closed to migratory bird hunting was completed.

Duck season was from October 16 to October 23 and the second season was November 4 to December 5 with the exception of black ducks which were legal only from November 4 to November 28. About 25 ducks, mostly wood ducks, were harvested during the first three days of the early season. By the end of the week ducks and duck hunters were both scarce.

Goose season opened October 7 and closed December 15. Twelve geese were harvested on refuge land.

The Pennsylvania Game Commission sponsored a Non-Toxic Shot program at the refuge. Attendance was poor. Steel shot is apparently no longer of concern to sportsmen in Crawford County.

Ruffed grouse and squirrel hunting season opened October 17. Grouse numbers appeared to be slightly improved over last year's miserable .43 flushes/hr. A few squirrel hunters were out opening day but no harvest results were reported.

Rabbit hunting and ring-necked pheasant hunting opened October 31. Most of the hunting pressure on the ring-necked pheasant was on the Seneca Division next to the PA Game Commission pheasant farm. Rabbit populations remained low but some hunters were successful in bagging a cottontail.

Raccoon and fox hunting opened October 24. The results of the 1987-88 raccoon and fox hunting season will be reported the 1988 Narrative. There were 13 raccoon hunting permits and 15 fox hunting permits issued for the 1986-87 season. Twelve raccoons were harvested and no fox were harvested in the 1986-87 season.

Deer hunting was the most popular hunting activity on the refuge. Archery deer season opened on October 3 and closed on October 30, then reopened December 26 and closed January 9, 1988. Antlered deer season was from November 30 through December 12, Antlerless deer season was December 14 through December 16 but was extended for an additional two days, December 18 and 19, because of inclement weather and a small harvest. Flintlock muzzleloader deer season was December 26 through January 9, 1988.

On the Seneca Division hunting pressure was heavy opening day of antlered deer season. There were reports that hunters were only about fifteen feet apart and there was a report of a near miss. One hunter reportedly had to dive into a depression to keep from getting hit and reportedly he said he would never hunt on the Seneca Division again on opening day of buck season.

Hunters were again asked to voluntarily report when they were successful in killing a deer on the refuge. Hunters harvested 40 buck during antlered season and 48 doe during antlerless season. Three deer were taken during archery season and five were taken during flintlock muzzleloader season. Final deer harvest figure was estimated to be 97 animals which is 13 animals less than the harvest during the 1986 deer season (1986 harvest figure was 110).

9. Fishing

The month of January had periods of freezing and thawing with rain and the month of February was also less than ideal for ice fishermen, however, a few ice fishermen did try their luck when weather conditions permitted.

The Allegheny Fish Hatchery stocked 500 rainbow trout near Ploski bridge on Woodcock Creek. On the opening day of trout fishing, April 18, weather conditions were ideal and fishermen lined the banks of refuge trout waters.

On June 2, members of the United Cerebral Palsy's Adult Day Care Program and the Independent Living Program participated in a fishing derby for mentally and physically impaired adults. These fishermen and women fished from a special handicapped fishing pier which is equipped with a wheelchair ramp. Prizes for the event were donated by the Pennsylvania Fish Commission and the refuge. Waterways Conservation Officer Mantzell was on hand to assist ORP Marvin with the judging.



First fish! JM 6/2/87



Prize for neatest fishing shorts. JM 6/2/87

Fish-for-Free Day, which allows anyone to fish in Pennsylvania without a license for one day only, was observed on June 6. These events were held in observance of National Fishing Week, June 1-7.

10. Trapping

Sixteen trapping units were designated in the refuge Trapping Plan which was approved in July 1987. There are 10 trapping units located on the Sugar Lake Division of the refuge and six additional trapping units were added on the Seneca Division of the refuge. Refuge trapping units continue to be distributed according to the bid system. One unit is awarded to each bidder and the bidder has exclusive rights to harvest furbearers on the assigned unit for the season. The Seneca Division trapping units were signed "By Permit Only" to alert trappers that special regulations apply. This signing provided for a smooth transition to the new trapping regulations at the Seneca Division.

Bids for trapping on the refuge were opened October 15. Twenty trappers bid for 16 trapping units. The lowest bid on all 16 units was \$26.05 and the highest bid on all 16 units was \$401.02. Total revenue amounted to \$1988.07.

Trapping season for skunks, opossums, foxes, weasels and raccoons opened November 4 and closed January 23, 1988. Mink and muskrat trapping season opened November 26 and closed December 26. Beaver trapping season opened December 26 and will close March 13, 1988. Results of the 1986-87 trapping season follow:

Fox	8 red	1 gray
Opossum	29	
Raccoon	47	
Mink	9	
Muskrat	350	
Beaver	32	

11. Wildlife Observation

The Observation Blind continued to be a favorite spot for birdwatchers and photographers with the three pools located near the headquarters entrance road running a close second. Bluebirds, great blue herons, wood ducks and hooded mergansers were a few of the species near the headquarters that provided visitors with good photographic opportunities.



Come this way, please. TH 5/10/87



Where do I put this now? TF 5/20/87

Spotlighting deer from a vehicle at night continued to be a popular pastime in northwestern Pennsylvania and the refuge permits this activity from township roads. State law was changed this year to permit this activity until only 11:00 p.m. instead of midnight as in past years and spotlighting was not permitted from November 30 through December 16. This activity usually begins in September when entire families pile into cars and cruise the roads looking for white-tails. Some families tally the number of deer seen on each outing on bulletin boards or chalkboards located in their homes.

12. Other Wildlife-Oriented Recreation

Cross-country skiers used both ski trails daily when weather conditions permitted. A snowshoe program scheduled for

January 24 had to be cancelled because of lack of snow, however, on January 31, the date of the Region I Pennsylvania Alliance for Environmental Education meeting, there was so much snow that vehicle travel to the refuge was treacherous. This group skied after the meeting and trail conditions were excellent.

14. Picnicking

Four picnic tables are located in a maple grove at the beginning of the headquarters entrance road. These tables were used by school groups who were involved in outdoor classrooms and by birdwatchers and photographers visiting the refuge.

17. Law Enforcement

Most of the violations this year concerned fishing regulations. Manager Mountain and Assistant Manager Wood cited four people for fishing in a closed area. On the opening day of trout season Waterways Patrolman Mantzell cited three fishermen for fishing before the 8:00 a.m. starting time and he also cited one fisherman for building a fire on the refuge. He also had six cases of refuge fishermen catching bass before the season opened and two cases where the fisherman had taken bass that were under the legal size of 12 inches. Three people were also apprehended by Mantzell for fishing on the refuge without a license. Fines were paid by all violators.

Bill Mantzell, PA Waterways Patrolman, and Dave Putnam, State College, Ecological Services, were notified on May 27, 1987, of an illegal wetlands fill operation being conducted by the Township and the Union Cemetery Association in a wetland that abuts both the cemetery and the Randolph Township building in Guys Mills. The matter was investigated by the Army Corps of Engineers and Ecological Services.

Five other off-refuge wetlands filling violations were reported to Ecological Services throughout the year.

A service station owner used a stream flowing into the Seneca Division to dispose of used parts, tires, oil cases, etc.



Heavy fines might remedy these problems. CR 9/87

Lost or discarded dogs were a continual problem on the refuge. During the month of January alone Manager Mountain had four dogs appear at his quarters. Dogs without licenses were turned over to the Crawford County Humane Society for disposition.

On the first day of waterfowl season Assistant Manager Wood encountered three hunters with unsigned duck stamps. Warnings were issued and the hunters signed the stamps.

During antlerless deer season Assistant Manager Wood discovered one hunter without a doe license. The hunter had left it at home. During buck season, Manager Mountain contacted a local teenager about removing tree stand steps which he nailed to a tree to get to his portable tree stand. Refuge regulations were discussed with the youngster and he was advised that future violations would be prosecuted.

Trooper Mermon of the State Police continued his late night patrols at the Pool K handicapped fishing pier during the summer season to assist the refuge in deterring the vandals that damaged the rail and pier on two occasions in 1986.

PA Game Protector Criswell issued six warnings for spotlighting deer and fined one person for spotlighting deer

after 11:00 p.m. He issued two warnings for unsigned duck stamps during waterfowl season and fined one raccoon hunter for using an illegal light.

Assistant Manager Wood and Refuge Manager Mountain attended the law enforcement training sessions at the Eastern Shore of Virginia Refuge and requalified with the Pennsylvania State Game Protectors.

Special Agent Richard Hart met with Assistant Manager Wood and Manager Mountain to discuss procedures for processing arrestees. He turned over the responsibility for sending Notices of Violations directly to the Clerk of Courts to the refuge project leader.

Wood and Mountain also attended five crime clinics. Some of the topics covered were searches without warrants, bomb disposal and enforcement of hunting regulations.

18. Cooperating Associations

A needs assessment to explore the possibility of establishing a Cooperating Association was conducted as required by our Public Use Development Prospectus.

Volunteer Devin Wanner staffed our visitor center on the weekends during the period June 10 through July 11 and collected some data from our visitors. Devin found that most of the visitors questions were about schedules for other public programs and about what activities they could do on their own. He found that visitors to the refuge were looking for activities where they did not need to spend money, probably because the unemployment average in this area is 10.2%. He found that most visitors to the refuge did not seem to expect to find books or posters for sale. Only one small group that visited in the spring was looking for posters and postcards.

ORP Marvin talked with four Region 5 Outdoor Recreation Planners about their experiences with cooperating associations. She discovered that refuges that have successful cooperating associations have had their visitor center staffed on a regular schedule for at least a couple of years, have some exhibits in place in the visitor center, have established teacher's workshops and have developed a core group of friends of the refuge that will take the lead in managing a Cooperating Association.

Our staff supports the idea of a Cooperating Association and realizes that once it is operating it can result in substantial benefit to the refuge, however, based on the findings of the needs assessment a recommendation was made

to the Regional Office that the starting of a Cooperating Association be delayed and that the refuge staff wait three years and then re-assess the need for a Cooperating Association.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

A. Shop Building

The maintenance shop was stained with a wood stain to protect it from the elements. Maintenance Worker Battin and Joe Lew, a Northwest Pennsylvania Training Partnership summer employee, completed the job.



Good weather facilitated staining refuge shop.
JM 7/2/87

Mr. Battin also finished the aluminum trim on the new pole building that was constructed last year.

B. Headquarters Area

Road work on the headquarters entrance road and Pool B road was completed in November. The entrance road was graded, graveled and rolled. Pool B road was raised to help prevent beaver flooding problems and force standing water away from State Route 198.

C. Government Quarters

1. Quarters #7 - No work done.
2. Quarters #9
 - a. A new water well drilled.
 - b. New water pump.
 - c. A new water filter system.
 - d. Outside lights repaired.
 - e. Dead bolt locks installed.
 - f. Employee painted the kitchen.



A search for water. JM 5/1/87



Finally after drilling 275 feet the contractor hit "good" water. RB 5/6/87

3. Quarters #11

- a. Installed water filter system taken out of Quarters #9.
- b. Installed a security light on the garage.

3. Major Maintenance

Cooper's Marsh was the only major maintenance item completed this year. (See Section F.2-Wetlands)



Dike breached at Cooper's Marsh. JM 11/16/87

4. Equipment Utilization and Replacement

- a. The John Deere bulldozer ordered last year has a delivery date of April 1988.
- b. Tires were replaced on three vehicles this year.
- c. Because of the loss of the maintenance mechanic position, vehicle maintenance inspections were done only periodically.
- d. The Jeep pickup was sent out for service on brakes and drums. The maintenance worker replaced the exhaust system on the Jeep.
- e. Three vehicles were fitted with ultrasonic deer alert devices.
- f. A "new" farm plow was ordered. The "new" plow was received in November. After inspecting the plow we found that the date of manufacture was 1985. The dealer had made a poor attempt to paint over a badly rusted frame. Further inspection revealed that the hydraulic hose connections were used, and that the pressure gauge was cracked. Since the plow did not

meet the specifications listed on the purchase order, the dealer was called and given an opportunity to replace the plow he delivered with a "new" plow. He refused. The Regional Office Contracting Officer then awarded the plow contract to the next highest bidder. Refuge personnel went to this dealer to inspect the plow prior to delivery. The plow offered by this dealer was "new" and an excellent piece of equipment.



"Brand spanking new" JM 12/31/87

5. Communications Systems

The refuge decided to purchase a new phone system instead of continuing to lease the old system. The Comdial 308 system was installed on October 2, 1987.

6. Computer Systems

The refuge computer was received in September, 1987. However, it was not set up or on-line until November 13, 1987. A local computer consultant, Johnston Consulting, was hired to set up the hardware and install the software as opposed to having a Fish and Wildlife Service employee from another station travel down to do the work.

It has worked out well having Mr. Johnston close for service and on-the-job training. For example, during the programming of the computer we found that the tape that was sent for the hard drive was the wrong size. Mr. Johnston was able to provide us with the correct tape in two days, along with paper and ribbon for the printer.

Two new electrical outlets were installed to carry the power for the computer. Surge protectors were also installed.

The modem has not been connected. A dedicated telephone line must be installed for the modem to work correctly. When the line is installed the modem will be ready to transmit.

The refuge staff has not had any formal training on the computer. When training is available, either by a local or regional training session, the staff will be formally trained. At this time, Secretary Brugler is the only staff member capable of using the computer. She has not had any formal training, just basics from Mr. Johnston and following the manuals on her own.

The dream for the future is the capability of graphics by eventually purchasing a dot matrix printer.

J. OTHER ITEMS

1. Cooperative Programs

The Pennsylvania Fish Commission held three Deputy meetings in the headquarters/visitor center and the Pennsylvania Game Commission held four Deputy meetings in headquarters/visitor center. A joint PA Fish Commission and PA Game Commission In-Service Training Session to review changes in the PA Game Commission Wildlife Code was also held in the headquarters/visitor center. Assistant Manager Wood and Manager Mountain attended this In-Service Training Session.

Waterfowl identification slides were loaned to Shayne Hoachlander, PA Game Protector. Shayne used the slides to instruct a class of 20 Deputy Game Protectors.

The Pennsylvania Game Commission held two beaver tagging clinics at refuge headquarters. Ninety-seven (97) beaver were tagged at the first session and 79 beaver were tagged at the second session. Beaver trappers must have the State tags on beaver pelts before they can sell them.



Top price for beaver pelts was \$30. JM 2/13/87

The refuge collected weather data at our maintenance shop in cooperation with the U.S. Army Corp of Engineers. Corps' personnel called daily to obtain the data which they used in the operation of Woodcock Flood Control Reservoir.

The refuge also operated a weather station in cooperation with the Pennsylvania Department of Environmental Resources, Forestry Division, during the fire danger season. Their personnel phoned daily for temperatures, humidity, wind speed, direction and stick readings. This information is then used to determine the "Fire Danger Rating." The refuge used the data collected for the Pennsylvania Department of Environmental Resources in the prescribed burning program.

3. Items of Interest

Maintenance Mechanic Bob Granda retired on December 6, 1986 and a retirement party to honor Bob was held January 31, 1987 at Sandalini's Restaurant. Bob was presented with a gift of fishing equipment.



"You can be proud of your accomplishments, Bob."
DM 1/31/87



Buddies. DM 1/31/87

4. Credits

Refuge Manager Mountain prepared Sections A, C, D, E-5, 6, 8, F-5, G-5 and 7 and K. Assistant Refuge Manager Wood prepared Sections F-1, 2, 3, 4, 5, 9, 10, G and I. Outdoor Recreation Planner Marvin prepared Sections E-3 and 4, H and J. Volunteer Byham prepared a portion of Section F-3 and G-7. Secretary Brugler prepared Section B, I-5 and 6, and typed and assembled the report. Secretary Brugler, ORP Marvin, Volunteer Howard Byham and Volunteer Joyce Sliter edited the report.

K. FEEDBACK

Despite relatively new BLHP facilities and land holdings of nearly 8,000 acres (a large tract in the east), the refuge does not have adequate basic heavy equipment to properly manage the diversity of habitats within the land resources at Erie NWR.

A John Deere 4040 tractor was purchased in 1978. The tractor is two-wheel drive. The average annual precipitation is 46 inches. The wet climate and moist field conditions year-round do not enable us to utilize the tractor as much as we would like. An additional 4x4 tractor with increased horsepower is needed.

Despite a beaver trapping season, live-trapping, shooting, blowing lodges, beaver tubes and simple culvert grates, beaver activity at township and state road culverts presented a serious drain on refuge labor that otherwise would have been available for other resource management activities. The average precipitation of 46 inches compounds the never-ending battle with beaver at road culverts. In 1986 YCC spent 700 hours of labor removing beaver plugs at road culverts. The refuge staff is now limited to hand tools to remove the beaver plugs. It is a labor intensive project we cannot ignore.

A drastic improvement in efficiency, staff morale and township public relations would be realized by the addition of a loader/backhoe and a dump truck to remove beaver plugs and debris from road rights-of-ways.

This basic package of heavy equipment would benefit all our land management activities at Erie NWR.

Volunteers provide a valuable service to the refuge helping us to accomplish many projects that would otherwise not get done, however, managing the volunteer program does require considerable staff time. Since volunteers are not receiving any monetary benefit from the work they do, keeping volunteers motivated often requires extra creativity, patience and understanding from the staff person handling the program so the volunteers will realize

their contributions are worthwhile not only to the refuge, but to themselves.

During this year, the Assistant Manager applied numerous times and was interviewed for several jobs in another Region. The Assistant Manager was not selected for any of the positions for which he was highly qualified. Merit promotion as it was intended to take place via the "green sheet" appeared in these instances not to be working. This problem may be specific to one Region or the entire U.S. Fish and Wildlife Service. If the present situation persists, there would be less heartache and morale problems if the Fish and Wildlife Service returned to the old system and did away with the "green sheet" entirely. Supervisors would then call an individual when he was seen as a likely candidate for filling a job. Return to this system would remove all the present day stress of questionable interviews, family moving anxieties, etc., for a position that has already been pre-selected.

On a positive note, we all made it through the year with no serious accidents on the job or at home. The refuge programs and resources were not impacted by adverse political pressures that often times do not have wildlife values as an operational objective. We made some on-the-ground progress that met wildlife and public use goals, all this is commendable and reflects on the stations fine staff and dedicated volunteers.



TAKE PRIDE AWARENESS WEEK

May 17-23, 1987

Welcome

Tom Mountain
Refuge Manager

Address

Tom Ridge
Representative
21st Congressional District

Adoption Ceremony

Tim Kimmel
President
Presque Isle Audubon Society

Tom Mountain
Refuge Manager

Presentation in memory of

ERIC P. ROWE

Youth Conservation Corpsman, 1985
and Conservation Corp Youth Leader, 1986

Jim Wood
Asst. Refuge Manager

Refuge "Take Pride" Tours

Tom Mountain
Refuge Manager

Jim Wood
Asst. Refuge Manager

Janet Marvin
Outdoor Recreation
Planner

*"All Americans should take pride
in their outstanding public lands...
We must all work together for a renewed awareness
that these lands are our lands"*

*President Ronald Reagan
1986 State of the Union Message*

"One of the best tributes to deceased veterans is to honor, respect, and care for those who live. What we do for our veterans and their families speaks loudly and clearly about our integrity as a nation, about our willingness to bear the burden of remaining free."

— U.S. Rep. Tom Ridge
July 8, 1987



PENNSYLVANIA AMERICAN LEGION CONVENTION — Then State Commander Dominic DeFrancesco is shown making a presentation to Congressman Ridge following his keynote speech to the more than 1,500 Legionnaires in Philadelphia. Ridge, a member of American Legion Post No. 773 in Millcreek, spoke about military reform and veterans' issues.

High School Seniors — Apply Now For U.S. Military Academies

High school seniors interested in applying for admission to the nation's military academies should begin the process immediately. Students should write to Congressman Ridge at the Erie District Office and request an information packet. Members of Congress will nominate students this winter for admission to: the U.S. Military Academy at West Point, New York; the U.S. Air Force Academy at Colorado Springs, Colorado; the U.S. Naval Academy at Annapolis, Maryland; and the U.S. Merchant Marine Academy at Kings Point, New York. After congressional nominations have been submitted, the military academies continue the selection process, offering final appointments by June of next year. Members of the class of 1988 or high school graduates under the age of 22 should be applying now.



RIDGE VISITS WILDLIFE REFUGE — Congressman Ridge was on hand at the Erie National Wildlife Refuge in Guys Mills when the refuge was officially adopted by the Presque Isle Audobon Society. He is shown here congratulating Tom Mountain, refuge manager, and Tim Kimmel, president of the Presque Isle Audobon Society.

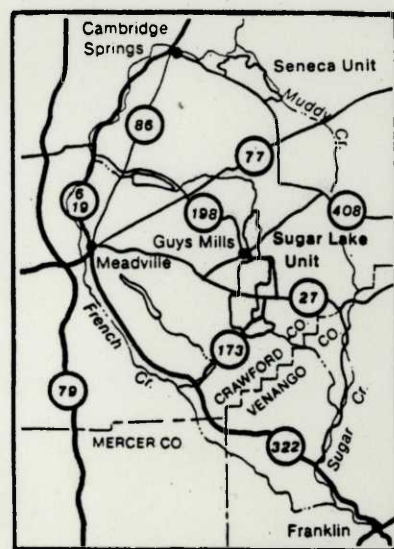
Audobon Society Adopts Refuge

In a recent ceremony, the Erie National Wildlife Refuge formalized a new relationship with the Presque Isle Audobon Society. The Society will now provide volunteers and assistance in coordinating various cleanup and wildlife projects at the wildlife refuge, located in Guys Mills in Crawford County.

The program was held in conjunction with a national public awareness campaign, "Take Pride in America." Public lands cover more than one-third of the United States, with over 700 million acres of federal lands and millions more under the care of state and local governments. Sadly, land and water resources are too often needlessly polluted and damaged. "Take Pride in America" is part of an ongoing effort to prevent the toll that misuse and abuse take on America's public lands.

The Erie National Wildlife Refuge is comprised of more than 8,000 acres of forests, grasslands, croplands, and wetlands. The diverse habitat attracts more than 200 species of birds and is home to more than 33 species of mammals.

The refuge is managed by the U.S. Department of the Interior Fish and Wildlife Service. Its nature trails are open seven days a week from sunrise to sunset. The refuge headquarters/visitor center building is open Monday through Friday, 8:00 a.m. to 4:30 p.m. The refuge is located on Wood Duck Lane, off Route 198, ¼-mile east of Guys Mills and 10 miles east of Meadville (see map).



Congress of the United States
House of Representatives
Washington, D.C.

Official Business

Tom Ridge
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POSTAL PATRON — Local
21st Congressional District
Pennsylvania

Ridge Casts Important Trade Vote

Congressman Ridge cast a crucial vote during the House consideration of major trade legislation. He supported an amendment which would require reductions in trade surpluses held by Japan, South Korea, and Taiwan. If the trade imbalances were not reduced significantly, the measure would force the president to enter into short-term negotiations to eliminate unfair trade practices. If these negotiations were to break down, the measure would mandate dollar-for-dollar retaliation.

The amendment, which passed the House by only four votes, is part of a comprehensive trade bill. At this writing, a conference committee is working to resolve differences between the House and the Senate versions. In his speech before the House, Congressman Ridge said, "We must be able to do more in response to unfair trade than just call for yet another round of talks."



RIDGE MAKES CASE FOR SMALL BUSINESS/TRADE BILL — Congressman Ridge testifies before a House subcommittee, arguing that small businesses should have access to legal assistance for unfair trade cases.

Ridge Calls For Better Weapons

The Congressional Military Reform Caucus, a bipartisan group of over 130 members of the House and Senate, sponsored a panel discussion of experts to address the question "Can We Stop Soviet Tank Armies?" Congressman Ridge is Republican chairman of the group.

A panel of experts in the field presented varying views on NATO's anti-tank capabilities to an audience of 300 members of Congress, congressional staff, the press, and public. Panelists reviewed the latest developments in "reactive armor" used on Soviet tanks, NATO's countermeasures, and the Army's plan of action.

The event began with an exhibit of five anti-tank weapons. The U.S. has not had an effective anti-tank weapon since 1942. Congressman Ridge believes that a major reason for U.S. inability to procure an effective anti-tank weapon is a lack of adequate testing. His amendment to require live-fire testing under realistic battlefield conditions passed the House and is currently awaiting Senate action. The Pentagon is currently evaluating eight anti-tank weapons for procurement.

Sand Improved at Presque Isle This Summer

The quality of sand on many Presque Isle beaches this summer is greatly improved over the "dirty sand" beach goers have endured in years past.

The improvement came as a result of a compromise worked out between the Presque Isle Advisory Board, the state Department of Environmental Resources, and the U.S. Army Corps of Engineers, which is responsible for the sand replenishment program on the peninsula. Under the agreement, coarser quarry sand is used as a base, with a "top dressing" of finer sand dredged from lake bottom and collected from the roadways.

The results achieved involved work by many different parties and a careful balance of our mutual goals: to minimize the erosion damage caused by storms and the high lake levels, to preserve the peninsula's natural environment and wildlife, and to make a trip to the park an enjoyable one for the thousands of Erie County residents and visitors who come each summer. The better beaches are an example of what can be accomplished through compromise and hard work from local citizens and concerned government officials. The goal is to improve the quality of sand on all beaches by next season.

RIDGE'S SMALL BUSINESS/TRADE BILL SUBJECT OF CONGRESSIONAL HEARING

Legislation introduced by Congressman Ridge was one of the topics at a subcommittee hearing to examine ways to assist small business that encounter unfair trade from foreign countries.

Small businesses account for 60 percent of U.S. jobs and over half the gross national product. In Pennsylvania, 98 percent of our businesses employ less than 100 workers. There are over 230,000 such businesses across the Commonwealth.

Although the government trade remedies currently on the books cover businesses of all sizes, in reality, they remain unavailable to small businesses. Proving an unfair trade practices case requires legal and financial resources beyond those of most small businesses. Ridge's legislation would create an office within the Small Business Administration specifically charged with assisting small businesses in assembling their trade cases. His bill was identified as going "to the heart" of the matter and may lead to further committee action.



RIDGE EXAMINES PROPOSED WEAPONS SYSTEMS — Congressman Ridge examines anti-tank weapons under evaluation by the Pentagon for possible procurement. The simulator weapons were shown at a panel discussion in Washington sponsored by the Congressional Military Reform Caucus.

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Ridge Says:

"Keep Northeast Farm Credit in the Northeast"

The Northeast Agriculture Caucus, a coalition of members of Congress concerned with unique needs of farming in the northeast, recently blasted a proposal to drain farm credit from several healthy systems in the country in attempt to bail out eight systems which are ailing. Ridge, a founding member of the caucus, believes the plan would siphon credit from the Baltimore system, which serves northwestern Pennsylvania, saying, "in its attempt to solve farm credit

problems, this plan would only create bigger ones." Healthy farm credit systems have already contributed farmer equity to other districts, creating pressure in Pennsylvania for higher interest rates and increased borrowing costs. According to Ridge, further "loss-sharing" would only make matters worse. He favors a targeted package of federal assistance that would stop further mandatory assessments of much-needed farmer capital from the Northeast.

Ridge Legislation in the 100th Congress

Housing and Community Development

- Amendment to earmark \$20 million for a program that would provide one-time only assistance to families in danger of becoming homeless. Less expensive alternative to building shelters. **Passed House. Report language approved by conference committee. Bill signed by the president.**
- Amendment to keep FHA insured home mortgage loans inexpensive and available for low and moderate-income Americans. Amendment would prohibit mortgage bankers from refusing to finance or charging extra points for smaller mortgages. **Passed House, pending in conference.**
- Amendment to transfer funds to the rental rehab program to create 34,000 more housing units for low-income Americans at the same funding level. **Passed House, pending in conference.**

UDAG Program

- Lobbied the House Appropriations Committee to restore cut UDAG funding totalling \$225 million for next year's program. **Funding restored.**
- Supported an amendment that would have awarded extra points to UDAG projects which renovate and use older, industrial facilities. **Amendment defeated.**

Pennsylvania Business Climate

- Introduced legislation to reduce unnecessary burden of excessive penalties on Pennsylvania employers, which places Pennsylvania business and economic development at a competitive disadvantage. Penalties are assessed by the state unemployment compensation fund to repay the federal government for money borrowed. **Referred to Ways and Means Committee.**

POW/MIA Issues

- Resolution to support General John Vessey's trip to Hanoi to negotiate with North Vietnam on POW/MIA and other humanitarian issues. **Passed House unanimously, 418-0. Sent to the president.**

Defense

- Amendment to reduce funding for the Strategic Defense Initiative by \$500 million in order to bring spending in line with our scientific research capability in order to avoid mismanagement of funds. **Passed House. Awaits Senate action.**

Military Reform

- Amendment to require realistic testing of anti-tank weapons, which has not taken place since 1942. Adequate testing will enable the U.S. to buy the most effective weapon capable of penetrating new Soviet tank armor. **Passed House. Awaits Senate action.**
- Amendment to require a redesign of the Bradley Fighting Vehicle, to address design and dependability problems with the new troop carrier that would endanger soldiers' lives in combat. **Passed House. Awaits Senate action.**
- Supported an amendment to slow the "revolving door," military personnel who lobby for weapons systems and, soon thereafter, accept employment with defense contractors. **Passed House. Awaits Senate action.**

Conference Committees

- Appointed to the House-Senate conference committee on the homeless aid bill. **Bill signed by the president.**
- Appointed to the House-Senate conference committee on the housing and community development bill with authority over important job-creating programs, such as urban development action grants, community development block grants, as well as housing assistance. **Conference in progress.**

4. Credits

Refuge Manager Mountain prepared Sections A, C, D, E-5, 6, 8, F-5, G-5 and 7 and K. Assistant Refuge Manager Wood prepared Sections F-1, 2, 3, 4, 5, 9, 10, G and I. Outdoor Recreation Planner Marvin prepared Sections E-3 and 4, H and J. Volunteer Byham prepared a portion of Section F-3 and G-7. Secretary Brugler prepared Section B, I-5 and 6, and typed and assembled the report. Secretary Brugler, ORP Marvin, Volunteer Howard Byham and Volunteer Joyce Sliter edited the report.

K. FEEDBACK

Despite relatively new BLHP facilities and land holdings of nearly 8,000 acres (a large tract in the east), the refuge does not have adequate basic heavy equipment to properly manage the diversity of habitats within the land resources at Erie NWR.

A John Deere 4040 tractor was purchased in 1978. The tractor is two-wheel drive. The average annual precipitation is 46 inches. The wet climate and moist field conditions year-round do not enable us to utilize the tractor as much as we would like. An additional 4x4 tractor with increased horsepower is needed.

Despite a beaver trapping season, live-trapping, shooting, blowing lodges, beaver tubes and simple culvert grates, beaver activity at township and state road culverts presented a serious drain on refuge labor that otherwise would have been available for other resource management activities. The average precipitation of 46 inches compounds the never-ending battle with beaver at road culverts. In 1986 YCC spent 700 hours of labor removing beaver plugs at road culverts. The refuge staff is now limited to hand tools to remove the beaver plugs. It is a labor intensive project we cannot ignore.

A drastic improvement in efficiency, staff morale and township public relations would be realized by the addition of a loader/backhoe and a dump truck to remove beaver plugs and debris from road rights-of-ways.

This basic package of heavy equipment would benefit all our land management activities at Erie NWR.

Volunteers provide a valuable service to the refuge helping us to accomplish many projects that would otherwise not get done, however, managing the volunteer program does require considerable staff time. Since volunteers are not receiving any monetary benefit from the work they do, keeping volunteers motivated often requires extra creativity, patience and understanding from the staff person handling the program so the volunteers will realize

their contributions are worthwhile not only to the refuge, but to themselves.

During this year, the Assistant Manager applied numerous times and was interviewed for several jobs in another Region. The Assistant Manager was not selected for any of the positions for which he was highly qualified. Merit promotion as it was intended to take place via the "green sheet" appeared in these instances not to be working. This problem may be specific to one Region or the entire U.S. Fish and Wildlife Service. If the present situation persists, there would be less heartache and morale problems if the Fish and Wildlife Service returned to the old system and did away with the "green sheet" entirely. Supervisors would then call an individual when he was seen as a likely candidate for filling a job. Return to this system would remove all the present day stress of questionable interviews, family moving anxieties, etc., for a position that has already been pre-selected.

On a positive note, we all made it through the year with no serious accidents on the job or at home. The refuge programs and resources were not impacted by adverse political pressures that often times do not have wildlife values as an operational objective. We made some on-the-ground progress that met wildlife and public use goals, all this is commendable and reflects on the stations fine staff and dedicated volunteers.



ERIE

NATIONAL WILDLIFE REFUGE

Has Been Adopted by

PRESQUE ISLE

AUDUBON SOCIETY

Volunteers Working to Protect

National Wildlife Refuges

ERIE



**National
Wildlife
Refuge**

PENNSYLVANIA



WELCOME

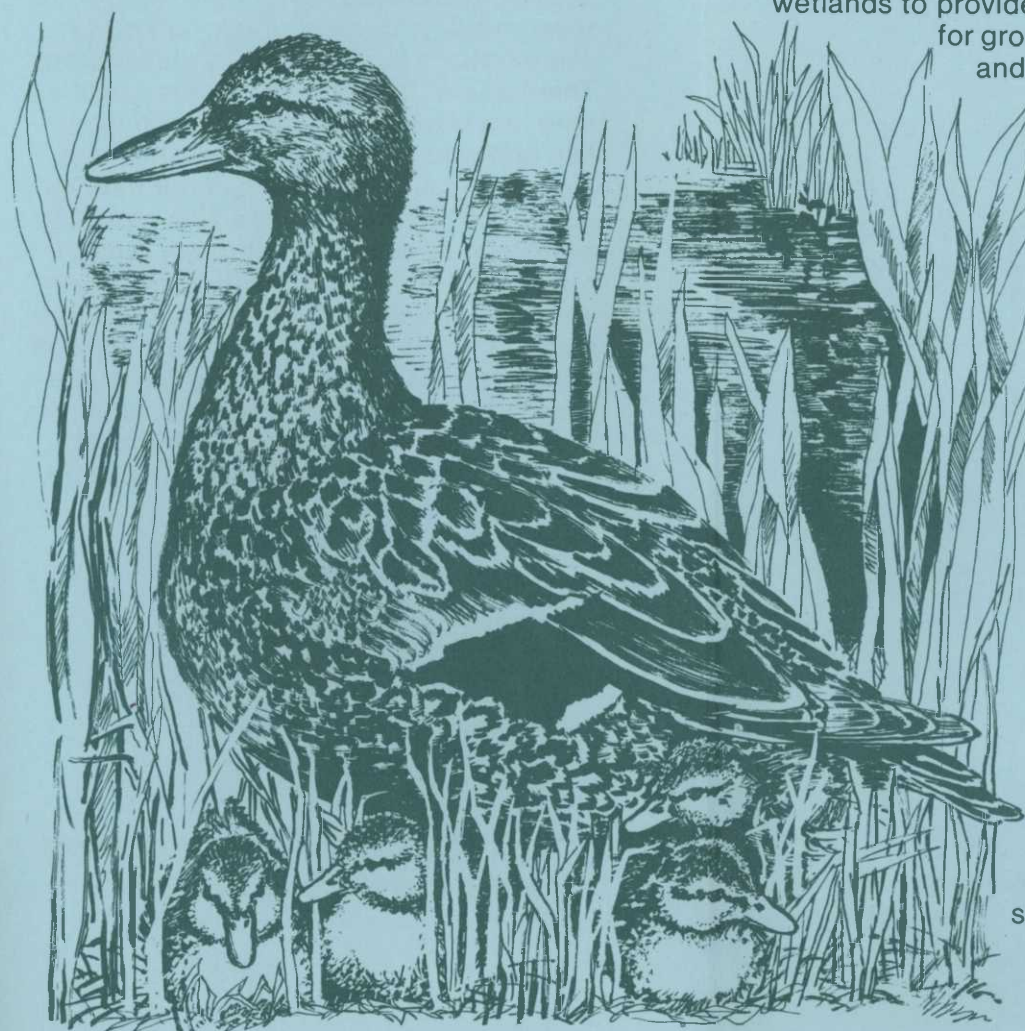
Erie National Wildlife Refuge, one of over 400 national wildlife refuges in the United States, is a haven for migratory birds. The refuge is not on the shores of Lake Erie, but lies in Crawford County, 35 miles south of the city of Erie and Lake Erie. The refuge is a namesake of the Erie Indians, an extinct tribe that resided near the lake.

The refuge consists of two separate land units. Sugar Lake Unit, the more intensely managed portion, lies 10 miles east of Meadville on the outskirts of Guys Mills village. It contains 4,967 acres lying in a narrow valley which includes Woodcock Creek draining to the north and Lake Creek draining to the south. Beaver ponds, pools, and marshland along the creeks are bounded by forested slopes interspersed with croplands, grasslands and wet meadows.

The Seneca Unit is about 10 miles north of Sugar Lake Unit, or four miles southeast of Cambridge Springs. It consists of 3,027 acres situated in a forested valley where Muddy Creek and Dead Creek provide most of the wetland habitat. This unit has no developed public use program as land acquisition is incomplete.

MANAGEMENT

Erie Refuge was established in 1959. The land was purchased with funds provided from the sale of Migratory Bird Hunting and Conservation Stamps. Its major objective is to provide waterfowl, primarily ducks, with nesting, feeding, brooding, and resting habitat. Secondary objectives are to provide habitat capable of supporting a diversity of other wildlife species and enhance opportunities for wildlife-oriented public recreation and environmental education.



Over 2,500 acres of wetland, including beaver floodings, marshes, swamps, man-made impoundments, creeks and wet meadows, provide desirable waterfowl habitat. Water control structures on refuge impoundments permit the manipulation of water levels to encourage the growth of waterfowl food and cover plants such as smartweeds and bulrushes. Future plans call for more than doubling the amount of manageable habitat now available.

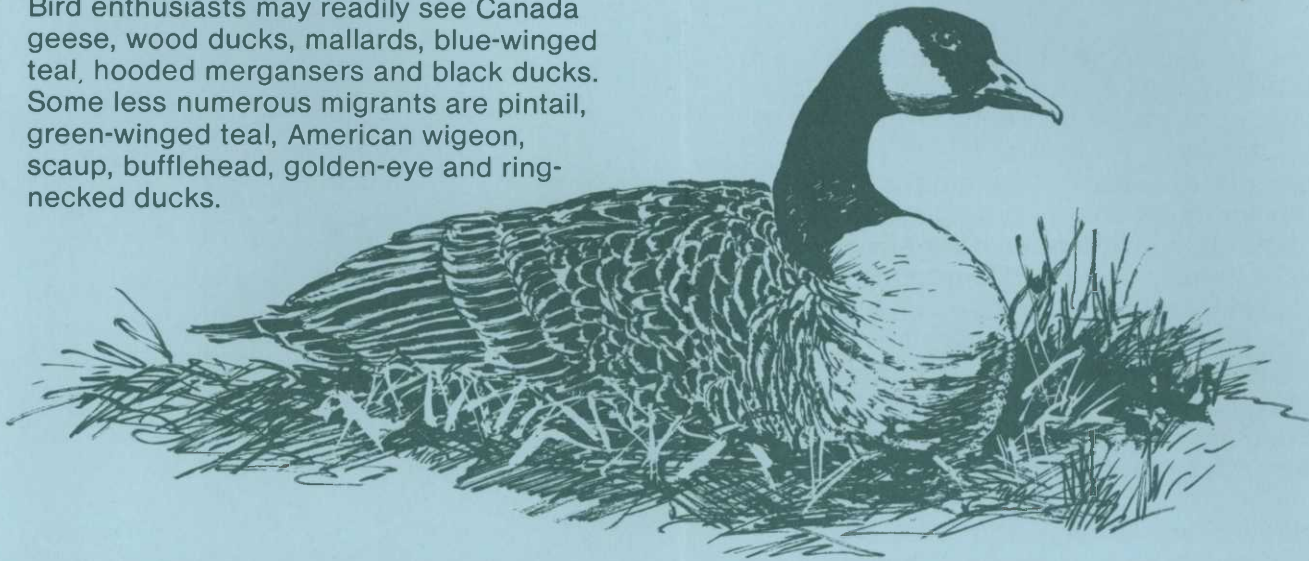
Grasslands are being developed near wetlands to provide dense nesting cover for ground-nesting waterfowl and other birds. Improved nesting cover provides more natural protection from predators and can be just as important to waterfowl production as quality marsh habitat.

A cooperative farming program permits farmers to cultivate crops on refuge lands. Farmers agree to raise certain crops such as oats, grass, clover and corn. In return for using the land, farmers leave the refuge a share of the crops. These refuge shares are usually left in the field as supplemental food for wildlife.

WILDLIFE

BIRDS

Waterfowl migrations occur in March to early April and again from September to November. The peak migrating waterfowl population on any given day has been 4,500 ducks and 1,200 Canada geese. Bird enthusiasts may readily see Canada geese, wood ducks, mallards, blue-winged teal, hooded mergansers and black ducks. Some less numerous migrants are pintail, green-winged teal, American wigeon, scaup, bufflehead, golden-eye and ring-necked ducks.



Wood ducks are the most prolific waterfowl nesters on the refuge. Their annual production is significantly increased by the placement of nesting boxes on refuge wetlands. Hooded mergansers, mallards, black ducks, blue-winged teal and Canada geese are other common resident nesting waterfowl.

Bald eagles and ospreys occasionally visit the refuge in search of food. Common nesting raptors are red-tailed hawks and American kestrels.

During summer, shorebirds such as sandpipers and yellowlegs appear in small groups feeding on mudflats. The most noticeable marsh birds are great blue herons, which nest in rookeries on the refuge.

Over 200 bird species have been observed in the diverse habitat types found on Erie Refuge. Of these, 132 species are songbirds. The refuge provides nesting habitat for about 90 bird species. A detailed refuge bird leaflet may be obtained from the refuge office.

MAMMALS

Some 33 species of mammals are present on the refuge. The most commonly seen are white-tailed deer, beaver, muskrat and woodchucks. A detailed refuge mammal leaflet is available at the refuge office.

FISH

Common warm water fish occurring in refuge waters include black crappie, yellow perch, largemouth bass, bluegills, sunfish and bullheads. Common cold water species include trout and white suckers in Woodcock Creek.

PUBLIC USE

Erie Refuge is open daily from sunrise to sunset. Visitors can view displays, obtain information leaflets and talk with personnel at the refuge headquarters/visitor center building Monday through Friday, 8:00 a.m. till 4:30 p.m. Headquarters is located off Rt. 198, ¾-mile east of Guys Mills and 10 miles east of Meadville.

The Tsuga Nature Trail near headquarters is open seven days a week. This two-loop trail follows a 1.2 or 1.6 mile route through a wide variety of habitat types. The trail and gravel roads throughout the refuge provide excellent opportunities for wildlife observation. During the winter months, skiing and snowshoeing on refuge trails are encouraged.

Educational groups are always welcome to use the refuge for environmental study. Such use should be arranged in advance with refuge staff.

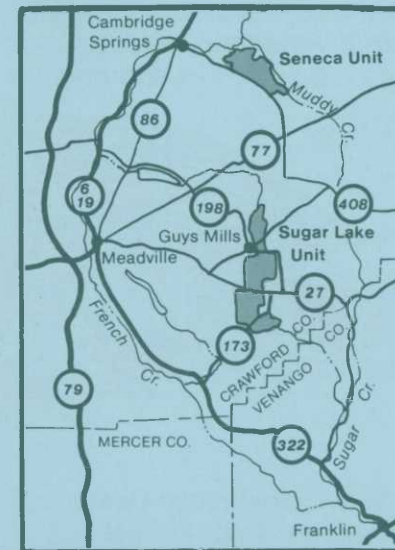
Hunting and fishing opportunities are available in designated areas in accordance with State and refuge regulations.

All refuge visitors are encouraged to bring binoculars, cameras and field guides to more fully enjoy Erie's wildlife.



ERIE

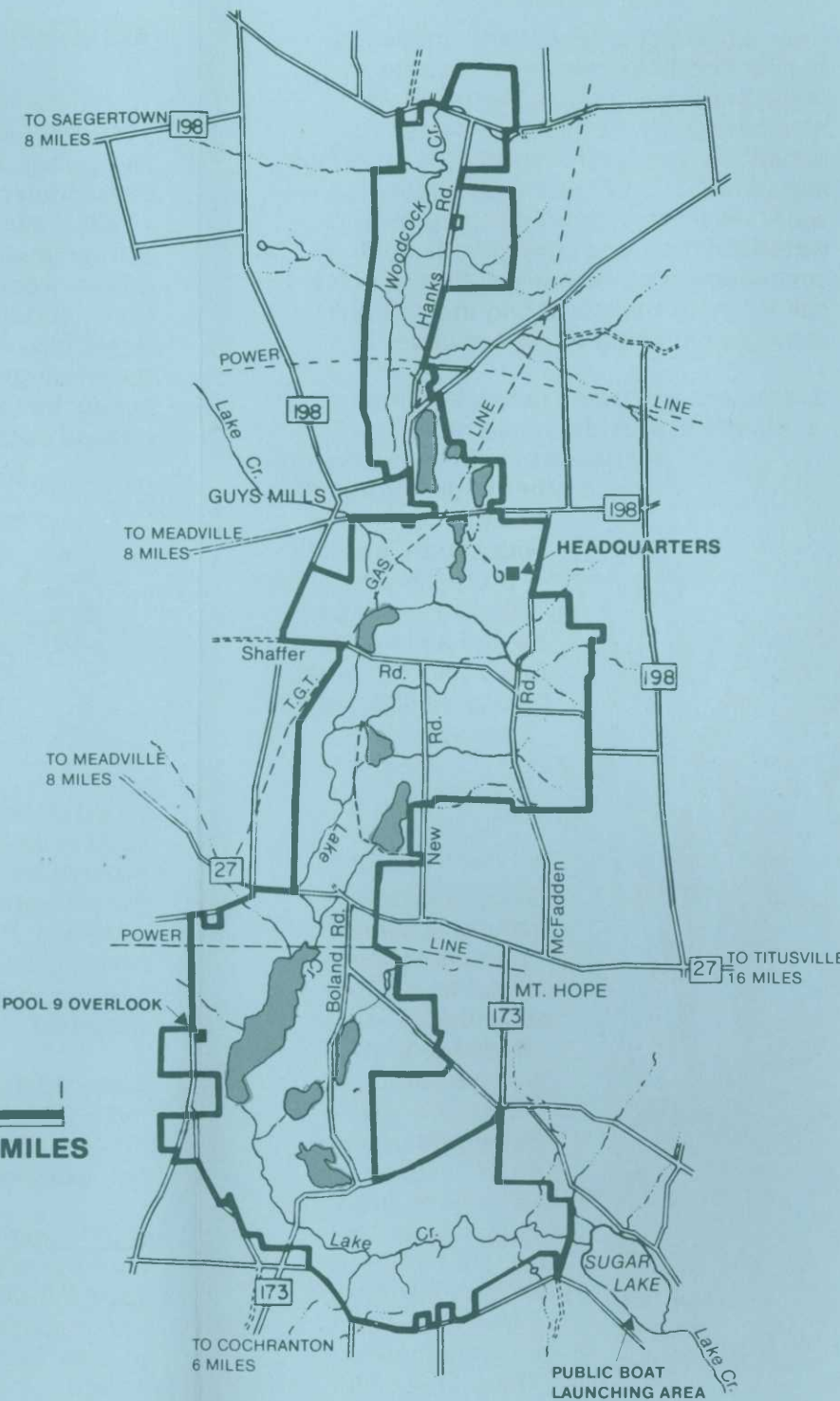
NATIONAL WILDLIFE REFUGE



LOCATION MAP



0 1/2 1
SCALE IN MILES



For further information contact:

Refuge Manager
Erie National Wildlife Refuge
R.D. #1 Wood Duck Lane
Guys Mills, PA 16327
Telephone: (814) 789-3585



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

RL 52520-1

March 1982

BIRDS of ERIE

National
Wildlife
Refuge



Pennsylvania

ERIE NATIONAL WILDLIFE REFUGE, established in 1959, is located in Crawford County in northwestern Pennsylvania. The refuge consists of two separate land units. The Sugar Lake Unit, containing 4,967 acres, is 10 miles east of Meadville on the outskirts of the village of Guys Mills. The Seneca Unit, containing 3,027 acres, is 10 miles north of the Sugar Lake Unit near Cambridge Springs.

Forests, swamps, beaver ponds, man-made impoundments, grasslands and croplands make up the diverse habitats which have attracted 236 species of birds. An additional 15 species have been observed only one or two times and are listed separately as accidentals.

Waterfowl migrations occur in March to early April and again from September to November. There are more wood ducks nesting on the refuge than any other duck and a good place to watch them during the spring migration is from our observation blind. In the spring goslings and their parents also can be seen as they travel back and forth from Pool C to the Entrance Road Pond.

Spring and summer is the time to look for nesting songbirds. Look for the Henslow's Sparrow, a rare bird in most areas of the United States. This sparrow is secretive and usually sings its "slick" song from a low perch.

Shorebirds, such as sandpipers and yellowlegs, can be seen in small groups feeding on mudflats during the summer and fall. On a winter walk black-capped chickadees, nuthatches, downy woodpeckers and dark-eyed juncos are easy to spot.

This list follows the Sixth American Ornithological Union checklist. Most birds are migratory and their seasonal occurrence and relative abundance are coded as follows:

SEASON

s - Spring	March - May
S - Summer	June - August
F - Fall	September - November
W - Winter	December - February

† - Nesting has occurred on the refuge.

RELATIVE ABUNDANCE

a - abundant	a species which is very numerous.
c - common	certain to be seen or heard in suitable habitat.
u - uncommon	present, but not certain to be seen.
o - occasional	seen only a few times during a season.
r - rare	seen at intervals of 2 to 5 years.

s S F W

LOONS - GREBES - CORMORANTS

BITTERNS - HERONS

Common Loon	o	o		
Pied-billed Grebe †	u	u	u	r
Horned Grebe	o	o		
Double-crested Cormorant	r	r		
American Bittern	u	u	u	
Great Blue Heron †	c	c	c	u
Great Egret	r	r	r	
Little Blue Heron	r			
Green-backed Heron †	u	c	u	
Black-crowned Night-Heron	r	r	r	

SWANS - GEESE - DUCKS

Tundra Swan	o	o	o	
Snow Goose	r	r	r	
Canada Goose †	c	c	c	c
Wood Duck †	c	c	c	o
Green-winged Teal	c	c	r	
American Black Duck †	o	o	o	u
Mallard †	c	c	c	c
Northern Pintail	o	o	r	
Blue-winged Teal †	c	u	c	r
Northern Shoveler	o	o	r	
Gadwall	u	u	r	
Eurasian Wigeon	r			
American Wigeon	c	r	c	r
Canvasback	o	o	r	
Redhead	o	o	r	
Ring-necked Duck	c	r	c	o
Greater Scaup	r	r	r	
Lesser Scaup	o	o	r	
Common Goldeneye	o	o	o	
Bufflehead	c	c	o	
Hooded Merganser †	c	c	c	r
Common Merganser	o	o		
Red-breasted Merganser	o	o	r	
Ruddy Duck	o	o	r	

VULTURES - HAWKS - FALCONS

Turkey Vulture	u	u	u	
Osprey	o	o		
Bald Eagle	o	o	o	r
Northern Harrier †	o	r	r	r
Sharp-shinned Hawk †	o	r	o	o
Cooper's Hawk †	o	r	o	r
Northern Goshawk	r	r	r	
Red-shouldered Hawk †	u	u	u	o
Broad-winged Hawk †	u	u	u	

s S F W

Red-tailed Hawk †	c	c	c	c
Rough-legged Hawk				r
American Kestrel †	u	u	u	r
Merlin	r	r	r	
Peregrine Falcon	r	r	r	

GROUSE - QUAIL - TURKEY - RAILS

Ring-necked Pheasant †	u	u	u	u
Ruffed Grouse †	c	c	c	c
Wild Turkey †	o	u	u	u
Northern Bobwhite	r	r	r	r
Virginia Rail †	u	u	u	
Sora †	u	u	u	
Common Moorhen	o	o	r	
American Coot †	u	u	u	r

PLOVERS - SANDPIPERS

Black-bellied Plover	r			
Lesser Golden-Plover	r			
Semipalmated Plover	u	u		
Killdeer †	c	c	c	r
Greater Yellowlegs	u	o	u	
Lesser Yellowlegs	u	o	u	
Solitary Sandpiper	u	o	u	
Willet	r			
Spotted Sandpiper †	u	u	u	
Upland Sandpiper	r	r		
Whimbrel	r	r		
Hudsonian Godwit	r			
Ruddy Turnstone	r	r		
Red Knot	r	r		
Sanderling	r	r		
Semipalmated Sandpiper	r	u		
Least Sandpiper	u	u		
White-rumped Sandpiper	r			
Baird's Sandpiper	r			
Pectoral Sandpiper	u	u		
Dunlin	u	u		
Stilt Sandpiper	r	r		
Buff-breasted Sandpiper	r			
Short-billed Dowitcher	u	u		
Long-billed Dowitcher	r			
Common Snipe †	u	u	u	
American Woodcock †	c	u	c	

GULLS - TERNS

Bonaparte's Gull	o	o	o	
Ring-billed Gull	o	o		
Herring Gull	o	o		
Common Tern	r	r		

s S F W

___ Forster's Tern	r	r		
___ Black Tern	r	r		

DOVES - CUCKOOS - OWLS -**SWIFTS - HUMMINGBIRDS**

___ Rock Dove †	c	c	c	c
___ Mourning Dove †	c	c	c	c
___ Black-billed Cuckoo †	c	c	c	
___ Yellow-billed Cuckoo	u	u	u	
___ Common Barn-Owl †	r	r	r	r
___ Eastern Screech-Owl †	u	u	u	u
___ Great Horned Owl †	c	c	c	c
___ Snowy Owl			r	
___ Barred Owl †	c	c	c	c
___ Long-eared Owl	r	r	r	r
___ Short-eared Owl	r	r		
___ Northern Saw-whet Owl			r	
___ Common Nighthawk †	c			
___ Whip-poor-will	r			
___ Chimney Swift †	c	c	c	
___ Ruby-throated Hummingbird †	u	u		
___ Belted Kingfisher †	c	c	c	o

WOODPECKERS - FLYCATCHERS

___ Red-headed Woodpecker †	u	u	u	
___ Red-bellied Woodpecker	r	r	r	r
___ Yellow-bellied Sapsucker †	u	c	c	
___ Downy Woodpecker †	c	c	c	c
___ Hairy Woodpecker †	u	u	u	u
___ Northern Flicker †	c	c	c	c
___ Pileated Woodpecker †	u	u	u	u
___ Olive-sided Flycatcher	r	r		
___ Eastern Wood-Pee-wee †	c	c	c	
___ Yellow-bellied Flycatcher	r	r		
___ Acadian Flycatcher †	u	u	u	
___ Alder Flycatcher	o	o		
___ Willow Flycatcher †	c	c	c	
___ Least Flycatcher †	c	u	c	
___ Eastern Phoebe †	c	c	c	
___ Great Crested Flycatcher †	u	c	c	
___ Eastern Kingbird †	c	c	c	

LARKS - SWALLOWS - JAYS and CROWS

___ Horned Lark	u	o	u	o
___ Purple Martin	u	c	c	
___ Tree Swallow †	a	a	a	
___ Northern Rough-winged Swallow	o	o	o	
___ Bank Swallow †	c	c	c	
___ Cliff Swallow	r	r	r	
___ Barn Swallow †	c	a	a	

s S F W

___ Blue Jay †	a	a	a	a
___ American Crow †	a	a	a	u

TITMICE - NUTHATCHES - WRENS

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

KINGLETS - THRUSHES - THRASHERS**WAXWINGS - STARLING**

___ Golden-crowned Kinglet	u	c	u	
___ Ruby-crowned Kinglet	u	c	r	
___ Blue-gray Gnatcatcher †	u	u	u	
___ Eastern Bluebird †	c	u	u	o
___ Veery †	c	c	c	
___ Gray-cheeked Thrush	c	c		
___ Swainson's Thrush	c	c		
___ Hermit Thrush	c	r	c	
___ Wood Thrush †	c	c	c	
___ American Robin †	a	a	a	o
___ Gray Catbird †	c	c	c	r
___ Northern Mockingbird	r	r	r	
___ Brown Thrasher †	u	u	u	
___ Water Pipit	r	r		
___ Cedar Waxwing	c	a	a	u
___ Northern Shrike			r	
___ European Starling †	a	a	a	u

VIREOS - WOOD WARBLERS

___ White-eyed Vireo	r	r		
___ Solitary Vireo †	u	r	u	
___ Yellow-throated Vireo †	o	r	o	
___ Warbling Vireo †	u	c	u	
___ Philadelphia Vireo	r	r		
___ Red-eyed Vireo †	c	a	a	
___ Blue-winged Warbler †	c	c	c	
___ Tennessee Warbler	a	a		
___ Orange-crowned Warbler		r		
___ Nashville Warbler †	c	r	c	
___ Northern Parula	o	o		
___ Yellow Warbler †	a	a	a	
___ Chestnut-sided Warbler †	c	o	c	
___ Magnolia Warbler †	c	r	c	

s S F W

— Cape May Warbler	c	c		
— Black-throated Blue Warbler	u	u		
— Yellow-rumped Warbler	a	a	o	
— Black-throated Green Warbler †	c	c	c	
— Blackburnian Warbler †	c	u	c	
— Pine Warbler	r	r	r	
— Prairie Warbler	r			
— Palm Warbler	u	u		
— Bay-breasted Warbler	u	u		
— Blackpoll Warbler	u	u		
— Cerulean Warbler	r	r	r	
— Black-and-white Warbler	u	r	u	
— American Redstart †	c	o	c	
— Prothonotary Warbler	r	r		
— Ovenbird †	c	c	c	
— Northern Waterthrush †	u	c	u	
— Louisiana Waterthrush †	u	u	u	
— Kentucky Warbler	r			
— Connecticut Warbler	r	r		
— Mourning Warbler †	u	u	u	
— Common Yellowthroat †	a	a	a	
— Hooded Warbler †	c	c	c	
— Wilson's Warbler	u	u		
— Canada Warbler †	u	o	u	
— Yellow-breasted Chat †	u	u	o	

TANAGERS - SPARROWS

— Scarlet Tanager †	c	c	c	
— Northern Cardinal †	c	c	c	c
— Rose-breasted Grosbeak †	c	c	c	
— Indigo Bunting †	c	c	c	
— Rufous-sided Towhee †	c	c	c	
— American Tree Sparrow	c	c	a	
— Chipping Sparrow †	c	c	c	
— Field Sparrow †	c	c	c	r
— Vesper Sparrow †	o	o	o	
— Savannah Sparrow †	o	o	o	
— Grasshopper Sparrow	u	u	u	
— Henslow's Sparrow †	u	u	u	
— Fox Sparrow	o	o		
— Song Sparrow †	a	a	a	c
— Lincoln's Sparrow	r	r		
— Swamp Sparrow †	a	a	a	u
— White-throated Sparrow	c	c	u	
— White-crowned Sparrow	u	u		
— Dark-eyed Junco	c	c	a	
— Snow Bunting		o	o	

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BLACKBIRDS - FINCHES

— Bobolink †	u	c	u	
— Red-winged Blackbird †	a	a	a	r
— Eastern Meadowlark †	u	c	c	r
— Rusty Blackbird	u	u		
— Common Grackle †	a	a	a	o
— Brown-headed Cowbird †	c	c	c	o
— Orchard Oriole	o	r	o	
— Northern Oriole †	c	c	c	
— Pine Grosbeak				r
— Purple Finch †	u	u	u	u
— House Finch †	o	o	o	o
— Red Crossbill				r
— White-winged Crossbill				r
— Common Redpoll				r
— Pine Siskin	o	o	o	
— American Goldfinch †	a	a	a	c
— Evening Grosbeak	o	o	c	
— House Sparrow †	a	a	a	a

ACCIDENTALS (only 1 or 2 records)

— Red-throated Loon				
— Least Bittern				
— Oldsquaw				
— Black Scoter				
— Surf Scoter				
— White-winged Scoter				
— Golden Eagle				
— Gyrfalcon				
— Sandhill Crane				
— Three-toed Woodpecker				
— Black-backed Woodpecker				
— Blue Grosbeak				
— Dickcissel				
— Lapland Longspur				
— Brewer's Blackbird				

For further information, or to report unusual birds, please contact:

Refuge Manager
 Erie National Wildlife Refuge
 RD 1, Wood Duck Lane
 Guys Mills, PA 16327
 Telephone: (814) 789-3585

NOTES

Location _____

Date _____ Total _____

Observers _____

Weather _____ Wind _____

Time _____

THE FISH AND WILDLIFE SERVICE

Erie is one of over 400 units encompassing more than 90 million acres in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The Service also manages more than 70 National Fish Hatcheries and major fish and wildlife research laboratories across the country. As the Nation's primary steward of fish and wildlife resources, the Service provides leadership in habitat and wetlands protection, fish and wildlife research and technical assistance, and conservation and protection of migratory birds, anadromous fishes, certain marine mammals, and threatened and endangered species.



UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE



Cover: Henslow's Sparrow by Arthur Morris/VIREO

RL 52520-2

January 1986

Fishing

Erie
National
Wildlife
Refuge



Pennsylvania

Special Conditions

1. Bank fishing is permitted on all public fishing areas.
2. Boats are allowed in Area 11, and boats without motors are permitted in Area 6 from the second Saturday in June to September 15 only.
3. Bank fishing in Areas 6 and 8 is permitted year-round. Areas 6 and 8 may be opened (conditions permitting) to ice fishing, as posted by signs in the areas.
4. Refuge areas are open for fishing sunrise to sunset.
5. The taking of frogs is prohibited.
6. Minnows and turtles may be trapped by special use permit only.

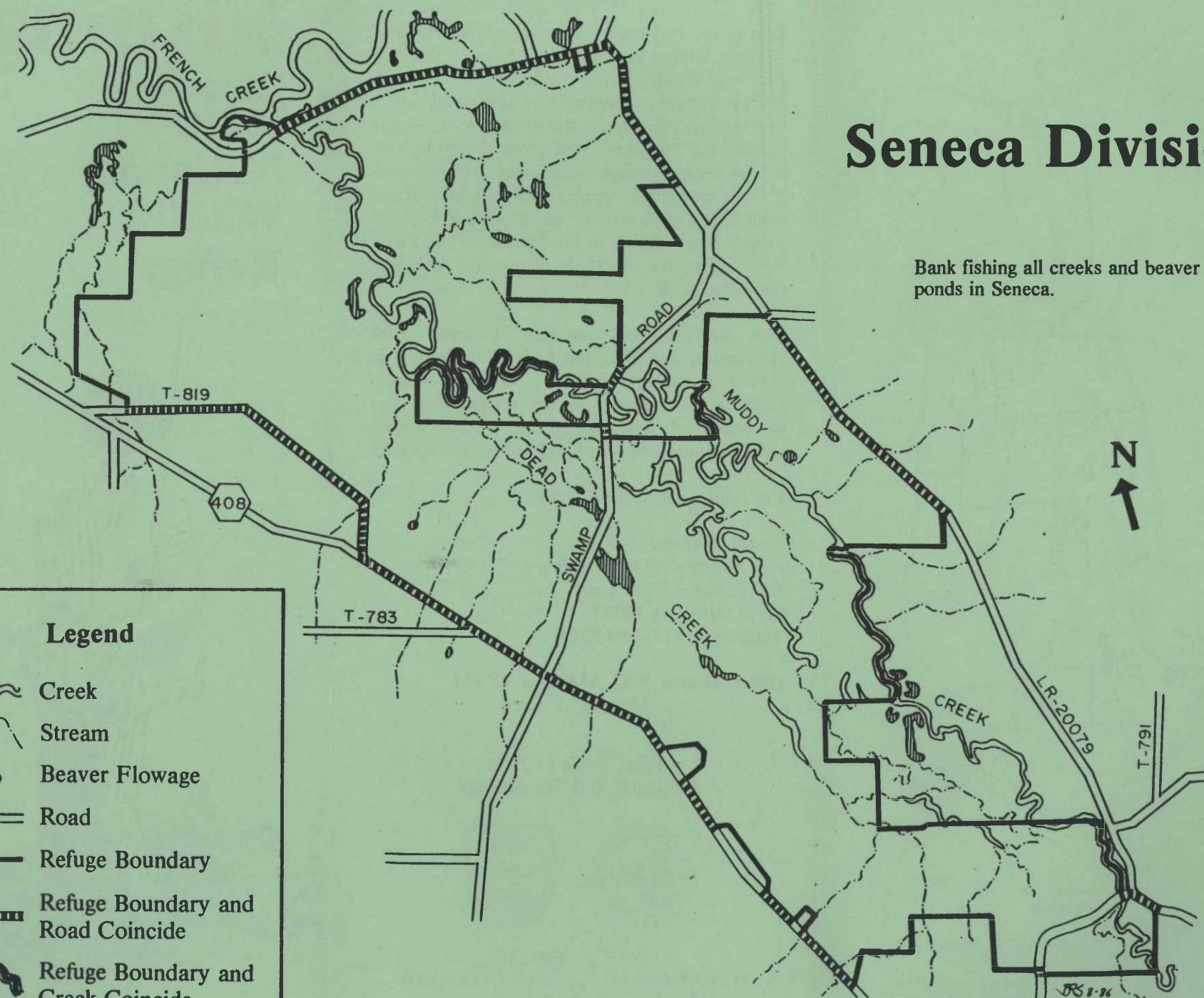
Seneca Division

Bank fishing all creeks and beaver ponds in Seneca.



Legend

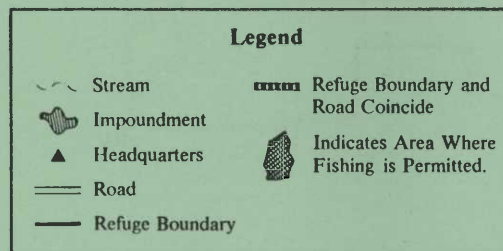
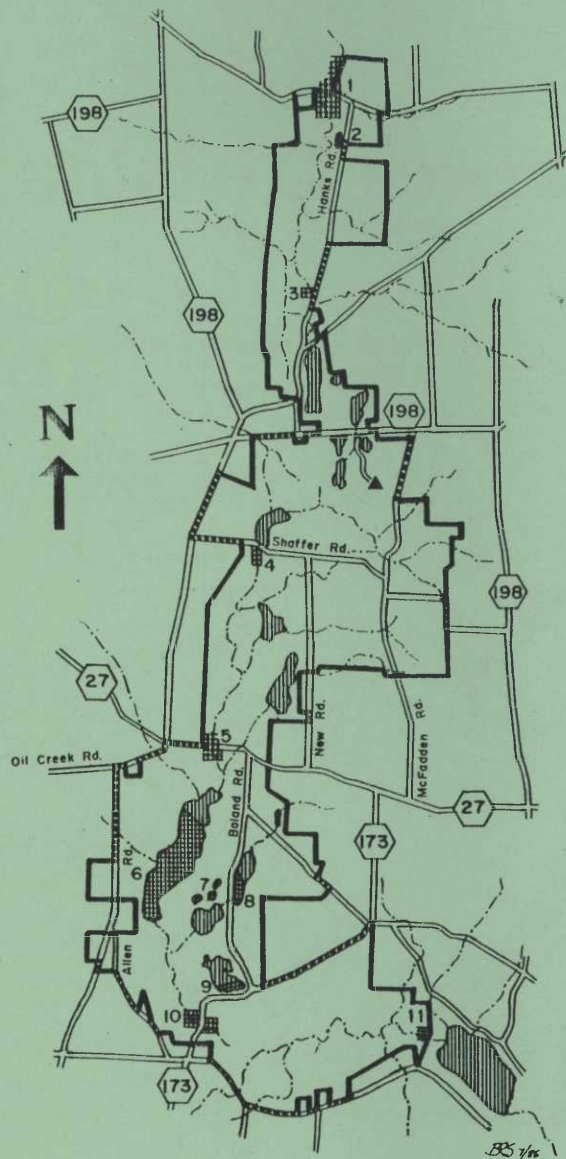
- Creek
- Stream
- Beaver Flowage
- Road
- Refuge Boundary
- Refuge Boundary and Road Coincide
- Refuge Boundary and Creek Coincide



Sugar Lake Division

Public Fishing Areas

1. Woodcock Creek at north end - from northern refuge boundary, upstream or south past LR-20114 about one-tenth of a mile.
2. Woodcock Overlook Pond - west side of Hanks Road.
3. Woodcock Creek south - downstream from Hanks Road about 150 feet.
4. Pool 4 Outlet - downstream from Shaffer Road about 150 feet.
5. Lake Creek at Route 27 - from Route 27 road embankment.
6. Pool 9 dike area - bank fishing on the dike and below the dike along Lake Creek for about 400 feet. Boats without motors and ice fishing upstream from the dike about 3000 feet.
7. Meyers Small Ponds - between Meyers Pond and Pool 9 entrance road.
8. Pool K - bank fishing on 300 feet of southwestern shore.
9. Reitz Pond dike and Small Ponds - bank fishing on about 1000 feet of south and southwestern shores and in small ponds east of Reitz.
10. Lake Creek at Route 173 - from road embankment.
11. Lake Creek above Sugar Lake - about 300 feet of creek with boat access from Sugar Lake.



THE U.S. FISH AND WILDLIFE SERVICE

Erie is one of more than 430 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife habitat and represents the most comprehensive wildlife resource management program in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys, and include small islands in the Caribbean and South Pacific. The character of the refuges is as diverse as the nation itself.

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

For further information contact:

Refuge Manager
Erie National Wildlife Refuge
RD 1, Wood Duck Lane
Guys Mills, PA 16327
Telephone (814) 789-3585

Office Hours: 8:00 AM to 4:30 PM
Monday - Friday.

**Take Pride in Erie
National Wildlife Refuge**



**UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE**

RL-52520-5

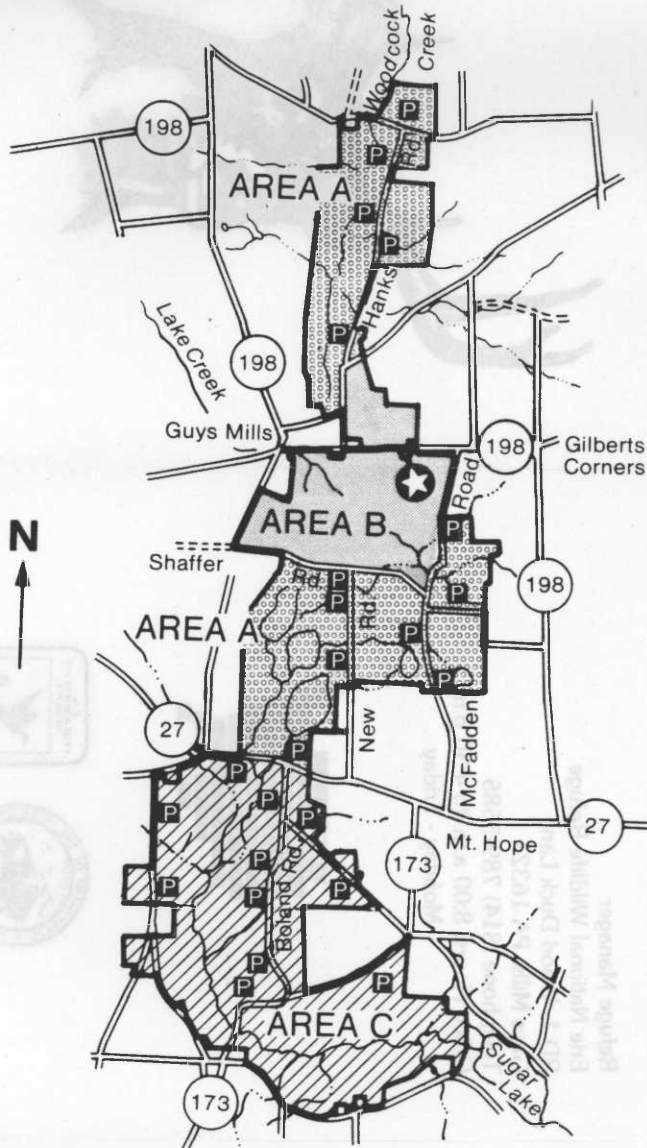
April 1987

Erie National Wildlife Refuge



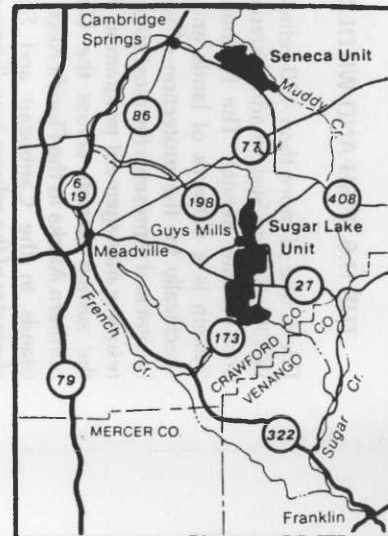
Pennsylvania

Sugar Lake Division

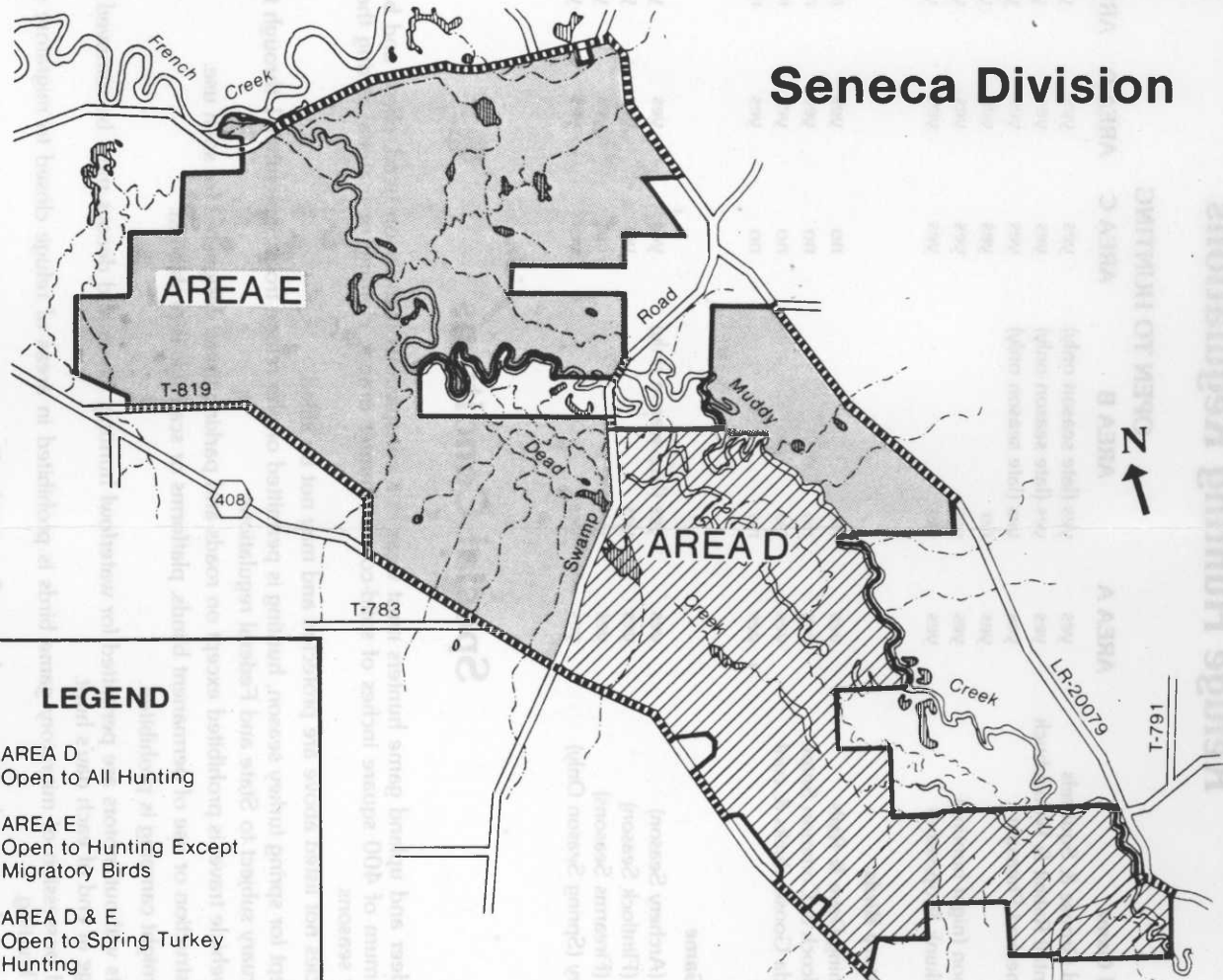


LEGEND

- AREA A
Open to All Hunting
- AREA B
Closed to Hunting Except Firearms
Deer Season, Late Archery and
Flintlock Deer Season, Night
Hunting Fox and Raccoon, and
Late Upland Game Season
- AREA C
Open to Hunting Except
Migratory Birds
- AREA A, B, C
Open to Spring Turkey Hunting
- Water Impoundments
- Refuge Headquarters
- Parking Areas
- See Back Cover for Special
Refuge Regulations



Seneca Division



LEGEND

- AREA D
Open to All Hunting
- AREA E
Open to Hunting Except
Migratory Birds
- AREA D & E
Open to Spring Turkey
Hunting
- See Back Cover for Special
Refuge Regulations

Refuge Hunting Regulations

OPEN TO HUNTING

Small Game	AREA A	AREA B	AREA C	AREA D	AREA E
Ruffed Grouse & Squirrels	yes	yes (late season only)	yes	yes	yes
Cottontail Rabbit & Woodchuck	yes	yes (late season only)	yes	yes	yes
Ring-necked Pheasant	yes	yes (late season only)	yes	yes	yes
Quail	yes	no	yes	yes	yes
Raccoon (night hunting)	yes	yes	yes	yes	yes
Fox, skunk & opossum	yes	yes	yes	yes	yes
Migratory Birds					
Mourning Dove & Rails	yes	no	no	yes	no
Woodcock & Common Snipe	yes	no	no	yes	no
Canada Goose, ducks & coot	yes	no	no	yes	no
Crow	yes	no	no	yes	no
Big Game					
Deer (Archery Season)	yes	yes (late season only)	yes	yes	yes
Deer (Flintlock Season)	yes	yes	yes	yes	yes
Deer (Firearms Seasons)	yes	yes	yes	yes	yes
Turkey (Spring Season Only)	yes	yes	yes	yes	yes

Special Conditions

- All deer and upland game hunters must wear in a conspicuous manner on head, chest, and back a minimum of 400 square inches of solid-colored hunter orange clothing or material during the gun deer seasons.
- Species not listed above are protected and may not be killed.
- Except for spring turkey season, hunting is permitted on the refuge from September 1 through the end of February subject to State and Federal regulations.
- All vehicle travel is prohibited except on roads and parking areas designated for such use.
- Construction or use of permanent blinds, platforms or scaffolds is prohibited.
- Overnight camping is prohibited.
- Boats without motors are permitted for waterfowl hunting. Boats and decoys must be removed from refuge at end of each day's hunt.
- Field possession of migratory game birds is prohibited in areas of refuge closed to migratory game bird hunting.
- All fox and raccoon hunters must have a Special Use Permit in possession when hunting on the refuge.
- Hunters must notify refuge headquarters within 48 hours after harvesting a deer or turkey.
- Report all injuries and accidents to Refuge Headquarters, R.D. #1, Wood Duck lane, Guys Mills, Pennsylvania 16327 or phone (814) 789-3585.

QUALITY HUNTING DEPENDS ON YOU
PLEASE RESPECT ALL REGULATIONS

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