ERIE NATIONAL WILDLIFE REFUGE

Guys Mills, Pennsylvania

ANNUAL NARRATIVE REPORT

Calendar Year 1981

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

FEB 8 1982

Personnel

1. William J. McCoy, Refuge Manager, GS-11, EOD 11/21/77, PFT
2. Daryle R. Lons, Assistant Refuge Manager, GS-9, EOD 1/28/79, PFT
3. Janet Marvin, Refuge Secretary, GS-5, EOD 11/6/66, PFT
4. Robert Granda, Maintenance Mechanic, WG-9, EOD 4/20/60, PFT
5. Robert Battin, Maintenance Worker, WG-8, EOD 3/14/77, PPT

Review and Approvals

William J. McCoy 1/21/82
Submitted By Date

William H. Hutchinson 1/28/82 Howard D. Woon 2/1/82
Area Office Review Date Regional Office Review Date

YCC Staff - Temporary Appointments

1. Kenneth J. Bender, Camp Director, GS-7, EOD 6/30/81, Terminated 8/20/81
2. Mary Cudzil, Group Aid, GS-4, EOD 7/2/81, Terminated 8/17/81
3. Tracey Elliott, Group Aid, GS-4, EOD 7/2/81, Terminated 8/14/81
4. Mark Kline, Group Aid, GS-4, EOD 7/2/81, Terminated 8/17/81

20 YCC enrollees

YACC - Temporary Appointments

Staff

Susan McMahon, Group Leader, GS-6, EOD 5/21/78, Excepted Appointment Transferred to Iroquois Job Corps Center, 9/19/81

Enrollees

1. Dinaque Bewley
2. David Boettner
3. Kenneth Bowersox
4. Ralph Haney
5. Gary Granda
6. Lisa Maginnis
7. Lisa Alexander
8. Melanie Henry
9. Mark Wilkinson
10. Judy Luzier
11. Marsha Mattocks
12. Mae Gordon
13. Mark Kline
14. Thomas Woodcock
15. Ronald Tatters
16. Christine Hollabaugh
17. Helen Schuster

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A. HIGHLIGHTS

-- The headquarters building with visitor meeting room was completed during the summer of 1981 at a total cost of $508,502.

-- The 30-acre Pool 4 impoundment was completed in 1981 at a cost of $252,669. This was the first new impoundment at Erie Refuge since 1969.

-- The wood duck nest box survey in January, 1981 showed 1980 to be our highest hatch year on record with 648 ducklings leaving the boxes.

-- A new 1.6 mile interpretive nature trail was completed in conjunction with the new office building to encourage outdoor classroom use of the refuge. The old nature trail was closed to reduce the maintenance workload.

-- Maintenance Mechanic, Bob Granda was presented his 20 year length of service award on September 19.

B. CLIMATIC CONDITIONS

Weather data was collected at the field station during the early part of the year and from the U.S. Weather Bureau Station in Meadville, Pennsylvania for most of the year. Total precipitation amounted to 65.52 inches compared to an average annual precipitation of 48 inches. The two biggest rainfalls occurred on June 9 with 3.75" and July 29 with 3.06". On June 22, high winds over 50 m.p.h. toppled many trees throughout the refuge. Total snowfall was 122.65 inches. Temperature extremes were - 16°F on January 12 and 90°F on July 9 and 10. Frost free days ran from May 20 to September 25 or 128 days.

A warm spell in February melted all snow cover and caused flooding on February 19. Cold and snow arrived again in March but most refuge impoundments began to open up by March 16. Pool 9, the largest refuge impoundment, was iced over until March 28.

Heavy rains in April caused flooding late in the month which adversely impacted waterfowl production with five known goose nests destroyed by high water. The abundant rainfall also had an adverse impact on crop production as discussed under croplands.

Smaller impoundments were frozen over by November 25, thawed out and then froze for the winter by December 12.

C. LAND ACQUISITION

1. Fee Title

Despite 1980 instructions from the Land Acquisition Review Committee for Realty to prepare an acquisition document and go for funding for key tracts within the Seneca Unit, no action was taken in 1981.

D. PLANNING

2. Management Plan

The Grassland Management Plan and Wildlife Inventory Plan were completed and submitted for approval.

4. Compliance with Environmental Mandates

Clearance was requested and received from the Pennsylvania State Historical Society before excessing the refuge maintenance barn and three buildings on the Seneca Unit.

5. Research and Investigations

Erie NR81 - "Breeding Bird Census" (52520-1)

Dr. Donald B. Snyder, Professor of Biology at Edinboro State College, is conducting a study to determine the species and density of the birds breeding in a 20 acre area of the Muddy Creek Research Natural Area. Progress Report No. 1 was submitted in 1976. Vegetation data was collected and the breeding bird population was determined during that year. Data collected in the future would be comparable to the 1976 data and would show biological changes over a number of years. No breeding bird data was collected in 1981.

E. ADMINISTRATION

1. Personnel

The refuge Clerk-Typist GS-5 position was reclassified to Secretary, GS-5 on 1/16/81.

The Maintenance Worker, WG-8 position was reclassified to Maintenance Mechanic, WG-9 on 6/28/81.

The Maintenance Helper, WG-5 position was reclassified to Maintenance Worker, WG-8 on 6/28/81.

Permanent

	Full-Time	Part-Time	Temporary
FY 81	4	1	42
FY 80	4	1	43
FY 79	4	1	47
FY 78	4	1	51
FY 77	4	1	25

2. Youth Programs

1981 marks the last full year of the refuge's YACC program. Phase-out activities began in the spring of the year. The last major recruiting effort was done in March and April. The last enrollee was hired in August to serve as crew leader since the group leader was being terminated in September.

Despite the limited budget, reduced enrollee numbers, loss of a competent group leader, and other phase-out limitations, the YACC program completed much worthwhile work on the refuge during the year. YACC's spent much of their time cleaning the office and refuge vehicles, and keeping the culverts and WCS's cleared of beaver debris. Their largest single project of the year was completing the new nature trail at refuge headquarters. This work included laying a gravel base of 108 cu. yds. on wet sections, constructing a 60' bridge, spreading 420 cu. yds. of wood chips and putting up directional signs on the trail. Other YACC projects during the year included: apple tree pruning, agricultural field border clearing, cleaning out bluebird houses, picking up litter, cutting fire wood, lawn mowing, and many other small maintenance projects around the refuge.

Peg Cochran, Erie Job Corps Center, spoke to YACC enrollees regarding Job Corps Program.

The refuge was notified on June 19 that the refuge was to host a six week non-residential YCC camp. Previously, we had been told that we would not have a camp this year because of our active YACC program. A staff of four was hurriedly hired and 20 enrollees were notified. Camp started on July 6. The camp operated out of the old refuge office as it had the year before. This year, however, they had the building to themselves as the refuge staff moved into the new office on July 9 and 10.

This year's camp was once again a highly successful and worthwhile program. The high point of the camp was initiating the construction of the new nature trail. The YCC's cleared the entire trail, built a 240' boardwalk across a beaver flooding, constructed several small foot bridges, and wood chipped a portion of the trail. Other projects during the summer included: preparing a rocket net site at Meyers Pond, raking and seeding disturbed areas and nesting islands associated with the Pool 4 construction project, improving woodcock habitat, painting Pool 9 water control structure, constructing wood duck boxes, and staining the bridges on the X-country ski trail.

Peter Suich, R.O. Youth Conservation Programs Coordinator - inspected YCC and YACC programs - July 14 and 15.

YCC's constructing a 240' boardwalk on the new nature trail.

D.R.L.

5. Funding

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

	Fiscal Year				
	'78	'79	'80	'81	'82
Migratory Birds					
O&M	73,000	88,000	90,000	109,000	127,000
pay act funds	3,000	3,000	4,000		
End-of-year Add-on				11,877	
Rehabilitation	12,000	7,400			
Construction & Anad. Fish Supplemental					
Mammals & Non-Migratory Birds					
O&M	8,000	11,000	11,000	11,000	10,000
Interpretation & Recreation					
O&M	16,000	19,000	18,000	18,000	15,000
pay act funds			2,000		
Qtr. Operations & Maint.				2,500	3,000
Expenses for Sales					1,000
Young Adult Conservation Corps	*116,000	**	**	**	**
BLHP Projects					
Pool 1	250,000				
Office			538,000		
Pool 4			308,000		
Temporary Shop				17,100	
Youth Conservation Corps	26,000	21,000	30,500	24,400	
Totals					
O&M	100,000	121,000	125,000	152,377	156,000
Rehab.	12,000	7,400			
YCC	26,000	21,000	30,500	24,400	
Other	116,000				
BLHP	250,000		846,000	17,100	

* estimated YACC funds expended for materials, supplies, equipment and salaries

** unknown

6. Safety

-- The refuge staff didn't have any accidents during the year.

-- The refuge safety committee met throughout the year.

-- YACC's had several minor accidents and two lost time accidents during the year. The first lost time accident occurred on January 27. While removing the wooden cargo rails from the refuge stake truck, an enrollee lost his grip on a section of the rails and dropped it on another enrollees head. The enrollee was wearing a hard-hat and did not appear hurt. Later, her neck became stiff and she went to the doctors 3 days after the accident. The doctor diagnosed her to have a cervical sprain and strain. She reported back to work on March 2 as her docter had ordered. She was put on light duty but still complained of pain. She went back to her doctor and he then ordered her off work until further notice. She has never returned to work.

The other lost time accident occurred on October 30. This accident involved an enrollee cutting his finger when he caught it between a pickup tailgate and a handle of a wheelbarrow that had been loaded in the bed. The cut was not serious but became infected. The enrollee lost three days work as a result of the accident.

-- Some of the major safety actions taken during the year included:

- proper battery jumping procedures were placed in all refuge vehicle engine compartments
- Pool 4's discharge chamber was fenced off
- an explosives storage box was constructed
- fuel oil tanks in shop were moved to a safer location
- all safety cans were labeled as to their contents
- Pool B, C, D, and 7N catwalks were repaired
- required annual and monthly fire extinguisher checks were conducted
- a personal pair of safety glasses for all staff members were purchased
- cargo barrier screens for the Jeep and Dodge pickups were installed
- automatic return devices were installed on the refuge's and the YACC's radial arm saw
- a hand truck was purchased

James McKnight, R.O. Safety Manager, conducted a station safety inspection on April 1 and 2.

8. Other Items

Refuge Manager McCoy delivered revenue sharing checks to the secretaries of Randolph, Rockdale, Richmond and Wayne townships during February and March.

-- Mary Champagne, R.D. Realty Appraiser - performed realty appraisal review to update refuge revenue sharing data and refuge quarters rental update - January 28-31.

-- Marty Lutsky and Jim Powell, R.O. Realty Office - assessed present refuge timber values - June 1-4.

-- William Hutchinson, Assistant Area Manager HAO, - conducted annual station inspection - March 18-20.

-- Deborah Jacobson, R.O. Classification Officer - performed desk audit of Refuge Secretary Marvins position - March 19.

Employees attended the following training sessions:

Assistant Manager Lons - 1981 Waterfowl Wingbee - Patuxent Wildlife Research Center.

Refuge Manager McCoy and Assistant Manager Lons - Wildlife Disease Workshop - Brigantine NWR.

Refuge Secretary Marvin - OPM's "Administrative Correspondence" course - Baltimore, Maryland.

Refuge Manager McCoy, Assistant Manager Lons, and Secretary Marvin - Project Leaders/Administrative Workshop - Harrisburg, Pa.

F. HABITAT MANAGEMENT

1. General

Apple production in the old farmstead apple orchards was very poor. Pear trees produced an abundant crop but there are too few trees to make much difference as far as wildlife food is concerned. It was also a poor production year for mast crops such as acorns, beechnuts and walnuts. The poor production of natural foods led to earlier than usual use of refuge corn shares by deer, turkey and squirrels.

2. Wetlands

There are approximately 2,500 acres of wetland habitat on the refuge. On the Sugar Lake Unit, there are 14 manageable impoundments, eight pools without water control structures and nearly 30 potholes. The 14 impoundments with water control structures comprise 297 acres at MML. The balance of wetlands on this unit includes creeks, beaver floodings, natural marsh, swamp, and seasonally flooded meadows. On the Seneca Unit, 1400 acres of wetland include stream channels, beaver floodings, natural marsh and swamp.

As noted earlier, the refuge received an above average amount of precipitation (65.5") during the year. Most of this excessive precipitation occurred in the form of rain from late spring through fall. The unusually wet summer maintained unmanaged refuge wetlands at high levels throughout this normally dry period. Serious flooding occurred on June 9 as a result of a 3.75" rain the previous evening. No damage, however, was done to any impoundment facilities.

Water levels in the 14 manageable impoundments were manipulated according to the annual water management plan with a few minor exceptions as discussed below.

Coopers Marsh was maintained at 8" below maximum management level (MML) throughout the year.

Pool B was drawn down 16" on May 15 to encourage desirable emergent vegetative growth. This partial drawdown made the pool a much more attractive waterfowl impoundment. The pool was refilled to MML on September 9. Approximately 150 geese used the pool extensively for loafing during October and early November. On November 24 Pool B was lowered 8" below MML.

Pool C's WCS was maintained at MML throughout the spring, summer, and early fall. This pool does not usually receive enough water during the summer months to be maintained at MML. Because of this year's wet season, pool C was at MML during much of the summer. It was lowered 8" below MML on November 24.

Pool D was drawn down completely on May 15 and was refilled beginning on September 8. A very heavy growth of smartweed occurred on the drained pool. The residual seeds should provide an excellent source of food for waterfowl next spring. Pool D was lowered to 8" below MML on November 24.

Because of contracting problems with Pool 4's WCS, very little water manipulation was possible this year. The pool was lowered 16" below MML on November 24.

Newly flooded habitat at Pool 4.

D.R.L.

Although it was planned to maintain pools 7N and 7S at MML throughout the spring, summer, and early fall, beaver dams actually maintained a higher level throughout this period. The beaver dams were cleared in November and pool 7N was lowered 8" below MML on November 24.

Pool 9 was originally planned to be maintained at MML throughout the spring migration period and then be drawn down on May 30. However, a 24" drawdown was effected on March 25 in order to allow waterfowl access to residual seeds left from the previous years heavy growth of smartweed and other emergent vegetation. The pool was raised to 8" below MML on May 29 to enhance warm water fishing activities. The pool was then lowered to 24" below MML in order to allow YCC's to tar the WCS. However, the pool jumped to MML several times following heavy rains throughout the summer because of the inadequate water control structure. The pool was raised to MML in September for the fall migration and then lowered 8" below MML on November 24.

Pool K was planned to be raised to MML on March 20. However, it was only raised to 8" below MML because of the unknown severity of muskrat borrowing in the dike. The pool was lowered to 16" below MML on June 15 to enhance shoreline vegetative growth. The pool was not refilled to MML in the fall in order to reduce further muskrat damage.

Meyers Pond was filled to MML on March 26. It was then lowered 16" on May 15 to encourage emergent vegetative growth. The pool was not refilled on September 1 as planned because the rocket net was set up on the west shoreline. The pool was refilled on September 28 and then lowered one board on November 28.

Reitz Pond was drawn down 16" from its MML on June 26 to facilitate the YCC banding site improvement project. It was then raised 8" and held at that level through banding season. The pool was raised to MML on November 6.

3. Forests

The refuge does not have a timber management program. A severe wind storm on June 22 blew down many large trees throughout the refuge.

The Pennsylvania Game Commission supplied the refuge with several hundred seedlings of crabapple, chestnut, silky dogwood, black locust, honeysuckle, scotch pine, and mugho pine. YACC enrollees planted food and cover plots at various sites on the refuge.

4. Croplands

In 1981, there were eight Cooperative Farmers on the Sugar Lake Unit farming 377.5 acres. One new farmer entered the program and two Cooperators increased their refuge acreage.

Crop acreages were as follows:

Corn	- 186.5
Oats (nurse crop)	- 38
Wheat (nurse crop)	- 34
Hay	- 119

There were five Cooperative Farmers on the Seneca Unit farming 209.5 acres. There were no new farmers but one Cooperator increased his acreage.

Crop acreages were as follows:

Corn	- 78.5
Oats (nurse crop)	- 52
Hay	- 198

Crop production was adversely impacted by the abundant rainfall. Soils saturated with water led to anerobic conditions which caused denitrification and, correspondingly, stunted corn growth. Herbicide effectiveness for quack grass and nutgrass control was also reduced in some fields. However, corn growth on gravelly, well drained soils was good to excellent.

All farmers have a one year agreement but follow a five year crop rotation of corn, corn, oats/grass-legume, hay and hay. The farmer must apply sufficient amounts of lime and fertilizer according to soil test results from soil samples collected the previous fall by the refuge.

The refuge takes one-fifth of each corn and oats crop. The farmer gets two years of hay with no refuge share. However, the refuge grain share takes into account the two years of hay use. This current crop sharing arrangement was adapted after the system used by the Pennsylvania Game Commission on State Gamelands. It has worked reasonably well over the past four years but has problems that need to be eliminated. For instance, if a farmer has a good stand of alfalfa, he may want to keep the field in hay for longer than two years. Since the farmer harvests all the hay and the refuge grain share is based on two years of free hay, any extension of hay beyond two years means the refuge must figure an equitable share for that extra hay year. This can be worked out as an extra corn share on another field or as services rendered on another crop field. The extra work involved to figure an equitable share and enforce the provisions has not been worth the time involved.

Other notable weaknesses of the current crop share system are as follows:

- The refuge has no need for the one-fifth oats share in the third year of rotation. Consequently, every year we have to figure an equitable trade for corn or a service rendered.

- Because of the low Canada goose population, much of the refuge share left as standing corn is not consumed by spring planting season. Consequently, the farmer wants to remove the corn to avoid volunteer corn in the new seeding. We have allowed the farmers to harvest this spring corn and split the yield with the refuge. The refuge share is then stored and used for bait during banding operations. Again, it is time consuming to pick up this corn and, often, it is high moisture corn and does not store well.

Because of these problems and others of a more minor nature, efforts to revise the Cropland Management Plan were initiated in January of 1981. The new plan should be completed in time for the 1982 growing season.

Wildlife use of refuge crop fields continued to be excellent. A flock of approximately 150 Canada geese utilized one corn field throughout the winter. Signs or actual sightings of deer, turkey, furbearers, squirrels and songbirds were noted in every refuge stand of corn throughout the winter.

The refuge did not plant any crops in 1981. However, a co-op farmer provided 2700 pounds of 10-20-20 fertilizer and planted 850 pounds of buckwheat on nine acres next to Meyers Pond as a service rendered in trade for green chopping a hay field. Another co-op farmer supplied 11 tons of lime and prepared the buckwheat field and a grassland field for planting as services in trade for hay.

Deer made extensive use of knocked down corn during December, 1981. Standing corn receives greater use after heavy snow cover.

W.J.M.

5. Grasslands

Hundreds of acres of cropland and pasture land have reverted to brush since the refuge was acquired. Many of these grown-up fields are located near wetlands in potentially prime duck nesting areas. The refuge's current grassland management objectives are to: 1) manage and maintain existing grasslands 2) revert some of the brush land back to grassland and 3) establish approximately 100 acres of native warm-season grasslands during a four-year trial period ending in 1983. When mature, these warm-season grasslands should provide some of the best nesting habitat on the refuge. Existing refuge grasslands are composed primarily of quack grass dominated fields which, without maintenance, soon change to goldenrod and later to moss and woody vegetation such as viburnums, hawthornes, aspen and wild cherry.

The refuge is experimentally establishing warm-season grasses rather than the more conventional introduced cool-season grasses which are commonly used on eastern refuges for dense nesting cover. This experiment should show that native warm-season grasses are more economical on a long term basis and provide better nesting habitat than the introduced cool-season grasses.

Although the native warm-season grasses are more difficult to establish, they are less costly to maintain and are much more long-lived. Periodic burning and/or mowing is the primary requirement to maintain vigorous stands of warm-season native grasses. Conversely, the introduced species are relatively short-lived and require expensive periodic liming and fertilizing to maintain their height, density, and vigor.

The first of the refuge's warm-season grasses were planted in 1980 with approximately 30 acres sowed. During the first season, native warm-season grasses develop very little vegetative growth above ground. Instead, most of their energy is used in establishing a strong root system. This native grass characteristic was observed in all refuge plantings. Quack grass and other cool-season weeds soon began to overrun the small native grasses. The fields with severe weed problems were bush-hogged in the fall and again in late spring of the following year to prevent the native grasses from being smothered. Second season growth was not as good as anticipated. However, grass in several fields produced scattered seed heads. Mature stands of native grass should develop during the third growing season.

During this past summer, 23 additional acres of native warm-season grasses were planted. Six of these acres were planted on June 19 in a field which had been planted to corn the previous year. "Roundup" had been applied on the field on May 22 in an effort to help reduce weed competition. We had planned to sow the grass in the corn stubble without any seedbed preparation in order to prevent turning up new weed seeds. However, the furrow opener discs on the Truax drill could not cut through the residual corn stubble and plant the seed at the proper depth. Thus, the field was disked shallow and cultimulched prior to seeding. Foxtail grass proved to be the biggest

weed competitor. The field was bush-hogged in September to control the foxtail.

Another twelve acres were planted on June 30 in two adjacent fields near Pool B and Cooper's Marsh. These fields had been cleared and root-raked in 1980. They were disked once in the spring and once in June the week before planting. Final seedbed preparation included cultimulching.

Cooper's Marsh field before it was rehabilitated and planted to native grass.

W.J.M.

Native grass in field south of Pool B approximately four weeks after planting.

D.R.L.

Same field as above in September.

D.R.L.

The final 5 acres were planted on July 9 in a field adjacent to Meyer's Pond. This field had been cleared of brush in 1979 and plowed in 1980. "Roundup" was applied in May of 1981 and the field was disked in late June. Because of wet soil conditions, it was not cultimulched before planting.

The following is a summary of 1981 grass plantings:

acreage	grass mixture planted (60 PLS/sq.ft.)
6	4:3:3: Kaw big bluestem: Holt Indiangrass: Blackwell switchgrass
12	4:3:3: Kaw big bluestem: Holt Indiangrass: Blackwell switchgrass
5	7:3: Kaw big bluestem: Blackwell switchgrass

Approximately 70 acres of old grasslands were bush-hogged during the year to control brush encroachment.

There was no grazing or prescribed burning during the year.

9. Fire Management

No wildfires occurred during the year.

The refuge maintains cooperative Fire Agreements with the Pennsylvania Department of Environmental Resources and the local Randolph Volunteer Fire Department.

The refuge also operates a weather station in cooperation with the Pennsylvania Department of Environmental Resources. The weather data is reported daily to Pennsylvania D.E.R. during spring and fall fire seasons. A D.E.R. fire danger sign is maintained by refuge staff during the fire seasons.

Jim Hall, District State Forester, visited on March 26 to discuss the upcoming fire season and the cooperative agreement between the refuge and Pennsylvania Bureau of Forestry.

Assistant Manager Lons attended the annual Fire Warden Dinner at the Dempseytown VFD Hall on March 19.

10. Pest Control

Herbicide use remained much the same as in past years with most farmers using atrazine on corn crops and MCPA amine on oats nurse crops. Minor amounts of Lasso and Bladex were also used on corn crops. One farmer who is a firm believer in minimum or no-till corn wanted to use Paraquat for weed control. When turned down, he applied liquid nitrogen and atrazine and was very satisfied with the results. However, the refuge received a complaint on this field from an irate public citizen who refused to identify himself. The caller claimed we were permitting the farmers to poison the wildlife on the refuge. When asked if he was aware of what had been sprayed on the field, he said, "No, but it didn't matter, all chemicals are poisonous and should not be permitted." He was advised that his views were appreciated and that the refuge would continue to limit herbicide use and prohibit any that were proven to cause or strongly suspected of causing harm to living organisms aside from target species of vegetation.

The refuge supplied 5 gallons of Roundup herbicide and paid a commercial sprayer $83.16 to treat 11.88 acres of ground in preparation for planting warm season prairie grasses. The target species were primarily quack grass, foxtail, ragweed and seedling spirea. An additional ten gallons of Roundup was purchased for $794.50 for application in 1982 on fields being prepared for prairie grasses.

12. Wilderness and Special Areas

There are three RNA's and two PUNA's on the refuge encompassing 2456 acres.

G. WILDLIFE

1. Wildlife Diversity

See Habitat Management Section.

2. Endangered and/or Threatened Species

Bald eagle observations on the refuge continue to increase over past year's sightings. The first sighting was at Pool 9 on April 26. Most of the other sightings throughout the summer were also in the general area of Pool 9. Only two sightings were north of route 27. One was on Lake Creek near route 27 and the other was at the new office area.

The bald eagles we observe are undoubtedly the eagles that are nesting in the nearby Pymatuning Waterfowl Management Area. These are the only known nesting eagles in Pennsylvania. For years there have been three active bald eagle nests, which have been producing only one or two eaglets per year. In 1980, the three nests produced four eaglets. A fourth nest containing an eaglet was found this past spring. A total of five eaglets were raised this year.

Only one osprey was sighted on the refuge during the year. This occurred at Pool C on May 1, 1981.

3. Waterfowl

No unusual changes in the refuge's waterfowl populations were noted during the year. A flock of approximately 150 Canada geese wintered over on the refuge during 1980-81. This was the first time it was verified that the geese stayed throughout the winter. Mild temperatures and abundant food were the primary reasons for the geese not leaving the refuge as usual during January and February.

The first migrant waterfowl were observed on February 27 (four common goldeneyes and four lesser scaup were sighted on Lake Creek south of Route 173 and four mallards were observed in Meyers Pond). The first migrating whistling swans were observed on February 28. Flocks as large as 125 birds used refuge pools and the Lake Creek bottoms throughout March. One flock of 31 swans stayed on Meyers Pond from March 5 through 13. Swan migration peaked on March 22 when thousands were observed flying over the refuge.

The peak spring population of Canada geese was estimated to be 1200 on March 16. Fall populations peaked at 900 on October 22. Peak spring duck populations were estimated at 2400 during the first week of April. This lower than normal spring peak was attributed to prolonged ice cover on refuge impoundments during March. Fall duck population peaked at approximately 4400 during the last week in October with the majority of the ducks using the Lake Creek bottoms below Route 173.

Waterfowl production to flight stage during 1981 was estimated as follows:

Canada Geese	- 200
Mallard	- 200
Wood Duck	- 540
Blue-winged Teal	- 100
Black Duck	- 20
Hooded Merganser	- 75

The refuge maintains approximately 220 wood duck nesting boxes. The boxes are checked for membrane counts, cleaned out and rechipped annually during January and February. Therefore, production data for the 1981 nesting season has not been completely gathered at the time of this writing. However, the 1980 summary of data is as follows:

	% boxes used	% successful nests
Wood Duck	52	75
Hooded Merganser	3	67
Mixed Clutch	3	67

	% hatch success	# hatched eggs
Wood Duck	64	587
Hooded Merganser	92	61
Mixed Clutch	36	0

	Average # young/successful nest
Wood Duck	8.8
Hooded Merganser	8.8
Mixed Clutch	6.3

A total of 648 ducklings were hatched from the boxes. This was the highest box production ever recorded at Erie Refuge.

Assistant Manager Lons inspecting a wood duck box on Pool 9.

H.P.S.

4. Marsh and Water Birds

The great blue heron rookery on the Seneca Unit is continuing to dwindle every year. The rookery dropped from 14 nests in 1980 to 12 nests in 1981. It had 68 nests in 1976. The number of great blue herons on the Sugar Lake Unit did not appear to change from recent years.

No significant population changes were observed in any other species. A total of twelve species were recorded during the year.

5. Shorebirds, Gulls, Terns and Allied Species

Sixteen species in this group of birds were recorded during the year. Woodcock are the most abundant species on the refuge. One singing ground count was done in April. Youth programs cut several openings for singing ground areas during the year.

The other species in this group are most commonly observed during spring migration. There are no major concentrations of these birds during the year because of limited suitable habitat.

6. Raptors

Fifteen species of raptors were observed on the refuge during the year. No unusual sightings were made.

7. Other Migratory Birds

Eastern bluebirds are commonly observed throughout the spring, summer, and fall months. The refuge maintains approximately 160 bluebird boxes. Inspection of these boxes during the nesting season is not usually performed. This year, however, an Allegheny College student did inspect some of the boxes as the field part of an independent study course she is taking. We have not received her report to date.

The refuge mourning dove population remained unchanged from recent years with a moderate number, approximately 300, of these birds residing on the refuge.

8. Game Mammals

Eastern cottontail populations increased somewhat from last year, but are still at low levels. These critters were almost non-existent in this area during 1978 and 1979. This may have been attributed to two consecutive extremely harsh winters.

Refuge squirrel populations seemed to be higher than in recent years, although, they still aren't extremely abundant.

The white-tailed deer population showed no significant change from the past two years. Deer were commonly observed throughout the year. Seven deer were known to have been hit and killed by vehicles during 1981. Six were does and one was a buck. At least three of the does

were carrying fawns at the time they were killed. Two doe were also found shot in May. A 7 pt. buck which had been shot prior to hunting season was found dead on opening day of buck season.

Poor hunting weather during the first week of the two-week antlered deer season led to reduced hunting pressure and a lower than anticipated buck harvest. Although there was excellent weather and snow cover during the two-day antlerless season, the number of hunters and the doe harvest was also lower than anticipated. There was a noticeable increase in flintlock hunters during the one-week late season but the harvest was about the same as last year.

The only significant change in harvest came in archery hunting where a refuge record of five deer were taken compared to one last year. With all forms of hunting considered, the total harvest reached the expected level and was almost identical to last year.

At this time data collected from the refuge's permit/report cards is as follows:

Permits issued	553
No. of Visits	983
Permits outstanding	160
Deer harvested	55
Shotgun/rifle	45
Buck	25
Doe	16
Muzzleloader	5
Buck	1
Doe	4
Archery	5
Buck	3
Doe	2
Deer hit but escaped	5
Deer found dead that had been shot	2

An additional 20-30 deer were estimated to have been taken from the Seneca Unit (the permit system is not used on this unit).

Field observations during the year did not indicate any abnormally depressed or high populations of furbearers.

Muskrat populations remained stable but at a lower level than what the refuge's habitat should be able to support. It is felt that the low level is due to the presence of an unknown disease which nearly eliminated muskrats on the refuge in 1975. Tyzzer's disease is suspected but has not been confirmed. Muskrat trapping was again permitted on all units. We have not received the trappers report of harvest yet, but the take is believed to be down because of reduced effort by the trappers due to low fur prices. 1981-82 trapping season fur harvest data will be reported in next years narrative.

A beaver lodge census was conducted in early October. Based on the survey, the refuge beaver population was estimated at 140-150 animals. Refuge trappers only harvested 17 animals during the 1981 beaver trapping season.

10. Other Resident Wildlife

A road-killed bobcat was collected by refuge staff near the refuge, on October 6. According to Pennsylvania Game Commission personnel, this was an extremely unusual occurrence in Crawford County.

Ruffed grouse are the most common upland game birds on the refuge. This year, just as the last three years, their population was fairly high.

Ring-necked pheasant are also common inhabitants of the refuge but do not winter over or reproduce very successfully in this climatic region. The majority of the refuge's pheasant are stocked in private adjacent areas and then come onto the refuge. Some also are escapees from a nearby private shooting preserve.

Wild turkey reside on the refuge. Turkey populations of the Sugar Lake Unit appeared to increase during the past year. Reported sightings and turkey sign were observed scattered over the entire unit. An accurate estimate of their numbers, however, has not been determined. No turkey hunting is allowed on the Sugar Lake Unit.

11. Fisheries Resources

Pennsylvania Fish Commission stocked trout in the refuge section of Woodcock Creek before and during the trout fishing season.

A winter kill of several hundred bluegill, crappie, and bass occurred on Pool 7S during February.

There is no active fisheries management program on the refuge.

15. Animal Control

A large amount of labor was performed by YACC and YCC during the past year to clear beaver debris from road culverts and water control structures. Three beaver were also live-trapped and moved from a road culvert on McFadden Road to the Beaver Run Nature Trail. This, however, did not solve the problem as several remaining beaver avoided capture.

With the phase-out of the YACC program this upcoming spring, there will not be enough staff time available to keep up with the current amount of beaver related problems. Removing beaver at specific problem sites does not eliminate the problem for long if adjacent areas are left untouched. Because of the refuge's overall high population, when one area is free of beaver, different beaver soon move in because of the availability of food and suitable habitat. For these reasons the number of beaver recommended for removal by trapping will be greatly increased from last year's quota. Fifty beaver are being recommended for removal during this upcoming trapping season.

16. Marking and Banding

The refuge's wood duck banding operation was started on August 25. The 1981 pre-season waterfowl banding quota was again 50 wood ducks of each age and sex. Ducks banded were as follows:

	AHY-M	AHY-F	HY-M	HY-F	Total
Wood Duck	63	35	62	50	210
Mallard	2	2	42	29	75
Black Duck	1	0	0	1	2
Blue-winged Teal	10	8	25	34	77
Green-winged Teal	3	2	18	6	29
Pintail	0	0	0	5	5

For the second year, in cooperation with the Florida Fish and Game Department, 50 blood samples were taken from trapped wood ducks. Florida Fish and Game personnel are attempting to distinguish Florida-produced wood ducks from ducks produced in the north by identifying parasites in the blood of hatch year birds. They hope to show that only resident birds would be affected by having an earlier wood duck hunting season.

Two new swim-in traps were constructed this year and placed at Reitz Pond where the majority of the last two year's banding has been done. Also, the rocket net which was purchased in 1980 was set up near the emergency overflow of Meyers Pond.

Success of the new swim-in traps was very limited. Although the number of ducks at the banding site was down from last year, there were still plenty of ducks to be caught. However, the ducks did not cooperate very well. Raccoons visited the site every night and ate the bait corn out of the traps during the early trapping operation. Five raccoons were live trapped and removed from the area. This did not prove to be the solution to our limited trapping success.

Meanwhile corn at the rocket net site was attracting hundreds of mallards within capturing range. Wood ducks, however, could not be coaxed up on dry land within capturing distance. Therefore, the rocket net was not fired during the banding season.

In a last ditch effort to achieve our wood duck banding quota, an experimental manually controlled swim-in trap was constructed utilizing the capture net from the rocket net system. This trap was not as effective as we hoped, but it did enable us to band the required number of 200 wood ducks during the last week of the banding operation. We did not, however, band the required number of adult females. Certain modifications (making it larger with two open sides) on the trap should make it a much more effective trap. Next year will tell the story.

H. PUBLIC USE

1. General

During 1981, the total number of refuge visits was 24,406 with a peak visitation of 6475 in December and least number of visits, 156, in March.

There were eight public news releases sent out during the year and two feature articles written by reporters. TV-12 from Erie, Pennsylvania visited the refuge on November 8 and filmed a news segment covering the new public use facilities.

The refuge manager participated in an "Earthkeeper" program at the state funded McKeever Environmental Learning Center on January 19-21. Approximately 100 fifth and sixth grade students from Randolph Elementary School participated in E.E. activities which they will utilize to complete an environmental project at their school or in their community.

2. Outdoor Classrooms - Students

Six groups visited for environmental education purposes. This use added to YCC E.E. use accounted for 243 visits and 1,428 activity hours.

4. Interpretive Foot Trails

It was decided in July to close the Beaver Run Nature Trail at the end of the year in favor of a new trail in closer proximity to the headquarters building. This decision was reached for the following reasons:

- the beaver abandoned the old nature trail site and this was the primary feature of the trail.
- we were informed that this would probably be our last year to host a YCC program.
- the high incidence of vandalism at the old trail made it costly and time consuming to maintain at Service standards.
- the new headquarters location provided an outstanding alternate trail site which would give us better control of vandalism and allow us to develop one area with proper facilities to encourage general wildlife public use.

Using both YCC and YACC labor, the new trail was completed and ready for use by November. The trail consists of a 1.2 mile primary loop with a .4 mile side loop. It passes through a wide variety of habitat types and provides an excellent opportunity to interpret many of the wildlife management practices on the refuge.

5. Interpretive Tour Routes

On May 13, Assistant Refuge Manager Lons provided a tour on refuge management practices to 20 students from Allegheny College participating in the Junior Seminar on Environmental Sciences.

On Nobember 17, Refuge Manager MCoy provided a resource management tour to 18 biology students from Edinboro State College.

6. Interpretive Exhibits/Demonstrations

An unmanned display on Erie Refuge was exhibited at the Crawford County Fair from August 24-29. An estimated 100,000 people viewed this display.

Manager McCoy set up and manned the National Wildlife Refuge System exhibit at the Meadville Shopping Mall for National Hunting & Fishing Day on September 26. An estimated 100 people viewed the display.

On November 8, the refuge hosted an "Open House" to encourage the public to visit and view the new headquarters building and nature trail. Approximately 250 people attended and were very enthusiastic about the new public use opportunities offered by the facilities.

7. Other Interpretive Programs

Update reports on refuge programs were presented at the monthly meetings of the Black Ash Sportsmen's Club and the Crawford County Sportsman's Council.

Manager McCoy presented a slide program to 35 members of the Townville Lions Club on January 5.

On April 22, Manager McCoy presented a program to 20 students in the Junior Seminar of Environmental Science at Allegheny College.

On January 29, Assistant Manager Lons presented a refuge program to 12 members of the Townville Girl Scouts.

8. Hunting

Hunting was permitted for white-tailed deer, upland game and waterfowl. See Hunting Map leaflet on back page for details. The cost for printing 2000 hunting leaflets was $190.00 compared to $175.00 in 1980 while the 700 Deer Hunting Permits cost $90.00 compared to $60.00 in 1980. The hunting leaflets are posted and provided in dispenser boxes at all road entrances to the refuge.

Refuge regulations and hunting areas were identical to 1980 since we were required to submit the regulations early with only one day notice from the R.O.

Deer hunting was, as usual, the most popular hunting activity. Pennsylvania's antlered deer season opened on November 30 and closed on December 12. Antlerless season was held on December 14 and 15. Early archery season opened on October 3 and closed on October 30. Late archery and flintlock season opened on December 26 and closed on

January 2, 1982. A total of 553 Season Permit/Report Cards were issued compared to 564 in 1980. Deer Hunters are required to return the report card within 10 days after the close of the last deer season. Since the late hunting season just ended, many of the cards have not been returned at this time. To date, returned cards show a harvest of 31 buck and 21 doe on the Sugar Lake Unit. Later reports will probably show a harvest very similar to last year's 52 deer. Harvest on the Seneca Unit is unknown but terrain limits hunting pressure on this area and the harvest is less than on the Sugar Lake Unit.

The first week of buck season was very slow because of warm temperatures and no snow. Although hunting pressure appeared light during the regular season, the number of flintlock hunters increased significantly because of the special one week, any deer, late season.

Waterfowl season opened at 8:00 a.m. on October 10. Hunting pressure was light throughout the season. However, those hunters that came out had many successful hunts with Pool 7 providing good goose hunting for a change.

Squirrel and grouse season opened on October 17. Hunting pressure was light but harvests were improved compared to last year.

Rabbit and pheasant season opened on October 31 with approximately 175 hunters using the refuge. The majority of these were pheasant hunters next to the Pennsylvania Game Commission pheasant pens on the Seneca Unit. Rabbit hunting was excellent in the right places but the low rabbit population over the past several years has greatly reduced the number of hunters.

Raccoon and fox hunting was limited to the north half of the Sugar Lake Unit to avoid conflict with trappers on the south half. Twenty-nine raccoon hunting permits and seventeen fox hunting permits were issued. Harvest data is not yet available since the season has not yet ended. However, based on field checks and discussions with hunters, the harvest will be on the light side.

9. Fishing

Fishing amounted to 3340 visits for warmwater species and 700 visits for coldwater fishing. Ice fishing was permitted by permit from January through March. This use was down compared to last year with only 36 visits recorded. Approximately 250 fishermen showed up on April 18 for the opening day of trout season on Woodcock Creek.

10. Trapping

For the fourth year, trapping was permitted on a cash bid system. Eighteen trappers bid on the ten units. All units were awarded with the high bid being $251.00 and the low bid being $55.00. The total revenue was a new high of $1654.86. The ten permittees, each with a helper, enjoyed another successful season. Although all reports are not yet in, we expect a reduced take of muskrats due to low fur prices. Two permittees reported stolen or destroyed traps and one reported stolen fur from the trap.

11. Wildlife Observation

The refuge is crisscrossed with gravel township roads which provide excellent wildlife viewing opportunities because of the low volume traffic. Since spot lighting deer from a vehicle at night is such a popular passtime in northwest Pennsylvania, the refuge permits this activity from the township roads. Starting in September and lasting into December, night lighters account for a high percentage of our bona fide wildlife observers far surpassing bird watchers or trail hikers combined. According to state law this activity is prohibited after midnight. We feel that permitting this activity reduces the potential poaching problem because of the large number of people traveling the roads.

12. Other Wildlife Oriented Recreation

In January, 1981 the refuge opened a cross-country ski trail on the south end of the Sugar Lake Unit. The trail, constructed by YCC and YACC enrollees, consists of a three mile primary loop and a one mile beginners loop. The trail passes through hemlock and hardwood forest, marsh edge, pine plantation, fields and open meadow. Public response to the trail was excellent with an estimated 380 visits from January through March. Because of this response during what is normally our lowest public use period, the new headquarters nature trail is also being promoted for ski use. TV-12 from Erie, Pennsylvania has already been in contact about doing a news segment on skiing the refuge trails.

14. Picnicking

The only use in this category was at the Group Picnic Area. Reservations are required to use the one pavillion and 12 picnic tables between May 15 and October 15. June was the most popular month with 95 of the total 195 visits. An electrial short developed in the water pump and the water fountain was inoperable all summer. Since picnicking is a non-wildlife oriented use, the electric company was called in to permanently disconnect the electrical service in anticipation of phasing out the activity.

17. Law Enforcement

No violation notice's were issued in 1981.

In April, YACC enrollees replaced the broken plexiglass in the visitor contact station at Beaver Run Nature Trail. The new sheet costing $60.37, was broken again within one month. The structure was moved to the new headquarters in the fall to reduce chances of further vandalism.

On May 6, two does were shot and left lying in a field next to the refuge boundary. Each doe was carrying one fawn. On May 20, a Canada goose was shot as it crossed a township road on the refuge near the manager's quarters. There were known suspects but insufficient information to make a case.

On August 8, a Canada goose was shot in Guys Mills. Again, there was insufficient evidence for a case.

On June 10, the Pennsylvania Bureau of Forestry fire danger sign was vandalized on the refuge when the large wooden image of Smokey the Bear was stolen.

On September 13, Manager McCoy and Assistant Manager Lons qualified with their service revolvers at a Pennsylvania Game Commission sponsored qualification shoot.

On September 26, the headquarters burglar alarm was set off. Inspection of the building showed that one of the 4' x 8' sliding glass doors had been pulled off its sliding track and then pushed back in place. Word later filtered in that a local teenager visiting with his parents had jerked on the door and set off the alarm.

The refuge purchased 2000 rounds of reloaded 38 caliber semi-wadcutters for revolver practice from 3-D Investment, Inc. in Doniphan, Nebraska. The price is $63.00 per thousand using customer brass.

Refuge Manager McCoy and Assistant Manager Lons attended several meetings of the Crawford County Crime Clinic during the year. This group meets primarily for the purpose of improving communications between the various law enforcement agencies in the county.

Refuge Manager McCoy attended Pennsylvania Game Commission Deputy meetings on February 6 and November 20.

I. EQUIPMENT AND FACILITIES

1. New Construction

Major construction included completion of the following BLHP projects:

-- The headquarters building including landscaping, access road, parking lot and access road dike.

-- The 30-acre Pool 4 impoundment and water control structure.

R.O. Construction Inspectors during the year included Milton (Butch) Ives, Peter Elliott, Ralph Crawford and Bryan Hodgkins, with Butch Ives being the primary on-site inspector after February.

R.O. Engineers, Paul Saulnier and Vincent Gasbarro made the substantial completion inspection of both projects on July 8, 1981.

Construction of the headquarters building proceeded throughout the winter with no major delays. Although final inspection occurred on July 8, 1981, final payment on the contract is pending until some major problems are cleared up.

Headquarters foundation work was completed in November, 1980.

W.J.M.

View of the headquarters building from the parking lot entrance before planting of trees and shrubs.

W.J.M.

Same view of the headquarters building in December 1981.
W.J.M.

On October 8, 1980 R.O. Engineering made the final decision that the refuge maintenance barn was unsafe and remedial repair was not feasible. Shortly thereafter it was also decided that the proposed location of the office entrance road should be changed to reduce impact on existing wetland. The new location follows an old gravel pit haul road which passed through the barn site. Since the road relocation required a change order to the existing headquarters contract, the barn demolition was included with the change order.

The condemned refuge maintenance barn, serving as a shop since 1962, was razed on May 7, 1981.
W.J.M.

Looking south at the maintenance barn site on May 11, 1981.
W.J.M.

Looking south during construction of the new headquarters entrance road dike. The headquarters building site is visible in left center of photo.
W.J.M.

Water control structure box for new headquarters entrance road pool.

W.J.M.

After the decision was reached to demolish the old barn, the refuge received approval and funds amounting to $17,100 to contract for a 40' x 60' pole building to serve as a temporary shop. Maintenance staff moved into this building on January 19, 1981. In the meantime, the R.O. made a request to Congress for reprogramming funds from cancelled BLHP projects to provide the funds necessary for constructing the Erie Refuge shop in 1981. Shop plans and specifications were obtained from a shop originally designed by an A&E firm for Great Meadows Refuge. Unfortunately, approval for the reprogramming request was not received in 1981 although there is still a possibility for 1982.

After the maintenance staff moved into the temporary shop building on January 19, all interior work had to be carried out force account. Electrical supplies amounted to $955.00 and heating supplies amounted to $400.00. Heating system costs were kept to a minimum by salvaging the oil-fired furnace and 275 gallon fuel tank from the old shop and a 275 gallon fuel tank from Qtrs. 176. The heated portion of the building was also restricted to a 27' x 40' area. In April, 260 cu. yds. of bank run gravel was purchased from Wood Gravel Co. for $1015.00 to enlarge the shop parking lot and finish the entrance road surface. This, along with 135 cu. yds. delivered in December, 1980, provided a serviceable vehicle area for maintenance operations.

Construction work on Pool 4 was suspended on December 19, 1980 due to unfavorable weather conditions. On May 5, 1981 the contractor returned to complete work on Pool 4. Many problems developed with the major ones being:

-- the steel stop log frame was twisted from top to bottom and the boards would not fit properly.
-- the concrete emergency overflow curb was three inches higher than specified in the blueprints.
-- the blueprints called for wing wall risers on each end of the emergency overflow curb and the contractor had left them out.
-- the guard rails did not meet specifications.
-- cracks developed in the concrete headwall of the discharge structure above each flow pipe.
-- the water control structure developed serious leaks where the riser pipes joined the flow pipes.

After much discussion, all but one of the problems were satisfactorily resolved by the contractor. The stop log frame was straightened enough to work reasonably well although each of the four drop slots requires a different length of stop log. Since the emergency overflow curb was too high, fill was added to raise the dike an equal amount. The wing wall risers were added to the curb per specifications. The guard rails were replaced. The cracks in the headwall of the discharge box were scoured out and filled with silicone caulking.

The leaking water control structure, unfortunately the most critical problem, was not so easily resolved. The leaking problem stemmed from the fact that the contractor decided to save some money by attaching the flow pipe connector flange to the riser pipe in the field rather than at the factory. The subcontractor who had never done this type of work was given the job in the field. After the six foot diameter circle was cut out of the corrugated metal riser pipe, the connector flange was butted up against the outside edge of this opening and spot welded at each peak in the corrugation. This left a hole big enough to put your hand through at every trough in the corrugated metal riser pipes. The subcontractor filled these openings with heavy roofing tar in the fall of 1980. One warm sunny day was all it took for this tar to soften and fall out of the opening. He next placed strips of window screen over the holes and plastered it down with more roofing tar. This soon peeled off in layers. R.O. Engineering then told the contractor that steel plates should be welded over each opening. Since the riser pipe was coated with bonded asbestos tar, the subcontractor suggested riveting the plates instead of having to burn the tar off to make a weld. The subcontractor later said he received verbal approval from the construction inspector after the inspector had checked with R.O. Engineering. There was no written record of this approval. Never-the-less, the work was done when neither the refuge staff or inspector was aware of it and the subcontractor used chimney flashing instead of steel plates. It was all covered with a heavy coating of tar and stayed this way through the winter.

In the spring, leaks became obvious all around this joint on both riser pipes. The leaks were brought to the attention of the contractor and his contract completion date was extended 21 days to June 21, 1981 to perform the work. Additional tar was placed on both joints and sakrete was poured around the bottom edges of both joints on the outside of each riser pipes. This was done on July 6 or two days before inspection for substantial completion. At the time of inspection, there was no water in the pool and we could not check for leaks. The contractor was told that acceptance of the structure would be delayed until after the pool filled up and it could be verified that the leaking problem had been eliminated. As the water rose, new leaks developed and, after the pool filled on July 29, the increased water pressure caused the leaks to enlarge to such an extent that the pool level dropped two feet in one week. The contractor wanted to pour concrete all around the joints on the outside of both riser pipes. R.O. Engineering felt that ice would form between the concrete and riser pipes and eventually open the leaks again. The contractor was told to clean off the joints and weld steel plates as originally instructed. The contractor hired a welder and the welding work was done during September. The pool refilled on October 1 and many leaks were still evident. The pool was drained again on October 10, the first day of waterfowl season. Many duck hunters were left high, dry and angry. On October 11, additional welds were made. On October 12, the welder sprayed both joints with a galvanizing compound and applied a coating of roofing tar. The pool refilled on October 28 with slight leaks showing on both joints. On November 12, Construction Inspector Butch Ives inspected the water control structure and said more welding was needed. On December 10, the contractor returned with the welder and made additional welds. On December 16, the joints were again inspected and, despite a few slight leaks, the project was accepted. This was 170 days after the construction completion date of June 21, 1981.

Looking north at railroad tank car culvert pipes installed by township supervisors many years ago to pass Lake Creek through Township Road 473 at the Pool 4 site. Note beaver dam on upstream side of pipes. YCC's of 1980 were observing fish survey.

D.R.L.

Looking north at new six foot culvert pipes and discharge box for Pool 4 on Township Road 473.

W.J.M.

2. Rehabilitation

On July 21, 1981, a contract for $395.00 was issued to Wood Gravel Company for grading Pool 7 dike road and supplying 36 cu. yds. of gravel to fill low spots.

3. Major Maintenance

Major maintenance expenses included the following:

Repairs to Monroe 570 calculator	- $230.26
Front end alignment - 1978 Volare and 1979 Dodge	- $ 48.00
Replace muffler and extension - 3010 J.D.	- $ 75.00
Replace oil line 4040 J.D.	- $130.00
Replace front tractor tire - 4040 J.D.	- $ 71.00
Replace 41"x91"x3/16" plexiglass on VCS	- $ 60.37
Replace brakes - 1979 Dodge	- $ 61.00
Clean and repair Brunson Level	- $ 90.00
Check and recharge fire estinguishers	- $ 35.00
Service contract on Saxon copier	- $420.00
Wall panelling, moulding and ceiling tile blocks for Qtr. 15	- $821.44
84 cu. yds. of crushed bank run gravel for office entrance and nature trail	- $441.00
Chimney material - Qtr. 15	- $156.00
Lumber material for office shelves	- $202.79

4. Equipment Utilization and Replacement

Major purchases included the following:

Kohler short block engine for the Wheel-Horse riding lawn mower	-$ 375.00
Model 8274 Winch with Fairlead Roller, accessory kit and mounting kit	-$ 672.00
King-O'-Matic 20" 4 H.P. push lawn mower	-$ 160.00
Yazoo 20" 5 H.P. Big Wheel Push Mower	-$ 306.00
Kelly Model 56 backhoe for 4040 J.D.	-$4775.00

Western slip-on fire pumper with 200 gallon tank, 5 H.P. pump, 150 feet of one inch hose and 20 feet of one inch hard suction hose with strainer	- $3691.19
3-point hitch "Pro" York Highway Rake with scarifier, depth gauge wheels, blade and blade end boots	- $2616.00
Blasting machine for cannon net trap	- $ 212.50
Battery Charger	- $ 170.00

Upgrading of refuge equipment was limited until the end of the fiscal year due to a lack of funds. When the engine of the Wheel Horse riding lawn mower wore out in early summer, a rebuilt engine block was purchased rather than replacing the whole mower. Mechanical problems with the 1974 International 4x4 pickup finally made it too expensive to repair. It was parked in storage to maintain the station fleet number until it could be traded for a replacement when funds become available. It will most likely be excessed before funds become available.

At the end of the fiscal year, our up-to-date "wish list" finally paid off. With unobligated funds provided by the Area and Regional Offices, we were able to purchase the winch, two push lawn mowers, 3-point hitch backhoe, 3-point hitch highway rake and portable fire pumper.

5. Communications Systems

On July 7, 1981, a low bid of $1200.00 was accepted from Seeman Electronics to relocate the GE and Motorola base stations and provide a new 40' Rohn 25-G radio tower, two antennas and cable. This action provided radio service at the new office and replaced the phone service at the YACC building.

The following two-way radio repairs were made:

1976 Chevy 4x4 - blown fuse	- $ 34.00
1974 Intern. 4x4 - replace antenna & loose wire	- $ 50.50
1979 Dodge - cleaned control cable connector	- $ 34.00
GE base station - cleaned & repaired	- $ 91.00

6. Energy Conservation

The refuge's energy conservation program suffered a severe setback during 1981. Although the refuge's new headquarters building greatly improves public use opportunities, it also tremendously increases the stations energy consumption.

During the first quarter of FY-82, the new office consumed more than two and a half times as much electricity and about three times as much fuel oil as the old office did in the same quarter of FY-81.

The new office was designed to have an active and passive solar system. These systems, however, were not incorporated into the structure due to insufficient BLHP funding. A wood boiler was added to the fuel oil heating system as an alternative means of conserving fuel oil. A design problem with the system, however, has not permitted the utilization of the wood boiler. Consequently, the new office is being heated solely with fuel oil.

Looking north at the new headquarters building. Designed for an active and passive solar heating system, neither system was installed due to insufficient funds. However, five 8'x8' sliding glass doors are installed on the south side of the building to take as much advantage of sunlight as possible.

W.J.M.

An additional energy problem exists with the temporary shop finished in January, 1981. It was constructed with a limited amount of funds to serve as a heated building for one winter only. At the time, the Regional Office felt there was a good chance of obtaining funds to construct a permanent shop later in 1981. The temporary shop would then be converted to a storage building without heat. With this understanding, a minimal amount of insulation consisting of one inch thick styrofoam sheets on the walls and two inch thick sheets on the ceiling was installed in the heated portion of the building. Interior walls were not covered with sheet rock paneling since it would be an unnecessary expense for a cold storage building. Now, the building is being used for the second winter with little hope in sight for the permanent shop.

On January 20 and 21, 1981 Joe Hall, a consultant engineer from Data Signal Corporation, performed an energy audit of refuge buildings. Since the new office was under construction at that time, it was not included in the survey. The survey was done as part of a Regional Office contract to provide information and recommendations for field stations to develop meaningful energy conservation and management plans. The final Building Energy Survey Report was full of errors and in no way assisted this field station in meeting its energy reduction goals.

Efforts made by the station to conserve energy include the following:

- quarterly monitoring of energy consumption to assure compliance with Area Office vehicle fuel allotment.
- the refuge purchased a 125cc Honda motorcycle in 1980. This machine is used whenever possible in place of refuge pickup and station wagon on the refuge. (80 M.P.G. vs. 10 M.P.G.).
- maintaining lowered building temperatures.
- using wood stove in YACC building as primary heat source.

7. Other

In association with the demolition of the old shop barn, a low bid of $1200.00 was accepted from Kebert Construction Co. to relocate 25 steel sheet pilings which had been stored behind the old shop since 1979 after the Pool 1 project was cancelled. These pilings, each 60 feet long, 18 inches wide and 3/8 inch thick are now being stored near the temporary shop until they can be used for a future impoundment. In addition, the old shop barn septic tank was pumped dry to avoid possible contamination of the new office road pond.

J. OTHER ITEMS

1. Cooperative Programs

Jan Rowan, an Allegheny College undergraduate student participating in an independent study course, did some preparatory field work on the refuge. Jan monitored some of the refuge's bluebird boxes throughout the nesting season. Her final report has not yet been received.

The refuge collects weather data at the YACC maintenance shop in cooperation with the U.S. Army Corps of Engineers at nearby Woodcock Dam. The Corps' personnel call daily to obtain this data which is used in the operation of their flood control reservoir.

In cooperation with the Pennsylvania Game Commission, refuge staff collected liver and gizzard samples from mallards and black ducks harvested by refuge hunters during the 1981 hunting season. The PGC survey included all of Crawford County except the Pymatuning Waterfowl Management Area. The survey was conducted to determine the incidence of shot found in Crawford County ducks. This information

was going to be used in formulating future steel shot regulations in the county. The PGC, however, decided to eliminate steel shot zone requirements in the state before finding out the results of the survey. The Fish and Wildlife Service has subsequently proposed the removal of steel shot zones in Pennsylvania.

Liaison was maintained with the U.S. Geological Survey concerning drainage of natural gas from refuge land by gas wells on adjacent private land. So far, the only result of our communications has been a request to open the refuge for gas well drilling. We are against this proposal because of serious water pollution problems caused by local gas drilling operations. A flat fee compensation royalty to be paid by the gas companies to the U.S. government is what we would prefer.

In July, refuge staff contacted the local Pennsylvania Fish Commission Warden in regards to collecting a water sample from a natural gas well site adjacent to the refuge. The well runoff was draining into Brawley Run which flows directly into Pool 9, the largest refuge impoundment. A lab analysis showed an extremely high concentartion of salt.

More detailed analysis taken from other well sites in the county have shown the salt brine to contain dangerously high levels of heavy metals such as cadmium. The Cabot Gas and Oil Company was fined $400.00 for this violation and ordered to clean up the site. Other gas well problems are anticipated in the future.

3. Credits

Refuge Manager McCoy and Assistant Refuge Manager Lons prepared this report. YACC Office Aid, Judy Luzier prepared the staff pages and typed the report.

K. FEEDBACK

The new narrative outline should include an Introduction section with background information and vicinity maps of the refuge. Although this basic information may be repeated each year, it makes each annual narrative appear as a more complete report. This information is especially informative when narratives are being circulated from station to station in the Narrative Club.

In my opinion, management of the wildlife resources within the National Wildlife Refuge System could be greatly enhanced by placing more emphasis on the professional self-development of management personnel. This could be done by providing more in service education opportunities and an improved management information dissemination system. Presently it seems as though most if not all of our conferences deal with administrative matters and organizational operations. Keeping up-to-date on current research findings or successful management practices is left entirely up to the individual employee. When it comes time to prepare management plans, an outline or format may be provided but there is little guidance or information beyond that.

Reviewing circulating narratives in the Narrative Club is probably the best means presently available to compare management ideas and practices with those of other people attempting to reach the same objectives. However, many times when reviewing narratives, ideas or practices are mentioned and commented on in such a way that the reader wonders what basis the person acted on to justify the management action. For instance, a narrative statement may say that an impoundment was maintained at maximum level during the spring migration period to provide maximum benefits for migrating waterfowl. It would be interesting to hear how many different opinions managers might give for following this idea of maximum water area equalling maximum benefits to waterfowl in search of an abundant, readily available food supply. Does lots of water mean lots of food? Or, does a maximum water level in the spring mean most of the tubers and residual seeds are too deep to be reached by dabbling ducks? The important question is whether or not food availability was even considered in making the management decision. It seems that in many cases, management practices are followed because that is the way it has always been done even though conditions may change from year to year or new information has become available that indicates a better way of accomplishing the objectives. The primary point here is that good management is a complex task and requires much time, study and a knowledge of the current information available to hope to achieve optimum results.

I personally would welcome a packet of information and recommenations on specific management practices such as water manipulation, prescribed burning or dense nesting cover establishment. Someone had a good idea when the task of writing the Refuge Manual was

assigned to all levels of management throughout the refuge system. Why couldn't this same idea be applied to developing management information packets consisting of research findings, field techniques or structure designs and maintenance guidelines. Additions to these packets could be made as new information became available. This basic information would be helpful when drawing up management plans and would provide a point of reference when the plan or actual practice is being discussed between field station personnel and Area or Regional Office personnel.

In lieu of specific management packets or manuals, perhaps more emphasis should be placed on using our existing library services such as the following:

The Library Skimmer periodically issued by the Region III Library.

The computerized search service offered by the Department of Interior's Natural Resource Library in Washington, D.C. and the Fish and Wildlife Reference Service in Denver, Colorado.

The periodic publications list issued by the Northern Prairie Wildlife Research Center.

These are all valuable resource management services and are probably all underutilized by most resource managers. Perhaps a requirement that all management plans include a bibliography would increase interest and use of these services and produce better management plans and, more importantly, better management results. Finding the time to gather and review the available information is probably the biggest problem and this's where the management packets could be of greatest assistance by making the most appropriate information readily available in one place.