

CRAB ORCHARD NATIONAL WILDLIFE REFUGE

Carterville, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1932

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

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

Front Row (L to R)

Wayne Adams
Terry Rendleman
Bob Swidergal
John Emerson
Jerry Updike

Second Row

George Stapleton
Russell Massie
Jim Smith
Bob Rice
Ray Goldsmith
Joe DeJulio
George Beckwith

Third Row

Karon Keeler
Donna Stanley
Bonnie Dungey
Bill Holup
Bob Venegoni
Chuck Adams
Bob Howell
Gilbert Hanks

Back Row

Bob Woodsum
Ross Adams
Roy Taylor
Lonnie Priest
Jim Cox
Jim Cameron
Brad McKinney
Dan Eastman
Doyle Case



Crab Orchard NWR Personnel - 1/1/83

Wayne D. Adams	Project Manager	GS-13	PFT
Gerald H. Updike	Assistant Project Manager	GS-12	PFT
N. Ross Adams	Wildlife Biologist	GS-11	PFT
James R. Rice	Biological Technician	GS-9	PFT
George Stapleton	Biological Technician	GS-6	PFT
VACANT	Forestry Technician	GS-6	
John C. Robinson	Refuge Manager Trainee	GS-5	PFT
James T. Cameron	Outdoor Recreation Planner	GS-11	PFT
Donna J. Stanley	Outdoor Recreation Planner	GS-7	PFT
Lonnie S. Priest	Park Technician Supervisor	GS-7	PFT
Sam Milazzo	Park Technician	GS-5	PFT
Bradley McKinney	Park Technician	GS-5	PFT
VACANT	Park Technician	GS-5	
VACANT	Park Technician	GS-5	
Joe DeJulio	Fire Chief	GS-7	PFT
Jim Brush	Fire Fighter-Structural	GS-5	PFT
Carl Chew	Fire Fighter-Structural	GS-5	PFT
John Emerson	Fire Fighter-Structural	GS-5	PFT
Lewis Gass	Fire Fighter-Structural	GS-5	PFT
Bob Webb	Fire Fighter-Structural	GS-5	PFT
R. Bruce Whitecotton	Fire Fighter-Structural	GS-5	PFT
Roy Taylor	Maintenance Foreman	WS-8	PFT
Dan Eastman	Electrician	WG-10	PFT
Jim Smith	Equipment Operator	WG-9	PFT
VACANT	Equipment Operator	WG-9	
Bob Venegoni	Carpentry Worker	WG-7	PFT
Bob Woodsum	Maintenance Worker	WG-7	PFT
George Beckwith	Maintenance Worker	WG-7	PFT
Jim Cox	Utility System Operator	WG-9	PFT
Bob Howell	Utility System Operator	WG-9	PFT
Jim Newbury	Utility System Operator	WG-9	PFT
Bill Stacey	Utility System Operator	WG-9	PFT

Personnel (Cont.)

Ray Goldsmith	Automotive Shop Foreman	WS-8	PFT
Chuck Adams	Automotive Worker	WG-9	PFT
Gilbert Hanks	Automotive Worker	WG-9	PFT
Russell Massie	Automotive Worker	WG-9	PFT
Bill Holup	Administrative Officer	GS-11	PFT
Doyle Case	Contract Specialist	GS-11	PFT
Bonnie Dungey	Secretary-Stenography	GS-5	PFT
Marsolie McCarty	Clerk-Typist	GS-4	PFT
Terry Rendleman	Administrative Technician	GS-7	PFT
Bob Swidergal	Supply Technician	GS-5	PPT
Karon Keeler	Accounting Technician	GS-4	PPT

Youth Conservation Corps - 6/7-8/6/82:

Richard Dresel, Herrin.

Jerry Hall, Energy.

Rebecca Ramey, Marion.

Scott Vaughn, Goreville.

Joanne Williams, Johnston City.

Temporary Employees:

Eric Smith, Kansas City, GS-4; Cooperative Student, 10/1-12/31/82.

Mark Koepsel, Milwaukee, GS-3, Biological Aid, 11/1-12/17/82.

Review and Approvals

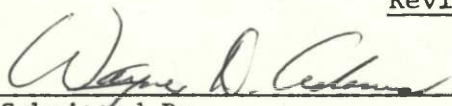
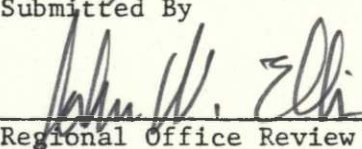
	5-16-83
Submitted By	Date
	5/19/83
Regional Office Review	Date

TABLE OF CONTENTS

	<u>Page</u>
A. <u>HIGHLIGHTS</u>	1
B. <u>CLIMATIC CONDITIONS</u>	2
C. <u>LAND ACQUISITION</u>	
1. Fee Title	6
2. Easements	Nothing to Report
3. Other	Nothing to Report
D. <u>PLANNING</u>	
1. Master Plan	Nothing to Report
2. Management Plan	7
3. Public Participation	Nothing to Report
4. Compliance with Environmental Mandates.	Nothing to Report
5. Research and Investigations	7
E. <u>ADMINISTRATION</u>	
1. Personnel	8
2. Youth Programs	9
3. Other Manpower Programs	9
4. Volunteers Program	9
5. Funding	10
6. Safety	11
F. <u>HABITAT MANAGEMENT</u>	
1. General	12
2. Wetlands	14
3. Forests	14
4. Croplands	15
5. Grasslands	Nothing to Report
6. Other Habitats	Nothing to Report
7. Grazing	17
8. Haying	17
9. Fire Management.	17
10. Pest Control.	17
11. Water Rights	Nothing to Report
12. Wilderness and Special Areas	18
13. WPA Easement Monitoring	Nothing to Report

TABLE OF CONTENTS

Page

G. WILDLIFE

1. Wildlife Diversity	19
2. Endangered and/or Threatened Species	19
3. Waterfowl	19
4. Marsh and Water Birds	22
5. Shorebirds, Gulls, Terns and Allied Species	22
6. Raptors	22
7. Other Migratory Birds	23
8. Game Animals	23
9. Marine Mammals	Nothing to Report
10. Other Resident Wildlife	24
11. Fisheries Resources	25
12. Wildlife Propagation and Stocking	Nothing to Report
13. Surplus Animal Disposal	Nothing to Report
14. Scientific Collections	25
15. Animal Control	Nothing to Report
16. Marking and Banding	25
17. Disease Prevention and Control	Nothing to Report

H. PUBLIC USE

1. General	27
2. Outdoor Classroom - Students	27
3. Outdoor Classroom - Teachers	27
4. Interpretive Foot Trails	27
5. Interpretive Tour Route	27
6. Interpretive Exhibits	27
7. Other Interpretive Programs	28
8. Hunting	28
9. Fishing	29
10. Trapping	29
11. Wildlife Observation	30
12. Other Wildlife Oriented Recreation	Nothing to Report
13. Camping	30
14. Picnicking	30
15. Off Road Vehicles	30
16. Other Non-Wildlife Oriented Recreation	30
17. Law Enforcement and Fires	30
18. Cooperating Associations	Nothing to Report
19. Concessions	35

TABLE OF CONTENTS

Page

I. EQUIPMENT AND FACILITIES

1. New Construction	Nothing to Report
2. Rehabilitation.36
3. Major Maintenance36
4. Equipment Utilization and Replacement36
5. Communications Systems	Nothing to Report
6. Energy Conservation36
7. OtherNothing to Report

J. OTHER ITEMS

1. Cooperative Programs - Industry37
2. Items of Interest39
3. Credits39

K. FEEDBACK

Nothing to Report

A. HIGHLIGHTS

A former industrial dump site was soil tested, and high levels of lead and polychlorinated biphenyls (PCB's) were found. (Section F.1)

Two bald eagles were fledged from the Little Creek nest. (Section G.2)

A major tornado hit just north of the refuge and cut through the City of Marion, killing 12. (Section B)

Heavy rainfall occurred during three periods of the year causing record high water levels in Crab Orchard Lake. (Section B)

B. CLIMATIC CONDITIONS

Winter temperatures were mild with the exception of a cold spell January 17-20 when the temperature was -15° and winds to 30 miles per hour. Spring temperatures were mild, summer was relatively cool, and fall and early winter were very mild. The last spring frosts occurred April 21, 22, and 23, and the first fall frost was October 20. There were 180 frost-free days. Ice cover never exceeded 4" on the lakes and ponds, and snow cover was light.

Heavy rainfall occurred January 29-31 when 6.9" fell, December 2-4 with 5.2", and December 24-27 when 6.6" fell. Crab Orchard Lake crested at the spillway at elevation 408.8, the highest recorded level on record. Soil erosion and road washouts resulted from these storms.

Precipitation was 60.40", and temperatures ranged from -15° to 94° . Average annual precipitation is 46".

On Saturday afternoon, May 29, a tornado struck the area and followed a 15-mile path from just north of the refuge near Cambria Neck to the east edge of the City of Marion. Width of the tornado varied from 50 yards to three city blocks in Marion. The tornado moved slowly and was visible as it generally followed State Highway 13. The death toll was 12, with 200 injured, and 300 homes and 50 businesses either destroyed or severely damaged. Good visibility and advance radio warnings saved many lives. Refuge campgrounds, less than one mile from the tornado had nearly 1,000 campers at the time, but there was no damage or injuries on the refuge. Refuge personnel assisted with traffic control and pickup and removal of rubble.



Heavy January rains caused problems on Crab Orchard Lake when it reached the highest crest on record at 408.8, or 3.8 feet above pool stage. Top shows dock at Highway 13 at Gateway Marina. Bottom is outflow from spillway toward county road bridge.

1/82 - 1 and 2

DJS





Marion tornado of May 29 killed ten in apartment complex (top) and destroyed most of three shopping centers (bottom). The tornado was on the ground for 15 miles and had a maximum width of three blocks in the City of Marion.

6/82 - 3 and 4 GHU



<u>Month - 1982</u>	<u>Temperatures (F)</u>		<u>Precipitation (inches)</u>	
	<u>High</u>	<u>Low</u>	<u>Snow</u>	<u>Rain</u>
January	51	-15	4	12.42
February	53	12	-	1.40
March	69	28	2	2.72
April	72	31	1	2.91
May	85	48	-	6.24
June	88	59	-	4.26
July	94	64	-	6.58
August	87	55	-	3.75
September	80	48	-	3.20
October	72	30	-	1.48
November	68	18	-	3.28
December	<u>60</u>	<u>21</u>	<u>-</u>	<u>12.16</u>
	94	-15	7	60.40

Lake Elevations:

	<u>Crab Orchard</u>	<u>Devils Kitchen</u>	<u>Little Grassy</u>
Spillway Elevation	405.0	410.0	500.0
Maximum Elevation	408.8	514.5	504.0
Date of Maximum	1-30-82	1-29-82	1-29-82
Minimum Elevation	404.75	509.60	496.70
Date of Minimum	8-19-82	8-19-82	11-17-82

The Little Grassy Fish Hatchery, operated by the Illinois Department of Conservation (IDOC) was expanded in 1981 and drew approximately 4,000 acre-feet of water from Little Grassy Lake in 1982. The lake level dropped 3.3' below spillway in November, and boat ramps could not be used. Operational changes to keep from lowering the lake will be discussed with IDOC in 1983.



Little Grassy Lake was at its lowest level on record in November at 496.7 or 3.3 feet below pool stage. Higher than anticipated water usage by the state fish hatchery accounted for the low level.

11/82 - 5 JTC

C. LAND ACQUISITION

1. Fee Title

A land exchange was initiated by IDOC so they could acquire a 250' strip of land on which they had built part of the expanded hatchery building. Under the exchange, agreeable to both parties, FWS would acquire 15 acres and IDOC 13.75 acres. Lands are of generally equal value.

D. PLANNING

2. Management Plans

The Furbearer Management Plan was approved by Regional Director Nelson on August 26. The Plan requires all trappers to purchase a permit from the refuge and to report their catch at the end of the season. Areas I and III will remain open to trapping with a limit of 50 permits.

Redrafting of the Fire Management Plan, Fisheries Management Recommendations, and Interpretation and Recreation Plan was initiated during this year.

5. Research and Investigations

Crab Orchard NR 82 - "Relative Survival of Stocked Walleye Larvae versus Fingerlings in Little Grassy Lake (33610-48). This study is part of a research project funded by the Department of Conservation with Dingel-Johnson funds and conducted by Dr. Roy Heidinger of Southern Illinois University. The study will provide information to develop the most economical stocking combination for future walleye production and stocking programs in Illinois waters.

Crab Orchard NR 82 - "Habitat Use by White-tailed Deer on Crab Orchard National Wildlife Refuge" (33610-49). This study will determine if the vegetative cover types on Crab Orchard are used by deer in direct proportion to cover type availability. Dr. Alan Woolf of Southern Illinois University is the principal investigator.

Crab Orchard NR 82 - "White-tailed Deer Fawn Survival in Southern Illinois" (33610-43). Field work continued through the third and final year. Preliminary data suggest that predation by wild canids is a significant mortality factor among fawns. Dr. Alan Woolf, Southern Illinois University, is the principal investigator.

E. ADMINISTRATION1. Personnel

Personnel changes included:

1/10/82 - George Beckwith, Maintenance Worker, transferred from Corning NFH, Arkansas.

5/1/82 - Eugene Shew, Fire Fighter-Structural, retired.

6/15/82 - Jack Stephens, Fire Fighter-Structural, died of heart attack at home.

7/11/82 - Layman Summers, Fire Chief, retired.

7/11-9/5/82 - Carl Chew, Acting Fire Chief.

8/22/82 - Bradley McKinney, Park Technician, transferred from Delaware Water Gap National Park, Pennsylvania.

9/5/82 - Joe DeJulio, promoted from Park Technician to Fire Chief.

9/9/82 - John Robinson, Refuge Manager (Trainee), EOD.

9/21/82 - John Emerson, Fire Fighter-Structural, EOD.

10/18/82 - A. D. Corhn, Fire Fighter-Structural, EOD.

11/12/82 - A. D. Corhn, Fire Fighter-Structural, resigned.

12/31/82 - R. Bruce Whitecotton, Fire Fighter-Structural, EOD.

Vacancies at year's end included: Forestry Technician, two Park Technicians, and Equipment Operator.

Personnel on board for the past six years included:

<u>Year</u>	<u>Full-Time</u>	<u>Part-Time</u>	<u>Temporary</u>	<u>Total</u>
1982	35	4	2	41
1981	32	6	3	41
1980	32	6	6	44
1979	35	7	11	53
1978	35	7	10	52
1977	39	1	12	52

The Carbondale Ecological Services office moved from the Federal Building in that city to refuge headquarters in October. Personnel of that office included: Joe Janecek, Bruce Stebbings, Al Balliett, Bill Ziegler, and Tammy Hoy. Also moving into this office from Carbondale was Special Agent John Keeler.

2. Youth Programs

There was no Youth Conservation Corps program in 1981, but five enrollees worked an eight-week program in 1982. Refuge personnel provided supervision, and the program ran well, with no accidents. Enrollee selection, from 60 applicants, was handled through the Illinois State Employment Service at Herrin.



1982 Youth Conservation Corps crew: Scott Vaughn, JoAnn Williams, Rick Dresel, Becky Ramey, and Jerry Hall. Donna Stanley coordinated the program.

7-82 -6 GHU

3. Other Manpower Programs

One Green Thumb program employee, George Corzine of Carterville, worked three weeks in the fall.

4. Volunteers Program

Local bass clubs participated in two cleanup projects on Crab Orchard Lake.

5. Funding

Funding levels for the past five years were:

	<u>FY-79</u>	<u>FY-80</u>	<u>FY-81</u>	<u>FY-82</u>	<u>FY-83*</u>
Migratory Birds	691,000	758,000	721,000	656,000	637,000
Mammals/ Birds	116,000	116,000	103,000	191,700	192,000
Recreation	301,000	260,000	200,000	117,000	222,000
Total O & M	1,108,000	1,134,000	1,024,000	964,700	1,051,000
Expense for Sales	18,000	160,000	160,000	214,000	218,000

* Subject to reduction as final appropriations bills are passed.

Refuge receipts decreased some as a result of the Fiberlite Company burning out and Trojan Corporation moving out of Area 12. Rental credit is allowed for bringing buildings up to standards by new tenants, thereby decreasing revenue somewhat.

Refuge receipts for the past five years were:

	<u>FY-78</u>	<u>FY-79</u>	<u>FY-80</u>	<u>FY-81</u>	<u>FY-82</u>
Building Rent	264,948	242,449	275,013	374,870	359,230
Water	34,919	29,264	35,512	42,696	39,902
Sewer	16,301	15,970	15,458	21,927	17,169
Total Industrial	316,168	287,683	325,983	439,493	416,301
Wildlife	9,023	7,461	8,741	7,410	6,823
Recreation	31,652	31,652	24,424	33,687	36,818
Total Refuge Receipts	356,843	326,796	359,148	480,590	459,942

Payments to counties, 91% of the full amount due, under the Refuge Revenue Sharing Act for FY-82 were: Williamson - \$204,873, Jackson - \$2,570, and Union - \$3,603.

6. Safety

One fatality occurred May 24, when an individual committed suicide by carbon monoxide poisoning in a vehicle at Bulliner Point. This was the first fatality on the refuge since 1979 when three occurred.

The refuge safety committee held monthly meetings and assisted with quarterly safety inspections. Monthly staff safety meetings were held.

F. HABITAT MANAGEMENT

1. General

Refuge personnel, supported by ECE and Fisheries Assistance, collected soil, honeysuckle, earthworm, rodent and fish samples to be analyzed for lead and polychlorinated biphenyl (PCB) contamination. Ten land sites (see map) were sampled over the northern portion of the refuge, and fish were collected east of State Highway 148 and in the west end of Crab Orchard Lake. In addition, sediments from six tributaries to the lake were sampled for PCB's.

Site No. 1, the Sangamo Dump, was badly contaminated with both lead and PCB's. The most contaminated soil sample for lead contained 7,070 parts per million (ppm) and for PCB's contained 20,594 ppm. The sample of honeysuckle roots contained 81.6 ppm lead. Mouse and vole livers and earthworms contained less than 0.3 ppm lead. This was the only site tested for both lead and PCB's.

Site No. 2, the Fire Station Dump, contained lead levels up to 553 ppm in the soil. Earthworms contained up to 4.19 ppm lead, and rodent livers contained less than 0.3 ppm lead.

Site No. 3, the Water Tower Dump, contained up to 843 ppm lead in the soil. Earthworms and honeysuckle roots contained 0.52 and 0.62 ppm, respectively. Both the Fire Station and Water Tower Dumps should be tested for PCB's. Sites 1-3 are old industrial dumps. Dumping ceased in the 1960's.

Site No. 4, the Hampton Cemetery Contaminated Area, contained up to 151 ppm lead in the soil and less than 0.5 ppm in earthworms and honeysuckle. This site was used by Department of Defense for disposal of ordnance plant products.

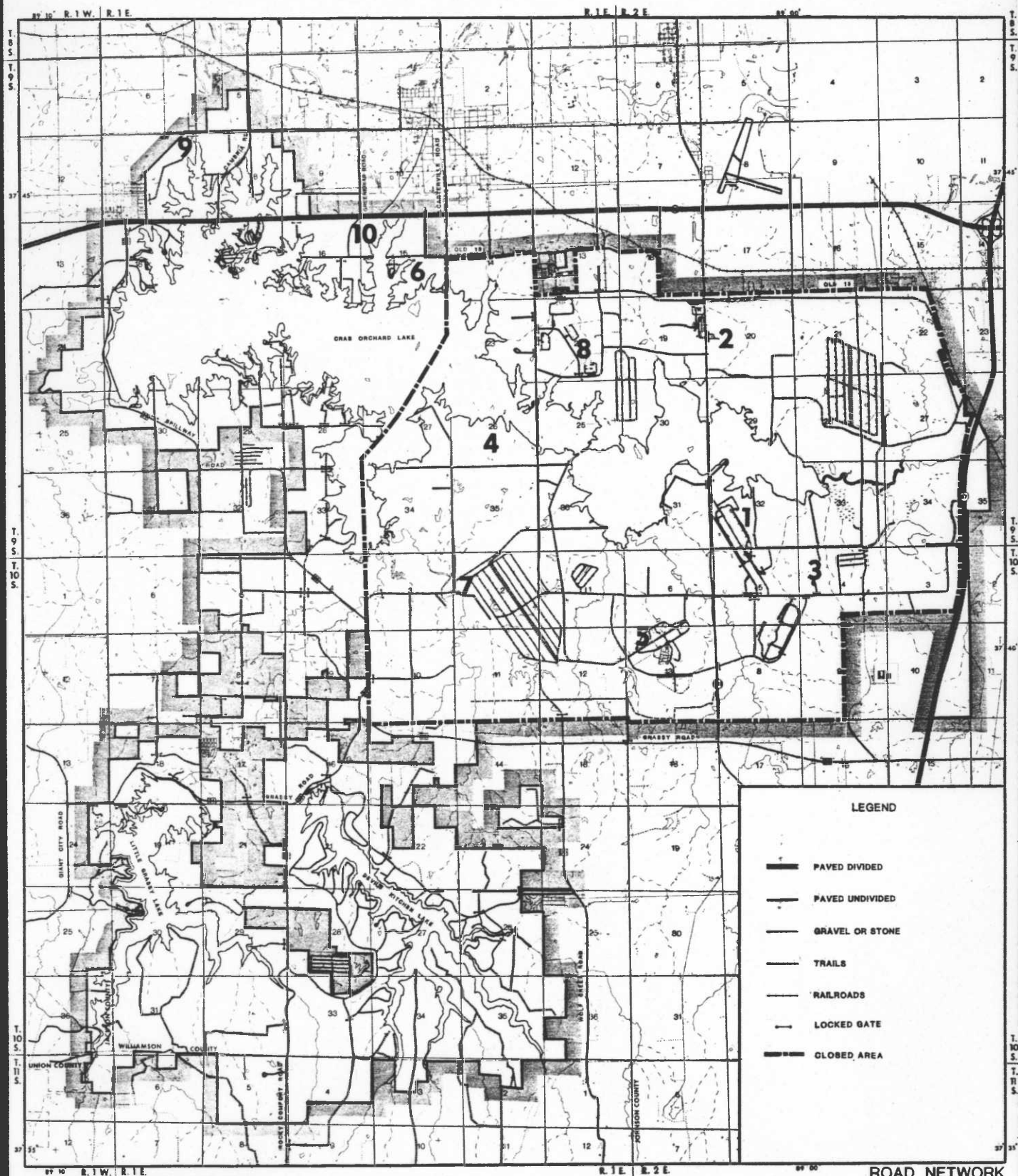
Sites No. 5-10 were within background levels (less than 50 ppm) for lead in soils.

Of the six sediment samples tested for PCB's, all were less than 0.5 ppm except for sediments from Crab Orchard Lake below the Sangamo Dump. This sample contained 3.32 ppm PCB's.

Seven largemouth bass collected east of State Highway 148 averaged 4.9 ppm PCB's and ranged from 3.2 to 9.3 ppm. Five bass collected from the west end of the lake contained no more than 1.9 ppm. The range of PCB's found in 13 channel catfish tested was from less than 0.2 to 5.2 ppm. One eight-pound channel catfish caught in the west end of the lake contained 4.4 ppm PCB's.

Crab Orchard NWR was selected as the site for a pilot study using the Habitat Evaluation Procedures (HEP) to assess the impact of various management options. Refuge personnel updated the resource inventory in preparation for the HEP study in 1983.

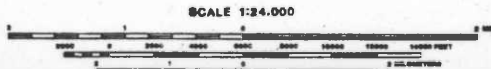
Numbers represent sample sites for lead and PCB's in soil.



CRAB ORCHARD NATIONAL WILDLIFE REFUGE

U.S. FISH AND WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

PREPARED 3-3-78



ROAD NETWORK

2. Wetlands

The trend toward increased emphasis on moist soil management continued in 1982. The A-41 moist soil units produced moderate amounts of millet and smartweed. The Number 1 and Number 2 units were drained in June, while units 3, 4 and 5 were drained in January to facilitate discing and maintenance operations. All units were flooded with 60 acre-feet of water from A-41 Pond in late October. Heavy December rains damaged the dike adjacent to the Number 6 unit.

The dam on the U. S. Powder Pond was reconstructed in July with the installation of a new stoplog water control structure. Late November rains filled the pond to a depth of 4'.

Excellent growth of millet, smartweed and rice-cutgrass developed in the Pigeon Creek unit, which was drained in early June. Rainfall in late November flooded the unit, but heavy late December rains caused minor structural damage to the water control structure.

Large quantities of moist soil plants developed around the periphery of the Observation Pond after a drawdown of 1.5' in mid-May. Wildlife response was excellent throughout the fall, and visitors had a good view of thousands of geese, several species of ducks, wading birds, and even seven avocets using the pond.

A second emergency spillway was built by force account in the A-16 Pond. Heavy runoff from December rains passed through both spillways without water topping the dam as in past years.

3. Forests

A forestry class from Southeastern Illinois College at Harrisburg volunteered to mark 41 acres of pines for thinning north of Devils Kitchen Lake. Commercial operators purchased the 772 cords of marked trees and cut them for pulpwood. Habitat for the turkey and deer in this area should improve substantially following the thinning operation.

Heavy January rains severely damaged the beaver dam maintaining the Carterville forested wetland and nearly drained the impoundment. The dam was successfully reinforced in July with sandbags by a YCC crew. The eagle nest adjacent to this wetland was abandoned in mid-March. Two eagles were fledged at the Little Creek unit where water elevations were maintained at spillway levels throughout the year.

A total of 115 firewood permits were issued to local citizens in 1982, resulting in approximately 60 cords of firewood being removed from the refuge. Permits were written for one pickup load only. A \$5.00 fee was charged starting in November.

4. Croplands

Some permittee farmers had difficulty planting refuge crops this year as 5.5" of rain fell from mid-May to mid-June. Several low and poorly drained fields had to be replanted because the prolonged wet soil caused poor germination.

The Soil Conservation Service and the refuge cooperated in improving soil conservation practices. Several waterways were established, and minimum tillage, contour and strip cropping, and zero tillage techniques were used in many units. Two permittees converted entirely to zero tillage. The 438 acres they planted yielded as good as, or better than conventionally tilled crops.



Two farm cooperators planted 438 acres to no-till corn. Roundup and Atrazine were used for weed control. Corn yield was approximately 85 bushels per acre - better than average for this area.

6/82-7 GHU

A test field was set up to demonstrate the effectiveness of anhydrous ammonia on corn after second year clover. Anhydrous ammonia, 100 pounds, was applied to 60 acres of corn, and 20 acres received no ammonia. The corn with ammonia yielded 11 bushels more per acre than the corn without ammonia. This application of ammonia would net the farmer \$5.02 per acre under a standard cooperative agreement with the refuge.

Blackbirds consumed an estimated 100 acres of milo not used by waterfowl. Blackbird-resistant varieties were planted in some fields, however, after maturity there seemed to be no difference in preference by the blackbirds.

One cooperative farmer was terminated in 1982 because of failure to comply with the terms of the agreement.

The following is a summary of cropland acreage for 1982:

<u>Crop</u>	<u>Acres</u>	<u>Yield</u>	<u>Refuge Share</u>
Corn	1,727	86 bu/ac.	37,130 bu.
Milo (grain sorghum)	1,458	72 bu/ac.	26,317 bu.
1st year Clover	1,531	Clipped	green browse
2nd year Clover	936	1400 ton	green browse
Wheat (force account)	30	-	green browse

A survey on January 4, 1982 indicated that 6,336 bushels (10% of total) of grain remained in the field. Goose use was well below the objective level and is attributed to a mild fall and a reduced number of geese in the population.

The following amounts of lime and fertilizers were applied to refuge croplands in 1982:

<u>Compound</u>	<u>Tons</u>
Di-ammonium nitrate	10.5
Anhydrous Ammonia	112.0
Potash	20.0
Phosphorus	19.0
Triple super phosphate	2.5
Starter fertilizers	<u>41.0</u>
Total Fertilizer -	205.0
Agriculture lime -	1390 tons.

7. Grazing

Seventeen permittees paid \$4429.88 for the privilege of grazing cattle on the refuge. The permittees mowed 2,021 acres of fescue grasslands to maintain the grasses for goose browse. One permittee forfeited \$200 in down payment when he failed to place cattle in the grazing unit.

Units A-12-15 and A-25 were planted to no-till corn in the first year of an agreement to farm the units for two years and seed them back to a grass-legume mix the third year.

Most units are poor quality fescue grass with multiflora rose encroachment. Mowing, clipping and spraying serve only as a temporary or delaying process in controlling the rose.

8. Haying

Common red clover continues to be an integral part of the crop rotation on the refuge. Farmers removed 1,400 tons of hay for their share of the clover, and most clover fields were in excellent condition to provide green browse in the fall and early winter for geese.

One farmer sold his share of standing clover without advising the purchaser of the special conditions. This resulted in 80 acres of prime clover being cut after the August 1 deadline. The purchaser was understandably upset when advised that he could not take or remove the hay from the refuge. Any subsequent hay sales will require the buyer to obtain a special use permit from the refuge.

9. Fire Management

The new FWS policy requiring all personnel on a fireline to have passed the step test severely hampered the prescribed burning plans for 1982. By the time the burning crew was able to pass the fitness test, the burning season had passed without any prescribed burning being conducted.

10. Pest Control

Purple loosestrife was identified for the first time on the refuge in 1982. Small colonies on the shoreline near Crab Orchard Lake and at the Greenbriar and State Highway 13 boat ramps were treated with glyphosphate. A plant along the Greenbriar road just north of Old Highway 13 was extracted and destroyed. However, a large colony of loosestrife occupies a drainage ditch in the yard of a refuge neighbor on Carterville Road and could serve as a seed source.

Johnson grass continued to plague the cooperative farmers and refuge personnel. The problem is presently under control but without continued vigilance and treatment the Johnson grass could become a severe problem. Neighbors to the north and to the south of the refuge have dense stands of Johnson grass that serve as seed sources.

Multiflora rose has invaded most refuge grasslands. A pilot project to renovate grasslands through cooperative farming agreements was initiated in 1982. Rose control in the first year of the project was somewhat disappointing.

12. Wilderness and Special Areas

Wilderness and refuge boundary signs were installed along two miles of the southwestern boundary of the refuge west of Rocky Comfort road. About a mile of the wilderness boundary from the old Southern Illinois University property west still should be marked. Four-wheel drive vehicles are causing problems in the western part of the wilderness area and around the old SIU property. Vehicle barricades have been ineffective.

G. WILDLIFE

1. Wildlife Diversity

Forty-four small plots were seeded to hybrid sorghum grain, hybrid sudan grass and German foxtail millet. These plots, which were planted in the 20 habitat diversity units in Areas I and III, help to maintain openings and produce a variety of food and cover for deer, quail, turkey, small mammals and songbirds. Portions of seven units totaling approximately 16 acres were disced, limed and seeded to winter wheat. This serves as a cover crop and produces food for many species of wildlife. Fire breaks were disced around some of these units for prescribed burning in the spring of 1983.

2. Endangered and/or Threatened Species

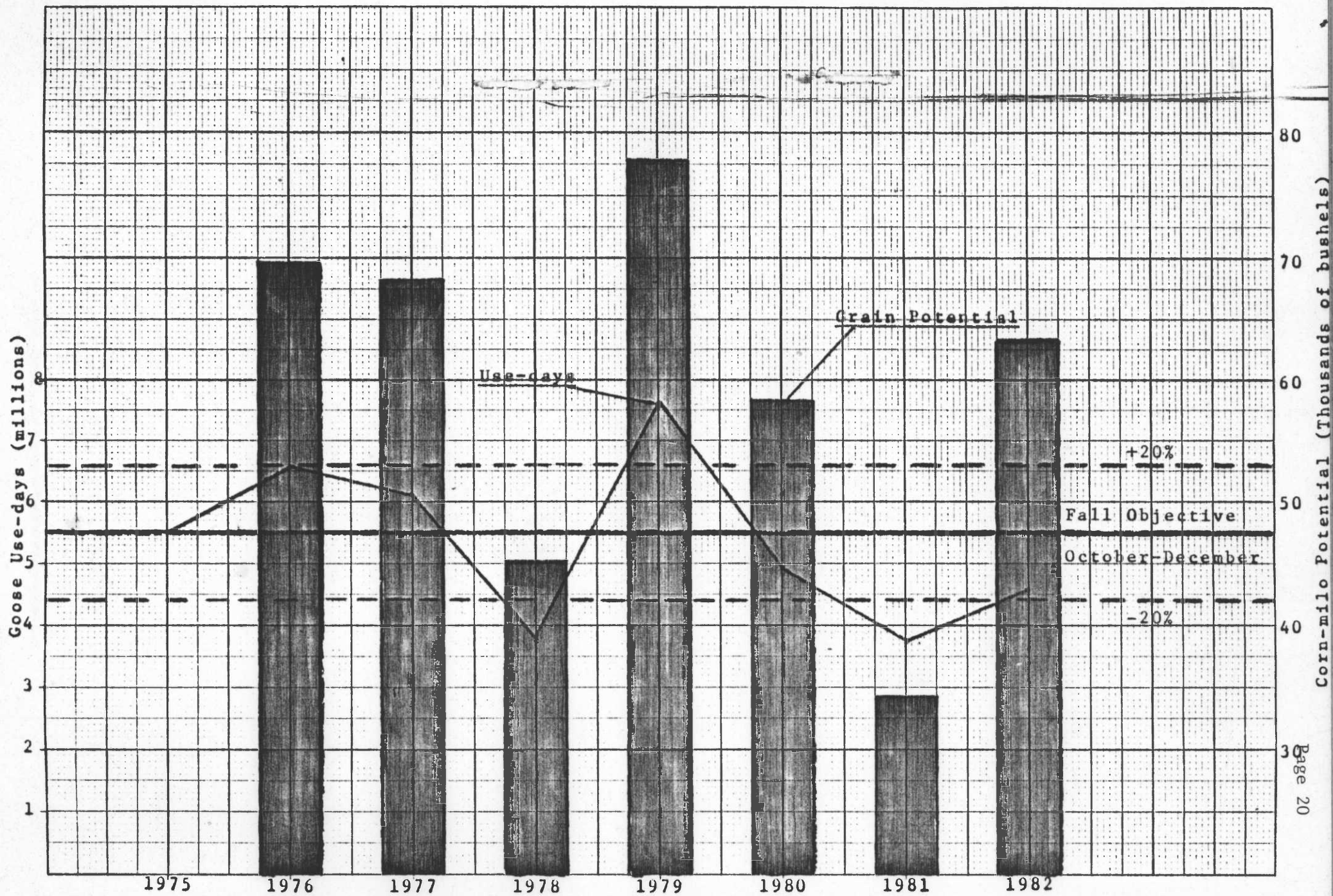
The bald eagle population peaked at 36 birds (16 adults and 20 immatures) in 1982, and use-days totaled 3,171, 1000 more than the objective of 2,172 use-days.

The bald eagle nest located along the shoreline of the Little Creek impoundment produced two eaglets which successfully fledged in late June. A second eagle nest, located six miles southeast of the Little Creek nest along a deciduous forested wetland, was built in November 1981. However, the nest was vacated by both adults in mid-March, and no nesting or territorial activities were observed during the rest of the year.

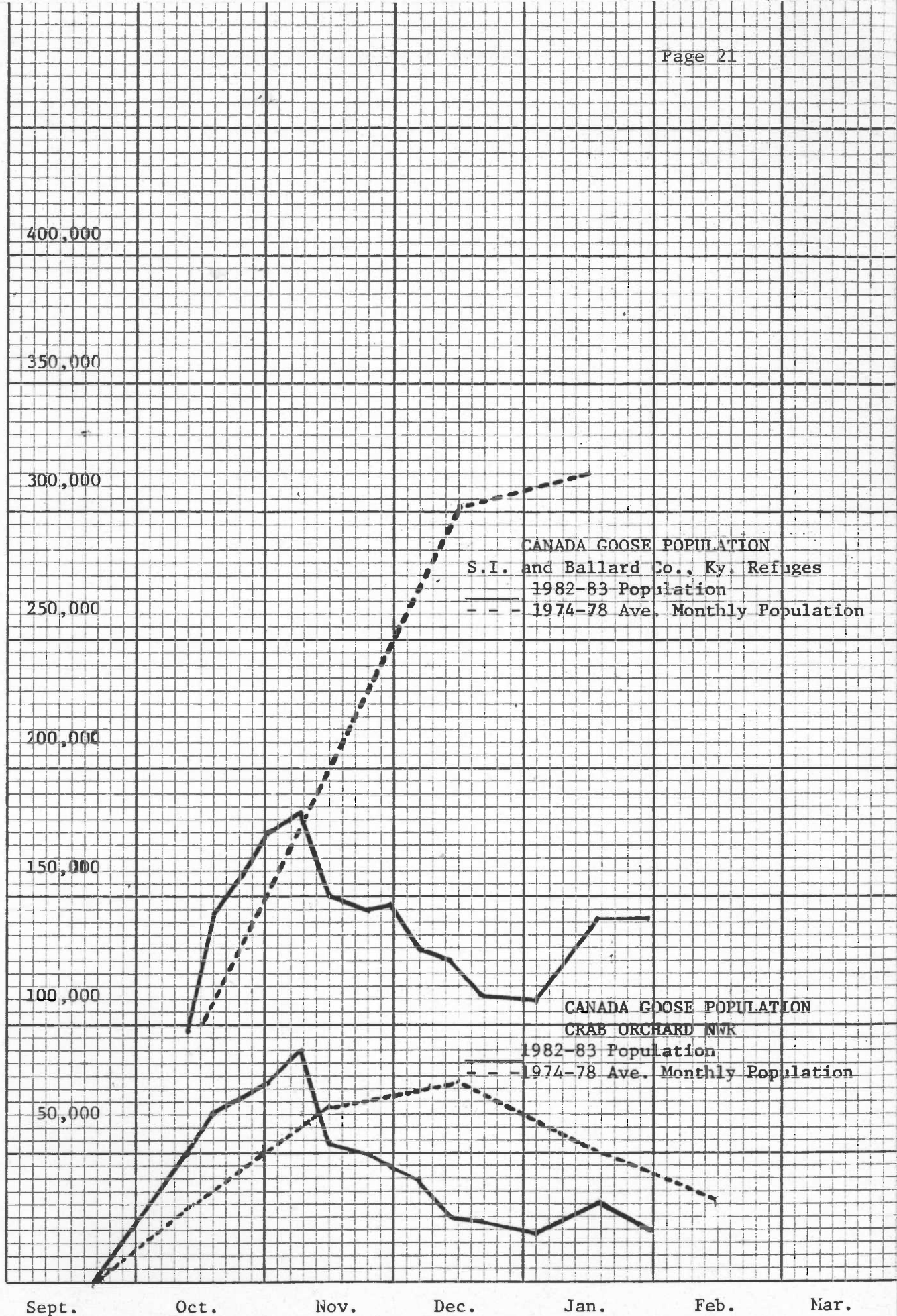
Three other species observed on the refuge in 1982 are currently listed as endangered or threatened by the State of Illinois. Five sightings of the Cooper's Hawk (endangered) during the fall and early winter were encouraging. The Red-shouldered Hawk (endangered) continues to nest in small numbers on the refuge. Loggerhead Shrikes (threatened), which also nest on the refuge, were commonly seen throughout the year.

3. Waterfowl

The Canada goose population of Crab Orchard Refuge peaked at 80,000 on November 10, with a total of 6,028,805 use-days in 1982. The objective for goose use on the refuge is 9,750,000. A reduction in the Mississippi Valley population is partially responsible for falling short of the objective. In addition, the development and maintenance of Rend Lake as a wintering area for Canada geese has drawn some geese away from the refuge. The objective relating to the Mississippi Valley Population Plan is 5,434,600 goose use-days from October through December. In 1982 total use through this period was 4,555,141 use-days.



Relationship between bushels of standing grain and goose use-days.



1982-83 goose populations at Crab Orchard Refuge and in southern Illinois compared to the 1974-78 average.

The downward trend in total duck use continued with the refuge providing 995,979 use-days, far short of the 3,500,000 objective level. Development of additional moist soil units would increase duck use on the area. However, without an increase in waterfowl populations, achieving the 3,500,000 duck use-days will be difficult. The mallard was the most common duck species, and numbers peaked at 9,000 on December 4.

Wood duck production was estimated to be 168, which is a substantial improvement over the 36 produced in 1981. However, the 1982 figure was still far below the 1976-80 average of 375.

The American coot population peaked at 1,000 during October, down from the 1981 high count of 4,000. Corresponding totals for coot use-days were 66,695 in 1982 and 145,300 in 1981.

4. Marsh and Water Birds

Fall numbers of great blue herons peaked at 200, which, although down from last year's high count of 250, is consistent with peak levels established in recent years. Great blue herons remained on the refuge throughout the winter for the sixth consecutive year.

An unusually large horned grebe flight occurred in late November, when 260 grebes were observed near the Crab Orchard Lake spillway.

5. Shorebirds, Gulls, Terns and Allied Species

As in past years, killdeer and pectoral sandpipers accounted for the majority of shorebird use. American avocets were seen in larger than usual numbers, with four late migrants lingering into mid-November. Total shorebird use was 97,270 use-days, down from last year's total of 145,000.

Total gull use-days were 143,000. Bonaparte's gulls stayed throughout December, and a Pomarine Jaeger was identified during the annual Audubon Christmas Bird Count.

6. Raptors

The golden eagle continues to be an uncommon but regular fall and winter visitor, with sightings of both adult and immature birds being recorded. An early bird, immature plumage, arrived in mid-September.

A major population crash of one of the main prey species of the Northern goshawk brought this rare northern accipiter south in the largest numbers since the invasion of 1972-73. Several goshawk sightings were reported on the refuge and in surrounding areas.

An adult Swainson's hawk was observed in early October. This was the first record of this raptor for the refuge.

7. Other Migratory Birds

The annual Audubon Christmas Bird Count revealed that foxtail fields comprise the preferred habitat of wintering Le Conte's sparrows in southern Illinois. The species is presently listed as accidental for the refuge. Over 25 Le Conte's were observed in December.

The Mourning Dove Call Count and North American Woodcock Singing Ground Surveys were conducted by the refuge staff again in 1982. The number of woodcock heard was the same as last year, 4 birds. Only 31 doves were heard, which was down from 1981's total of 63.

8. Game Animals

Area II was opened to 899 shotgun deer hunters who killed 485 deer for a 54 percent success rate, the lowest in the past eight years. The size of the deer herd has essentially declined to the level established by refuge objectives, a significant improvement over 1974, when peak numbers overbrowsed many areas.

Hunting and trapping of raccoon, fox, coyote and other furbearers continued to be an important recreational activity. Trapping of furbearers is by permit in Areas I and III. Trappers killed 20 fox, 96 raccoon, 295 muskrats, 17 beavers, 9 mink, 23 opossum, 5 coyotes and one skunk in the 1982-82 trapping season.

A predator survey was conducted September 21-24 using scent stations baited with a synthetic fermented egg product which is distributed by the Pocatello, Idaho office. This survey, which was originally intended for use on the western rangelands, was found to have limited applicability here.

Trend in relative deer density and hunter harvest on Area II.
Data on deer seen per mile provided by Southern Illinois University.

<u>DEER HARVEST</u>					
<u>Year</u>	<u>Deer/Mile</u>	<u>Total</u>	<u>% Females</u>	<u>Hunters</u>	<u>% Success</u>
1966	2.79	1109	55.4	3819*	
1967	2.52**				
1968	3.48				
1969	4.88				
1970	6.72				
1971	4.78				
1972	7.23				
1973	8.88	796	40.6	1178*	
1974	15.03	1121	46.3	1881*	
1975	6.32	621	42.2	722	73
1976	6.86	612	40.2	718	83
1977	7.07	639	41.0	716	89
1978	6.61	892	46.5	1097	81
1979	4.83	920	53.0	1222	75
1980	3.14	745	51.3	1109	67
1981	3.93	562	49.0	1019	55
1982	2.71	478	48.1	897	53

* Objective level for Area II

* 1966 - 10-day hunt - different hunters each day

1973 and 1974 - 6-day hunt - different hunters each day

10. Other Resident Wildlife

The wild turkey population, which has expanded considerably since the release of two toms and seven hens in 1978 by the IDOC, was hunted for the first time in 1982. A total of 125 permits was issued for Williamson County. Hunters took 11 birds, including eight which were shot on the public hunting area at the refuge.

The Carolina wren has recovered from the severe winters of the late 1970's and is again a common winter resident.

11. Fisheries Resources

The Illinois Department of Conservation stocked 5,000 adult threadfin shad in Crab Orchard Lake and 2,000 in both Little Grassy and Devils Kitchen lakes in a continuing program to improve the quality of fishing on the refuge.

Fisheries Services made 20 crappie sets from discarded Christmas trees and cedar trees cut along Wolf Creek causeway. These sets attract both fish and fishermen in large numbers.

Spring gill netting failed to detect any trout in Devils Kitchen Lake.

The white bass spawning structure on Little Creek appears to be functioning as planned. Water conditions were favorable for reproduction on two occasions in 1982, and creel checks indicate white bass year classes have been produced the past two years.

White bass-stripped bass hybrid day-old fry (700,000) were received from South Carolina for stocking in Crab Orchard Lake. The fry were held at the Southern Illinois fish facilities at Gorham for six days prior to stocking so they could develop to the swim-up stage. Approximately 200,000 fry died before stocking.

14. Scientific Collections

Refuge personnel collected 50 male red-winged blackbirds and mailed the wings to the Denver Wildlife Research Center. The Center examined the wings under ultra-violet light in search of birds marked at Squaw Creek NWR, Missouri, with a fluorescent paint pigment. The Center marked approximately 6,000,000 birds in an effort to determine the migration routes and breeding marshes used by blackbirds.

16. Marking and Banding

A total of 805 Canada geese were captured using rocket nets. Leg bands and neck collars with the prefixes UA, UC, UE, UF and UJ were placed on 500 geese. Leg bands only were placed on 105 geese.

In a FWS cooperative effort to help the Arkansas State Fish and Game Commission establish a local wintering flock of Canada geese, 200 hatch-year birds were captured and held for subsequent transport to Arkansas. These birds will be maintained in captivity for two years and then released back into the wild. It is hoped they will be imprinted to Arkansas as a wintering area. All transportation costs, marking and banding efforts, and maintenance operations were the responsibility of Arkansas State Fish and Game Commission.



Canada geese were captured for banding, and 200 geese were transported to Arkansas. John Robinson (left), Ross Adams and Eric Smith are shown banding.

10/82-8 DJS

H. PUBLIC USE

1. General

Visitor use was 1,251,076 visits, an increase of 57,732 visits, or 5 percent over 1981.

The major emphasis was the continuation of the station sign program, upgrading picnic areas, and the monitoring of concession contracts. Beach concession operations were improved by painting beach houses and shower facilities and by installing new grills. New entrance signs were installed along Wolf Creek Road and at the Devils Kitchen-Lake Tacoma entrance.

Refuge headquarters facilities were used for a trapping workshop, hunter safety course, and waterfowl identification class. More programs will be encouraged during 1983.

2. Outdoor Classrooms - Students

Six youth camps provided Environmental Education programs for 2,000 participants during the summer.

3. Outdoor Classrooms - Teachers

One teacher EE program, instructed by Soil Conservation Service personnel, was held at refuge headquarters with 22 local school teachers in attendance. An EE workshop was also held at refuge headquarters for youth camp instructors. Donna Stanley organized and presented the workshop.

4. Interpretive Foot Trails

The one-mile Chamnesstown School Trail received 21,100 visits during the season.

5. Interpretive Tour Route

There are no interpretive auto tour routes on the refuge. Conducted auto tours were provided on a limited basis for 1,118 visitors. Area II was opened for a one-day, self-guided auto tour, and 1,446 visitors drove the seven-mile route.

6. Interpretive Exhibits

The refuge fire station and the headquarters serve as visitor contact stations. Visitors stopping at these locations for information and to view exhibits numbered 44,000. Three evening campground slide shows were presented to approximately 115 campers. Interpretive exhibits were provided for National Hunting and Fishing Day, and the Girl Scout, Future Farmers of America, and Boy Scout camps. The exhibits were viewed by approximately 760 people.

Recreation and fishing reports were given to local radio stations on Thursdays. Radio programs in 1983 will be limited to the Memorial Day to Labor Day period.

7. Other On-Refuge Programs

The refuge sponsored a hunter safety course for 95 young people, and a trapping clinic was held with 30 attending.

8. Hunting

Big Game

For Area II, 500 permits were issued for each three-day deer gun season. For the November season, 467 hunters took 253 deer (54% success). During the December season, 432 hunters took 232 deer (also 54% success). On Areas I and III an estimated 1,400 hunters killed 499 deer (36% success) during these shotgun hunts. There were an estimated 3,000 archery hunter visits from October 1 through December 31. No success rates are available.

Migratory Birds

The Canada goose quota for the four-county southern Illinois zone was 17,500, which was 6,500 less than 1981 and 10,500 less than 1980. Many people speculated that the season would go only two weeks, but it lasted the entire November 8-December 17 season, with 17,863 geese being registered. On the three refuge controlled hunting areas, 149 geese were taken by 1,386 hunters (11% success). Also, an estimated 3,414 goose hunting and 8,200 duck hunting visits occurred on the refuge. Two major State of Illinois regulation changes took effect in 1982. One was that areas outside the quota zone had a daily bag limit of one goose per day. The quota zone limit remained at two. The second regulation was that non-commercial hunters no longer had to register or report their kill. The State came up with a formula, based on goose kill statistics over the past several years, to arrive at a final harvest figure. They add 35 percent to the commercial club kill to arrive at a total for the quota zone.



Daily drawings were held for 42 goose hunting blinds. Mark Koepsel (left), Eric Smith, and John Robinson worked with the program.

11/82-9

DJS

Upland and Small Game

An estimated 1,885 hunters participated in upland and small game hunting.

9. Fishing

An estimated 248,000 fishing visits occurred on the refuge. Other than wildlife observation, fishing is the most popular recreational activity. Largemouth bass, crappie, bluegill and catfish are the most popular species taken. Several 8 lb. largemouth bass were taken from Devils Kitchen Lake during the spring. Three sanctioned bass tournaments were again held on the refuge, with 1,028 fish being caught by 666 fishermen. All fish were returned to the lake.

10. Trapping

Nineteen trapping permits were issued and reported. Four permittees did not trap. Trapping was poor due to high waters. A refuge trapping workshop was attended by 30 people and instructed by Dave Charles, State Conservation Officer, and Ron Ogden of the Springfield Wildlife Assistance Office.

11. Wildlife Observation

An estimated 549,515 wildlife observation visits occurred during 1982. Three established observation areas include the observation towers on State Highway 148; the Display Pond on Wolf Creek Road, and the Wolf Creek Causeway. In addition to these areas, the open roads within the closed part of the refuge accommodate a considerable amount of visitor traffic viewing deer and geese.

13. Camping

Camping increased 28,072 visits over 1981 to 93,590 visits. The Crab Orchard Campground concessionaire requested termination of his contract, and this was accomplished October 31, 1982. A new contract has been written and is being advertised. New contracts for Little Grassy and Devils Kitchen campgrounds will be written in 1983.

14. Picnicking

An estimated 95,500 picnickers used the eight refuge picnic areas. Twenty-five new tables were obtained from the Corps of Engineers and installed at Cambria Neck, Greenbriar, and Old Route 13. Restroom renovation, parking lot development, and more maintenance personnel are needed to complete the upgrading of these areas.

15. Off-Road Vehicles

Vehicle trespass continues to cause problems in the Wilderness Area. Additional barricades will be necessary to stop this activity.

16. Other Non-Wildlife Oriented Recreation

Swimming, boating and water skiing visits to the refuge are estimated at 142,000.

17. Law Enforcement and Fires

There were 107 citations written during the year. The number of serious incidents and violations dropped drastically again this year. The only significant case involved two individuals in possession of a large amount of drugs. The individuals were prosecuted in state court, but the charges were dropped during the preliminary hearing due to "tainted evidence".

The refuge fire department responded to nine fire calls during 1982. They included three grass fires, one building fire, and five sprinkler alarm malfunctions. The most significant fire came on September 6 when the new recreation building at the U. S. Prison burned. The building was totally destroyed, and later investigation revealed the fire was started as a diversion to aid in a prison escape.

The refuge fire station serves as an industrial fire fighting department and as the refuge visitor contact station. During 1982 the station provided information or services to over 17,000 walk-in visitors.

During 1982 a new Siamese valve for Pumper #12 was purchased and installed, fire evacuation plans were prepared for refuge headquarters, the pumper room was repainted and fluorescent lights installed, and fire training was provided to qualified refuge staff.



Fire Chief DeJulio showing new Siamese connection for use with fire hydrants.
10/82-10 DJS

TR Code				Organization Number					Name				Report Period			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Yr	Mo	
3	0	1	0	3	3	6	1	0	0	0	0	C	R			

PUBLIC USE REPORT

CALENDER YEAR-1982

Page 1 of 3

OUTPUT TYPE	LINE CODE										NO. VISITS	ACTIVITY HOURS	NON-STD TOT. HRS
	18	19	20	21	22	23	24	25	26	27-35			
INTERPRETATION													
Wildlife Trails - Nonmotorized													
Self Guided	0	1	1	0	0	0	0	P	S	21100	21100		
Conducted	0	1	2	0	0	0	0	P	C				
Wildlife Tour Routes - Motorized													
Self Guided	0	2	1	0	0	0	0	P	U				
Conducted	0	2	2	0	0	0	0	P	T	1118	2124		
Interpretive Center	0	3	0	0	0	0	0	P	R				
Visitor Contact Station	0	4	0	0	0	0	0	P	Q	29700	6287		
Interpretive Exhibits - Demonstra													
Self Guided	0	5	1	0	0	0	0	P	A	44000	7275		
Conducted	0	5	2	0	0	0	0	P	M				
Other On-Refuge Programs	0	6	0	0	0	0	0	P	P	2497	2193		
ENVIRONMENTAL EDUCATION													
Students	1	0	0	0	0	0	0	P	E	2005	7210		
Teachers	1	1	0	0	0	0	0	P	B	22	110		
RECREATION-WILDLIFE CONSUMPTIVE													
Hunting Mig. Birds - Waterfowl													
Ducks	2	0	1	0	0	0	0	P	D	8200	32800		
Geese	2	0	2	0	0	0	0	P	G	4800	28800		
Swans	2	0	3	0	0	0	0	P	N				
General Waterfowl	2	0	4	0	0	0	0	P	W				
Hunting Mig. Birds - Other	2	0	5	0	0	0	0	P	X	220	660		
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z				

Region _____ Station _____ Date Prepared _____

Name _____

Fish and Wildlife Service
Division of Wildlife Refuge

TR Code				Organization Number					Name					Report Period	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Yr	Mo
3	0	1	0						0	0					

PUBLIC USE REPORT

Page 2 of 3

OUTPUT TYPE	LINE CODE										NO. VISITS	ACTIVITY HOURS	NON-STD TOT. RE
	18	19	20	21	22	23	24	25	26	27-35			
RECREATION-WILDLIFE CONSUMPTIVE (c't)													
Hunting Resident Game													
Upland Game Birds	2	1	1	0	0	0	0	P	L	700	4200		
Big Game				(Species Code)									
Deer - Gun	2	1	2	8	5	4	0	P	H	2300	18400		
Deer - Bow	2	1	3	8	5	4	0	P	J	3000	12500		
	2	1	4					P	K				
	2	1	4					P	K				
	2	1	4					P	K				
	2	1	4					P	K				
Small Game	2	1	5	0	0	0	0	P	Z	1185	4430		
Other Game	2	1	6	0	0	0	0	P	U				
Trapping	2	1	7	0	0	0	0	U	G	694	1756		
Fishing													
Warmwater	2	2	1	0	0	0	0	U	W	248000	1131000		
Coldwater	2	2	2	0	0	0	0	U	C				
Saltwater	2	2	3	0	0	0	0	U	S				
Clams, Crabs, Oysters, Frogs	2	2	4	0	0	0	0	U	Y				
Other Consumptive Wildl. Rec.	2	3	0	0	0	0	0	U	M	90	160		
RECREATION-WILDLIFE NON-CONSUMPTIVE													
Camping	3	0	0	0	0	0	0	U	H	28072	33664		
Picnicking	3	1	0	0	0	0	0	U	B	19555	39110		
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z				

Region _____ Station _____ Date Prepared _____

Name _____

Form 3-239b
Rev. 12/75

Fish and Wildlife Service
Division of Wildlife Refuge

PUBLIC USE REPORT

TR Code				Organization Number					Name				Report Period		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Yr	Mo
3	0	1	0						0	0				15	17

Page 3 of 3

OUTPUT TYPE	LINE CODE										NO. VISITS	OUTPUT UNITS	NON-STD TOT. REU
	18	19	20	21	22	23	24	25	26	27-35	36-45	46-55	
RECREATION-WILDLIFE NON-CONSUMPTIVE											Act.Hr.		
Wildlife/Wildlands Observation													
Foot	3	2	1	0	0	0	0	U	E	16700	16700		
Land Vehicle	3	2	2	0	0	0	0	U	N	525000	525000		
Boat	3	2	3	0	0	0	0	U	L	7200	12200		
Other	3	2	4	0	0	0	0	U	P				
Photography	3	3	0	0	0	0	0	U	T	615	1200		
Field Trials	3	4	0	0	0	0	0	U	X				
RECREATION - NON-WILDLIFE													
Camping	4	0	0	0	0	0	0	R	C	65518	786216		
Picnicking	4	1	0	0	0	0	0	R	P	75945	132445		
Swimming	4	2	0	0	0	0	0	R	S	62640	67225		
Boating	4	3	0	0	0	0	0	R	B	58200	170400		
Waterskiing	4	4	0	0	0	0	0	R	W	22000	44000		
Off Road Vehicling	4	5	0	0	0	0	0	R	V				
Other	4	6	0	0	0	0	0	R	M				
TOTAL VISITS TO REFUGE	0	9	0	0	0	0	0	P	V	1251076			
FISH & WILDLIFE INFORMATION											Per.Sats		
Public Inquiries	5	0	1	0	0	0	0	F	P		18843		
News Releases	5	0	2	0	0	0	0	F	N		12	12000	
Personal Appearances	5	0	3	0	0	0	0	F	A		30	30000	
Professional Services	5	0	4	0	0	0	0	F	S		28	34000	
Exhibits	5	0	5	0	0	0	0	F	E		4	4000	
CONTROL TOTALS	9	9	2	0	0	0	0	R	Z				

Region _____ Station _____ Date Prepared _____

Name _____

19. Concessions

Concession operations continued at Little Grassy, Devils Kitchen, and Crab Orchard campgrounds. Concession operator Dwight McCurdy requested that his contract be terminated for Crab Orchard Campground after three years of the five-year contract. Bids will be taken for a new concession operator. Revenue for the government from the three concession operations was approximately \$30,000, which is between 1% and 3% of gross receipts, depending upon contracts and sales.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

Three contracts were awarded for removal of obsolete buildings and facilities. Excavating Services of Carbondale bid \$51,400 to clean up the Fiberlite area consisting of 20 acres and 88,000 square feet of burned-out buildings. Ed's Construction Company of East St. Louis bid \$21,000 to destroy and bury the 10,000 square feet melt-pour building near Fiberlite. Vander Trucking Company of Herrin bid \$20,165 to remove two small buildings, a 250,000 gallon water tower and sewage lift station in the Trojan Corporation area.

Willis Trucking of Anna placed 9,749 tons of CA-10 gravel on eight miles of road in Area 6 at a cost of \$43,311.

Altitude valves were replaced in the three 250,000 gallon water towers by Homoya Construction Company of Carterville at a cost of \$36,405.

3. Major Maintenance

Sheets of 1½" styrofoam insulation were placed on the shop ceiling during the winter. Roll-type insulation, originally installed, began to sag, but the new sheets will increase the insulating factor and hold the roll insulation in place.

Problems with plastic items coming into sewage lift stations from the penitentiary continued. Penitentiary facilities personnel are working to correct the problem either by installing more screens or a grinder in the line.

4. Equipment Utilization and Replacement

Major equipment purchases included: two Massey Ferguson 245 tractors, two ½-ton pickup trucks, one sedan vehicle, and three mobile radios.

6. Energy Conservation

Gas/diesel fuel use was 17,450 gallons with an allotment of 25,930 gallons. Use for 1981 was 18,400 gallons, and annual gas use alone was approximately 24,000 gallons prior to 1980.

A building energy audit was conducted March 22-23 by Joe Knecht of Minneapolis and Les Cunningham of the Washington office. No report was received.

Energy Conservation Consultants of Bloomington, Minnesota were contracted by the Regional Office to conduct an evaluation of refuge building energy systems in January. No report was received at the station.

J. OTHER ITEMS

1. Cooperative Programs - Industry

The refuge Industrial Policy is being implemented with increased rental rates and improvement of facilities being the major features. Trojan Corporation moved out of Area 12, making that area and Area 11 vacant. All facilities in these areas will be removed, and approximately 20% of refuge water/sewer lines will be eliminated. Manpower Training moved from an area south of Crab Orchard Lake to the old refuge shop facility. Building rental demand has increased slightly over late 1981 and early 1982.



Industrial tenants are improving the visual appearance of buildings in the area, as directed by the new Refuge Industrial Policy.

9/82-11

DTC



Olin Corporation area south of Crab Orchard Lake is being kept up to standards (top photo). Trojan Corporation vacated Area 12 (bottom photo), and facilities will be removed.

8/82-12 and 13 GHU



2. Items of Interest

Annual law enforcement training was held in April for refuge employees in Illinois and Missouri with law enforcement authority.

3. Credits

Sections of this report were written as follows: A-C, E, I, and J - Updike, D and F - R. Adams, Stapleton and Robinson, and H - Cameron, Priest and DeJulio. Updike edited, and Bonnie typed and assembled this report.