

CRAB ORCHARD NATIONAL WILDLIFE REFUGE

Cartersville, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1981

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

APR 21 1982

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



Front Row (left to right)

27. Jim Cox
36. Doyle Case
21. Dan Eastman
2. Jerry Updike
9. Lonnie Priest
7. Jim Cameron
20. Roy Taylor
1. Wayne Adams

Middle Row (left to right)

10. Joe DeJulio
39. Terry Rendleman
24. Bob Venegoni
32. Chuck Adams
33. Gilbert Hanks
41. Karon Keeler
8. Donna Stanley
37. Bonnie Dungey

Back Row (left to right)

28. Bob Howell
26. George Beckwith
13. Layman Summers
3. Ross Adams
31. Ray Goldsmith
34. Russell Massie
40. Bob Swidergal
5. George Stapleton
38. Marsolie McCarty

Crab Orchard NWR Personnel - 1/9/82

1. Wayne D. Adams	Project Manager	GS-13	PFT
2. Gerald H. Updike	Assistant Project Manager	GS-12	PFT
3. N. Ross Adams	Wildlife Biologist	GS-11	PFT
4. James R. Rice	Biological Technician	GS-9	PFT
5. George Stapleton	Biological Technician	GS-6	PFT
6. VACANT	Forestry Technician	GS-6	
7. James T. Cameron	Outdoor Recreation Planner	GS-11	PFT
8. Donna J. Stanley	Outdoor Recreation Planner	GS-7	PFT
9. Lonnie S. Priest	Park Technician Supervisor	GS-7	PFT
10. Joe DeJulio	Park Technician	GS-5	PFT
11. Sam Milazzo	Park Technician	GS-5	PFT
12. VACANT	Park Technician	GS-5	
13. Layman Summers	Fire Chief	GS-7	PFT
14. Jim Brush	Fire Fighter-Structural	GS-5	PFT
15. Carl Chew	Fire Fighter-Structural	GS-5	PFT (CS)
16. Lewis Gass	Fire Fighter-Structural	GS-5	PFT
17. Gene Shew	Fire Fighter-Structural	GS-5	PFT
18. Jack Stephens	Fire Fighter-Structural	GS-5	PFT
19. Bob Webb	Fire Fighter-Structural	GS-5	PFT (CS)
20. Roy Taylor	Maintenance Foreman	WS-8	PFT (CS)
21. Dan Eastman	Electrician	WG-10	PFT
22. Jim Smith	Equipment Operator	WG-9	PFT
23. VACANT	Equipment Operator	WG-9	
24. Bob Venegoni	Carpentry Worker	WG-7	PFT
25. Bob Woodsum	Maintenance Worker	WG-7	PFT
26. George Beckwith	Maintenance Worker	WG-7	PFT (CS)
27. Jim Cox	Utility System Operator	WG-9	PFT
28. Bob Howell	Utility System Operator	WG-9	PFT
29. Jim Newbury	Utility System Operator	WG-9	PFT
30. Bill Stacey	Utility System Operator	WG-9	PFT
31. Ray Goldsmith	Automotive Shop Foreman	WS-8	PFT
32. Chuck Adams	Automotive Worker	WG-9	PFT
33. Gilbert Hanks	Automotive Worker	WG-9	PFT
34. Russell Massie	Automotive Worker	WG-9	PFT

Personnel (Cont.)

35. Bill Holup	Administrative Officer	GS-11	PFT
36. Doyle Case	Contract Specialist	GS-11	PFT
37. Bonnie Dungey	Secretary-Stenography	GS-5	PFT
38. Marsolie McCarty	Clerk-Typist	GS-4	PFT
39. Terry Rendleman	Administrative Technician	GS-7	PFT
40. Bob Swidergal	Supply Technician	GS-5	PPT
41. Karon Keeler	Clerk-Typist	GS-3	PPT

Biological Aid - GS-3 - Controlled Goose Hunt:

Doug Allen, Carbondale, Illinois - 11/2-12/31.

Bruce Andrews, Fly Creek, New York - 11/2-12/22.

Karen Uyeno, Carbondale, Illinois - 11/2-12/31.

Review and Approvals

Wayne D. Coburn 2-23-82
Submitted By Date

Donald S. Young 3/5/82
Area Office Review Date

Calvin R. De 4-13-82
Regional Office Review Date

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K. FEEDBACK

Nothing to Report

A. HIGHLIGHTS

Two bald eagles were fledged, and a second bald eagle nest was established. (Section G.2)

Refuge personnel moved into the new office-shop complex on April 6. (Section I.1)

The first refuge industrial operations policy was approved in Washington December 1. (Section D.1)

Fifteen former staff houses were removed from the refuge (Section I.2)

Industrial buildings, 88,000 square feet, leased to Fiberlite Corporation, burned March 28. (Section H.17)

High concentrations of lead were found in deer livers and soil samples in Area II. (Section F.1)

B. CLIMATIC CONDITIONS

An 18-month drought period which began in 1979 (36" precipitation for 1979) was broken in May when 12.71" of rain fell. Prior to May, local cities curtailed and even rationed water use as reservoirs were down 10' or so below spillway. The City of Marion reservoir was low, and emergency pumping of raw water from Crab Orchard Lake to the city reservoir occurred January through May.

The winter was mild with no snow cover or frost more than 4". Heavy thunderstorms May through July caused heavy soil erosion as many crop fields had not been planted or seeds did not germinate. The last frost was mid-March, and the first fall frost was October 3 - 200 frost-free days.

Precipitation was 43.82", and temperatures were mild with a low of 13° and high of 92°. Average annual precipitation is 46".

B. CLIMATIC CONDITIONS (Cont.)

<u>Month - 1981</u>	<u>Temperatures (F)</u>		<u>Precipitation (inches)</u>	
	<u>High</u>	<u>Low</u>	<u>Snow</u>	<u>Rain</u>
January	49	15	2	1.23
February	59	16	-	1.94
March	64	25	-	1.10
April	80	38	-	1.77
May	80	44	-	12.71
June	90	58	-	5.49
July	92	64	-	8.33
August	87	62	-	2.89
September	85	51	-	0.28
October	76	32	-	2.83
November	56	30	-	2.17
December	50	13	-	<u>3.09</u>
				43.83

Lake Elevations:

	<u>Crab Orchard</u>	<u>Devils Kitchen</u>	<u>Little Grassy</u>
Spillway Elevation	405.0	510.0	500.0
Maximum Elevation	406.2	511.3	500.9
Date of Maximum	5-20-81	5-19-81	5-19-81
Minimum Elevation	404.3	508.9	498.5
Date of Minimum	1-15-81	1-15-81	11-30-81

The expanded Little Grassy Fish Hatchery of the Illinois Department of Conservation (IDOC) drew a substantial amount of water from Little Grassy Lake beginning in September.

D. PLANNING1. Master Plan

The master plan and environmental assessment were completed and approved in 1979. The industrial policy, originally approved in January 1980, was again reviewed by industrial tenants and personnel from the Kansas City

D. PLANNING (Cont.)

Area Office (AO), Minneapolis Regional Office (RO), and Washington Office in June. Differences were settled, and the final Crab Orchard Industrial Policy was approved for implementation in December. The policy calls for fair market value rental rates, improved maintenance standards, elimination of scattered facilities by 1990, cleanup of the area, and also defines types of industry permitted. The long-range goal is consolidation of industry into a 250-acre site by 2000.

2. Management Plans

The interpretation and recreation (I & R) prospectus, begun under contract in 1979, was delivered by Hanna, Silvy and Associates in July. Throughout the planning process there were differences of opinion between the refuge staff, RO personnel, and the planners. These differences revolved around interpretation of 1947 legislation creating the refuge, past history of this area, and application of refuge system guidelines to this specific refuge. Differences in the prospectus should be resolved before final approval and implementation of the plan.

A fisheries management plan was submitted to the AO in December 1980. The plan is being reviewed by fisheries assistance personnel.

A fur management trapping plan was submitted. The annual amendment portion was approved, and the general plan returned for revision.

Work began on a cropland management plan by refuge and AO personnel. Cooperative farmers, local agricultural agencies, and Southern Illinois University (SIU) personnel have provided information for this plan.

4. Compliance with Environmental Mandates

An environmental assessment was prepared for modification of the IDOC fish hatchery road across refuge lands.

Archeological/historical studies were conducted by McNerney Associates of Carbondale for the boiler house and staff houses removal projects.

5. Research and Investigations

Crab Orchard NR81- "Microhabitats of Small Mammals in Southern Illinois" (33610-42). The investigator sampled second growth forest on the refuge and identified 35 species of birds and three small mammals. He subjected the data to a series of statistical analyses and concluded that management should maintain a variety of successional stages for wildlife habitats in a given area. The study resulted in a thesis entitled "Habitat Relationships of Birds and Small Mammals in Second Growth Forests" by Dean Urban, SIU.

D. PLANNING (Cont.)

Crab Orchard NR81- "White-tailed Deer Fawn Survival in Southern Illinois" (33610-43). Field work continued for the second year of this three-year study. Dr. Alan Woolf, SIU, is the principal investigator.

Crab Orchard NR81- "Effects of Swareflex Highway Warning Reflectors on Behavior and Mortality of White-tailed Deer" (33610-44). Field observations were completed, and a final report is expected in 1982. Dr. George Waring, SIU, is the principal investigator.

Crab Orchard NR81- "Ecology of Bald Eagles Wintering in Southern Illinois" (33610-45). Neil Sabine of SIU found Canada goose remains in 80% of the eagle pellets collected on Crab Orchard Refuge. Sabine recommended that road-killed deer be placed in foraging areas for eagles during periods of heavy ice cover. The refuge does not agree with this recommendation. Sabine located a roost site in the NE $\frac{1}{4}$, Sec. 11, T10S, R1E. He recommended preservation of the roost and adjacent windbreaks.

Crab Orchard NR81- "Movements of Canada Goose Subflocks in Relation to the Southern Illinois Quota Zone". Radio packs were placed on 15 geese by Dana Anderson of SIU and their movements were monitored.

E. ADMINISTRATION1. Personnel

Personnel changes included:

- 1/10/81 - Harvey Carner, Utility System Operator, retired, 30 years.
- 5/31/81 - Bob Howell, Plumber, transferred to Utility System Operator.
- 8/9/81 - Art North, Park Technician, transferred to Delaware Water Gap National Park, Pennsylvania.
- 9/18/81 - Jim Brush, transferred from Crab Orchard YACC to Fire Fighter-Structural.
- 1/9/82 - George Beckwith, Maintenance Worker, transferred from Corning NFH, Arkansas.

E. ADMINISTRATION (Cont.)

Harvey Carner, retired with over 30 years service, shown with Project Manager Adams and Mrs. Carner.

1/81-1 GHU

There were three vacancies: Park Technician, Forestry Technician, and Equipment Operator, at year's end. Young Adult Conservation Corps (YACC) personnel, five permanent employees, were terminated October 1.

Personnel on board for the past five years included:

<u>Year</u>	<u>Full-Time</u>	<u>Part-Time</u>	<u>Temporary</u>
1981	32	6	3
1980	32	6	6
1979	35	7	11
1978	35	7	10
1977	39	1	12

Charles Surprenant, Fisheries Biologist, moved his office from Princeton, Indiana to the sub-headquarters building. His work involves fisheries management under the AO.

2. Youth Programs

For the first summer in ten years there was no Youth Conservation Corps program. The YACC program terminated October 1, but 13 remaining enrollees will complete their one year of employment under refuge supervision. YACC did the landscape work around the new headquarters complex.

5. Funding

Program management makes it difficult to present costs accurately, especially with the industrial program included. Expense for sales funds were \$218,000, but \$350,000 was required to operate the industrial complex. The remaining funds came from migratory birds and recreation funds. However, the base Fish and Wildlife Service (FWS) budget, before program management and before expense for sales funds were received, included funds for industrial operations. Industrial receipts could reach \$1 million within a few years.

Funds received have decreased \$30,000 since FY-80. To keep up with inflation, vacant positions have not been filled or positions have been left vacant for longer periods of time, and work projects have been cancelled.

Funding levels 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>
Migratory Birds	507,700	691,000	758,000	721,000	698,000
Mammals/ Birds	111,200	116,000	116,000	103,000	196,000
Recreation	280,300	301,000	260,000	200,000	150,000
Total O & M	899,200	1,108,000	1,134,000	1,024,000	1,044,000
Expense for Sales	18,000	18,000	160,000	179,000	218,000

* Subject to reduction as final appropriations bills are passed.

Refuge receipts for the past five years were:

	<u>FY-77</u>	<u>FY-78</u>	<u>FY-79</u>	<u>FY-80</u>	<u>FY-81</u>
Building Rent	223,665	264,948	242,449	275,013	374,870
Water	36,051	34,919	29,264	35,512	42,696
Sewer	17,089	16,301	15,970	15,458	21,927
Total Industrial	276,805	316,165	287,683	325,983	439,493
Wildlife	18,172	9,023	7,461	8,741	7,410
Recreation	19,166	31,652	31,652	24,424	33,687
Total Refuge Receipts	314,143	357,211	326,796	359,148	480,590

Payments to counties under the Refuge Revenue Sharing Act for FY-81 were: Williamson - \$198,088, Jackson - \$2,485, and Union - \$3,484.

6. Safety

There were no known fatalities during 1980 or 1981. In 1978 and 1979 there were three fatalities each year.

The Scott Davis case continued. Mr. Davis jumped into Devils Kitchen Lake on September 18, 1978, hit a submerged rock, broke his neck, and filed a \$10 million tort claim. The lake is closed to swimming because of hazards. Nancy Needles of the U. S. Attorney's office in Chicago represented the government and assisted while depositions were taken from Davis in California and from refuge and RO personnel. Witnesses visited the site, and Don Reilly, RO photographer, made a video tape of the area. The case was heard before a judge in Chicago in January 1982, and Wayne Adams and Lonnie Priest testified. The judge absolved the government of any willful wrongdoing and said Davis was negligent in the accident. However, under Illinois law, the federal judge found the government 25% responsible, with a final dollar settlement yet to be determined. The government may appeal the award on the grounds that Illinois state law was used.

A claim of \$129 was paid a Carbondale individual for injuries sustained by a fall into an open spillway culvert at North pasture pond. Another individual claimed a rock from a refuge truck hit and broke his windshield. However, he has failed to return the signed tort claim forms.

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

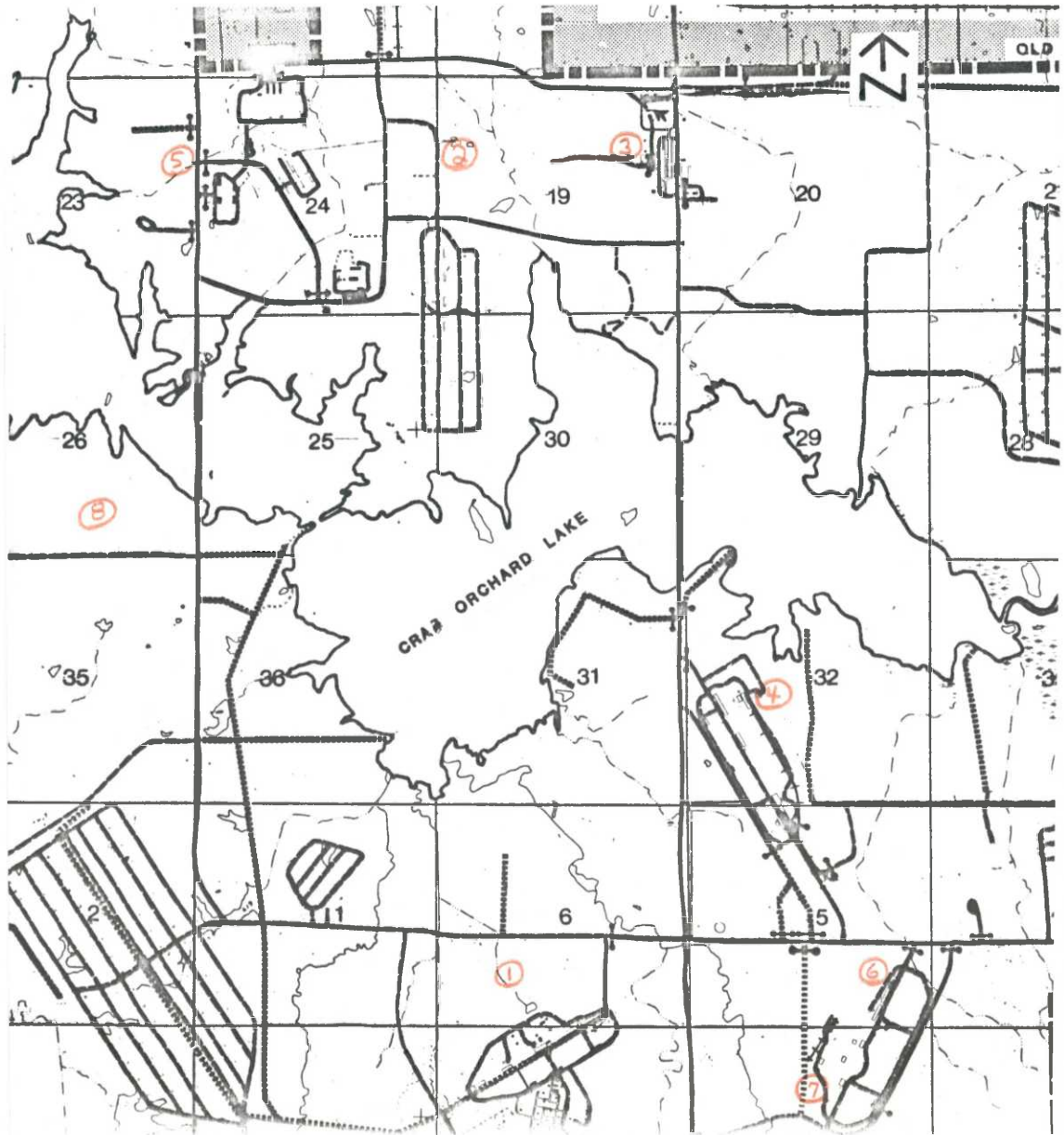
F. HABITAT MANAGEMENT1. General

Southern Illinois University and IDOC analyzed 131 deer livers collected at the deer check stations in 1980. Average lead levels of livers from the Area II deer were 5.59 parts per million.

Refuge personnel took soil samples from eight suspected problem areas (see map for sample locations) and found four to be high. The four contaminated samples and levels of lead in parts per billion (ppb) were: (1) U. S. Powder Area - 50, (2) refuge sewage sludge - 222, (3) Supreme Plating area - 284, and (4) old Sangamo Electric dump area - 3,644. Thirty samples analyzed from in and around the two acre Sangamo dump area indicated that lead contamination was limited to the actual site and had not moved. Samples from the dump debris tested from 403 to 11,340 ppb, whereas samples on the periphery ranged from 13 ppb to 59 ppb. These soil samples were tested for lead only by the Illinois Department of Public Health.

Mr. Hart of Murphysboro, a purchasing agent for Sherwin-Williams Company during the 1940's said he ordered hundreds of tons of arsenate of lead and Paris green for insect control in Area II during the early 1940's. A former employee of Olin Corporation suggested that lead linings surrounding nitroglycerine could have contaminated the area during three explosions in the firm's history at Crab Orchard NWR.

Deer tissues from Area II were slightly higher in cadmium, cobalt, chromium, copper, magnesium, manganese, and nickel than tissues collected elsewhere in Illinois.



Area II soil sample locations to test for lead. Samples in the "high" range were: (1) U. S. Powder Area, (2) refuge sewage sludge, (3) Supreme Plating area, and (4) old Sangamo Electric dump. Samples in the "normal" range were: (5) Wolf Creek Road area, (6) Diagraph area, (7) Fiberlite area, and (8) Hampton Road area.

F. HABITAT MANAGEMENT (Cont.)

2. Wetlands

While altering a culvert under Interstate 57, the Illinois Department of Transportation inadvertently drained a 35-acre beaver impoundment. The impoundment, located south of Crab Orchard Creek and east of the Interstate highway, was a valuable wildlife area and important for wood duck production. Upon request, the department restored the wetland in October by installing stoplogs.



Stoplog structure on I-57 installed by state Highway department to re-flood 35-acre wetland.

11/81-2 NRA

The A-41 moist soil units produced a fair crop of rice cutgrass, millet and smartweed. The south unit at Pigeon Creek produced good millet and smartweed but received little waterfowl use because there was inadequate rainfall to flood it until early winter.

F. HABITAT MANAGEMENT (Cont.)3. Forests

The removal of 723 cords of shortleaf pine by a commercial operator was nearly completed. This 73-acre sale completes the thinning of plantations southwest of Devils Kitchen Lake and was the last sale prepared by the Forestry Technician before retirement. Another 500 acres south of Crab Orchard Lake has been identified for thinning.

A heavy outbreak of canker worms was responsible for defoliation of many trees for the second consecutive year. Although most trees recovered, there was a noticeable reduction in mast production.

Free firewood permits were written to local citizens on Thursday mornings in the spring and fall. From January through March, 113 permits were issued for two pickup loads to be cut in a one-week period. From October through December, 77 permits were issued for one pickup load to be cut in one day. Approximately 150 cords of firewood were removed.

Diseased trees, 363, were removed from the campgrounds and other recreation areas by a local tree service company for \$1800.

4. Croplands

Adverse weather had a dramatic impact on the cropland program. Rains set in on May 9 and continued without a drying spell through early July. Crops planted before the rains produced average yields, however 262 acres of milo planted in early July was a complete failure because of frost on October 3.

Four farmers prepared seed beds on 1,052 acres but planted nothing before the rains. Heavy soil losses occurred on many of these fields, and the Soil Conservation Service was asked to examine the fields and provide recommendations to reduce subsequent soil losses. Unplanted fields grew up in a nearly monotypic stand of foxtail with some smartweed. There was practically no goose use in these fields.

F. HABITAT MANAGEMENT (Cont.)

Soil erosion was severe on croplands worked up but not planted because of heavy rains.

6/81-3 NRA

The following is a summary of cropland acreage:

<u>Crop</u>	<u>Acres</u>	<u>Yield (bu./ac.)</u>	<u>Refuge Share</u>
Corn	1,210	73.3	22,200
Milo (grain sorghum)	1,222	50.1	14,500
Not Planted	1,103		
Red Clover	2,050	820 tons	
Wheat	20		

A survey of row crops on December 31 indicated that 2,614 bushels (7%) of grain remained in the fields. All of this grain was milo in unbroken blocks and, therefore, not particularly attractive to geese.

F. HABITAT MANAGEMENT (Cont.)

The following amounts of lime and fertilizer were added to refuge crop fields:

<u>Compound</u>	<u>Tons</u>
Di-ammonium nitrate	10.7
Anhydrous ammonia	69.0
Potash	114.5
Phosphorus	47.0
Starter Fertilizers	41.0
Triple super phosphate	<u>11.5</u>
TOTAL FERTILIZER -	293.7
Agricultural Lime -	514.0

7. Grazing

Fifteen cattlemen paid \$5,831 for the privilege of grazing cattle on the refuge. The cattlemen mowed 1,638 acres of fescue pastures to maintain the grasses for goose browse. Three cattlemen forfeited \$350 in down payments when they failed to put cattle on the pastures during the grazing season.

Units A-12, A-15, and A-16 were removed from the grazing program because of brush encroachment and deteriorating grassland conditions. The best portions of A-12 and A-15 will be combined to make one unit. The A-16 and excluded portions of A-12 and A-15 will be allowed to revert to woodlands.

9. Fire Management

R. Adams, Cameron, Rice, and Updike completed the S-215 firing equipment course presented by the U. S. Forest Service in February.

The following areas of 159 acres were burned in the spring: Unit 1 - 56 acres, Unit 16 - 68 acres, Unit 17 - 24 acres, and Unit 24 - 11 acres.

Unit 24 was burned to maintain the restored prairie grasses. The other units were brushlands and burned to provide habitat diversity for upland wildlife and to maintain openings in forested areas.

F. HABITAT MANAGEMENT (Cont.)

Burning small prairie grassland between
headquarters and Chammesstown Trail.

4/81-4 DJS

12. Wilderness Area

Thomas Throgmorton, a neighbor to the east of the wilderness area, mowed 3.5 miles of 20' wide trails during late summer. Three wilderness signs on his boundary were found in the brush. Mr. Throgmorton stated he had a previous verbal agreement to maintain trails prior to wilderness designation. He was advised that the mowing was a violation and that any future activities of this nature would result in legal action against him.

Establishment of a riding stable north of the wilderness area resulted in several attempts to secure a permit for commercial horseback riding in the wilderness area. The refuge master plan identified the wilderness area as a fragile area with soils that are highly susceptible to erosion and recommended that no trails be developed. Demand for horse trails in the wilderness area is expected to be a continuing problem.

F. HABITAT MANAGEMENT (Cont.)

One-third of the wilderness boundary was marked, and 12 barricades were installed to stop vehicle trespass. The rest of the boundary will be posted, and two vehicle barricades will be installed in 1982.

G. WILDLIFE

1. Wildlife Diversity

Thirty-five 1/8 acre food plots were planted with hybrid sudan grass, hybrid sorghum grain and German foxtail millet. These food plots help to maintain openings in the 20 habitat diversity units in Areas I and III. These openings produce a variety of food and cover and benefit deer, turkey, quail and songbirds.

2. Endangered and/or Threatened Species

A bald eagle nest, constructed during November 1980 on the shoreline of Little Creek impoundment (SE $\frac{1}{4}$, SW $\frac{1}{4}$, Section 22, T9S, R2E), produced two eaglets. Both successfully fledged in July.

A pair of eagles constructed another nest on the refuge in November 1981 (SE $\frac{1}{4}$, SE $\frac{1}{4}$, Section 34, T9S, R1E). The nest is in a snag at the edge of a 27-acre beaver impoundment six miles southeast of the first nest. The refuge staff hopes this pair will remain for the nesting season.

G. WILDLIFE (Cont.)



Little Creek bald eagle nest (top) fledged two young, and new eagle nest was established in a week's time near Crab Orchard Lake.

Top - 5/81-5 DJS

Bottom - 12/81-6 DJS



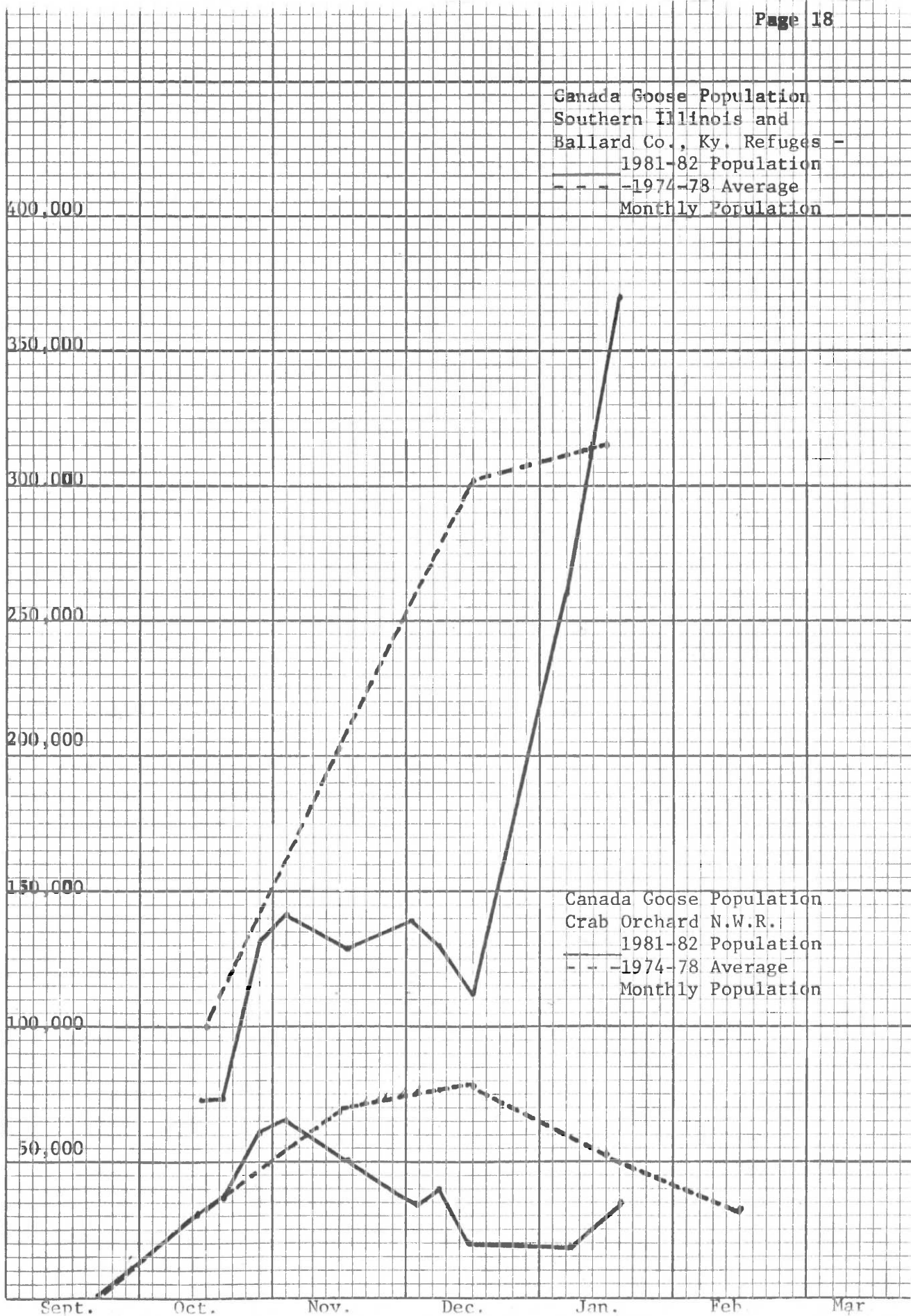
G. WILDLIFE (Cont.)3. Waterfowl

The Canada goose population built up slowly in southern Illinois during the fall, as shown on the graph. Apparently the birds settled down at the migration stopovers and remained there during the unusually mild fall weather. Total goose use was 5,406,500 use-days. This was short of the refuge objective of 9,753,500 use-days, but close to the October through December objective of 5,434,600 called for in the Mississippi Valley Population Plan.

Total duck use was 1,300,400 use-days, again considerably less than the refuge objective of 3,568,000 use-days. The mallard population peaked at 9,000 compared to the 1975-80 average of 21,600. Scaup, the most common diving duck, peaked at 2,500 during March

Wood duck production was estimated to be 36 young, compared to the 1976-80 average of 375. The state waterfowl biologist indicated that wood duck production was depressed state-wide.

The American coot population peaked at 4,000 during November. Total use by the coots was 145,300 use-days.



G. WILDLIFE (Cont.)4. Marsh and Water Birds

The great blue heron population peaked at 250, which represents a steady increase since 1978 when the peak was 90 birds. For some reason the herons have been remaining on the refuge for the entire winter the past five years. In past years the herons normally migrated south the first time the lakes froze.

5. Shorebirds, Gulls, Terns and Allied Species

Killdeer and pectoral sandpiper accounted for most of the shorebird use. Total shorebird use was 145,000 use-days, up from last year's 94,400 use-days.

Total use for gulls was 93,000 use-days.

7. Other Migratory Birds

Stapleton heard 266 calls from 63 doves and saw 19 doves on the mourning dove coo count survey in Williamson County. He heard four woodcock peenting during the singing ground survey in Jackson County. These counts paralleled counts of past years.

8. Game Animals

Gun deer hunters in Area II, 1,019 total, shot 562 deer for a 55% hunter success, the lowest since the deer hunt began on a regular basis in 1973. Other data indicate that the deer herd has been reduced substantially from the 1974 peak and is approaching the point where it is compatible with refuge objectives. At its peak, the deer herd was overbrowsing the woodlands and competing with geese for cropland foods.

The high prices for pelts have stimulated a lot of interest in furbearers, and hunting and trapping pressure has increased substantially in recent years. On a statewide basis, the raccoon population has remained relatively stable in spite of high harvests. The Illinois harvest rose from 53,000 in 1970 when pelts were \$1.35, to 380,000 in 1979 when pelts were \$25.50. Hunting and trapping of furbearers is permitted in Areas I and III by permit.

10. Other Resident Wildlife

The turkey population has expanded considerably since the initial release of two toms and seven hens in February 1978 by the IDOC. Williamson County, including Areas I and III of the refuge, will be open to turkey hunting for the first time in the spring of 1982. Number of permits issued will be 125.

G. WILDLIFE (Cont.)

Feral dogs invaded the swim-in goose trap and killed 22 Canada geese during pre-season banding operations.

11. Fisheries Resources

The IDOC stocked 1,000 breeding threadfin shad in Devils Kitchen and Little Grassy lakes and 4,000 in Crab Orchard Lake in the spring. Unlike the successful results demonstrated in Crab Orchard Lake, the threadfin shad stocking in Little Grassy and Devils Kitchen lakes did not show adequate reproduction. Threadfin shad stocking will be discontinued in these two lakes.

Two hundred tons of riprap were placed below the spillway of Little Creek Pond in April. This area is the only known spawning area for white bass in Crab Orchard Lake. The graveled area was badly silted, and white bass reproduction was poor in 1978-80. The riprap should stabilize the creek banks below the spillway spawning habitat for the white bass.



White bass spawning area below bridge at Little Creek impoundment. Large riprap to hold gravel from washing in the spring.

6/81-7

NRA

G. WILDLIFE (Cont.)

Firehouse Pond was seined on May 13, and 1,000 7-inch bass were caught and released into Crab Orchard Lake. This poor recovery of the 10,000 fingerlings stocked in 1980 was thought to be because of oxygen depletion at the time of drawdown.



Large mouth bass being removed from Firehouse rearing pond for release into Crab Orchard Lake. YACC, refuge and fisheries personnel assisted.

5/81-8 GHU

15. Animal Control

Propane exploders were loaned to six farmers to keep geese out of their wheat fields and to one farmer to keep blackbirds out of sunflowers. No additional assistance was requested.

16. Marking and Banding

Refuge personnel banded 362 Canada geese prior to the goose season. Blue neck collars with TK, TJ, and TF 00-99 in white letters were

G. WILDLIFE (Cont.)

placed on 300 of the geese, and radio packs were placed on 15. The radio packs were placed by SIU personnel to monitor subflock movement in southern Illinois.

17. Disease Prevention and Control

National Wildlife Health Lab personnel, Madison, Wisconsin, searched transects on Crab Orchard NWR and three state refuges in the area and picked up 413 goose carcasses. Necropsies were performed on 163 Canada geese, and avian cholera was responsible for 54% of the mortality. Lead poisoning accounted for 16%, and gunshot-related wounds accounted for 12%. Of the seven geese necropsied from Crab Orchard NWR, five died from gunshots, one from lead poisoning, and one from unidentified trauma.

Avian cholera was first found in the Mississippi Valley population of Canada geese in January and February 1979, at Union County and Horseshoe Lake Conservation areas. The only bird known to have died from cholera on Crab Orchard NWR was found in 1980 in the moist soil units below A-41 pond.

H. PUBLIC USE1. General

With the completion of the new headquarters complex and the implementation of the refuge sign manual, Crab Orchard NWR is beginning to show a new face. Refuge staff hope to have a completed and approved I & R plan to work with some time in 1982.

Visitor use was 1,193,344, up 90,000 visits (+8%) over 1980.

Major I & R emphasis was the implementation of the sign plan. Signs installed included beach entrance signs, Devils Kitchen Lake regulation signs, campground entrance signs, Cambria Neck fishing area sign, and Group Picnic Area sign. Additional signs installed included traffic and regulatory signs.

An open house for the new refuge headquarters complex was held in October with 700 visitors touring the facilities. Only four individuals voiced opposition to the money being spent in this fashion.

H. PUBLIC USE



Recreation information signs were installed along public roads in Areas I and III.

2/82-9 RDT

2. Outdoor Classroom - Students

The six youth camps are beginning to provide the required environmental education (EE) classes. Over 2,000 summer camp participants took part in EE programs, and Stanley presented four programs at these camps. An EE workshop for camp instructors is planned for 1982.

Upon approval of the I & R prospectus, three to six EE sites may be established in addition to the youth camps.

3. Outdoor Classrooms - Teachers

Two EE teacher workshops were offered, but there was no interest. The refuge plans to work with SIU in 1982 to see if college credit could be given for such workshops.

H. PUBLIC USE (Cont.)4. Interpretive Foot Trails

The self-guided Chammesstown School Trail provided a good interpretive trail experience for 19,100 visitors. The one-mile trail provides limited wildlife viewing, and exhibits five separate wildlife habitats. More wildlife self-guided trails are needed.

5. Interpretive Tour Route

There is no formal auto tour route on the refuge. Conducted auto tours were provided on a limited basis to 734 visitors from local schools. For the first time in several years, Area II of the refuge was opened for a one-day auto tour. Over 1,200 visitors drove the pre-determined route. The public was pleased and cooperated fully.

6. Interpretive Exhibits

The refuge fire station serves as a visitor contact station. The firemen assisted 29,500 visitors. Six interpretive panels explaining Crab Orchard NWR and the refuge system are on display in the foyer of the new office building. The refuge staff participated in 21 interpretive exhibits. They included National Wildlife Week, National Hunting and Fishing Day, slide shows at Crab Orchard campground, and numerous speaking engagements. National Wildlife Week programs were presented to 698 students at local schools. National Hunting and Fishing Day was held September 27, with 200 visitors viewing 17 wildlife exhibits, and 12 interpretive slide shows were shown at Crab Orchard Campground to 312 campers.

Stanley spoke and presented interpretive programs to several birding groups and one local senior citizens group. Cameron presented interpretive programs to two Ducks Unlimited banquets and two local bass clubs. Stanley attended the Future Farmers of America National Career Day held in Kansas City, representing the FWS.

7. Other Interpretive Programs

The refuge sponsored a hunter safety course for 94 young people.

8. Hunting

The four programs include upland game, small game, big game, and migratory bird hunting. It is estimated that 1,100 hunters hunted upland and small game. There were 1,019 white-tailed deer hunters participating in the two three-day Area II hunts. They killed 562 deer for a 55% success rate. Approximately 1,500 hunters were estimated to have hunted Areas I and III of the refuge within Williamson County, taking 348 deer for a success rate of 24%. An estimated 3,000 bow hunters hunted the refuge from October through December.

H. PUBLIC USE (Cont.)

Canada goose and duck hunting were poor. The goose quota for the four-county southern Illinois zone was 24,000, 4,000 less than 1980. The lower quota caused considerable concern from hunting clubs and the local population. Within Crab Orchard's three controlled hunting areas, 224 birds were taken by 1,968 hunters for a 11.3% success rate. The controlled hunting program took in \$5,315 in receipts, roughly \$2,000 less than 1980. There were 25,040 birds taken from the quota zone. In addition to the controlled hunting areas, an estimated 3,400 goose hunters and 10,900 duck hunters hunted the refuge.

9. Fishing

An estimated 237,000 fishermen visited the refuge. June was the most popular month, with 50,000 visits. Bass, crappie, bluegill and catfish are the most popular species taken. Three bass tournaments were held on Crab Orchard Lake, with 598 fish being taken by 438 fishermen.

10. Trapping

For the first year trapping was conducted under an approved plan, and permits were issued to 35 trappers. Reported trapper catch for the period November 25 through December 18 was: red fox - 16, raccoon - 79, muskrats - 255, beaver - 15, mink - 8, opossum - 20, and coyote - 2.

Final trapping figures will not be available until the season ends February 28, 1982. No major changes are expected in the trapping plan for the 1982-83 season.

11. Wildlife Observation

Most popular during the fall of the year, with an estimated 556,000 visits to the refuge. There are four wildlife observation areas and several public roads for wildlife viewing.

13. Camping

Camping on the refuge was 60,188 visits, up 9% from the 1980 season. The increase was due to more normal summer weather conditions compared to the hot 1980 season. Refuge campgrounds were busy with Crab Orchard Campground having 30,488 campers, Little Grassy Campground 29,700, and Devils Kitchen 3,200 campers.

14. Picnicking

An estimated 81,400 picnickers used the eight refuge picnic areas. Seventeen new grills were obtained from Mingo NWR and replaced the dilapidated grills at Cambria Neck. The I & R prospectus includes removal of four picnic areas and renovation of the four remaining areas with new tables and grills.

H. PUBLIC USE (Cont.)15. Off Road Vehicle

There was some trespass into the Wilderness Area by vehicles, but most entrance points have been blocked with barricades.

16. Other Non-Wildlife Oriented Recreation

These activities include swimming, boating and water skiing. Estimated visits were 137,000.

17. Law Enforcement and Fires

There were 463 citations written, compared to 326 in 1980. The number of serious incidents has been reduced because of effective preventive law enforcement. Serious incidents on the refuge included one burglary and two rapes. The burglary case was handled in state court, and the subject received a three-year sentence. All other cases were handled by the Federal Magistrate at Benton, Illinois. One individual was arrested for drunk driving and transported to the federally approved jail at Belleville, Illinois, 100 miles away. The problem of transporting prisoners 100 miles for incarceration is time consuming and depletes manpower. Arrests are avoided if at all possible.

Citations issued by category included:

<u>Violation Category</u>	<u>Citations Issued</u>
Hunting -	16
Fishing -	72
Motor Vehicle -	31
Boating -	31
Miscellaneous Unauthorized Use -	<u>313</u>
TOTAL -	463

Evidence from the November homicide of Joan Weatherall was found on the refuge. Her body was found ten miles from the refuge, but the location of the actual homicide is not known. Several agencies are investigating.

Refuge Fires

The refuge fire department responded to 14 fire calls, of which eight were grass fires, four were building fires, one powerline fire, and one false alarm. On 3/28/81 the fire department responded to an

H. PUBLIC USE (Cont.)

alarm at Fiberlite Company. Upon arrival, the fire was raging out of control, and additional assistance was requested from the Coal Belt Fire Association. Six other fire departments responded, and over 100 firefighters were on the scene. Damage from the fire was estimated to be more than \$200,000.

Fires during 1981 were:

<u>Date</u>	<u>Type and Location</u>
1/11/81	Grass fire - Interstate 57 near East Gate Road.
1/18/81	Grass fire - Crab Orchard Beach.
2/8/81	False alarm.
3/14/81	Field Fire - Marion requested assistance.
3/22/81	CIPS light pole, Rt. 148.
3/28/81	Building fire - Fiberlite Company.
3/31/81	Field fire - along Grassy Road.
4/11/81	Grass fire - West Boat launch.
4/15/81	Olin furnace fire - fire truck delivered to Olin.
4/26/81	Grass fire - 3 miles west of Rt. 148.
7/14/81	Light Pole - East Side Lumber.
10/1/81	Building fire - Area II.
10/21/81	Grass fire - Area 6.
10/22/81	Building fire - Refuge sewer plant.

H. PUBLIC USE (Cont.)



Fiberlite Area, 88,000 square feet of buildings
and approximately 25 acres, burned as result of
electrical fire on March 28.

3/81-10

DJS

I. EQUIPMENT AND FACILITIES

1. New Construction

The new office-shop complex, a \$1.6 million Bicentennial Land Heritage Project from 1979, was completed April 3 by F. E. Holmes Construction Company of Marion. Official moving day was April 6, but the remainder of 1981 was spent moving out of the World War II facilities and setting up the new buildings. The only problem to date is some warping of cedar siding on the south building exposure.



Aerial view of new headquarters complex.

10/81-11 Reilly-RO

I. EQUIPMENT AND FACILITIES (Cont.)



Office at top and shop with pole barn and storage yard at bottom.
Top - 10/81-42, Bottom - 10/81-13 Reilly-RO



I. EQUIPMENT AND FACILITIES (Cont.)



Office lunch room and outside deck overlooking Crab Orchard Lake.
Left to right: Case, Holup, R. Adams, Stanley, Rendleman.

5/81-14 GHU



Reception - Administrative area of office, with Marsolie, Bonnie
and Karon in the picture.

5/81-15 GHU

I. EQUIPMENT AND FACILITIES (Cont.)



Shop lunchroom (top) with pole building in background and vehicle equipment repair bays (bottom).

Top - 2/82-17 Bottom - 2/82-18 RDT



I. EQUIPMENT AND FACILITIES (Cont.)

A two-acre wildlife pond was completed at Greenbriar Area, and a sewage lift station was constructed by force account at Loop D showerhouse in the Crab Orchard Campground.

2. Rehabilitation

The 15 staff houses on the "circle", constructed in 1942 by the War Department, were removed. Three houses were moved just off the refuge, and the remaining 12 houses have been moved to one location east of Crainville and are for sale for \$45,000 each. The government received an average of \$2,000 per house. The "circle" will be cleaned up and returned to wildlife habitat in 1982.



Six of the 13 former staff houses sold and moved two miles to an area east of Crainville.

10/81-18 GHU

The A-3 road boiler house was demolished and buried at a cost of \$6,250. Demolition Engineers of Galatia was low bidder, began work, and defaulted. Short Brothers Construction of Marion completed the job.

I. EQUIPMENT AND FACILITIES (Cont.)

A-3 road boiler house before demolition. Area was returned to wildlife habitat.

6/81-19 GHU

Roads were seal coated by Illini Asphalt of Benton at a cost of \$24,240 for 18,776 gallons of oil and 908 tons of aggregate. The five miles of roads treated were Lookout Point, Cambria Neck, Greenbriar, and Area 4. Forby Trucking of Makanda delivered 5,128 tons of CA-10 gravel to Dogwood Lane and the shop stockpile.

Showerhouse floors in loops B and C of Crab Orchard Campground were covered with non-skid floor tile by Dunn Construction of Carbondale at a cost of \$6,740.

Sewage lift station renovation, new wiring, plumbing, and pumps, was completed in stations 3, 4 and 6. A new gas-fired boiler heating unit was installed in the subheadquarters building. These projects were force account.

3. Major Maintenance

Domestic water loss from elevated tanks and lines was encountered in May. The system was checked for four weeks, and many hours of overtime

I. EQUIPMENT AND FACILITIES (Cont.)

were required to keep water pressure up, before a large water break was located in an isolated area and repaired. Altitude valves and pipes need to be replaced in the three 250,000 gallon elevated tanks so water plant operating time can be reduced. This work is scheduled for 1982 at a cost of \$67,000.

4. Equipment Utilization and Replacement

Major equipment purchases included: four Ford pickup trucks (20 miles per gallon actual mileage), two platform high lifts, four mobile radios, portable welder, concrete nailer, pneumatic staple gun, and eight office desks and chairs. Tools from several stations of the YACC program were transported and turned over to Crab Orchard NWR. These are being sent out to other refuges and agencies. The only equipment problem remains the long length of time it takes to get rid of vehicles through the government sale process.

5. Communications Systems

A new headquarters telephone system was purchased from Applied Communications of Cape Girardeau, Missouri for \$22,000. Savings with this purchased system will be approximately \$4,000 yearly. The refuge was also connected to FTS lines for the first time.

6. Energy Conservation

Gas/diesel fuel use was 18,400 gallons with an allotment of 21,450 gallons. The reduction is due to better mileage vehicles, consolidated trips, and fewer personnel. Gas use only for past years was: 1975 - 28,000 gallons, 1979 - 24,000 gallons, and 1980 - 18,000 gallons.

J. OTHER ITEMS1. Cooperative Programsa. Industry

The refuge industrial policy is being implemented with a major change being increased rental fees. The second of three yearly rental rate adjustments took effect October 1. Cold storage increased \$.10 to \$.45 per square foot, and manufacturing space increased \$.13 to \$.46 per square foot annually. Also, rental credit can now be given for new tenants to bring buildings up to standards when they first occupy a building.

The Fiberlite fire eliminated 88,000 square feet of industrial building space. Fiberlite had employed 40 people, and Olin Corporation laid off 60 people. Turco Company gave up its lease on eight warehouses of

J. OTHER ITEMS (Cont.)

10,000 square feet. McBride Trucking, a new tenant, rented one warehouse. The U. S. Department of Energy research center, 30 employees, was closed. Under a Department of Interior appropriations bill, the facility was given to Southern Illinois University along with \$1 million for operations. The station will function as a mining research center. The old refuge office-shop buildings were vacated and are available for rent.

b. Lake Access

The IDOC access agreement was extended 25 years. They maintain a small boat access site on Little Grassy Lake adjacent to Giant City State Park.

c. Propellant

The refuge now issues military propellant for cannon net charges to Wildlife Materials and Winco Companies. Universities, states, and other countries in turn order, through cooperative agreement, cannon net charges direct from these companies.

2. Items of Interest

Cameron attended the Refuge Managers Training Academy, Beckley, West Virginia, in February, and DeJulio completed a one-week refresher law enforcement course at Glynco, Georgia.

The AO held an annual work plan session at Crab Orchard in August, with all field stations, AO and RO personnel in attendance.

Bob Rice became ill in December and had surgery in January 1982. Bob may be out for some time, and we wish him well.

The IDOC Little Grassy Fish Hatchery was completely renovated and enlarged at a cost of \$5 million. This facility was dedicated on September 4, and is designed to produce three million channel catfish and three million redear sunfish annually.

J. OTHER ITEMS (Cont.)



New Illinois Department of Conservation fish hatchery
at Little Grassy Lake.

1/82-20 DJS

3. Credits

Sections of this report were written as follows: A-E.4 and I-J -
Updike; E.5-G - Ross Adams and Stapleton; H.- Cameron, Priest and
Summers. Updike edited, and Bonnie typed and assembled this report.