

REVIEW AND APPROVALS

CRAB ORCHARD NATIONAL WILDLIFE REFUGE

Cartersville, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1992

Richard F. Berry
Refuge Manager

2/18/93
Date

Matthew A. Kisch 2.23.93
Refuge Supervisor Review Date

Susan Hasettini
Regional Office Approval

3-2-93
Date

INTRODUCTION

Crab Orchard National Wildlife Refuge includes 43,550 acres extending into Jackson, Williamson and Union counties of southern Illinois. The topography varies from gentle rolling slopes through most of the Refuge to slopes exceeding 24% in the southern portion. Broad habitat types include: water (9300 ac.), hardwoods (12,200 ac.), brush (8500 ac.), pine plantations (3,000 ac.), grassland (3,000 ac.), and agricultural (5,000 ac.) and about 500 acres of moist soil units.

The Refuge was established in 1947 by an Act of Congress, Public Law 361, which transferred to the Fish and Wildlife Service lands administered by the War Department and the Soil Conservation Service. During the 1930s these lands, which consisted of small farms, were sold by their private owners to the federal government. During World War II the War Department constructed the Illinois Ordnance Plant on these lands which, after the war, became part of the Crab Orchard National Wildlife Refuge.

The Congressional Act establishing the Refuge mandated that the land would be managed with four broad objectives: wildlife management, agricultural development, recreational use and industrial operation.

Twenty-two thousand acres were designated a wildlife sanctuary and remain closed to general public use. Cooperative farming, moist soil management and permittee grazing are the primary management tools used to provide feeding and loafing areas for migrating and wintering waterfowl, the main wildlife management objective.

There is a wide spectrum of recreational opportunities on and around three man-made lakes which in total exceed 8,700 acres. Boating, skiing, fishing, swimming, hunting and wildlife observation are part of the public use program. Other recreational programs include concession campgrounds and marinas, public hunting areas, picnic areas, walking trails and observation points.

Industrial activities on the Refuge range from manufacturing and storage facilities to administrative offices. In excess of \$45 million and 600 non-federal jobs are generated annually by the industrial tenants. The Refuge provides contracted fire protection and Refuge operated potable water and sewer service to industrial tenants, and water and sewer service to a maximum security federal prison located adjacent to the Refuge.

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A. HIGHLIGHTS

On June 28, 1992 new Refuge Manager Richard F. Berry arrived. With his arrival came innovative approaches to presenting Refuge issues in the news. Manager Berry sought out photo and news conference opportunities to aggressively tell the Crab Orchard story rather than being in a news responsive mode. A full scale vision setting process was initiated involving all Refuge staff.

During July the Biology staff conducted a half day Refuge management overview and tour for commercial goose hunting club owners. This program was instrumental in dispelling many of the misunderstandings that club owners had about Refuge management (See Section D 3).

The Refuge volunteer program went through a major direction shift with the implementation of volunteer position descriptions, a full time volunteer coordinator, volunteer newsletter, and volunteer recruitment. Additionally, Refuge Volunteer Roy Frank received the National Take Pride in America Award from U.S. Fish and Wildlife Service Director John Turner. (See Section E 4). On May 4, 1992 the Refuge Quality Council gave a one and a half hour Crab Orchard Refuge management overview to the Regional Directorate (See Section E 8).

Major remodeling work was initiated this year on the visitor information center. Problems with termites, asbestos, and lead paint removal have pushed this project very near the \$500,000.00 mark (See Sections E 8 A&E contracts and I 2).

Twelve private wetlands projects were completed this year for a total of 175 acres (See Section F 15).

Five bald Eagles were fledged from the Refuge this year out of two nests (See Section G 2).

Refuge visitation broke 1.2 million this year and new recreational facilities were built. Additionally, 12 handicapped hunters harvested 11 deer during the firsts hunting season (See Section H 1).

Unfortunately, the Refuge was a popular spot for illegal activities. This year 24 separate cultivation spots for marijuana were eradicated. Additionally, the Refuge was the location for: 1 murder, 1 attempted murder, 2 assaults, 1 suicide, 4 traffic fatalities, 1 heart attack, 1 accidental shooting, and 18 stolen properties (See Section H 17).

In July 1992 major reconstruction work was initiated on the Little Grassy Lake dam. This reconstruction involves building an auxiliary spillway, reconstructing a new stilling basin, and replacing the outlet jet valve (See Section I 1).

Railroad access to the Refuge was again initiated for industrial tenants (See Section I 2).

B. CLIMATIC CONDITIONS

The average annual precipitation for the Refuge is about 45 inches. In 1992 a total of 53.7 inches were received. The critical growing periods of July, August, and September included above normal precipitation which provided a major benefit to agricultural crops.

The three major lakes on the Refuge maintained a relatively consistent water level throughout the year with average lows during the summer and highs in the spring and fall. No drought or flood conditions occurred. In September, Little Grassy Lake was drawn down four feet below spillway elevation in order to perform construction work on the existing spillway and to construct a new auxiliary spillway. The draw down is expected to be in effect until May 1993.

PRECIPITATION (inches) and TEMPERATURE (degrees F)						
Precipitation Month			Temperature			
	1991	1992	1991		1992	
			High	Low	High	Low
January	3.16	2.54	49	8	56	7
February	2.90	1.89	62	33	73	15
March	4.75	3.44	76	23	77	21
April	5.13	4.47	83	34	89	29
May	5.50	2.88	92	42	92	37
June	2.47	3.93	96	53	97	46
July	3.95	5.22	99	65	98	61
August	2.40	4.43	83	59	100	52
September	7.44	9.21	97	38	89	62
October	7.10	3.49	84	31	86	32
November	11.61	9.55	69	10	73	27
December	<u>4.61</u>	<u>2.65</u>	65	13	61	13
	61.02	53.70				

LAKE ELEVATIONS			
	Crab Orchard	Devils Kitchen	Little Grassy
Spillway Elev.	405.00	510.00	500.00
Max. Elevation	405.40	510.30	500.20
Date of Maximum	11-27-92	01-10-92	01-10 and 02-21-92
Min. Elevation	404.45	509.35	496.00
Date of Minimum	08-20-92	09-04-92	10-02 and 12-31-92

C. LAND ACQUISITION

1. Fee Title

No fee title acquisition activities occurred this year. However, there are inholdings and private properties adjacent to the Refuge boundary that should be acquired. Previous attempts to acquire these parcels have failed due to the landowners' lack of interest in selling.

4. Farmers Home Administration Conservation Easements

Since 1987, easements have been obtained through the Farmers Home Administration (FmHA) as authorized by the 1985 Farm Bill. The U.S. Fish and Wildlife Service division of Ecological Services and Refuge personnel review all FmHA foreclosure lands for endangered and wetland species habitat. Easements are protected and managed by the National Wildlife Refuge System.

The following sites are currently being managed by Crab Orchard National Wildlife Refuge.

<u>County</u>	<u>Date Recorded</u>	<u>Name</u>	<u>Acres</u>	<u>Plant Communities</u>
Jackson	Not recorded	Deming	46	bottomland pasture
Jackson	11-14-88	Mayberry	39	bottomland field
Wayne	05-01-89	Moore	25	bottomland hardwood
White	10-13-89	Russel	31	bottomland and upland hardwood
Williamson and Franklin	12-11-90	Woolard	87	bottomland hardwood forest/bottomland field

Transferred to Patoka NWR

Pike, Indiana	Eversoll	33
Gibson, Indiana	Kiesel	46

All FmHA easements will be visited in the early part of 1993 to check for compliance and management purposes. Management plans will then be written for each individual unit to maximize wildlife benefits. Additional easements will be considered as they become available.

D. PLANNING

2. Management Plan

No Refuge management plans were revised during the calendar year. The annual Water Management and Burn Plans were submitted and approved.

A community relations plan was revised to reflect current needs for public involvement in the Refuge Superfund clean-up activities.

3. Public Participation

The biological staff conducted a presentation and meeting with the Commercial Goose Hunting Industry. This presentation involved an overview of the Refuge farming, grazing, wetlands, and habitat management programs. After the presentation a discussion was held on the impact Refuge management has on the migrant Canada Goose population. A van tour of the Refuge was also conducted as a part of the program. The overall program was significant in dispelling the notion that the Refuge conducts super secret management techniques that minimize hunting success on adjacent lands. Because of the popularity of this meeting and program, Refuge staff will continue this interaction as an annual event.

On July 27, 1992 the U.S EPA hosted a public availability session to issue a status report on the progress of clean up activities on the Refuge.

4. Compliance with Environmental and Cultural Resource Mandates

A number of wetland projects were conducted off-Refuge during 1992. These projects required Clean Water Act Section 404 permits and phase 1 archeological investigations.

An archeological inventory of Refuge artifacts was completed by Southern Illinois University and submitted to the Regional Archeological Officer. An Archeological display from Southern Illinois University was borrowed by the Refuge as a display in the Refuge Administrative office. The artifacts being displayed were from both the Refuge's collection and the general area.

5. Research and Investigations

Dr. Larry G. Hansen of the University of Illinois at Urbana-Champaign is conducting a study of PCB's on the Refuge. The study is entitled "Determination of Animal Hazards from PCB-contaminated Air and Soil Samples from Crab Orchard using Planarian and Rat Bioassay Systems". The study was started this year and preliminary results should be forthcoming February 1993. The study is intended to continue for two more years with an anticipated completion date of July 1995.

The second year for the loggerhead shrike study is being performed by Joyce Collins under the direction of Dr. Paul Lafavre and Dr. George Waring of Southern Illinois University. The study examines the breeding ecology, nesting habitat, and winter ecology of the loggerhead shrike. Approximately twelve pairs of shrikes were located and studied this year. Results have not been completed, but are expected in June 1993.

As part of a Masters degree thesis at Southern Illinois University, Jay Rubinoff began a study of the defensive behavior of copperhead snakes in

southern Illinois. His objective is to observe the various defensive responses displayed by copperheads. Preliminary results for the study are not expected to be available until March 1993.

The Illinois Department of Conservation, Division of Illinois Natural History Survey conducted a creel survey of Devils Kitchen Lake. The survey is used to determine the amount of fishing pressure on the lake, angler rating of the lake, and to collect harvest data. Results are expected by February 1993.

The fourth year of the Bluebird Trail Survey has been completed. The nesting success for the Eastern bluebird was 71 percent with 607 fledglings. Other species utilizing bluebird boxes included the tree swallow, house wren, and a Carolina chickadee. Nesting success for all species was 69 percent with 774 fledglings.

Michael McKee of Southern Illinois University, Cooperative Wildlife Research Laboratory is conducting biological monitoring of chemical contamination at the Refuge. The purpose of the study is to provide baseline information to be used in evaluating the effectiveness of remediation with regard to impact from contamination to wildlife. The information will document the degree of biological effects in wildlife inhabiting contaminated areas at the Refuge. Sampling efforts were undertaken in 1991 and continued into 1992. A final report is due in May 1993.

Christopher Kohler of the Fisheries laboratory at Southern Illinois University, under a grant with the Hazardous Waste Research and Information Center, collected fish from Crab Orchard Lake in spring 1991 for analysis of Polychlorinated Biphenyls. The purpose was to evaluate what type of impacts draw down of water levels may have had on contaminant burdens of PCB's in catfish and possible distribution throughout the lake. The report documenting findings and conclusions is underway and expected to be available in 1993.

John Maurer of the U. S. Geological Survey, Water Resource Division, is currently conducting a study of the water outflow from the Refuge's three major lakes. The study will determine the "Occurrence, Temporal Distribution, and Persistence of Herbicides in Discharge from Reservoirs in the Upper Midwestern United States". The last water samples will be taken in March '93. At this time there are no preliminary results to report.

Kevin Dallmier of Southern Illinois University, Fisheries Department is continuing the study from 1991 on sunfish populations in Devils Kitchen Lake and five Refuge farm ponds. The objective is to determine the extent and frequency of hybridization of sunfish in wild populations. The study was extended this year to four additional ponds on the Refuge. Results are near completion and are expected to be available in March 1993.

E. ADMINISTRATION

1. Personnel

The full-time personnel equivalent for FY-92 that was authorized by the Regional Office was 32.00.

Permanent full-time personnel as of December 31, 1992:

<u>Name</u>	<u>Title</u>	<u>Series/Grade</u>
Aly, Wm. Frank	Refuge Operations Specialist	GS-0485/07
Berry, Richard F.	Refuge Manager	GM-0485/14
Beckwith, George	Utility Systems Operator	WG-5406/09
Boles, Arthur J.	Automotive Worker	WG-5823/09
Cameron, James T.	Outdoor Recreation Planner	GS-0023/11
Case, Anthony K.	Maintenance Worker (Student)	WG-4759/05
Case, Doyle T.	Contract Compliance Officer	GS-1101/11
Chew, Carl E.	Supply Technician	GS-2005/05
Daron, Sheryl A.	Administrative Technician	GS-0303/06
Dungey, Esther M.	Secretary (Steno)	GS-0318/05
Eastman, Daniel R.	O & M Foreman	WS-4749/09
Fike, Stephen	Tractor Operator	WG-5705/05
Giles, John P.	Refuge Guide	GS-0090/05
Hericks, Candace F.	Refuge Operations Specialist	GS-0485/09
Hileman, Roger D.	Maintenance Worker	WG-4749/05
Holbrook, Charles L.	Deputy Refuge Manager	GM-0485/13
Humphreys, Brent	Maintenance Worker	WG-4749/05
Janulis, Michael J.	Forestry Technician (Firefighter)	GS-0462/04*
Mabery, John N.	Wildlife Biologist	GS-0486/11
Mahan, John T.	Refuge Law Enforcement Officer	GS-1802/07
Maze, Tony L.	Utilities Systems Operator	WG-5406/05
Modglin, C. Eric	Maintenance Worker	WG-4749/07
Palmer, Thomas A.	Forester	GS-0460/11
Parks, Kay F.	Accounting Technician	GS-0525/04
Randle, Richard P.	Forestry Technician (Firefighter)	GS-0462/04*
Rendleman, Terry W.	Administrative Officer	GS-0341/11
Solliday, Kristie M.	Refuge Law Enforcement Officer	GS-1802/07
Smith, James L.	Heavy Equipment Operator	WG-5716/09
Stewart, Russell C.	Refuge Law Enforcement Officer	GS-1802/07
Upchurch, Michael R.	Maintenance Worker	WG-4749/08
Vincent, J. Neil	Refuge Guide	GS-0090/05
Wagner, Edward	Outdoor Recreation Planner	GS-0023/09
Whitecotton, Robert	Utility Systems Operator	WG-5406/07
Woodsum, Robert	Heavy Equipment Operator	WG-5716/09
Vacant	Tractor Operator	WG-5705/05
Vacant	Refuge L.E. Officer (Seasonal)	GS-1802/05
Vacant	Refuge L.E. Officer (Seasonal)	GS-1802/05
Vacant	Refuge L.E. Officer (Seasonal)	GS-1802/05



Youth Conservation Corps Enrolles and Refuge Crew Leader
Mac-Shane Frank Steve Fike Jason Shimp
Kelly Perkins Amanda Murphy



Retired from his duties as Wildlife Biologist since the the first of the year, Wendell Crews volunteered to help plant trees in a former agricultural field.



Staff Changes During 1992 Included:

Promotions:

01/12/92	Maze, Tony L.	Utility Systems Operator, WG-5406-05 to WG-07
01/12/92	Upchurch, Michael R.	Maintenance Worker WG-4749-08 to WG-09
03/08/92	Terry W. Rendleman	Administrative Officer GS-0341-09 to GS-11
05/03/92	Mahan, John W.	Refuge Law Enforcement Officer, GS 1802-06 to GS-07
11/15/92	Daron, Sheryl A.	Office Assistant (Automation), GS-0303-05 to GS-06
11/29/92	Maze, Tony L.	Utility Systems Operator, WG-5406-07 to WG-09

Career Change:

05/03/92	Aly, Wm. Frank	Biological Technician, GS-0404-05 to Refuge Operations Specialist GS-0485-07
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New Hires:

04/19/92	Janulis, Michael J.	Forestry Technician (Seasonal Firefighter) GS-0462-04
04/19/92	Randle, Richard P.	Forestry Technician (Seasonal Firefighter) GS-0462-04
11/02/92	Case, Anthony K.	Student Trainee (Maintenance Worker), WG-4701-05

Transfers In:

01/12/92	Daron, Sheryl A.	Office Assistant (Automation), GS-0303-5, transferred in from Ecological Services Field Office, Marion, Illinois
05/31/92	Fisher, James R.	Refuge Manger, GM-0485-14, transferred from Washington Office Division of Refuges.
06/14/92	Hericks, Candace F.	Refuge Operation Specialist, GS-0485-09, transferred in from Ecological Services Field Office, Reynoldsburg, Ohio

06/28/92 Berry, Richard F. Refuge Manager, GM-0485-14,
transferred from the Upper
Mississippi River Refuge Complex,
Winona, Minnesota

07/26/92 Mabery, John N. Wildlife Biologist, GS-0486-11,
transferred in from Corp of
Engineers, Rend Lake Management
Office, Benton, Illinois

Transferred Out

06/28/92 Fisher, James R. Refuge Manger, GM-0485-14,
transferred to Upper Mississippi
River Refuge Complex

Terminated:

11/13/92 Janulis, Michael J. Forestry Technician (Seasonal
Firefighter) GS-0462-04, end of fire
season

11/13/92 Randle, Richard P. Forestry Technician (Seasonal
Firefighter) GS-0462-04, end of fire
season

Retirement:

01/03/92 Crews, Wendell E. Wildlife Biologist GS-0486-11

01/03/92 Wallace, Norrel F. Refuge Manager GM-0485-14

Employment History for the Past Five Fiscal Years at Crab Orchard National Wildlife Refuge:				
	Permanent Full-Time	Part-Time	Temporary	Total FTEs Used
1992	32	1	2	29.88
1991	32	0	2	29.07
1990	32	0	4	32.93
1989	32	0	8	35.21
1988	30	0	6	34.56

2. Youth Programs

The 1992 YCC program employed four enrolles, two female and two male. Two of the enrolles were seventeen and two were sixteen. Enrolles from three local High Schools were selected by a lottery drawing. The YCC program was supervised by Stephen Fike, Tractor Operator during their eight week program.

This was a fine group of young local people who acquired some knowledge about the operation and purpose of The U.S. Fish and Wildlife Service and the Crab Orchard National Wildlife Refuge while accomplishing a great deal of work.

3. Other Staff (Manpower) Programs

The Refuge identified two construction projects and requested Job Corps vocational assistance. The projects were installation of new siding/roof on an industrial building and the construction and rehabilitation of an interpretive foot trail. At year's end, Job Corps ability to provide assistance to our requests is pending and is scheduled to be discussed in their Vocational Skills Training meeting in the near future.

4. Volunteer Programs

This year a new approach was taken with the Refuge volunteer program. A Refuge Volunteer Coordinator was appointed and four volunteer position descriptions were written. By doing this volunteers are able to integrate their efforts into Refuge management programs. This much more formal program provided greater benefit to Refuge operations as well as increased satisfaction for Refuge volunteers.

Volunteer Valerie Staack completed a much needed volunteer handbook to aid volunteers and new staff in becoming acclimated with the Refuge and the first ever volunteer orientation training session was held. During that July, 1992 session 35 volunteers were introduced to the Refuge and the work involved in being a volunteer. Volunteers were then assigned specific assignments like visitor center duties and trail maintenance.

This new volunteer approach matured with a new volunteer coordinator Paul Thomas and the initiation of a volunteer uniform, award program and volunteer newspaper. This newspaper started out as a single one issue newsletter with no name. It has become a major information source for volunteers with volunteer Katrina Walasinski's prize winning title of "Wild Times."



Refuge Volunteer Brent Hopkins conducting a hands on demonstration on fly tying during a "Pathways to Fishing" program during National Fishing Week.



Roy Frank from the Southern Illinois University receiving the National Take Pride in America Award from Region 3, Regional Director Sam Marler.

Since July, 1992, the volunteer program has grown from just a few to 81 active volunteers. These volunteers donated over 6,000 hours during 1992 with most of those hours being donated between July and September.

Mr. Jack Golio, a forestry student attending Southern Illinois University, signed up as a volunteer during the summer and contributed 285 hours to the forestry and fire programs.

Refuge volunteer Roy Frank Jr. received the National Take Pride In America award from U.S. Fish and Wildlife Service Director John Turner. The award was presented by Regional Director Sam Marler during the National Hunting and Fishing Days celebration held at the John A. Logan College. Mr. Frank and his thirty-four Southern Illinois University students conducted bottom surveys of Crab Orchard Lake, constructed a relief map for the Visitor Information Center, and assisted with the Take Pride In America bass rearing pond.

The Take Pride In America bass pond project was completed this year jointly with Refuge staff, volunteers and a number of local organizations. The project began in 1990 and was accomplished with thousands of volunteer hours being donated to the Refuge.

National Wildlife Week was a success with volunteers making contact with over 3,000 students from local schools conducting educational outreach with the theme of Endangered Species. Refuge volunteers also distributed over 100 free National Wildlife Federation packets to local schools.

This was the first year the Refuge incorporated the Student Conservation Association (SCA) program into management operations. One Southern Illinois University student worked 480 hours over a 12 week period from January 18, 1992, to April 9, 1992. The student, Alan Shearer, worked in the I & R program and was invaluable in aiding the Refuge staff in operating the Visitor Information Center and conducting interpretive programs.

5. Funding

Refuge Operations and Maintenance Funds Received for Fiscal Years 1988 - 1992					
Program	FY 88	FY 89	FY 90	FY 91	FY 92
1261	\$593,300	\$451,100	\$361,835	\$312,693	\$340,604
1262	352,200	499,100	565,447	575,000	562,845
4960	6,295	6,101	5,300		
6860	*544,410	419,000	*503,000	460,000	455,000
Total O/M	1,496,205	1,375,301	1,435,582	1,347,693	1,358,449
Challenge Grant			8,000	7,500	15,000
Contributed Funds					3,645
Contaminate Cleanup		400,000	614,000		
Drug Eradication				3,120	46,000
Farm Bill		1,100	15,000	14,000	17,000
Fire Funds		18,626	300	108,500	103,000
Maintenance Management		15,000	40,000	545,000	591,500
Recreational Fisheries					32,000
Volunteers					7,000
Watchable Wildlife					24,000
STATION TOTAL	1,496,205	1,810,027	2,112,882	2,025,813	2,197,594

* Includes \$124,510 for FY 89 and \$43,000 for FY 90 insurance settlement for warehouses destroyed by fire in Industrial Area 7. Funds were used for cleanup.

Refuge Receipts For Calendar Years 1988 - 1992					
Category	1988	1989	1990	1991	1992
Building Rent	*\$537,215	\$344,665	*\$358,889	\$324,522	\$359,300
Water	67,358	83,721	82,818	85,327	\$81,469
Sewer	39,426	49,562	48,330	50,168	\$47,778
TOTAL FOR INDUSTRY	*\$643,999	\$477,948	*\$490,037	\$460,017	\$488,547
Wildlife +	14,969	10,065	15,202	13,892	7,838
Concession	24,802	26,525	24,532	21,815	26,318
Entrance Fees	35,095	38,476	30,772	26,760	33,504
Hunting	14,983	9,893	6,559	**	
TOTAL RECEIPTS	*\$733,848	\$562,907	*\$567,102	\$522,484	\$556,207

* Includes \$124,510 and \$43,000 insurance settlement received for warehouses destroyed by fire in Area 7.

+ Wildlife Category includes: trapping, grazing, and timber sales receipts.

** Prior to 1988 the controlled goose hunt receipts were included under concessions. Starting in 1990 the controlled goose hunt was made a part of the Crab Orchard Campground concession contract.

90% of entrance fees were from duck stamp sales.

Refuge Revenue Sharing

Payments to counties under the Refuge Revenue Sharing Act for FY 91, included 89.50% of the full entitled amount. The amounts each county received are listed below:

Williamson County -	\$211,765
Jackson County -	\$ 9,417
Union County -	<u>\$ 3,259</u>
TOTAL	\$224,441



Refuge Manager Richard F. Berry presenting the fiscal year 1991 Revenue Sharing check to Williamson County Commissioner Sam Shemwell.

6. Safety

There were two reported injuries to Refuge coworkers during calendar year 1992. On June 29, 1992, Eric Modglin, Maintenance Worker, received a severe cut on his left thumb, while installing a door lock. First Aid was administered at the Herrin Hospital emergency room and he returned to work. On November 24, 1992, Mr. Stephen Fike, Tractor Operator, was injured while removing a overhead door track from one of the Refuge's warehouses. The track fell on his back requiring him to be off work until December 14, 1992.

During the second deer hunt, on the morning of December 4, 1992, a Mr. Fred Drescher, a permitted Refuge deer hunter was accidentally shot in the leg by a member of his own hunting group. He was treated at and released from the Marion Memorial Hospital emergency room.

Monthly safety meetings were conducted with topics of discussion appropriate for the season. A new Refuge "Safety Committee" was appointed and the committee held quarterly safety meetings and facility safety inspections.

The Refuge received its Third "Award of Safety Accomplishments" for an Outstanding Safety Record for FY 1992. From this award each employee received a \$100 cash award.



This year the Refuge experienced an unusually high number of fatality accidents (4). This non fatality accident ended up on the Refuge because the driver lost control of his truck.

Four traffic fatality accidents occurred on spillway road and Rt.148 adjacent to the Refuge. The Youth Conservation Corps (YCC) summer program had another year without injuries or accidents.

7. Technical Assistance

Last year approximately 300 staff hours were spent with students and Refuge visitors relating technical and non-technical information. Throughout the year numerous students from local high schools, community colleges and state universities came to the Refuge for information and advice on a wide variety of natural resource related subjects.

Technical wetland management and maintenance advice was given to private landowners under the Partners for Wildlife Program. We are in the process of writing a fairly detailed and generic management plan to give to future "partners" that will not only advise them on how to manage their wetland for maximum wildlife benefits, but will also explain how and why wetland habitats are beneficial to wildlife.

8. Other

Training and Visits

On January 28 and 29, 1992 the Refuge hosted a visit by retiring Regional Director Jim Gritman with a tour and evening dinner.

Charles Holbrook, Assistant Refuge Manager, traveled to the Regional Office to attend the Project Leaders Meeting on January 30 through February 1, 1992.

John Mahan, Law Enforcement Officer, attended 40 caliber firearms instructor training at Marana, Arizona.

On February 27, 1992, Dan Baumgartner, Fisheries and Bob Lange, Federal Aid, visited the Refuge and discussed the Fisheries Vision Plan with Refuge staff and the Marion Ecological Services field office.

During the week of March 23rd through March 27th, Jim Cameron, Outdoor Recreation Planner, and Refuge Law Enforcement Officers, Kristie Solliday, Russell Stewart, and John Mahan attended the law enforcement refresher course in Des Moines, Iowa.

A new pilot Word Perfect 5.1 training course was held at the Refuge during the week of April 20th through April 24, 1992. Offices that participated were Mingo National Wildlife Refuge, Mingo Job Corp, Southern Missouri Ascertainment Office, Marion Ecological Services Field Office, Carterville Fisheries Assistance Office and Crab Orchard National Wildlife Refuge. Twenty eight (28) employees were trained during the week at various levels of Wordperfect 5.1.

The levels were Basic, Intermediate 1, Intermediate 2, and Advanced. Employees were given four (4) hours of training in each level, with instructions by Mary Ennigna, private consultant and hands on use of individual computers. Classes were set up with six (6) employees in each session. Employees were very satisfied with the program according to evaluations that were completed at the end of each training period. Employees were very satisfied with training facilities and accommodations for out of town employees.

During the week of May 4 through May 6, 1992, the Refuge Quality Council attended "Managing Cultural Diversity and Recruitment Training" Edina, Minnesota. Those attending were James Fisher, Refuge Manager, Charles Holbrook, Assistant Refuge Manager, Terry Rendleman, Administrative Officer, James Cameron, Outdoor Recreation Planner, Daniel Eastman, Maintenance Foreman, and Doyle Case, Contract Compliance Specialist. Also during the week the Quality Council participants conducted a one hour presentation to the Regional Directorate on the management programs of the Crab Orchard National Wildlife Refuge.

Charles Holbrook, Assistant Refuge Manager, traveled to Oregon, Ohio, during the week of May 11, 1992, for WAM Jam VI meeting.

On June 12, 1992, Robert Stratton, Complex Manager, Mark Twain National Wildlife Refuge, provided Aircraft Safety training to thirteen (13) staff members of the Refuge and Marion Ecological Services staff.

First Aid and CPR training was held for the YCC enrollees and other Refuge staff members on June 15 through June 17, 1992.

During the week of June 19th through 24th, 1992, Daniel Eastman, O&M Maintenance Foreman, provided assistance to WAM 2, as Acting Assistant Wildlife Associate Manager. Also, during the week of July 5th through 10th, 1992, Terry Rendleman, Administrative Officer, provided assistance to WAM 2, as Acting Assistant Wildlife Associate Manager.

John Giles, Refuge Guide, attended an Environmental Methods training workshop at San Francisco Bay National Wildlife Refuge during the week of July 13 through 17, 1992.

John Mahan, Refuge Law Enforcement Officer, traveled to Glynco, Georgia, on July 25 through August 2, 1992, for instructor training for semi-automatic pistols.

On August 6, Joan Skolte, Region 3 Payroll Coordinator, provided training on how to input employees' time and attendance records, using the computer to transmit electronically to the Regional Office. The training was given to the Refuge, Marion Ecological Services Office, and the Fisheries Assistance Office.

Franklin Time Management and Planning Seminar was attended by ten (10) Refuge coworkers members on August 17, 1992, at Cape Girardeau, Missouri.

During the week of August 24 through 28, 1992, Crab Orchard National Wildlife Refuge hosted a Service Task Force meeting. This meeting was a preliminary meeting of the Task Force members designated to update and write various sections relating to permits and fees in the administrative manual. The various manual sections include concessions, special use permits, public user fees and cooperating associations. The Task Force included Washington, Regional, and Refuge personnel from across the country. Tom Worthington and Doyle Case represented Region 3. Doyle Case was designated leader for the concession section.

The entire Crab Orchard staff attended Total Quality Management (TQM) training in the Refuge's conference room on October 22, 1992. Individual TQM teams have completed goal statements and developed strategies to achieve those goals.

John Mabery, Wildlife Biologist attended the national workshop on the "Status and Management of Neo-tropical Migratory Birds" at Estes Park, Colorado during the week of September 20 through September 26, 1992.

During the week of September 28 through October 1, 1992, Richard Berry, Refuge Manager and Charles Holbrook, Deputy Refuge Manager, attended WAM Jam VII in Bloomington, Minnesota.

John Mahan, Refuge Law Enforcement Officer, traveled to Clarence Cannon National Wildlife Refuge, Annada, Missouri, as certified range instructor for qualifying employee's with law enforcement authority of the Mark Twain National Wildlife Refuge Complex on October 16, 1992.

Candace Hericks, Refuge Operations Specialist, completed S-130 and S-190 wildfire training course conducted by the U.S. Forest Service, Shawnee National Forest, Jonesboro, Illinois.

John Mabery, Wildlife Biologist, and Tony Maze, Utility Systems Operator, attended Region 3's New Employee Orientation session held in St. Paul, Minnesota, during the week of November 3rd through 5th, 1992.

John Giles, Refuge Guide, attended a training workshop for Interpreters of Natural and Cultural History Sites at Schaumburg, Illinois, during the week of November 4 through November 6, 1992.

Tony Case, Maintenance Worker, Richard Randle and Michael Janulis, Forestry Technicians, Candace Hericks, Refuge Operations Specialist, and John Mabery, Wildlife Biologist, successfully completed both the classroom and operation sections of a tractor safety certification course during the month of November, 1992. All five employees received their certificates.

Architectural and Engineering (A & E) Contracts

During CY-1992, A & E Contractors performed the following services:

Completion of review, design and recommendations for hook-up and supplying the Refuge with treated water through the City of Herrin, Rend Lake water system. At year's end, the construction contract for the water hook-up had been awarded and was approximately 75% complete.

The extended study and preparation of plans and specifications to correct deficiencies in the Refuge's waste water treatment plant was completed. A solicitation was issued and contract awarded to correct the deficiencies. At year's end, a Notice to Proceed had been issued to the successful contractor. This project should be completed in the early CY-1993.

Again, in CY-1992, at the request of SBA, plans and specifications for the Visitor Information Center remodeling and rehabilitation project were presented to a local Minority Set Aside (8A) contractor for a cost proposal. The 8A contractor's second cost proposal was still excessive

to our estimates. This project was then advertised for competitive bidding and the above local 8A contractor was the successful bidder. The contract was awarded and work was initiated this year. More core drilling and tank integrity tests were performed at underground fuel storage tank sites at Little Grassy Boat Dock, Pirates Cove II Marina and Playport Marina. The additional core drilling determined the level of contamination at the sites. Funding requests for tank removal and contamination clean-up have been forwarded to the Regional Office.



After a two year contract bidding process, construction was initiated this year on the 1942 vintage Refuge fire house to become the Refuge Visitor Information Center.

F. HABITAT MANAGEMENT

1. General

In terms of overall habitat diversity Crab Orchard is in excellent condition. The entire Refuge is a mosaic of various types of forests, grasslands, old fields, cropland and wetlands. With growing concerns of declining songbird populations we began to re-assess Refuge habitat conditions giving greater consideration to nongame birds.

2. Wetlands

All seasonal wetlands and moist soil units were slowly drained in the spring to allow growth of desirable moist soil vegetation. The A-41 moist soil complex was drained much earlier than normal to allow quicker drying of the ground. In July this complex was rehabilitated by repairing some narrow, eroded levees and by installing small screw gates in four of the cells. The capability now exists to individually control the six cells making up this 82 acre moist soil complex. The early, quick draw-down of A-41 caused a poor production of desirable plants. Cocklebur was dominant throughout A-41, but hopefully this will not be the case in the future. All A-41 control structures were closed and all cells were flooded by rainfall/runoff in mid-November. That portion of A-41 bottoms planted in corn received intensive waterfowl use in December.



Refuge Biologist John Mabery inspecting the growth success of sedges, smartweed and millet in the East Crab Orchard Bay.

During July the 64 acre East Crab Orchard Bay moist soil unit was de-watered with a crisifulli pump. The entire basin was a mudflat which received considerable shorebird use. There was excellent growth of sedge, smartweed and millet during August and when heavy rains fell in late September the table was set for soon-to-be arriving ducks and geese. This site received heavy waterfowl use with peak duck use recorded at approximately 5,000 during November.

Erosion damages were repaired on the Pigeon Creek levee by placing topsoil in eroded areas around the concrete stoplog headwall and seeding/mulching the site. The repairs appear to be successful as the impoundment was flooded in November and held water throughout the winter.

A five acre wetland was built just southwest of East Crab Orchard Bay. This entailed building a low earthen levee across an existing grass waterway in a crop field. A corrugated metal pipe and stoplog structure were installed to allow management of this shallow impoundment for moist soil plant production.

Several wetlands were restored and/or enhanced by the Refuge on private property under the Partners for Wildlife Program. See Section F-15 for more information.

3. Forests

One timber sale (#91-1), purchased and partially cut in the previous year by Westvaco, was completed this year. This commercial timber harvest contract involved thinning operations to alleviate overstocking and improve habitat conditions on 85 acres of pine and 20 acres of hardwood in some of the 50⁺-year-old plantations. Over 1,000 cords of pulpwood were removed under this sale. The predominant species in these stands are shortleaf pine and white oak.

The forestry staff marked 1,300 cords of pine pulpwood on 100 acres for future commercial sales. Most of the trees will be removed as products of thinning overstocked stands; a small volume will come from complete removal of the pine overstory to release advance regeneration of native hardwoods.

The public firewood cutting program continued this year with the issuance of 69 permits. As in past years, there was no charge for a firewood cutting permit to individuals holding the prerequisite refuge entrance pass. A new, 10-acre firewood cutting area located on Highway 148 near the wildlife observation platform was opened. By year's end, about 90 percent of the 65 cords of trees marked had been harvested for firewood.

Reforestation of several upland fields totalling 8 acres was accomplished. Over 5,000 hardwood tree seedlings were planted by the forestry staff with assistance from several volunteers. The seedlings were provided by Cypress Creek NWR, which had acquired a surplus from the state nursery. At summer's end, the survival rate was determined to be 55 percent, both over-all and individually for oaks and sweetgum.

The theft of approximately 80 metal fence posts from a bottomland hardwood plantation was discovered in April. The posts were installed to mark rows of tree seedlings and support plastic tree shelters. About

60 tree shelters were damaged or destroyed. The posts and tree shelters were later replaced.

The forestry staff assisted the Camp Cedar Point staff in felling about 20 large, hazardous trees located within the Girl Scout's campgrounds. Some of the trees were salvaged by the U.S. Forest Service for use as lumber.



The reforestation crew of Mike Janulus (l), Rich Randle (c), and Jack Golio (r) prepare to set another row of hardwood tree seedlings using the Refuge's vintage tree planter.

4. Croplands

The 1992 crop year got off to a good start with moderate spring rains. Some corn was planted in late April, but the majority was planted in mid to late May. A new cultural practice was initiated on the Refuge this year to try and better control the ever present johnson grass problem. Due to the lack of good johnson grass herbicides in corn, soybeans were introduced into the corn and clover rotation. Several good herbicides are available to combat johnson grass in a soybean rotation. Soybeans are readily available to migrating Canada geese off the refuge, therefore the refuge doesn't need any share of the soybeans. Also soybean stubble has a higher potential for soil erosion. To alleviate these problems, the coop farmers harvested all soybeans and then immediately planted winter wheat. The wheat provided a good cover crop to eliminate any potential erosion problems and provided excellent green browse for the geese. The wheat will be disced under in the spring and

corn will then be planted. The control on johnson grass was very encouraging, goose use was heavy on the wheat, and this program will probably continue next year.

Most harvesting operations were completed by mid-November. Corn production for the year was well above average at 90 bushels per acre. The average is about 75 bushels per acre.

Cropland acreage and yields for the year were as follows:

<u>Crop</u>	<u>Acres</u>	<u>Yield</u>	<u>Refuge Share Left in Field</u>
Corn	2,402	90 bu/acre	54,045 bu.
Red Clover	1786	3.0 tons/acre	Green browse
Soybeans/Wheat	269	30 bu/acre	Green browse (wheat)
Milo	118	35 bu/acre	1,032 bu.
Perm. Hay	125	Green browse	All

The following fertilizers were applied to Refuge cropland by cooperative farmers during 1992:

<u>Compound</u>	<u>Amount (Tons)</u>
Urea	49
Ammonium nitrate	91
Anhydrous	100
DAP	127
Potash	171
Phosphate	53
Ag Lime	1,012

5. Grasslands

The Refuge has eight small restored prairie areas totaling 66 acres. These areas are being propagated and managed by controlled burns, direct seeding and hand planting forbes. Two of these areas totaling ten acres were burned this year. The 1991 root-stock plantings of purple prairie cone flower, prairie mimosa, tall gayfeather, rattlesnake master and American feverfew continued to do well and showed some signs of growth.

An additional 20 acres of grasslands were burned in a effort to control autumn olive.

7. Grazing

Fourteen permittees paid a total of \$8,747.47 for the use 2,247 acres of grazing land. The previous years May 1 to October 1 grazing period was changed this year to April 15 to October 15 to take advantage of the early growing grass and to keep grazing areas groomed for goose loafing. No adverse affects were encountered due to this change and is expected to continue next year. A total of 891 cattle were pastured during the period for a total of 3,887.75 animal use months. The time frame for permittees to mow their pastures was July 15 - August 30 to allow ample time to complete work, avoid ground nesting birds and prevent pasture grasses from getting to tall and tough for fall use of geese.

8. Haying

Cooperative farmers harvested an estimated 3.5 tons of hay per acre from 795 acres of second year red clover. Overall, the years hay crop was well above average and provided excellent green browse for geese. Several favorable comments were made by individuals at the July farm program meeting, as well as other conservation agencies, concerning the clover hay. One Special-Use-Permit was issued in the fall to a cooperator to harvest 50 acres of fescue hay in the Greenbriar controlled goose hunt area. A cooperative agreement was also made to include the planting of an additional 75 acres of marginal farmland into a permanent hay mixture.

9. Fire Management

Significant improvements to the fire management program were again made thanks to increased funding and the addition of two temporary, seasonal firefighter positions. Rich Randle and Mike Janulis were selected to fill these positions. Their assistance in maintaining fire equipment, equipping a new fire truck, organizing the fire cache, and preparing firebreaks made considerable strides toward optimum preparedness for both wildfire suppression and prescribed burning for habitat improvement.

A new, $\frac{3}{4}$ -ton, 4x4 Chevrolet pickup truck was delivered in June. It was promptly equipped to maximum capacity with the 100-gallon slip-on pumper transferred from the 1967 International brush truck, along with a new foam proportioner, electric winch, and toolbox. Sufficient funding allowed purchases of equipment and supplies to fully equip the cadre of 18 firefighters for the first time.

Six staff members signed up to serve on the FWS Sherburne Crew II interagency firefighter crew. Four of the crew members were put on alert August 23, but the crew was not mobilized because the western fire situation had cooled.

Nine prescribed burns were conducted on 138.2 acres of brushland and grassland habitats. Prescribed fire has again demonstrated its merit as an efficient and effective means to reduce fuel loads, control hardwood invasion, and rejuvenate native grasses and forbs in these habitat types. The backlog of proposed, but as yet untreated, prescribed burning units grew larger since favorable weather and fuel conditions failed to transpire.

Six wildfires and no false alarms were reported by Herrin Fire Department which is under contract to provide fire protection to the refuge. The total area burned by wildfires was 15.1 acres. A single wildfire, which burned 12.8 acres of pasture, accounts for the vast majority of the acreage burned. Fortunately, no significant damage to resources was suffered by the way of any of the wildfires. One arson fire destroyed an individual's car, however; he was also the victim of a robbery and attempted murder.

Several staff firefighters fulfilled the requirements for various National Wildfire Coordinating Group (NWCG) self-study courses offered through North East Area Training (NEAT). Forester Palmer completed S-201 Fire Supervision; Administrative Officer Rendleman completed I-252 Ordering Manager; Maintenance Worker Hileman completed I-256 Tool & Equipment Specialist; Refuge Officers Cameron, Mahan, Solliday and Stewart completed I-259 Security Manager.



Forestry Technician Rich Randle (l) and Mike Janulis (r) respond to a vehicle arson incident at Devils Kitchen Lake using the new fire truck for the first time.

SUMMARY OF FIRE MANAGEMENT EVENTS

REGION FIRE NUMBER	DATE	CLASSIFICATION				
		FALSE ALARMS	MUTUAL AID CALLS	PRESCRIBED BURNS	WILDFIRES	WILDERNESS WILDFIRES
3006	02-20-92				12.8	
3007	02-22-92				1.2	
3010	03-16-92			8.0		
3011	03-24-92			32.8		
3025	04-02-92			10.0		
3026	04-02-92			3.0		
3027	04-02-92			8.0		
3028	04-03-92			29.2		
3029	04-06-92			4.0		
3033	04-07-92			20.0		
3046	04-13-92			23.2		
3144	06-22-92				0.1	
3147	07-01-92				0.1	
3148	07-09-92				0.1	
3160	11-20-92				0.8	
Total Acreage →				138.2	15.1	0.0
Total # of Events →		0	0	9	6	0

10. Pest Control

The shorelines of Crab Orchard, Devils Kitchen and Little Grassy Lake were surveyed for purple loosestrife. A total of 34 plants at nine locations were sprayed with a 2% solution of glyphosate (Round-Up).

Dense stands of cocklebur were mowed in two wetland units, A-41 and the area west of the Firing Range, to prevent seed production and to allow better growth of desirable moist soil vegetation. Cocklebur seed was considerably reduced, but there was minimal growth of other plants.

In order to combat the rapidly spreading johnson grass on the Refuge soybeans were planted in several crop fields. This allowed use of pesticides that effectively kill johnson grass, but which cannot be used in traditional corn or grain sorghum crops. This seemed to be an effective way to set back the spreading johnson grass and we will probably continue to use this tactic in the future. Tenant farmers are required to harvest all soybeans and plant those fields in winter wheat before they can begin harvesting Refuge-grown corn.

Beavers continue to be a nuisance by plugging off road culverts and outlet structures in ponds. When available, Refuge volunteers remove the mud and sticks and a local trapper was permitted to remove beavers from the problem area.

In cooperation with the USDA Forest Service gypsy moth monitoring program, 10 traps were installed throughout the Refuge in June. The

traps were retrieved and inspected for the presence of gypsy moths in September. No gypsy moths were captured.

Forester Palmer attended an Illinois pesticide applicator training session, and subsequently passed exams for general standards and forest pest applicator licensing.

12. Wilderness and Special Areas

Crab Orchard has approximately 4,050 acres of wilderness located across the southern ends of Devils Kitchen and Little Grassy lakes. This area is open to the public year-round. Primary recreational uses of this area include hiking, hunting, wildlife viewing and horseback riding.

15. Private Lands

Wetland restorations on private lands began with the repair and maintenance of previously restored wetlands. One dike in the 18 Bottoms project had been overtopped and blown out. A new dike was built higher and wider to force excess water away from the dike. One other project was in need of repair due to a leaking water control structure. Both projects were in Franklin county and were in full operation by the fall.

New construction on private lands began in late August and ended in late October. A total of 12 projects were completed in five counties. Over 170 acres were restored along the Mississippi, Big Muddy and Little Wabash Rivers and Crab Orchard Lake watershed.

The following wetland sites were built or enhanced on private lands by the Refuge this year:

<u>County</u>	<u>Date Constructed</u>	<u>Name</u>	<u>Acres</u>
Williamson	08-20-92	Moore	10
Franklin	08-27-92	Venegoni	8.5
Franklin	09-02-92	Malone	2
Randolph	09-14-92	Gonterman	50
Williamson	10-16-92	Pisoni	4
Hamilton	10-30-92	Dozier	<u>100</u>
TOTAL ACREAGE			174.5

Several site visits were made on additional properties with some showing good potential for the 1993 season.



Engineering Equipment Operator James Smith is putting the finishing touches to the 8.5 acre private wetland he helped construct in Franklin County.

G. WILDLIFE

2. Endangered and Threatened Species

The Refuge has two nesting pairs of bald eagles. Three eaglets fledged from the Grassy Bay nest located in a live sycamore tree. Two eaglets fledged from the Little Creek nest located in live shagbark hickory tree.

As a participating member of the Kentucky, Tennessee, Illinois Eagle Management Team the Crab Orchard staff conducted a thorough eagle survey on pre-scheduled dates several times throughout the year. These surveys are in addition to various other surveys done on the Refuge (ie. weekly raptor surveys, mid-winter eagle count, etc.). The highest number of eagles recorded at Crab Orchard in 1992 was nine on December 16. There were also nine eagles (four adults and five eaglets) at Crab Orchard for a period of time after fledging occurred from the two Refuge nests.

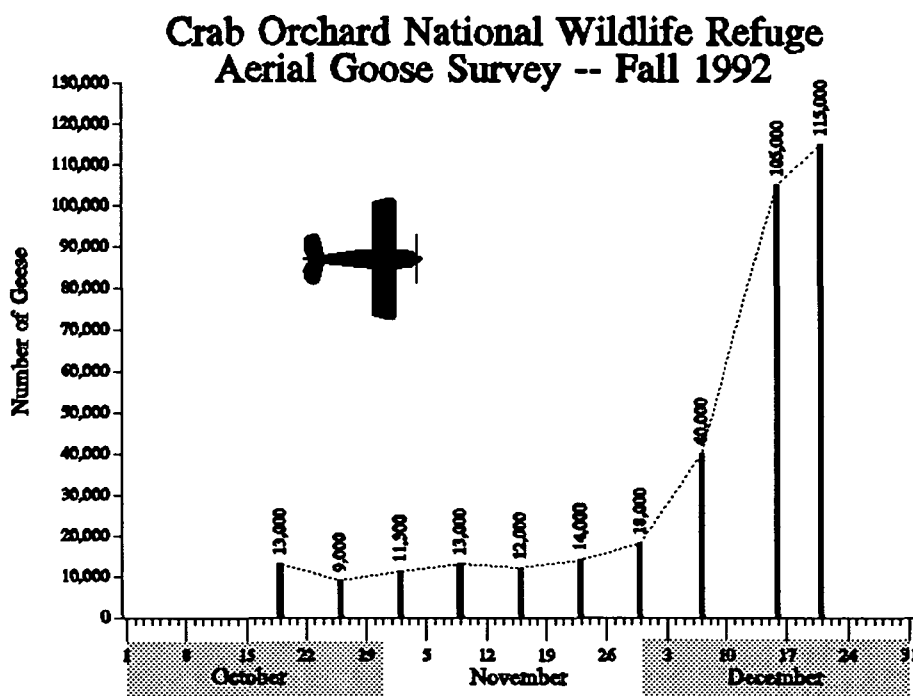
3. Waterfowl

Food and water conditions were very good in 1992 for the fall waterfowl migration. Most shallow ponds and moist soil units had very good seed production and low water levels in Crab Orchard Lake allowed good moist soil plant production along exposed shoreline. Due to the abundance of

food and water on the Refuge we did not begin flooding controlled wetland areas until early November when duck use peaked. The East Crab Orchard Bay moist soil unit contained a vigorous stand of sedges and millet which was heavily used by ducks throughout October, November and December. Total fall duck use days of the Refuge for 1992 is estimated at 240,288. This figure is based on weekly duck surveys from September 21 through December 21 (92 days).

Food availability for geese could not have been better. Crop yields on the Refuge were excellent which resulted in an abundance of corn left standing in fields. Vigorous stands of red clover and winter wheat helped provide a mosaic of corn, wheat, clover and pasture (fescue) fields which made for outstanding loafing and feeding diversity.

The 1992 fall Canada Goose population was slow in building at Crab Orchard. See summary below:





The Canada Goose population peaked this year at 152,000. This peak shows a steady increase in the population over the past five years.

4. Marsh and Water Birds

These birds are also surveyed on a weekly basis during the period of January through April and August through December. The great blue heron is a very common year-round resident at Crab Orchard and it is not uncommon to see up to 30 great blues at one time during mid-late summer. Based on the large numbers of great blues at the Refuge in recent years we feel there must be an active nesting rookery either on the Refuge or very close by. So far no rookery has been found or cited and the nearest confirmed great blue heron rookery is at Rend Lake, approximately 31 miles away.

Other commonly seen marsh and water birds at Crab Orchard are the green backed heron, little blue heron, cattle egret, great egret and double crested cormorants.

5. Shorebirds, Gulls, Terns, and Allied Species

Crab Orchard as a whole did not receive heavy use by shorebirds. None of the Refuge's lakes or large ponds have the proper contours to provide mudflats or areas of extremely shallow water preferred by most shorebird species. However, moist soil management units and seasonal ponds did provide desirable habitat conditions and receive a fair amount of use by migrating shorebirds such as killdeer, yellow legs, snipe and sandpipers. Ring-billed and Bonaparte's gulls were common during fall

and winter and 4,500 gulls were counted during one Refuge survey this year.

6. Raptors

The red-tailed hawk were the most commonly seen hawk on the Refuge. Kestrels were also a common sight. Red-shoulder, Cooper's and sharp-shinned hawks were regular year-round residents, but were rarely identified by untrained observers. Great horned, barred and screech owls were the most common owls found at the Refuge. All raptors were included on the weekly bird survey, but often were easily overlooked due to the surveyors focusing their attention on larger numbers of waterfowl at each stop on the survey route.

Eagles were also counted on a weekly basis with several other specific eagle surveys conducted throughout the year. See G-2 for more information on Refuge eagles.

7. Other Migratory Birds

The Refuge was included in the Audubon Society annual Christmas Bird Count. The total species count was 80, up two from 1991 and equal to the 1990 count. The more unusual sightings this year were an eastern phoebe and two house wrens which are seldom found in this area in December. Also sighted in this year's count were four bald eagles, one golden eagle and two Richardson's geese.

8. Game Mammals

The 1992 white-tail deer survey gave a final index figure of 5.5 deer per mile. This is more than twice the Refuge objective level of 2.21 as defined in the Refuge's wildlife inventory management plan. This seemingly high number of deer does not appear to be causing significant damage or problems on or around the Refuge. The number of car-deer collisions is on the rise throughout southern Illinois including the Refuge area.

The 1992 firearm deer hunt on Crab Orchard resulted in 1,010 permitted hunters checking in 559 deer, a 55.3% success rate. These figures are slightly above the average from previous Refuge deer hunts.

This year the Refuge deer check-in station was set up and run by Refuge personnel instead of by Southern Illinois University. Candace Hericks, Refuge Operation Specialist, coordinated and ran the check station for the seven day split season with assistance from other Refuge employees and volunteers. Aside from recreational and logistical information collected from hunters, biological data was also gathered on the deer pertaining to age, weight, sex, antler size, and overall body condition.

Hunters were also quarried about sightings of coyotes, turkeys and bobcats.

Furbearer populations appear to be stable, however, there is very little interest in trapping on the Refuge. We believe that this lack of interest is primarily due to extremely low demand and prices for pelts.

Once again squirrel populations were very good, but hunting pressure was again light.

Cottontail rabbit populations seem to be very low. It is almost becoming uncommon to see rabbits on the Refuge and comments from area hunters and wildlife managers indicate rabbits have been scarce for the last 3-4 years.

11. Fisheries Resources

Principal water bodies on the Refuge are Crab Orchard Lake (7,000 surface acres), Devils Kitchen Lake (810 surface acres), Little Grassy Lake (1,000 surface acres), Visitor Pond (40 surface acres), and A-41 Pond (40 surface acres). Other small ponds are also under management. The Fish and Wildlife Service and the Illinois Department of Conservation have entered into a Cooperative Management Agreement for the Refuge. In this agreement, the Service is designated as the lead for fisheries management. The Illinois Department of Conservation assists with management at the Refuge by providing 5,000 channel catfish and 7,000 rainbow trout per year for stocking in Refuge Lakes. Additionally, the IDOC collects fish for contaminants analysis and, along with the Illinois Environmental Protection Agency and the Illinois Department of Health, issues advisories on fish consumption as necessary.

There are 68 ponds and small lakes totaling 405 surface acres on the Refuge. Periodic winter fish kills in these ponds and small lakes have resulted in many of the fish communities converting to rough fish dominated systems. Increased turbidity, reduced submergent aquatic vegetation, and low availability of invertebrates and zooplankton has resulted.

Crab Orchard Lake:

White crappie recruitment has been a problem for the last several years. While the crappie fishery was once characterized by slow growing, stunted white crappie, fewer but much faster growing individuals now occur. Black crappie have shifted from a small component of the fishery to the dominant species and are much faster growing. Bluegill sunfish density and quality have improved. Rough fish remain abundant. White bass recruitment has significantly improved.



Refuge Biologist John Mabery and Volunteer Robert Bush conducting a fish community survey of Crab Orchard Lake in preparation for a new fisheries management plan.

During a prolonged water flow period in January, a small number of freshwater drum and gizzard shad were observed impinged on the fish barrier at the dam. The hybrid striped bass and white bass fishery is expected to significantly improve with the installation of the emigration barrier on the spillway.

Harvest regulations on white bass, striped bass and hybrid striped bass were changed this year to take advantage of the large white bass year class. Fishermen were allowed to creel 10 white bass or hybrid striped bass in aggregate, only three of which may be over 17 inches long. Hybrid striped bass were not stocked this year because of improved white bass recruitment.

The 15-inch minimum size limit on largemouth bass remains in effect. Flathead catfish stocked in 1983 are beginning to appear in angler catches. This year a 29 pound individual was reported. Natural recruitment has not been documented.

The Take Pride in America fish rearing pond system was completed and utilized during the year. An 8.5-acre main rearing pond, one 3.5-acre and one 1-acre forage production pond were constructed. The main pond and one of the forage ponds have concrete collection kettles placed downstream. All have concrete outlets and gate valves. A boat ramp and access road were built to the main rearing pond.

The main rearing pond and the larger minnow pond were seeded this year with fathead minnows purchased from Logan Hollow Fish Farm. On June 25th, Little Grassy State Fish Hatchery seeded almost 10,000 1.5-inch largemouth bass fingerlings into the main rearing pond. From this seeding close to 8,000 6-inch fish were stocked into Crab Orchard Lake on August 21, 1992, with volunteer assistance from the TPIA, Logan Hollow Fish Farm, local bass club members, and others.

Four floating fishing piers and a fish cleaning station were acquired during FY92 with recreational fishing funds.

Little Grassy Lake:

The Refuge Fishery Management Plan calls for managing this site for average quality largemouth bass and bluegill sunfish angling supplemented by annual stocking of channel catfish. Channel catfish were stocked by the Illinois Department of Conservation.

The lake was drawn down approximately 4-feet during Fall, 1992 to facilitate construction improvements at the dam. No fishery related problems were experienced from the drawdown. As part of the project a new boat ramp and parking lot will be constructed at the east end of the dam. This will double the capacity for trailered boats at the lake.

Devils Kitchen Lake:

The Refuge Fishery Management Plan calls for managing this site for quality panfishing supplemented by a put-grow-and-take rainbow trout stocking program. Devils Kitchen Lake is one of the few Illinois lakes capable of oversummering rainbow trout.

Trout fishing during 1992 was excellent with numerous fish in the 2-3.5 pound range reported by anglers. A winter tailwater fishery is created when some catchable size fish migrate over the spillway with the first winter rains. 7,800 7-inch rainbow trout and 2,000 brown trout were stocked by the Illinois Department of Conservation during October, 1992.

This lake is the least eutrophic lake in the State of Illinois and has the reputation of having the highest water quality of all Illinois lakes. The City of Marion, Illinois, has been trying unsuccessfully to withdraw 2 million gallons of water per day from the lake for municipal purposes. As the City has initiated planning through the NEPA process to construct a new city reservoir near Creal Springs, Illinois, the issue of Marion, Illinois taking Devils Kitchen water has surfaced again in the alternative review process. The Refuge maintains that use of Devils Kitchen water for municipal purposes is not compatible with Refuge purposes.

The Illinois Department of Conservation conducted a creel census on Devils Kitchen Lake during 1992. The Census is part of the Statewide Creel Census Program which eventually will include Little Grassy and Crab Orchard Lakes. See section: H 9 for survey results.

Visitor Pond:

The Visitor Pond continues to provide high quality angling opportunities for largemouth bass and bluegill sunfish. Fishing at this site has been featured in Outdoor Life, Field and Stream, and Fin and Feather magazines. A 21-inch minimum size limit on largemouth bass is used here to reduce total mortality and maintain quality fishing in the face of low recruitment and heavy fishing pressure. In an average season, over 6,000 fishermen fish 18,000 hours here. The lake is open to fishing from March 15 through September 30. An electro-fishing survey was conducted on Visitor Pond on July 17th, 1992. Data analysis is pending.

A-41 and Blue Heron Ponds:

Electro-fishing surveys were conducted on A-41 and Blue Heron Ponds on August 12th, 1992. Data analysis is pending.

12. Wildlife Propagation and Stocking

See section G-11 for report of fish stocking.

14. Scientific Collections

Southern Illinois University, Cooperative Wildlife Research Laboratory is continuing biological monitoring of chemical contamination at the Refuge. The purpose of the study is to provide baseline information to be used in evaluating the effectiveness of remediation with regard to impact from contamination to wildlife. The information will document the degree of biological effects in wildlife inhabiting contaminated areas at the Refuge. Sampling efforts were undertaken in 1991 and continued into 1992. A final report is due in May 1993.

15. Animal Control

Five raccoons were removed from Refuge industrial buildings to remote Refuge areas. Twenty raccoons were dispatched in the bottom land cooperative farm areas due to excessive crop depredation. This pressure caused the remaining animals to shift feeding patterns and solved the problem. A total of ten beaver were removed to prevent overtopping of Refuge ponds.

16. Marking and Banding

This year the Refuge had no banding quota. However, the Refuge did have a 1,500 quota for reading goose collars. A total of 147 collars were read on Mississippi Valley Branta population geese.

17. Disease Prevention and Control

A landowner in the vicinity of the Refuge reported the loss of approximately 25 mallards in a period of a week at a pond located about 5 miles from the Refuge. Carcasses were sent to the National Wildlife Health Research Center to identify the cause of death. General diagnosis of the specimens was determined to be Organophosphate poisoning. No other deaths have been reported and the landowner was informed of appropriate measures to reduce future incidents.

Another landowner living approximately 5 miles south of the Refuge reported several incidents where mourning doves were having difficulty in flying, landing, and other motor functions. The landowner was able to capture a specimen and bring the carcass in to be sent to Madison, Wisconsin. Upon examination of the specimen it was determined that the bird had Avian poxvirus infection. The landowner raises pigeons that are free to fly, so information was provided to reduce the spread of the infection.

A great blue heron was found dead in Crab Orchard Lake. The body was retrieved and sent to Madison. The specimen was covered with sores similar to that found on the mourning dove with Avian poxvirus infection. A final diagnosis has not been made, therefore observations are speculative.

H. PUBLIC USE

1. General

This year the Refuge received 1,253,171 visits. This is an increase of 41,204 visits over 1991. Since 1991 public use initiatives have been given higher priority in management actions. Enabling legislation for the Refuge mandates recreation as one of our four primary objectives. Because of this and with significant funding through sources like Maintenance Management Funds, Challenge Grant, Watchable Wildlife, and Recreational Fisheries, a rejuvenation of the Refuge recreational infrastructure began this year. We also purchased 6 car counters in an effort to more scientifically update Refuge use figures.

Refuge staff are implementing a focused approach to recreational facilities management. If facilities do not meet the Service standard, we endeavor to replace them or remove them. This year, all seventeen entrance signs were replaced, a new two hundred and twenty foot sailboat dock was built and installed, a new handicapped accessible wildlife observation tower was constructed, and the old fire house was closed as the Refuge Visitor Information Center.

This year the Refuge provided (2) handicapped accessible floating fishing piers, a roof over an existing pier, and a state of the art fish cleaning station with handicapped accessibility.

In February, 1992 a concession management and facility inspection program was initiated. Because Refuge concession facilities have such a high profile in the public eye the three campgrounds, four marinas, two swimming beaches, and boat and yacht club were inspected monthly for health and safety problems. These inspections have revealed serious infrastructure problems in concession management. Things like: unauthorized and unlicensed beach services at the Crab Orchard Campground and Little Grassy Lake were removed, year round residency at the Crab Orchard Campground was eliminated, and the abandoned property at concession areas was removed.

Challenge grants were also very beneficial during 1992. \$2,000 was granted for fish stocking of the Take Pride In America Pond and \$5,000 in support of the National Hunting and Fishing Day Celebration. The Take Pride Pond produced eight thousand 6" large mouth bass and the Hunting and Fishing Day Celebration was the largest and best attended in the country with over 25,000 visitors. Governor Edgar of Illinois acknowledged the event as the best in the southern part of the state.

A special dedication for the new observation tower on Rt 148 site was held in October. U.S. Congressman Poschard and State Representative Larry Woolard, were on hand for the ceremony. The observation deck at the Administrative Office was also redone and made handicapped accessible. A permanently mounted wheelchair friendly spotting scope was installed at the Rt 148 tower.



This new wildlife observation tower was constructed with watchable wildlife funding at a cost of \$12,500.00.



The spotting scope for the new wildlife observation tower is handicapped accessible. Able-bodied visitors have to bend over to use the scope... what a small price to pay for mobility.

ENTRANCE FEES

The following entrance passes were issued during 1992:

	Cost	# of Passes	Total
Seven Day Permits	\$ 2.00	2,541	\$5,082.00
Duck Stamp Annual Passes	\$15.00	1,846	\$27,690.00
Golden Age Passes	Free	376	0
Golden Access Passes	Free	168	0
TOTAL		4,931	\$32,772.00

2. Outdoor Classrooms - Students

This year there was a total of 30,624 outdoor classroom activity hours. Schools, and college classes were encouraged to use the Refuge as an outdoor classroom through an annual distribution of the Refuge's outdoor classroom brochure and year-round correspondence with teachers.

The Refuge staff regularly provided environmental education materials and information throughout Southern Illinois.

Most outdoor classroom activities, were conducted at the Refuge's six year-round youth camps. The 1992 outdoor classroom program at the youth camps accounted for 29,741 activity hours with 11,896 campers staying an

average of two and a half days. All camps provide a minimum of one hour of outdoor classroom activity to each camper per day. The Boy Scout and Girl Scout camps provide much more.

Some high school and grade school classes spent their entire field trip conducting EE activities, but most completed classroom assignments in combination with a trail walk or other interpretive program.

3. Outdoor Classrooms - Teachers

During 1992 Refuge staff coordinated and helped conduct a training session for 24 Little Grassy Lake Youth Camp Counselors in cooperation with the Southern Illinois University's Touch of Nature Outdoor Learning Center.

Outdoor classrooms for teachers and other instructors was also conducted at the Touch Of Nature Outdoor Learning Center. The center regularly uses Refuge lands and waters for teachers' outdoor classroom activities, as they do for the students mentioned above.

Refuge Guide John Giles conducted a combination of outdoor classroom programs and volunteer training sessions for four Refuge volunteers at one of the Refuge's five youth camps. The session involved 120 campers from age 8 to 16 years of age.

The Refuge's four youth camps had 28,601 camper visits and 1,141 teacher visits for 1992.

Refuge management sessions were conducted for wildlife and forestry students. These management sessions included moist soil units, cooperative farming, prescribed burning, timber thinning and other management techniques. Professors used examples of the results of actual management to reinforce classroom instruction.

4. Interpretive Foot Trails

The Refuge has three principle foot trails, the Chamnesstown School, the Rocky Bluff and the Wild Turkey Nature trails. Chamnesstown School Trail is the only trail on the Refuge with interpretive pamphlets for individuals, as well as booklets for teachers. Teachers Guides for this trail are often requested in advance in preparation for using the trail area as an outdoor classroom. Of the 12,096 people who walked these trails, 635 were given interpretive walks by volunteers and staff.

5. Interpretive Tour Routes

About 1,200 visitors drove the auto tour route which located in the closed portion of the Refuge. This route has 14 numbered pull-offs that are located at typical example of refuge management projects and

wildlife habitats which are interpreted with a leaflet. Additionally, a special Sunday auto tour was conducted during the month of October. This special tour had predetermined stops that were staffed by volunteers and enabled visitors to see a portions of the Refuge that is normally locked up.

6. Interpretive Exhibits/Demonstrations

An archaeological exhibit entitled "Prehistory of the Crab Orchard Lake Region" was added to the indoors exhibits at the Visitor Information Center. Approximately 17,175 visitors viewed this exhibit along with other indoor exhibits while obtaining information and leaflets from Refuge staff or volunteers.

Approximately 35,000 visitors viewed roadside exhibits panels. Most of these panels are outdated and are currently being upgraded.

Refuge exhibits and other Fish and Wildlife Service exhibits were displayed at National Hunting and Fishing Day, Career Days, and other off-Refuge sites by staff and volunteers.

7. Other Interpretive Programs

Refuge personnel conducted 55 interpretive talks for schools and several different service organizations and clubs. Theses talks were presented on Refuge trails, in school buses, classrooms and other outdoor settings. Exhibits, posters, animal specimens and puppets were used as props to help explain refuge objectives and to increase wildlife awareness.

Topics for these programs included wildlife interpretation, recreation and the Take Pride In American campaign which, when appropriate, included volunteer recruitment.

8. Hunting

Big Game: The Closed Area, (20,000 acres), shot gun deer hunt is one of the most sought after hunts in the State deer permit lottery system. This system is used to conduct all shotgun deer hunting. There were 1,153 permits issued during 1992. During the two seasons, November 20-22 and December 3-6, 1,010 hunters took 559 deer for a success rate of 55.3%. This hunt is conducted to maintain a healthy deer population, minimize crop depredation, reduce vehicle--deer collisions and balance deer habitat with other wildlife needs.

The Open Area, (23,000 acres), is also a very popular deer hunting area. It supports most, but not all of Williamson county deer hunting. Approximately 450 deer were taken by an estimated 1,200 recreational hunters in this open area of the Refuge.



This year 1,010 hunters harvested 559 deer during the seven day special deer hunt season. Twelve handicapped hunters harvested eleven deer.

Archery hunters accounted for approximately 2,500 visits during the October - December bow season. At the present no total harvest records are available.

Migratory Birds: Due to the shortage of ducks and the increased number of Canada geese, most duck hunters in this area have switched to hunting geese. Harvest figures of those hunters who did hunt ducks were not collected, but cursory reports indicated that the success had improved from past seasons.

The 1992/93 Canada goose season began on a grim note with a mid-summer snow fall in the nesting grounds-approximately 2\3 of the goslings perished. The Refuge is located in the Southern Illinois Quota Zone for hunting geese. The quota for this season is 39,500 geese. The season runs from November 14 until January 31, for a total of 79 days. At the present time the harvest figures have been very poor. This is mostly due to the late arrival of geese, mild winter conditions and unusually good crop yields.

Most Refuge goose hunters hunt in the three "controlled" goose hunting areas. This daily lottery-type hunt continues to be contracted out to a concessionaire. The operation is running smoothly and will likely continue to be on contract in the future. During the first 23 days of the season 380 hunters in the controlled area harvested 42 geese and 113 ducks. Blind rental fee is \$15.00.

An estimated 450 hunters had minimal success hunting doves, woodcock, snipe, and rails.

Upland and Small Game: An estimated 2,762 hunters pursued squirrel, rabbit, and quail. Squirrel hunters had a good harvest. Quail and rabbit hunters experienced less than average success. At this time there is no explanation for this, weather and other factors were similar to past years.

261 State permitted turkey hunters took 33 jakes and gobblers on the Refuge during the spring hunt. During the fall hunt, 58 hunters collected 9 turkeys of mixed age and sex.

Archery hunters were successful in harvesting 2 turkeys.

9. Fishing

The primary Refuge "fishing holes" are comprised of Crab Orchard, Devils Kitchen, Little Grassy Lakes and the six walk-in ponds located in the closed area. Total surface water acreage is approximately 8,910 . Fishing pressure, as usual, was heavy with moderate success.

Crab Orchard Lake, (7,000 acres), is renowned for its largemouth Bass fishing. Due to a fish barrier recently placed across the spillway, many anglers now also have great expectations for catching stripped bass and hybrid white bass x striped bass, (wipers), in 1993.

Striped bass and wipers were stocked in Crab Orchard Lake to convert the lake's excessive population of shad into sport fish. When conditions are favorable, however, they instinctively leave the lake by going over the spillway. This has been the case in recent years and few were caught this year. In the past, when they stayed in the lake long enough, fishing for these voracious fish has been spectacular. The permanent fish barrier, which was installed across the top of the spillway during the 1989 dam renovation project, should prevent these wipers and other game fish from escaping.

Little Grassy Lake, (1,000 acres), is a famous crappie lake with at least one State record to its credit. (It is not unusual for anglers to sacrifice to the palate, 3 pound plus fish which would normally be mounted for future bragging display).

Devils Kitchen Lake: The Illinois Department of Conservation conducted a creel census on Devils Kitchen Lake (810 acres) during the 1992 fishing season. Data from a rough draft report based on over 1,600 interviews indicated 6,947 boat and bank fishermen fished 46,196 hours. Over 90% of the fishing was by boat and fishermen harvested a total of 10,084 pounds of fish or 14.3 pounds per acre. The principal species harvested were bluegill (6.6 lbs/acre), large mouth bass (4.4 lbs/acre), redear sunfish (1.7 lbs/acre), and white crappie (1.5 lbs/acre).

Fishermen traveled a mean distance of 78.9 miles to fish the lake indicating that many of the fishing trips were by individuals from outside the immediate area of the lake. The largest percentage of fishermen (43.5%) fished for largemouth bass. The remaining percentages were: 27.3% bluegill, 2.4% rainbow trout, and 25.4% for anything that would bite.

A total of 344,135 warmwater anglers fished Refuge waters in 1992. Fishing remains one of the more popular activities on the Refuge. The six Closed Area ponds that were first opened to summer fishing in 1986 remained favorite fishing spots. The Visitor Pond, with its largemouth bass size limit of 21 inches, produced few keepers, but due to a legendary opening season, anglers continued to fish it with great expectation.



The Shriners Fishing Derby for Kids is a very popular event especially for this father and daughter pair. Illinois Dept. of Conservation grants a free fishing license for this event.

10. Trapping

Trapping interest was non-existent for the 1991-92 season; no permits were issued.

11. Wildlife Observation

Wildlife observation is the single most popular recreational activity on the Refuge. We estimate 450,000 people visit the Refuge annually to see wildlife. During the fall and winter Refuge roads are busy with

vehicles at our two primary observation points observing ducks, geese and shore birds. During late afternoon until sunset our roads are often crowded with people watching and counting deer, looking for coyote and the elusive wild turkey and bald eagle.

During 1992, Watchable Wildlife Funding was used for the renovation of two observation points on the Refuge.

12. Other Wildlife Oriented Recreation

The Refuge provided other wildlife oriented recreation like wildlife and wildlands photography sessions. These sessions are conducted by a core of volunteer photographers who hold photo contests and present informational and instructional programs in the visitor information center.

As estimated 1,440 people gathered wild foods, such as, mushrooms, nuts, fruits and berries while they enjoyed their outing.

13. Camping

Camping on the Refuge is limited to one of our (4) Refuge campground concessions. The Refuge presently has 525 camping sites. Over 50,000 visitors used these campgrounds during 1992. Each of the Refuge campgrounds has their unique qualities. Crab Orchard attracts the motor boater and water skier, Devil's Kitchen the avid angler, Little Grassy the senior citizen and The Boat and Yacht Club the bank fishing crowd.

Crab Orchard Campground is the largest with 320 sites. This contract expired in December of 1992, but was extended for one year until new National policy is established on concessions.

The Refuge has begun implementing a five year renovation project at the Crab Orchard Campground. The five year plan calls for a general upgrading of each of the five loops. "A" loop will be completed by April of 1993, and the remaining 4 loops will be done prior to 1997. Other administrative procedures will be implemented over the next several seasons that should change the character of the campground considerably.

14. Picnicking

An estimated 8,825 picnickers used the Refuge this year. While most of them used the eight established picnic areas others, picnicked at boat ramps, campgrounds, headquarters, and the concession group picnic grounds. Approximately 25,300 additional picnickers ate lunch during school lunch hour or during their work day and were not classified as being wildlife oriented because they did not come to the Refuge for wildlife purposes.



Maintenance Workers Roger Hileman (l), Eric Modglin (c), and Mick Upchurch (r) built the new wildlife observation tower located on Rt 148.

17. Law Enforcement

This years Refuge law enforcement staff was made up of three full time enforcement officers and two collateral officers. Due to budgetary constraints one collateral officer did not receive the required training.

The major enforcement emphasis during the 1992 season was drug location and eradication. The Refuge was involved in 24 separate cases and confiscated 374 separate plants. We worked in cooperation with Illinois State Police, U.S. Air National Guard, Williamson County Drug Unit, Drug Enforcement Administration, and the U.S. Forest Service.

The Refuge received (2) new vehicles, a 3/4 ton pick-up and a 4 wheel drive blazer. These vehicles along with the patrol boat were equipped with new lights and sirens. A new hand held radar gun was acquired to help in maintaining traffic safety.

Refuge Officer Solliday was detailed as the Region 3 coordinator for law enforcement training and Refuge Officer Mahan became certified as a firearms instructor.

Refuge Officer Solliday participated in a detail assignment on the McGregor District of the Upper Mississippi National Wildlife and Fish Refuge.

The Benton, Illinois Federal Court adjusted its calendar and now hears Refuge cases only once every three months.

The following is a list enforcement activities:

Serious Law Enforcement Incidents for 1992:

Murder	1
Attempted Murder	1
Assault	2
Suicide	1
Traffic Fatalities	4
Heart Attack (Death)	1
Accidental Shooting	1
Stolen Property	18



Refuge Officer Kristie Solliday, other Refuge Officers and the Air National Guard eradicated nearly 400 marijuana plants being cultivated on the Refuge.

Other Law Enforcement Activities for 1992:

Offense	Citation	Warning
Fishing without license	47	27
Swimming in closed area	7	16
Trespass	19	55
Speeding	9	56
Hunting violations	2	4
Life jackets	2	5
No fire extinguisher	1	0
Public Indecency	2	0
Off-road vehicle trespass	2	14
Undersize fish	6	2
No firewood permit	0	2
Discharging a firearm	1	14
Camping in closed area	2	19
No entrance fee	0	70
Trot line fishing after hours	1	0
Motor vehicle violations	0	2
Littering	2	1
Abandoned property	2	1
No boat registration	0	2
Water skiing without observer	1	0
Unleashed dog	0	3
Uncased firearm	4	0
Firearm violation	0	7
Theft	0	2
Uncontained fires	0	18
Watercraft horsepower limit	0	1
Parking	0	3
Underage drinking	0	3
Spotlighting wildlife	0	4
No lights on watercraft	0	1
Advertising on refuge	<u>0</u>	<u>1</u>
TOTAL	110	332

17. Cooperating Associations

This year the Refuge made a major change with its cooperating association. Previously the Refuge cooperatively agreed with the Midwest Interpretive Association to conduct a book sales outlet. Sales for 1992 totaled \$1,208.47. This was a decrease of \$49.27 from 1991.

Because no funding was returned to the Refuge and with the need to develop a local cooperator, the cooperative agreement with Midwest was discontinued and a new grassroots association was formed under the name of "The Friends of Crab Orchard."

This new cooperating association is made up of a five member Board of Directors. As of the writing of this narrative they are pursuing articles of incorporation according to Illinois Statute, Federal tax exempt status, and a State tax identification number. In preparation for conducting their sales outlet the "Friends" acquired a \$5,000 loan from the Chincoteague Natural History Association. As soon as all their legal hurdles are jumped they will begin a book sales operation for the Refuge.

18. Concessions

This year the Refuge conducted extensive concession management changes. The Gateway Marina was sold for \$157,550.00 to Buddy Murphy of Carbondale, Illinois and is now known as the Pirates Cove II Marina. The Refuge extended the existing Crab Orchard Campground concession contract for one year in expectation of new Departmental policy guidance regarding concession management.

During the year, underground gasoline storage tanks were evaluated at Little Grassy Boat Dock, Playport Marina and Pirates Cove II Marina concessions. These three areas have a total of six tanks ranging in size from 350 to 4,000 gallon capacity. Core drilling test results at the tank sites indicated the need to remove the tanks and further drilling indicated soil contamination adjacent to the tank sites. As of the writing of this narrative cost estimates to remediate this tank problem are around \$500,000.00.

A major renovation of the Crab Orchard Campground facilities was instituted this year. This renovation process is being performed by Refuge maintenance staff and will entail a projected five-year program to bring the campground facilities up to an acceptable standard. The first phase will be concentrated in Loop "A". The process will consist of re-roofing and re-siding the Comfort Station, removal of old and installation of new plumbing fixtures, interior painting, new camp site numbering and upgrading, installation of new fish cleaning station to conform to Illinois Department of Conservation laws, removal of shoreline docks throughout the campground and a general clean-up of the entire facility. At year's end, good progress is being made in the renovation process.

In February, 1992, the Refuge initiated monthly inspections of all concession facilities. These inspections focused on safety, health, environmental and general maintenance items needed in concession areas. Numerous discrepancies were found and extensive repair work will be necessary.



Concession recreation facilities like this boat dock have fallen into disrepair because of laws prohibiting the Refuge from causing the concessioner to pay for maintenance.

In late 1991, the Refuge received a "Draft" copy of the U.S. Department of the Interior's "Report of the Concession Management Task Force." This report was compiled by a task force consisting of members from the Bureau of Land Management, the U.S. Fish and Wildlife Service, the Bureau of Reclamation, the National Park Service, the Bureau of Indian Affairs, the U.S. Army Corps of Engineers, and the U.S. Forest Service.

The report addressed concerns in program areas of concession operations, cooperating associations, special use permits and the federal recreation fee program. The main thrust of concerns centered around concession and special use permit operations. Basically, those main concerns were fair and equitable payments by concessions/permittee for use of government facilities, low and divergent franchise fees, length of contracts, preferential renewal options, vested interest by concessionaires, and recommendations for selection and training of personnel administering concession contracts.

The Service's Washington Office established its own review and evaluation team to prepare an "Action Plan" to review and implement recommendations contained in the report. The team members included representation from the Washington Office, all Regional Offices and selected Refuges. Region 3 team members were Tom Worthington of the Regional Office and Doyle Case of the Refuge.

The team's first meeting was held during the week of August 24, 1992, and was hosted by Crab Orchard National Wildlife Refuge. The team reviewed existing Service policies and guidance, identified the relevant issues, discussed the development of a responsive work plan and assigned related tasks to individual team members. The target date for implementation of the work plan is June, 1993.

To comply with the USDI Task Force recommendations, the Service instituted interim guidelines, particularly in concession contracting procedures. Most concession contracting actions now require in-depth review at the Washington Office.

I. EQUIPMENT AND FACILITIES

1. New Construction

Refuge maintenance staff designed, constructed, and installed a 220 ft. floating boat dock/breakwater, to accommodate 20 sailboats at the Playport Marina Concession. This dock replaced old dilapidated and unsafe facilities at this marina. The concession area is owned by the Fish and Wildlife Service and operated by a concession contractor. The dock is fully handicapped accessible with an 150 ft. concrete sidewalk and wider dock piers. It took about 2½ months to fabricate and install this dock at a cost of approximately \$18,000. This same dock system installed by a private contractor would have cost in excess of \$50,000.



This 220' boat dock system was designed, built and installed by the Refuge Maintenance crew.

For over the past five years the Refuge has been planning to connect with the Rend Lake water distribution system. Contract details with the City of Herrin, Illinois were completed early in 1992 and the city started installing the new water lines and fire hydrant. The total project is not expected to be completed until 1993 with a new pump station and water meters.

Refuge maintenance staff constructed a new wildlife observation tower on Rt. 148 this year. Through watchable wildlife funding the project replaced two old dilapidated towers in the same area. The new tower is handicapped accessible with a special self-focussing wheelchair friendly spotting scope. Use of this new facility has greatly increased.

Construction work was started during June this year on the building of an axillary spillway and new stilling basin on the Little Grassy lake dam. This construction project was awarded to E.T. Simons Construction Company and involves lowering spillway road by about twelve feet, building a two hundred feet auxiliary spillway, installing a parapet wall along the dam, and installing a new jet outlet valve.



In order to minimize the risk of a dam failure major reconstruction work was initiated on the Little Grassy Dam and stilling basin.

2. Rehabilitation

After an extensive Architectural and Engineering contract by Lipe and Associates, Benton, Illinois, a contract was awarded this year to EMC Consultants INC., Carbondale, Illinois, in the amount of \$63,650.00. This contract involves the construction and installation of a new chemical feed system and building including chemical feeder, storage tank, piping, and electrical connections. This contract also includes renovation of the sewage treatment plant effluent structure.

A complete renovation project was initiated in November on the Refuge's old fire house. This renovation will cause an old 1942 vintage fire house to become a 5,000 square feet Visitor Information Center at a cost of over \$500,000. As of the writing of this narrative extensive problems have been encountered with structural integrity, termites, asbestos, lead paint, and contract non compliance. The project is expected to be completed in June 1993.

A complete renovation of the original deck at the Headquarters Building was required as it had deteriorated to the point that it had to be removed. We replaced the old deck with a new handicapped accessible observation deck using watchable wildlife funds. The new deck is $\frac{1}{2}$ the size of the original and some vegetation was removed to increase visibility for our visitors.

The U.S. Army Corps of Engineers Offices, (COE) Chicago, Illinois, awarded a second demolition contract this year which will complete the demolition and burial of the five remaining igloo type buildings in Industrial Area 11. This project is expected to be completed early in 1993 and will complete all building demolition in Areas 11 and 12. The buildings in these two areas were demolished in compliance with the Short-Term Goals of the Industrial Policy. In the very near future, that goal will have been achieved. The contract costs incurred for these two demolition projects were funded through the COE's "Defense Environmental Restoration Program" (DERP) at no cost to the Refuge with the exception of the actual on-site monitoring of the demolition contractors.

A renovation project was initiated by Olin Corporation (Olin) at the old railroad spur on the north boundary of the Refuge. This last remaining railroad track will be used by industrial tenants to provide rail service. The project got off to a rocky start when Olin went into this area which is outside their leased boundary without prior approval from the Refuge and initiated vegetation control and staging of rail cars. The Refuge stopped all work because of adverse effects on Killdeer nesting and Loggerhead Shrike perching habitat. After the nesting season and with the approved Special Use Permit Olin was later allowed to use the area.

3. Major Maintenance

The Refuge sewer plant and digester buildings were both sandblasted and painted this year with a two part epoxy paint. The Refuge receives from industry over 160,000 gallons of raw sewage daily for primary and secondary treatment. This was the first time the digester had been painted since construction in the early 1940's. The Refuge also replaced two return sludge pumps and mid-frames that were exhausted.

The vertical siding on the Refuge Administrative Office was replaced this year by, 8" cedar, horizontal lap siding. The vertical siding required continuous maintenance and even with constant staining and sealing it had dried and warped to the point that it would leak and was unsightly. We discovered that the studs the siding was nailed to were not properly spaced, this contributed to the deterioration of the original siding. We added 2 x 4 studs to insure the new siding would be secured properly.



The Refuge administrative office was resided this year. Because the old siding was warped and not properly installed, the building developed water leaks.

Eleven new overhead doors, were replaced this year on four industrial warehouses and metal BI-RIB siding was also purchased to cover existing asbestos siding on one of our warehouses. This is an approved method of containing asbestos materials in the existing siding. "Challenge Grants" totalling \$199,500.00 were submitted for Regional Office and "Directors Award" funding consideration.

Major maintenance was initiated this year on one of the six loops in the Crab Orchard Campground. The campground is a concession area operated by an individual contractor, with the Refuge responsible for major maintenance. The campground consists of over 300 camp sites, comfort stations, and electric and water service. The loop A renovation includes; new individual campsite markers, individual campsite picnic tables and grills, residing the comfort station, replacing the comfort station roof, new exhaust fans, new 120 gallon hot water heater with mixing valve, and fixtures replaced with stainless steel fixtures. The estimated cost of this project is \$35,000.

This year all dikes and control structures on the A-41 moist soil units were completely redone and four new tubes with screw valve controls were installed. Management of this unit had deteriorated to the point that we could not mow the dikes or adequately control flow of water into the individual cells.

4. Equipment Utilization and Replacement

Major Purchases (1992)

John Deere 2555 Farm Tractor with Cab	
Bush Hog Rotary Mower	(10 ft. Batwing)
Bush Hog Rotary Mower	(9 ft.)
Brown Tree Cutter #80TC720HD	
1992 Chevrolet Blazer	(Law Enforcement)
1992 Chevrolet S-10	(Administration)
1992 Chevrolet 1500	(Maintenance)
1992 Chevrolet 2500	(4X4 Fire Vehicle)
Snap-On Diagnostic Scanner	
Portable Air Compressor	

5. Communications System

During the summer arrangements were made with a local firm to provide the Refuge with a repeater system that has enhanced the high band radio frequency. A local firm, J&O Communications, Marion, Illinois, had a tower located south of the Refuge and a repeater that was available for rental on a monthly basis at a cost of \$100.00 per month. All mobile radios were reprogrammed during October to use the capabilities of the repeater.

6. Computer Systems

Three additional computer systems were received during the year, two from Northgate Computer Corporation and one from Dell Marketing Corporation. Two computers were 80386 models and one was 80486 model which are being utilized by the Refuge Operations Specialists and

Administrative Technician. Software was ordered for each unit and is being utilized on a daily basis for memo's and reports.

7. Energy Conservation

Gas/diesel fuel use during 1992 was 19,978 gallons, as compared to 21,176 gallons in 1991. A decrease of 1,198 (5.66%) gallons.

J. OTHER ITEMS

1. Cooperative Programs

Several changes were notable in the industrial leasing program this year. At year's end, only two, marginal warehouses were available for lease. Olin Corporation, Orpack Stone, Summit Resources and M & M Storage expanded their cold storage operations and required additional warehouses to accommodate the expansions.

The most notable potential for industrial change centered around Olin Corporation. In May, Olin announced the tentative sale of their Ordnance Division to Alliant Techsystems. In November, the Federal Trade Commission voted to oppose the sales transaction and requested a temporary restraining order to block the transaction. At first, both Olin and Alliant planned to appeal the injunction blocking the merger of the two corporations but both corporations elected not to appeal. It appears the Ordnance Division of Olin will remain on the Refuge as before.

An adverse termination of a lessee, Castel Properties, was taken by the Refuge. The reasons for termination were non-payment of rent, failure to provide proof of required insurance coverage and failure to perform maintenance to leased building as required by the lease contract. This lessee has had a history of similar lease contract violations and is now terminated. In the termination procedure, the Refuge permitted the lessee until January 4, 1993, to enter the leased building and remove personal property items.

With the Solicitor's imposed restrictions on use of "Rental Credits" to upgrade industrial buildings to specified lease standards, the Refuge has had to take a more active role in the upgrading process when buildings are requested by current or new lessees. Responsibility for building repairs such as installation of new overhead doors, building siding, painting, glass repair, and trim repair and costs incurred with those repairs now rest with the Refuge.

To off-set those costs and to obtain the maximum for the dollar expended, the Refuge submitted "Challenge Grants" with Olin Ordnance Corporation and Digraph Corporation, to cost-share repairs in the upgrading of leased buildings. Limited financial resources were

strained to the maximum and funding through both Regional and Director's Challenge Grant Awards were not available for Industry.

3. Items of Interest

The Refuge continued with the community outreach effort that was initiated in 1991 with the Washington Elementary School, in Marion, Illinois. During the school year, each week for about forty five minutes, Terry Rendleman, Administrative Officer, assisted the 5th grade teacher, Mrs. Amy Sanders, with her class of approximately 22 students, using computers as study aids in science, reading, spelling, math, social studies, and now this year for writing reports. The computer class has become a favorite time for the students, since this is the second year that most have been using them and are now not afraid to use the applications.

With Mr. Rendleman's computer skills the computer lab expanded this year to the schools library, where a CD Rom has been added to the computer network so that students can have access to research materials for class projects.

The Washington School faculty has been very receptive to using the computer classroom. Their positive attitude and willingness to learn new skills and applications of the computer are keys to the success of the program.

The Washington School consist of pre-kindergarten through 6th grade students. It has an enrollment of 800 students and 35 teachers. It is part of the Marion Community Unit School District No. 2.

This year some of the Refuge staff tried their hands at playing in an 8 ball pool tournament. The Refuge pool team squared off against the Marion Prison team in two spirited five member pool matches. The first tournament on November 2 was narrowly won by the Prison team. In the second tournament, the Refuge team resoundingly defeated the Prison team. Everyone had a good time and through entry fees and donations \$480.00 were given to the "Dream Factory for Children of Southern Illinois" and the "Toys for Tots."

This year during the Christmas season the Refuge staff and Labor Union donated \$417.00 to the "Share Your Blessings" program. From the funds collected we were able to buy Christmas gifts for 5 children that would otherwise not have had anything. Each child received six gifts, four of which were clothing and two were toys.



These 30 Christmas gifts were donated to six children in the "Share Your Blessings" program. Money for the gifts came from Labor Union #2086 Members and other Refuge employees.

4. Credits

Section: A Holbrook
 B Mabery
 C Mabery, Aly
 D Mabery, Cameron
 E Rendleman, Eastman, Case, Mabery
 F Mabery, Palmer, Hericks, Aly
 G Mabery, Hericks, Aly, Surprenant
 H Cameron, Vincent, Giles, Solliday, Surprenant
 I Eastman, Rendleman
 J Case, Cameron, Rendleman, Holbrook, Moore
 K Berry
 Editing and Assembly: Vincent, Berry, Holbrook

5. Contaminants

This year dirt was turned in June at the Water Tower Operable Units as part of a removal action to address toxic lead contamination. The lead contamination is the result of lead based paint chips accumulating in the soils during sandblasting activities of water towers over the last fifty years. The U.S. Fish and Wildlife Service completed plans in June 1992 governing how the removal action would be conducted. U.S. Environmental Protection Agency and Illinois Environmental Protection

Agency participated in the review and comment on the plans. The Administrative Record supporting the need for the removal action was made available to the public for review and comment from July 10 through August 11, 1993. In October 1992, approximately 425 tons of soil excavated from two of the three existing water towers was shipped as hazardous waste to Peoria Disposal Company in Peoria for treatment and disposal. Approximately 3,000 tons of lead contaminated soils are stockpiled under plastic sheeting at the Water Tower sites awaiting disposal. It is more difficult to dispose of the soils not classified as a hazardous waste. As of the date of the writing of this report, the contractor and disposal facility is completing the paperwork required to obtain the State of Illinois's authorization to accept the waste.

During the summer of 1993, we expect to turn dirt at the Metal Areas Operable Unit sites. In support of this action, during 1992 the field south of Area 7 Industrial Warehouse Complex was selected as the site for the landfill. During September and October, plans and field activities, and interpretations were completed to address Illinois Environmental Protection Agency's concerns regarding subsurface soil conditions and potential groundwater pathways at the site. A geophysical survey followed by soil borings and piezometer installation were completed as part of the characterization program. The One-Hundred Percent Remedial Design was completed in November. As of the date of writing of this report, final modifications are being incorporated to the design documents. This will enable the Army Corps of Engineers, on behalf of the Service, to solicit bids for a contract to construct a landfill and excavate, treat, and dispose of soils/debris.



Clean-up of lead contamination at the three water tower sites was initiated in July at a cost of over \$750,000.00.

At the Polychlorinated Biphenyls Areas Operable Units (PCB OU), design activities are just commencing. The Work Plans for delineating the boundaries of contamination were approved by U.S. EPA in June 1992. The active Olin explosive/munitions manufacturing facility is one of the sites comprising the PCBs OU. Many safety and distance limitations required of Department of Defense contracts apply thus introducing complexities. The field activities were expedited in June 1992 to allow Schlumberger to collect samples at the Olin "I" facility during Olin's shut down period of operations. The field activities were completed in October 1992. Schlumberger was required to submit a report for the delineation in December. As the date of this report, Schlumberger expects to submit the document to U.S. EPA and the Interior in the middle of January 1993.

Schlumberger is legally bound to complete cleanup at the PCB OU as of August 27, 1992. The Consent Decree, the legal agreement for cleanup, was signed by the Federal Judge and entered into the Federal District Court.

In accordance with the Consent Decree, Schlumberger provided the Fish and Wildlife Service in September with three checks totalling \$2.5 million for settlement of natural resources damages. The \$2.5 million is being held in an interest bearing account. A Natural Resource Restoration Plan must be prepared to detail how the \$2.5 million will be spent.

To accomplish this task, the Service decided to hire staff to coordinate these restoration activities. The personnel documentation to hire a natural resource damage assessment coordinator was developed through the coordinated efforts of Crab Orchard National Wildlife Refuge, Fisheries, and Ecological Services.

The Corps of Engineers, on behalf of the Army, is conducting a remedial investigation of areas potentially contaminated by explosives/munitions. The first phase focused on fifteen sites to identify sites with contamination requiring further characterization. The technical memorandum reporting the findings of the first phase was completed in June 1992. Work plan development is underway for the next phase.

In accordance with the Federal Facility Agreement, the Fish and Wildlife Service provided to USEPA and IEPA a scope of services in May 1992 as the evaluation of whether further action is needed at the sites comprising the Miscellaneous Areas Operable Unit. The scope of services identified sites for additional characterization to confirm the presence or absence of contamination.

A site reconnaissance was conducted October 27, 1992 for the consultant, USEPA, IEPA, and USACE to facilitate work plan development for twenty sites comprising the Miscellaneous Areas Operable Unit.

K. FEEDBACK

I arrived at Crab Orchard Refuge in late June with, I suspect, one preconceived concern shared by many with only a passing familiarity with the Crab Orchard National Wildlife Refuge. I wondered about just how serious the "contamination problem" was. I quickly learned to my surprise that the Superfund Project involves what amounts to surface soil contamination of only six acres or so of the more than 43,500 that compose the Refuge. While we need to be concerned about this issue and arrange to clean up the areas involved as completely and quickly as feasible, the notoriety associated with the Superfund Project has inappropriately overshadowed other Crab Orchard Refuge programs. The Refuge is a magnificent natural resource that also supports an industrial complex and recreational use that have significant local and regional economic importance. Environmental education and interpretation opportunities are essentially limitless. Overtime we plan on changing the image others tend to have of our Refuge to one that accurately reflects its values.