

FISHERY MANAGEMENT

Crab Orchard National Wildlife Refuge  
Carterville, Illinois 62918

Submitted by W. D. Adams Date 12-5-83  
Project Manager

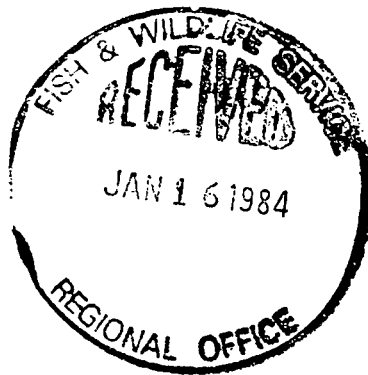
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Regional Director

Approved by Robert A. Jantzen Date 1/12/84  
Director



COOPERATIVE AGREEMENT  
BETWEEN  
DEPARTMENT OF CONSERVATION  
OF THE  
STATE OF ILLINOIS  
AND THE  
U.S. FISH AND WILDLIFE SERVICE  
OF THE  
DEPARTMENT OF INTERIOR

I. PURPOSE

This cooperative agreement between the Department of Conservation of the State of Illinois, hereafter referred to as the Department, and the U.S. Fish and Wildlife Service, Department of Interior, hereafter referred to as the Service is hereby entered into under the authority of 16 USC 742f(a)(4) and 757a; and the Fish and Wildlife Coordination Act (48 Stat. 401) as amended.

It is the intent of this agreement to facilitate the cooperation of the two agencies in administering the fishery program on Crab Orchard National Refuge, hereafter referred to as the Refuge. Specific direction for managing the fish resources of the Refuge is contained in a Fish Management Plan approved in 1983. This Plan states the broad goals for fish management and outlines on a lake by lake basis the steps necessary to achieve these goals.

II. RESPONSIBILITIES OF THE AGENCIES

The Service has the lead responsibility for fish resource management on the Refuge. These responsibilities include furnishing personnel, materials, services and facilities necessary to achieve fish management goals. The Department will assist by providing consultation, assistance in fish collections, fishery surveys, law enforcement, and as available fish for stocking Refuge waters from its State Fish Hatchery System.

A. Specifically the Service will:

1. Implement the Fish Management Plan, evaluate progress towards achieving fish management goals and revise the Plan as necessary.
2. Cooperate with the Department in determining regulations under which the fishery resource will be protected and utilized.
3. Enforce fishery regulations including Refuge Special Regulations and State Administrative Orders on the waters of the Refuge.
4. Meet with representatives of the Department at a mutually agreed upon date each year to determine the define fish management practices and develop fish stocking schedules in accordance with Service and State policy.

5. Stock fish from State Fish Hatcheries in accordance with the Fish Management Plan and approved stocking schedules and notify the Service two weeks prior to stocking.

### III. ADMINISTRATION

It is agreed that the Service and the Department, their agents and employees, will not hold each other responsible for any fines, claims, damages, losses, judgements, and expenses arising out of or resulting from any act, omission, or activity in connection with the activities undertaken in furtherance of this agreement.

The Service will be liable for accidents or injury to the extent provided under the Federal Tort Claims Act. The State will be liable to the extent provided under the applicable statutes and laws of Illinois.

This agreement shall be contingent upon availability of funds and personnel for expenditures and work contemplated herein. The respective parties are released from liability hereunder to the extent that such funds and personnel are not available.

### IV. TERMS OF THE AGREEMENT

This is a continuing Agreement. Either party shall have the right to terminate the Agreement in whole or in part for the convenience of the parties at any time upon thirty (30) days written notice to the other participants.

This Agreement will be reviewed annually by Service and Department officials to determine whether it must be amended to accomodate policy change or program redirection. Changes in the Agreement may be proposed at any time by either the Service or the Department and will become effective after they are agreed upon in writing by both parties.

Nothing contained in this Agreement shall abrogate the statutory responsibility or authority of either signatory agency.

#### APPROVAL:

DATE 10/4/85 By John P. Pawski  
 Acting Regional Director, Region 3  
 U.S. Fish and Wildlife Service  
 Twin Cities, Minnesota

DATE 10/15/85 By Paul B. Witt  
 Director, State of Illinois  
 Department of Conservation  
 Springfield, Illinois

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## TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	UNIT PLAN 1 - CRAB ORCHARD LAKE	
	A. UNIT DESCRIPTION	2
	B. FISHERY MANAGEMENT PROBLEMS	6
	C. ALLOCATION OF RESOURCES	7
III.	UNIT PLAN 2 - DEVILS KITCHEN LAKE	
	A. UNIT DESCRIPTION	10
	B. FISHERY MANAGEMENT PROBLEM	11
	C. ALLOCATION OF RESOURCES	12
IV.	UNIT PLAN 3 - LITTLE GRASSY LAKE	
	A. UNIT DESCRIPTION	13
	B. FISHERY MANAGEMENT PROBLEMS	13
	C. ALLOCATION OF RESOURCES	15
V.	UNIT PLAN 4 - POND A-41	
	A. UNIT DESCRIPTION	16
	B. FISHERY MANAGEMENT PROBLEMS	16
	C. ALLOCATION OF RESOURCES	17
VI.	UNIT PLAN 5 - PONDS OPEN TO PUBLIC FISHING	
	A. UNIT DESCRIPTION	18
	B. FISHERY MANAGEMENT PROBLEMS	18
	C. ALLOCATION OF RESOURCES	19
VII.	UNIT PLAN 6 - PONDS CLOSED TO PUBLIC FISHING	
	A. UNIT DESCRIPTION	20
	B. FISHERY MANAGEMENT PROBLEMS	20
	C. ALLOCATION OF RESOURCES	21
VIII.	COOPERATION AND COORDINATION	22
IX.	EVALUATION AND UPDATE	23
X.	LITERATURE CITED	24
XI.	ALLOCATION OF RESOURCES - TOTAL	25
XII.	FIGURE 1	26

## I. INTRODUCTION

Crab Orchard National Wildlife Refuge was established in 1947 when lands of the Ordill Ordnance Plant were transferred from the Department of Defense to the U.S. Fish and Wildlife Service. In the transfer, Congress specified that the area was to be used for wildlife conservation, recreation, agriculture and industry.

Crab Orchard contains 43,550 acres located in Williamson and Jackson Counties in southern Illinois. Approximately half of the land area is administered as public use area and half as sanctuary area for waterfowl (Figure 1).

The primary objective of the refuge is to provide migration and wintering habitat for a portion of the Mississippi Valley population of Canada geese (RRP). Approximately 6,000 acres of cropland and 2,200 acres of grassland are managed for this purpose.

Secondary objectives include:

1. Provide nesting habitat for wood ducks (RRP).
2. Provide nesting and wintering habitat for bald eagles (RRP).
3. Provide habitat for transient shorebirds and wading birds.
4. Support an industrial area by providing buildings, water and sewer services, fire and police protection.
5. Provide opportunities for public use with emphasis on wildlife related uses such as wildlife observation, hunting, and fishing. Primary and secondary objectives are fully described in the Refuge Master Plan prepared in 1976.

The purpose of this plan is to describe the fishery resources of Crab Orchard National Wildlife Refuge and to present a management scheme which best uses these resources to achieve the goals of the National Wildlife Refuge System and Crab Orchard National Wildlife Refuge.

The broad goals of fishery management on Crab Orchard NWR are to:

1. Maintain and improve the quality of aquatic habitats for a well balanced community of fish and other water oriented wildlife species.
2. Provide quality recreational fishing opportunities, which are compatible with primary refuge objectives.

## II. UNIT PLAN I - CRAB ORCHARD LAKE

### A. UNIT DESCRIPTION

Crab Orchard Lake, impounded in 1940, covers 7,000 surface acres, has a maximum depth of 34 feet, an average depth of 9 feet, and 128 miles of shoreline. The lake was initially used for a water supply for towns and industry and for recreation. In 1947 U.S. Fish and Wildlife Service began managing the east end of the lake and adjacent lands as a refuge for Canada geese. Initial management efforts were successful and by 1976 120,000 geese were using the refuge.

The lake remains an important resting and roosting area for geese of the Mississippi Valley population and will provide a portion of the habitat necessary for the continued management of the population at levels identified in the plan prepared by the Mississippi Flyway Council. Crab Orchard Lake also provides wintering habitat for up to 40 bald eagles.

This plan is compatible with refuge objectives for Canada geese and eagles on Crab Orchard Lake. The east end of the lake is closed to fishing from October 1 through March 15 to reduce disturbance to geese using the lake at that time. The lake is open to fishing the rest of the year when the geese are in the northern portion of the flyway.

Crab Orchard Lake is eutrophic and rarely exhibits thermal stratification. Biological oxygen demand is high. During calm hot weather oxygen levels fall below 4 ppm at 6 foot depths. Following periods of extended rainfall, turbidity reaches 110 Jackson turbidity units. Turbidity drops to 40 Jackson turbidity units during late summer and winter. Water surface temperature reach 88°F in August.

A 1951 sedimentation study (Stall et.al.) showed that 2.8 tons of soil is deposited annually in Crab Orchard Lake for every acre in the watershed, resulting in an annual loss of storage capacity of 0.43 percent/year. Erosion in the watershed is the primary source of these sediments. Although approximately one-half of the lake shoreline is protected by riprap, erosion is severe on 40 miles of shoreline and contributes 8.6 percent of the total sediments. The erosion results in the complete destruction of littoral zones, thus reducing available habitat for the most popular game fishes. Several islands have been lost to erosion. Eight out of the eleven remaining islands are threatened by erosion.

Water willow (Dianthera americana), the dominant emergent plant, occupies approximately 44% of the lake's shoreline growing in water up to three feet deep. Coverage ranges from 67% of the shoreline, where siltation and erosion is minimal, to 11% in degraded areas. Submerged vegetation is sparse and found only in protected coves. Carp are a problem in Crab

Orchard Lake. The presence of carp increases turbidity and destroys aquatic vegetation, thus reducing feed available for geese and other waterfowl.

Implementation of this plan will improve predator-prey relationships resulting in decreased abundance of rough fish species. The subsequent decline in turbidity will improve the potential for aquatic plant production and enhance the value of the lake for wildlife.

Nine tributaries drain agricultural lands, coal mines, and industrial and urban areas. Effluent from three sewage treatment plants also enters the lake. The sewage plants are operated by Marion, Carterville, and the Refuge. Pollutants and contaminants in Crab Orchard Lake long have been a matter of concern to the Refuge management and the State of Illinois. A long-abandoned industrial waste dump near the east end of the lake has been identified as a probable source of PCBs. An assessment of the dump by U.S. EPA will result in specific recommendations for containment and cleanup.

The lake is the primary potable water supply for the refuge, Ordill Industrial Park and Marion Federal Penitentiary, all served by the refuge water plant. Marion, Illinois maintains an intake and pump system on the lake with capability of pumping water to its city reservoir. During 1982, the refuge withdrew 110 million gallons and Marion, 70 million gallons from the lake.

Crab Orchard Lake is used for many forms of aquatic recreation, with boat ramps provided at 14 locations. One private marina and two marina concessions with dock, boat rental, storage facilities and marine supply shops are located at the west end of the lake. A campground and three public swimming beaches are also provided.

Fishing is the most popular wildlife oriented recreation activity on the refuge. Creel censuses were conducted in 1976 and 1978. Fishing pressure ranged from 32-42 hours per acre per year. Anglers harvested 18.7 lbs/ac in 1976 with white crappie (3.82 lbs/ac), channel catfish (2.99 lbs/ac), bluegill (3.5 lbs/ac) and largemouth bass (1.89 lbs/ac) accounting for 65% of the total harvest. In 1978, anglers caught an estimated 27.4 lbs/ac with increased harvest noted in white crappie (8.6 lbs/ac), bluegill (4.6 lbs/ac) and channel catfish (8.1 lbs/ac).

Initial stocking records are not available but if Soil Conservation recommendations were followed, largemouth bass, bluegill, channel catfish, and bullheads were stocked. Other species now occurring were present in the watershed or introduced.

Following the predictable pattern of large impoundments, the largemouth bass fishery flourished initially then declined through the late 1940's with carp, gizzard shad, white crappie and yellow bass becoming dominant. Stocking of game species began with 1.5 million largemouth bass fingerlings in the 1950's. During the 1970's, 8,000 non-vulnerable northern pike, over 40,000 striped bass, and more than 9,000 adult largemouth bass failed to rejuvenate the fishery. The white bass was successfully introduced in the 1960's. However, abundance fluctuated drastically because of periodic reproduction failure. Renovation of the principal spawning area in 1980 resulted in consecutive year classes in 1981 and 1982 but successful reproduction remains dependant on optimum spring rainfall.

A 14" minimum size limit on largemouth bass initiated in 1977 doubled the largemouth bass standing crop between 1977 and 1981 but the population remains low at about 6.0 lbs/acre.

Wading fishermen and divers employing snagging gear to take spawning channel catfish are impacting catfish reproduction and interfering with the recreational opportunities of the majority of fishermen. In response, the Illinois Department of Conservation will issue an Administrative Order prohibiting the taking of channel catfish with the aid of underwater breathing devices and enforce existing State regulations on snagging.

Fishing on the refuge is important to the economy of local communities. The 250,000 refuge visits by fishermen in 1976 were valued at \$2,875,000. This estimate is based on the results of the 1975 National Survey of Hunting, Fishing and Wildlife Associated Recreation.

There are conflicts between the different types of public use on Crab Orchard Lake. A "bluebird" day in late fall may bring duck hunters and fishermen together on the lake much to the dissatisfaction of both.

The short-term impact of this plan may reduce the number of people fishing for bass on the refuge. However, once the structure of the fish community is improved, an overall increase in fishing pressure is expected to occur.

Additional maintenance dollars and ceilings are needed to upgrade and maintain the recreation areas to fully implement this plan. Adequate funding and personnel to develop and maintain a quality public use program has always been, and is still a serious problem facing the refuge.

Commercial fishing was permitted on Crab Orchard Lake during the 1960s and 1970s. Initially fishermen were permitted to use trammel nets, gillnets, hoop nets and seines to take carp, buffalo, drum and bullheads. Bass and channel catfish were vulnerable to this gear in the turbid water and diving ducks

were also lost at certain times of the year. Gear restrictions were imposed to eliminate the loss of non-target species. Seines were difficult to use effectively, and hoop nets had a low catch rate. After these restrictions, interest in commercial fishing waned with only a few individuals fishing at a "hobby" level. When their nets were stolen, the ensuing charges and countercharges led to the discontinuation of the program in 1979.

There are no plans to resume commercial fishing on Crab Orchard Lake. This activity will be reconsidered should new techniques be developed to substantially reduce rough fish populations by commercial means without adversely impacting wildlife and sport fishes.

Water level manipulation of Crab Orchard Lake would adversely affect three marinas and would require relocating the water intakes of the Refuge waterplant and the emergency water intake of the City of Marion, both located at the shallow east end of the lake. Therefore, water level manipulation is not a viable management action.

Contaminant levels in Crab Orchard Lake fish have been studied by the Illinois Environmental Protection Agency, Fish and Wildlife Service and Illinois Department of Conservation. Mercury levels in bass averaged 0.188 ppm in 1975 (Hite and King, 1977) and 0.177 ppm in 1982 (FWS, 1983). No individual levels exceeded the Food and Drug Administration action level of 1.0 ppm. Bass whole fish PCB levels from east of Highway 148 ranged from 2.4 to 9.3 ppm in 1982 (FWS, 1983). Follow up studies by the Illinois Department of Conservation early in 1983 disclosed low levels of PCBs in bass and channel catfish filets from Crab Orchard Lake. All fish samples were well within guidelines for human consumption.

The proposed largemouth bass size limit will be controversial. Local bass clubs have expressed strong reservations concerning the proposed size limit. However, the Illinois Department of Conservation has had few complaints when implementing 18-inch limits on bass in selected state lakes. A public notice will be issued prior to setting the limit, and the public will have the opportunity to provide written comments concerning the proposed limits.

Annual Work Plan Advices - Wildlife Resources FY 84-85  
B.1C. 309 and Refuge Manual sections 7 RM 8, 7 RM 10, 7 RM 12 and 8 RM 6 govern fishery management and sport fishing activities on national wildlife refuges. These provisions are not expected to adversely affect fishery management activities at Crab Orchard Lake with the exception of stocking striped/white bass hybrids. Stocking of such non-indigenous, non-reproducing predatory fishes may require special approval by the Director, FWS, and Director of Illinois Department of Conservation.

## B. FISHERY MANAGEMENT PROBLEMS

### 1. PROBLEM

Interspecific competition from yellow bass, carp, and gizzard shad caused by low littoral and pelagic predator densities results in poor largemouth bass recruitment and low harvest of quality size panfish.

### SOLUTIONS

Reduce inter and intra specific competition within the panfish/prey community and improve sport fishing by:

- a. Increasing the number of young largemouth bass recruiting to the population,
- b. Increasing the physical condition of adult bluegill and gizzard shad to promote reproduction,
- c. Increase the harvest of quality size bluegill and yellow bass,
- d. Increasing the littoral predator population.

### TASKS

- a. Implement an 18" minimum size limit on largemouth bass.
- b. Stock 1.0 million white bass x striped bass hybrid fry each year.
- c. Review the life history of flathead catfish and determine its suitability for introduction.
- d. Annually stock 5-7,000 adult threadfin shad.
- e. Stabilize recruitment of white bass by creating an additional spawning run on suitable tributaries.
- f. Work with the Illinois Department of Conservation to eliminate snagging of channel catfish.
- g. Construct and install 30 fish attractors for crappie and bluegill.

### 2. PROBLEM

Low utilization of rough species by anglers.

### SOLUTION

- a. Increase the utilization of carp and bullheads by anglers and investigate the potential of a limited entry commercial fishery.

### TASKS

- a. Attract high densities of carp and bullheads into selected areas and encourage utilization by anglers.
- b. Monitor commercial fish populations, evaluate gear efficiency and selectivity and determine impacts on non-target wildlife.

### 3. PROBLEM

The water quality of Crab Orchard Lake may be declining because of silt and pollutants entering the system from shoreline erosion, agricultural areas, industrial sites, waste treatment plants and toxic waste dumps in the watershed.

### SOLUTION

- a. Clean up Crab Orchard Lake.

### TASKS

- a. Monitor the lake's water chemistry on an annual basis and make recommendations for improvement.
- b. Monitor the kinds and amounts of pollutants entering the lake and cooperate with state and federal monitoring programs.
- c. Encourage cities, industry, and agricultural interests in the watershed to reduce pollutants entering the lake.
- d. Evaluate the siltation rate and recommend actions needed to reduce silt loads.
- e. Continue to evaluate and recommend specific shoreline stabilization projects.
- f. Eliminate known toxic waste sites and monitor effects of clean-up.

### C. ALLOCATION OF RESOURCES

The following table summarizes staff days and cost estimates for accomplishing the identified tasks. Task responsibilities are designated in the table as follows:

CONWR - Crab Orchard National Wildlife Refuge  
FAO - Fisheries Assistance Office  
HR-RCA - Habitat Resources-Resource Contaminant Assessment  
USEPA - United States Environmental Protection Agency  
ILEPA - Illinois Environmental Protection Agency  
DOC - Illinois Department of Conservation

The dollar estimates do not include trash pickup, litter control, access roads, parking areas, boat ramps, signing, sign maintenance, information signs, bulletin boards, restroom sanitary facilities for rehabilitation nor rehabilitation and maintenance for them. Many of these are in need of major rehabilitation as well as annual maintenance programs. These are addressed in current refuge public use management plan.

Also, Crab Orchard Lake Task 3-E and 3-f, Shoreline Stabilization and Dump Clean-up are planned for contract work but reflect refuge staff days for contract administration.

UNIT PLAN 1 - CRAB ORCHARD LAKE

TASK	RESPONSIBILITY	TARGET DATE	FY 84		FY 85		FY 86	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	10/1/84	70	9,600	70	9,600	70	9,600
1-a	FAO	Annually						
1-b	CONWR	Annually	5	750	5	750	5	750
1-b	IDOC	Annually						
1-c	CONWR	10/1/85	10	1,500				
1-c	FAO	10/1/85			5	5,000		
1-d	IDOC	Annually						
1-e	CONWR	Annually	9	3,500				
1-e	FAO	Annually	25	6,500	25	6,500		
1-e	IDOC	Annually						
1-f	CONWR	3/1/85	40	5,000	40	5,000	40	5,000
1-f	IDOC	3/1/85						
1-g	CONWR	8/1/85	5	5,000	5	5,000	5	5,000
1-g	FAO	8/1/85	30	8,000	20	5,000		
2-a	CONWR	8/1/85	17	2,250	4	1,200	4	1,200
2-a	FAO	8/1/85	10	2,000	10	2,000	10	2,000
2-b	CONWR	12/1/85	5	750	5	750	5	750
2-b	FAO	12/1/85	10	3,000	30	5,000	10	3,000
3-a	CONWR	Annually	2	300	2	300	2	300
3-a	IEPA	Annually						
3-b	CONWR	Annually	5	750	5	750	5	750
3-b	FAO	Annually	3	800	3	800	3	800
3-b	HR--RCA	Annually						
3-c	CONWR	Annually	5	750	5	750	5	750

UNIT PLAN 1 - CRAB ORCHARD LAKE (Con't)

TASK	RESPONSIBILITY	TARGET DATE	<u>FY 84</u>		<u>FY 85</u>		<u>FY 86</u>	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
3-d	CONWR	10/1/85	20	4,500	20	3,000	20	3,000
3-e	CONWR	Annually	5	100,000	5	100,000	5	100,000
3-f	CONWR	Annually	20	250,000	20	250,000	20	250,000
3-f	HR-RCA	Annually						
3-f	USEPA	Annually						
Eval & Update	CONWR	Annually	15	1,500	15	1,500	5	1,500
Eval & Update	FAO	Annually	40	10,000	40	10,000	40	10,000
NOTE: See IIc for key to acronyms and cost exclusions.								

### III. UNIT PLAN 2 - DEVILS KITCHEN LAKE

#### A. UNIT DESCRIPTION

Devils Kitchen Lake is an 810 surface acre lake impounded in 1959 following extensive watershed renovation. A long, narrow, deep lake, it has an average depth of 36 feet and a maximum depth of 90 feet. It has 24 miles of shoreline. The lake is clear with Secchi disk readings of up to 20 feet recorded. Water quality is excellent but the soft, low alkalinity nature of the water, coupled with the small littoral zone, results in low productivity. A marina/campground concession with 35 camping units is located on the lake. Boat ramps are provided at three locations and boat motors are limited to 10 h.p. One largemouth bass fishing tournament per year is permitted on the lake. In 1983, 248 fishermen participated in the tournament.

Devils Kitchen Lake is ranked by the Illinois Environmental Protection Agency as one of the coldest, clearest and most pristine lakes in the state. It is adjacent to the wilderness area of the refuge with the rest of the watershed lying within the Shawnee National Forest and private lands. Of the entire watershed, less than 3 percent is row-cropped or barren. The remainder is made up of equal areas of forest and grassland. Submerged timber dominates the upper reaches of the lake and most coves.

There is now intensive interest by local communities to withdraw water from the lake for city water supplies. If permitted, changes may then be required in this plan because of anticipated fluctuation of water levels.

Current plans are to continue to protect the existing water quality of Devils Kitchen Lake by limiting the development of intensive recreational facilities and maintaining vegetative cover in the watershed. Due to its pristine nature and proximity to the refuge wilderness area, increased public use would negatively impact the lake. The area is considered extremely vulnerable to such an increase. Further development is felt to be unnecessary at this time due to the nearby availability of Crab Orchard and Little Grassy Lake.

Largemouth bass, smallmouth bass, bluegill, redear sunfish and channel catfish were stocked following impoundment. A variety of other species including yellow perch and grass pickerel have become established. Carp have never been collected.

A put-grow-and-take rainbow trout stocking program was initiated in 1976. After four years of stocking 4000 rainbow trout per year, a fishery was established. Fish up to four pounds began appearing in late 1979. Emigration of trout during heavy spring flows created a limited spring stream trout fishery immediately downstream from the dam. Trout stocking

was terminated in 1979 because of policy in the Refuge Manual and conflicts with Refuge public use objectives.

Threadfin shad were stocked in 1980, 1981, and 1982 with slight improvements in bass growth, condition and population structure noted.

The last creel census was conducted in 1968 and is considered out of date. Current fishing pressure is unknown.

Maintenance stocking of non-vulnerable, 8-10 inch catfish may be affected by Refuge Manual provisions relating to self-sustaining populations (7 RM 10.2,a).

## B. FISHERY MANAGEMENT PROBLEM

### 1. PROBLEM

With the termination of the trout stocking program, the lakes extensive deep limnetic area is underutilized and game fish production remains low.

### SOLUTIONS

- a. Maintain current warm water population characteristics which favor production of quality size bluegill and redear sunfish.
- b. Increase angling quality and catch diversity by introduction of rainbow trout.

### TASKS

- a. Stock 4,000 5-7 inch rainbow trout per year.
- b. Monitor the fish population and recommend bass size limits as appropriate.

UNIT PLAN 2 - DEVILS KITCHEN LAKE

TASK	RESPONSIBILITY	TARGET DATE	<u>FY 84</u>		<u>FY 85</u>		<u>FY 86</u>	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	Annually	3	450	3	450	3	450
1-a	IDOC	Annually						
1-b	FAO	Annually	20	5,000	20	5,000	20	5,000
NOTE: See IIc for key to acronyms and cost exclusions.								

#### IV. UNIT PLAN 3 - LITTLE GRASSY LAKE

##### A. UNIT DESCRIPTION

Little Grassy Lake is a 1000 surface acre impoundment with a 28 mile shoreline, a maximum depth of 77 feet and an average depth of 26 feet. Water quality is excellent, although the lake is more turbid than Devils Kitchen Lake.

The lake is primarily used by youth camping groups and recreational fishing associated with a public campground on the lake. Three public boat ramps are provided.

Little Grassy Lake is the prime water source for the Little Grassy State Fish Hatchery, an intensive channel catfish rearing facility. By agreement, the Illinois Department of Conservation may withdraw 561 million gallons of water each year for operation of the Little Grassy Hatchery, located below the dam. This amounts to 1760 acre-feet of water.

No wildlife related objectives are identified for Little Grassy Lake.

Little Grassy Lake was impounded in 1950. No information is available on initial stocking, however, in 1951, northern pike broodstock were introduced with no success. Threadfin shad were stocked in 1974 with improvement in white crappie growth and condition noted. Threadfin shad stocking was resumed in 1979 with inconclusive results. Attempts by private individuals to introduce white bass have failed to establish a fishery.

A creel census conducted in 1969 is considered out-of-date.

Stocking rainbow trout, a non-indigenous species, may require special approval by the Director, FWS, and the Director of the Illinois Department of Conservation (7 RM 12.1,c).

##### B. FISHERY MANAGEMENT PROBLEMS

###### 1. PROBLEM

The over harvest of 12 inch and larger bass has led to an unbalanced fish community with low quality fishing for largemouth bass and panfish species although bass recruitment remains high.

###### SOLUTION

- a. Manage Little Grassy Lake for youth camping groups and recreational fishing associated with the public campground by increasing the harvest of young bass while protecting a portion of the quality size bass and increasing the quality of panfish angling.

TASKS

- a. Implement a 12-18 inch protected size range on largemouth bass and monitor to determine if community objectives are attained.
- b. Stock 1,000 adult threadfin shad.

2. PROBLEM

Channel catfish reproduction is insufficient to support the fishery in Little Grassy Lake.

SOLUTION

Increase catch diversity and angler harvest by annually stocking channel catfish.

TASKS

- a. Stock 10,000 8-10 inch channelcatfish each year.
- b. Establish refuge special regulations which prohibit trot line and jug fishing.

UNIT PLAN 3 - LITTLE GRASSY LAKE

TASK	RESPONSIBILITY	TARGET DATE	FY 84		FY 85		FY 86	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	10/1/84	15	4,000	15	4,000	15	4,000
1-a	FAO	10/1/84	20	5,000	20	5,000	20	5,000
1-b	IDOC	10/1/84						
2-a	CONWR	Annually	2	300	2	300	2	300
2-a	FAO	Annually	20	5,000	20	5,000	20	5,000
2-a	IDOC	Annually						
2-b	CONWR	10/1/84	15	4,000	15	4,000	15	4,000
NOTE: See IIc for key to acronyms and cost exclusions.								

V. UNIT PLAN 4 - POND A-41

A. UNIT DESCRIPTION

This 60 surface acre pond, built in 1959, is an important wildlife area, receiving heavy use by waterfowl and eagles in fall and winter. It is closed from October 1 through March 14, permitting wildlife to rest undisturbed.

The pond is the primary source of water for irrigating a 100 acre moist soil unit. This requires the annual removal of 120 acre-feet of water from the pond.

Located within that portion of the refuge normally closed to public use, limited public access is permitted in spring and summer, over a 0.5 mile trail, during daylight hours. Boats and flotation devices are prohibited.

B. FISHERY MANAGEMENT PROBLEM

1. PROBLEM

Information is required on the level of use and harvest. Channel catfish may require periodic restocking.

SOLUTION

- a. Determine angler perception of fishing quality and level of use for harvest.

TASKS

- a. Conduct a voluntary creel census and determine status and quality of the fishery from catch.
- b. Restock channel catfish as necessary.

UNIT PLAN 4 - POND A-41

TASK	RESPONSIBILITY	TARGET DATE	FY 84		FY 85		FY 86	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	10/1/86	8	2,000	2	300	2	300
1-a	FAO	10/1/86	5	1,000	10	2,000	5	1,000
1-b	IDOC	Annually						
NOTE: See IIc for key to acronyms and cost exclusions.								

VI. UNIT PLAN 5 - PONDS OPEN TO PUBLIC FISHING

A. UNIT DESCRIPTION

This unit consists of 26 small ponds totaling 25 surface acres. They are located in the 22,000 acre area of the refuge open to year-round public use. Small in size, they provide recreational opportunities of a type unavailable on the refuge's large reservoirs. Fish populations in eleven of the ponds were checked during 1983.

Fishermen and wildlife use these ponds without conflicts.

B. FISHERY MANAGEMENT PROBLEM

1. PROBLEM

Information on the status of the fishery at these sites is incomplete; baseline surveys are required.

SOLUTION

- a. Complete baseline surveys on public fishing ponds and manage for warm water fisheries.

TASK

- a. Survey 5 small ponds each year and recommend management required to bring population in line with refuge objectives.

UNIT PLAN 5 - PONDS OPEN TO PUBLIC FISHING

TASK	RESPONSIBILITY	TARGET DATE	<u>FY 84</u>		<u>FY 85</u>		<u>FY 86</u>	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	Annually	5	1,500	5	1,500	5	1,500
1-a	FAO	Annually	5	1,000	5	1,000	5	1,000
NOTE: See IIc for key to acronyms and cost exclusions.								

## VII. UNIT PLAN 6 - PONDS CLOSED TO PUBLIC FISHING

### A. UNIT DESCRIPTION

This unit consists of 68 ponds totaling 405 surface acres. Ranging from 0.1 to 150.0 acres in size, these ponds were developed for and are heavily used by wildlife.

One pond currently supports the only successful nesting pair of bald eagles in Illinois and four of the ponds are being used by the Illinois Department of Conservation to rear prey fish and for holding brood channel catfish.

Management of these ponds is oriented primarily toward waterfowl. As the ponds are closed to all fishing, management of their fishery resource potential should be limited to benefits for wildlife, research and special use.

No fish management problems are identified. Surveys conducted on these sites will be given low priority.

### B. FISHERY MANAGEMENT PROBLEM

#### 1. PROBLEM

Some ponds are important for wood duck brood rearing and the presence of rough fish may reduce the value of these ponds for food and cover for the broods.

#### SOLUTION

- a. Control rough fish populations to enhance food and cover for wood ducks.

#### TASKS

- a. Identify brood ponds and determine effects on wildlife values.
- b. Initiate control of rough fish species as necessary.

UNIT PLAN 6 - PONDS CLOSED TO PUBLIC FISHING

TASK	RESPONSIBILITY	TARGET DATE	<u>FY 84</u>		<u>FY 85</u>		<u>FY 86</u>	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
1-a	CONWR	Annually	5	750	5	750	5	750
1-b	CONWR	Annually	5	750	5	750	5	750
NOTE: See IIc for key to acronyms and cost exclusions.								

### VIII. COOPERATION AND COORDINATION

Project Manager Adams met with the Fin and Feather Club on August 1, 1983 to discuss the problem of excessive harvest of spawning channel catfish by snagging. The Illinois Bass Association also expressed concern about this issue in a letter dated September 1, 1983. Jim Cameron and Charles Surprenant met with the Regional Biologist, Illinois DOC, to draft an administrative order to resolve the problem.

Don Garver, Area Fishery Biologist, Illinois DOC, met at the Refuge on August 2, 1983 with Wayne Adams, Ross Adams, and Jim Hudson. Various topics of fishery programs were discussed.

A meeting chaired by Project Manager Adams was held at refuge headquarters on August 3, 1983 from 7:00 to 9:00 P.M. The meeting was attended by members of local Bass Busters and Illinois Bass Association clubs, and refuge staff member Jim Hudson.

Refuge personnel assist officials from the Illinois Department of Conservation in the annual collection of fish from refuge waters. Tissue samples are taken and tested for contaminants (PCB's, etc.) at the state laboratory in Centralia, at no cost to the refuge. Copies of results are furnished to the refuge.

The Illinois Environmental Protection Agency periodically samples water quality of the refuge's three largest impoundments. Copies of results are furnished to the refuge free.

Fishery Assistance maintains an office on the refuge. Refuge personnel worked with Charles Surprenant in developing this plan.

IX. EVALUATION AND UPDATE

Annually, in cooperation with Fishery Assistance, the refuge will review and evaluate progress toward objectives and determine the degree of accomplishment and changes needed.

The refuge will review and update the plan, with public involvement, every three years.

The target date is October 1, 1987 for the first update.

X. LITERATURE CITED

Hite, R.L. and M. King, 1975. Biological investigation of the Crab Orchard Creek Basin - summer 1975. Illinois Environmental Protection Agency, Division of Water Pollution Control, State of Illinois, April 1977 141 pp.

Ruelle, Richard, 1983. Survey of Polychlorinated Biphenyls on Crab Orchard National Wildlife Refuge. U.S. Fish and Wildlife Service, Rock Island, Illinois. 9pp. Typewritten.

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Stall, J.B., J. B. Fehrenbacher, L. J. Bartelli, G.O. Walker, E. L. Sauer and S. W. Melsted, 1954. Water and land resources of the Crab Orchard Lake Basin. State of Illinois Department of Registration and Education, State Water Survey Division, Bulletin No. 42, 53 pp.

U. S. Fish and Wildlife Service, 1979. Environmental Assessment, Crab Orchard NWR. Booker Associates, Inc., 54 pp.

U. S. Fish and Wildlife Service, 1978. Master Plan, Crab Orchard NWR. Booker Associates, Inc., 541 pp.

TOTALS FOR FISHERY MANAGEMENT PLAN - CRAB ORCHARD

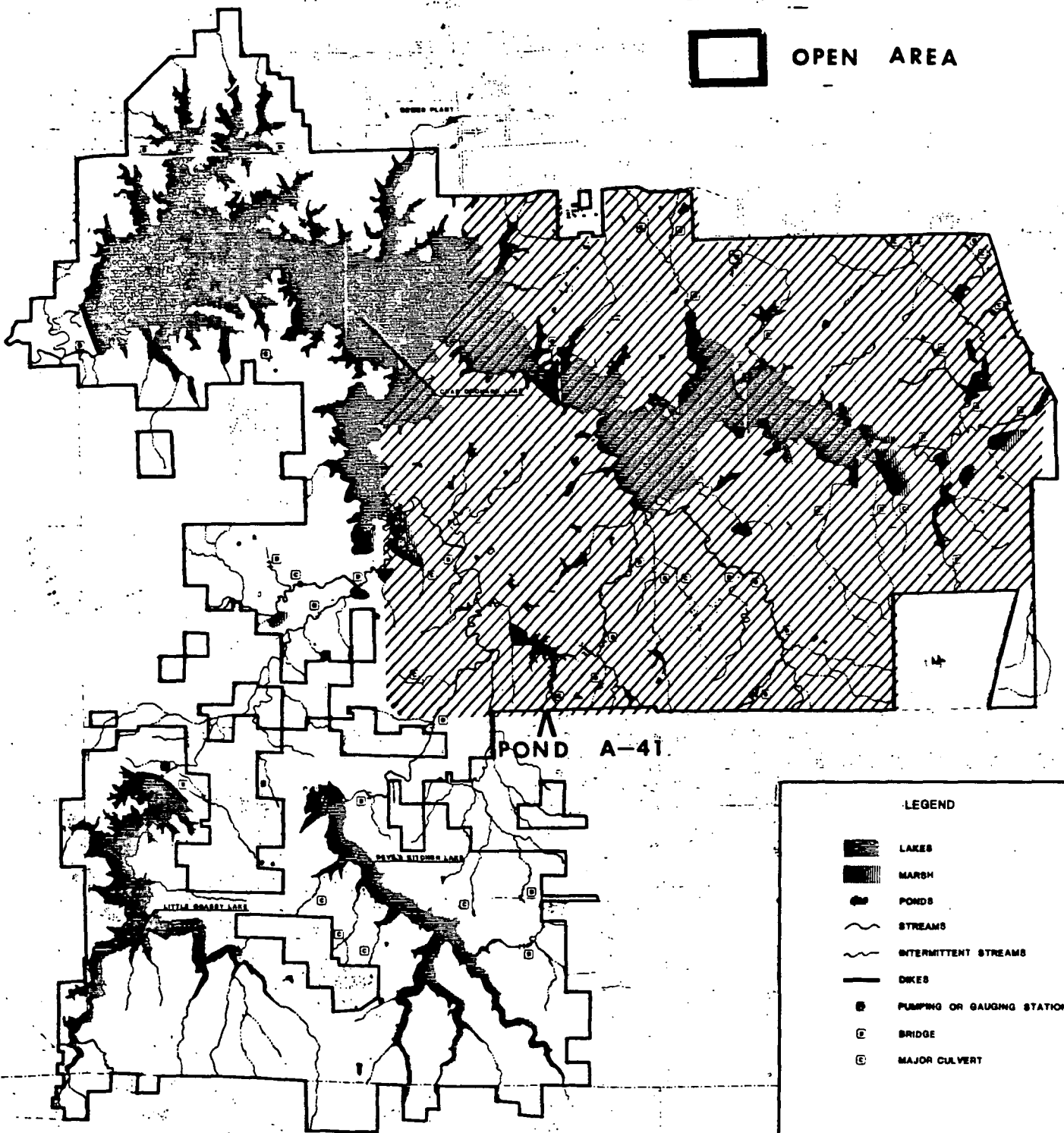
TASK	RESPONSIBILITY	TARGET DATE	<u>FY 84</u>		<u>FY 85</u>		<u>FY 86</u>	
			STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)	STAFF DAYS	COST (\$)
	CONWR		291	399,900	253	390,650	253	390,650
	FAO		188	47,300	208	52,300	133	32,800
NOTE: See IIc for key to acronyms and cost exclusions.								



SANCTUARY AREA



OPEN AREA



LEGEND










-  LAKES
-  MARSH
-  PONDS
-  STREAMS
-  INTERMITTENT STREAMS
-  DIKES
-  PUMPING OR GAUGING STATION
-  BRIDGE
-  MAJOR CULVERT

FIGURE 1.

SURFACE HYDROLOGY

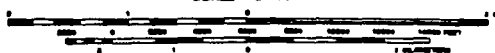
**CRAB ORCHARD**  
NATIONAL WILDLIFE REFUGE

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

PREPARED 3-3-78



SCALE 1:24,000



File: Crab Orchard  
800.10

Ellis

1/19/84

JAN 19 1984

Regional Refuge Supervisor, FWS, Twin Cities, MN (RF 2)

Fish Management Plan

Project Leader, Crab Orchard NWR, Carterville, IL

Attached is a signatory page approving the subject plan.

You should provide the State with a copy of the plan for their review and concurrence before it is implemented. Fishery Resources will develop the necessary cooperative agreement.

Thanks to you, your staff and Chuck Surprenant for a job well done.

/s/ John W. Ellis

John W. Ellis

Attachments

cc:AF  
AW  
PSW

RF 2:J.Ellis:dr:01/19/84:X4701: M-C



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,  
FISH AND WILDLIFE SERVICE

JAN 6 1984

## Memorandum

To: Regional Director, Region 3

Acting Associate  
From: Director

Subject: Fishery Management Plans for Crab Orchard and DeSoto NWRs

Attached are the signature pages for the approved new Fishery Management Plans for Crab Orchard and DeSoto NWRs. These plans are very well written and will serve as good examples of proper management planning.

Be advised that management plans, such as these, are approved by the Regional Director (4 RM 3.20) and need only be forwarded to Washington as information copies. The initial fishing plan for new refuges or for existing refuges that have not been opened to fishing must also be approved by the Director (8 RM 6.4B). Since Crab Orchard NWR and DeSoto NWR are already "opened" to fishing (50 CFR), the Director's approval is not required.

National Environmental Protection Act compliance is required with the initial refuge fishing plan, and with subsequent management plans if they constitute or involve a major federal action (4 RM 3.19).

*Walt Stieglitz*

Attachment

