10-2-86

Regional Refuge Supervisor, FWS, Twin Cities, MN (RF 1)

Horicon Fisheries Management Plan

Refuge Manager, Horicon NWR, Mayville, WI

The subject plan has been reviewed and is approved. It covers the requirements outlined in the Refuge Manual and the objectives are appropriate for Horicon.

/s/ Richard E. Toltzmann

RBl:SWilds:sjk:8/19/86:x4145

Refuge Management Program

Part III

Fisheries Management Plan

Horicon National Wildlife Refuge
Mayville, Wisconsin

Submitted by: /s/ Richard Birger Date: August 14, 1986
Refuge Manager

Reviewed by: R.E. Bolz Date: 9/29/86
Regional Refuge Supervisor, RF1

acting Daniel H. Gumgaarner Date: 9/30/86
Assistant Regional Director (AF)

Acting Thomas J. Dahlsmith Date: 10-2-86
Assistant Regional Director (ARW)

Approved by: Thomas J. Key Date: 10/2/86
acting Regional Director (RD)

Table of Contents

I. Objectives

A. Service Objectives

The objectives of the fishery management program in the refuge system are:

1. To maintain balanced, self-sustaining populations of native fish species in refuge waters.

2. To provide opportunities for sport fisheries pursuant to the Refuge Recreation Act.

B. Horicon National Wildlife Refuge Objectives

The primary objectives are:

1. Enhance conditions for waterfowl production.

2. Enhance conditions for waterfowl maintenance.

3. Provide a quality angler experience.

Fishery management strategies will be used to help make up objective deficits in redhead and other diver duck production; diver and dabbler duck maintenance use days; and fishing activity hours. The deficits are listed in Horicon's Refuge Management Plan, Part II.

II. Description of Fishery Resources

Following is the description of the refuge fishery resource as taken from the Draft "Fishery Management Recommendation", prepared by Hannibal Bolton of the Fishery Assistance Office (FAO), Winona, Minnesota.

> "Fish populations sampling activities were conducted on May 11 and 12, 1982. Four types of fish sampling gear were employed to collect fisheries data; experimental gill net, large frame net, small frame net, and electrofishing. All nets were set and allowed to fish overnight. Only one experimental gill net was set because of uncertainty of species composition and abundance. Judging from the species of fish and sizes of fish captured the setting of one gill net was a wise decision. A total of 1,567 fish representing ten species were collected (see Table #1). Northern Pike were the only major predaceous fish species collected but not in significant numbers. Northern Pike accounted for only about 1.0 percent of the total amount and about 3.0 percent of the sample weight. This small sample of Pike is probably not indicative of the total population but rather due to gear inefficiency to capture large numbers of Northern Pike. However, Northern Pike are expected to rank fairly low in total numbers when compared to other fish species present. Body condition is considerably above average, C = 23.4 (normal = 20.0). Thirteen of the fifteen Pike collected were classed as catchable (17.0 inches or greater) sized fish.

Table 1. - Tabulation of Fish Collected from Horicon Marsh at the Horicon National Wildlife Refuge on May 11 & 12, 1982.

Species	Gear	Hours	Total Number	Percent of Total Number	Mean Total Length (Inches)	Total Range Length (Inches)	Total Weight (Pounds)	Percent of Total Weight	Number* Catchables
Northern Pike	Electrofishing	2.0	4	4.6	18.1	15.7-21.2	5.80	3.2	3
Carp			81	92.1	14.2	4.9-24.3	173.85	95.8	--
Pumpkinseed Sunfish			2	2.2	3.0	2.5-3.5	--	--	--
White Sucker			1	1.1	--	16.7	1.85	1.0	--
Total			88	100.0			181.50	100.0	3
Northern Pike	Gillnet	19.5	9	5.6	20.3	13.2-27.3	19.75	51.6	8
Carp			4	2.4	5.9	5.8-6.3	0.42	1.1	--
Black Crappie			1	0.6	--	3.2	--	trace	--
Black Bullhead			148	90.8	6.1	3.2-8.9	17.71	46.3	22
Yellow Bullhead			1	0.6	--	8.6	0.38	1.0	1
Total			163	100.0			38.26	100.0	31
Northern Pike	Trapnet	70.0	2	0.2	22.7	21.6-23.8	5.70	4.8	2
Carp			183	13.8	5.7	3.7-23.5	20.01	16.9	--
Pumpkinseed Sunfish			21	1.5	4.4	3.1-6.6	1.44	1.2	1
Black Crappie			1	0.1	--	10.2	0.65	0.5	1
Black Bullhead			1,100	83.5	6.0	3.5-8.9	89.47	75.4	28
Yellow Bullhead			2	0.2	8.2	7.5-8.8	0.71	0.6	1
Bluegill			1	0.1	--	6.6	0.22	0.2	1
Green Sunfish			4	0.4	4.8	3.8-5.1	0.30	0.3	--
Golden Shiner			2	0.2		4.5-6.2	0.11	0.1	--
Total			1,316	100.0			118.61	100.0	134
GRAND TOTAL			1,567				338.37		168

* Northern Pike -- 17.0 inches & greater
Bullheads -- 8.0 inches & greater
Bluegill & other sunfish -- 6.0 inches & greater
Crappie -- 8.0 inches & greater

Black bullheads accounted for nearly 80 percent of the total number and 32 percent of the sample weight. The average size of Black Bullheads is 6.0 inches. Bullheads ranged from 3.2 to 8.9 inches in total length. Body condition is below normal C -45.7 (normal = 50.0). Only 150 of the 1,248 (12.0 percent) Blackheads collected were classed as catachable sized fish (8.0 inches and greater). Bullheads are the most important fish taken by the public (personal observation).

Carp accounted for 17 percent of the sample number and 57 percent of the sample weight. The low number of Carp in the sample is due mainly to the time of year which the sample was collected. Many Carp were observed spawning in the shallower marsh habitat. There is little demand for this species by the sport fishing public. Carp and the abundant Bullhead population are adversely impacting important aquatic macrophyte growth as well as the aquatic invertebrate community. The feeding habits of both Carp and Bullhead, causes bottom materials to become suspended and this contributed to the high turbidity which reduces light penetration that is necessary for plant growth.

All other fish species collected were not significantly represented in the sample and all are considered as forage except for Crappie and Yellow Bullhead. Crappie are classed as forage/game fish while Yellow Bullheads are game fish, but they should be appropriately viewed as undesirable fish along with Black Bullheads and Carp in this particular body of water.

Based on these data and discussions held with Wisconsin DNR personnel and personal contacts with fishermen, this fishery is unsatisfactory for fish and is probably hampering waterfowl production.

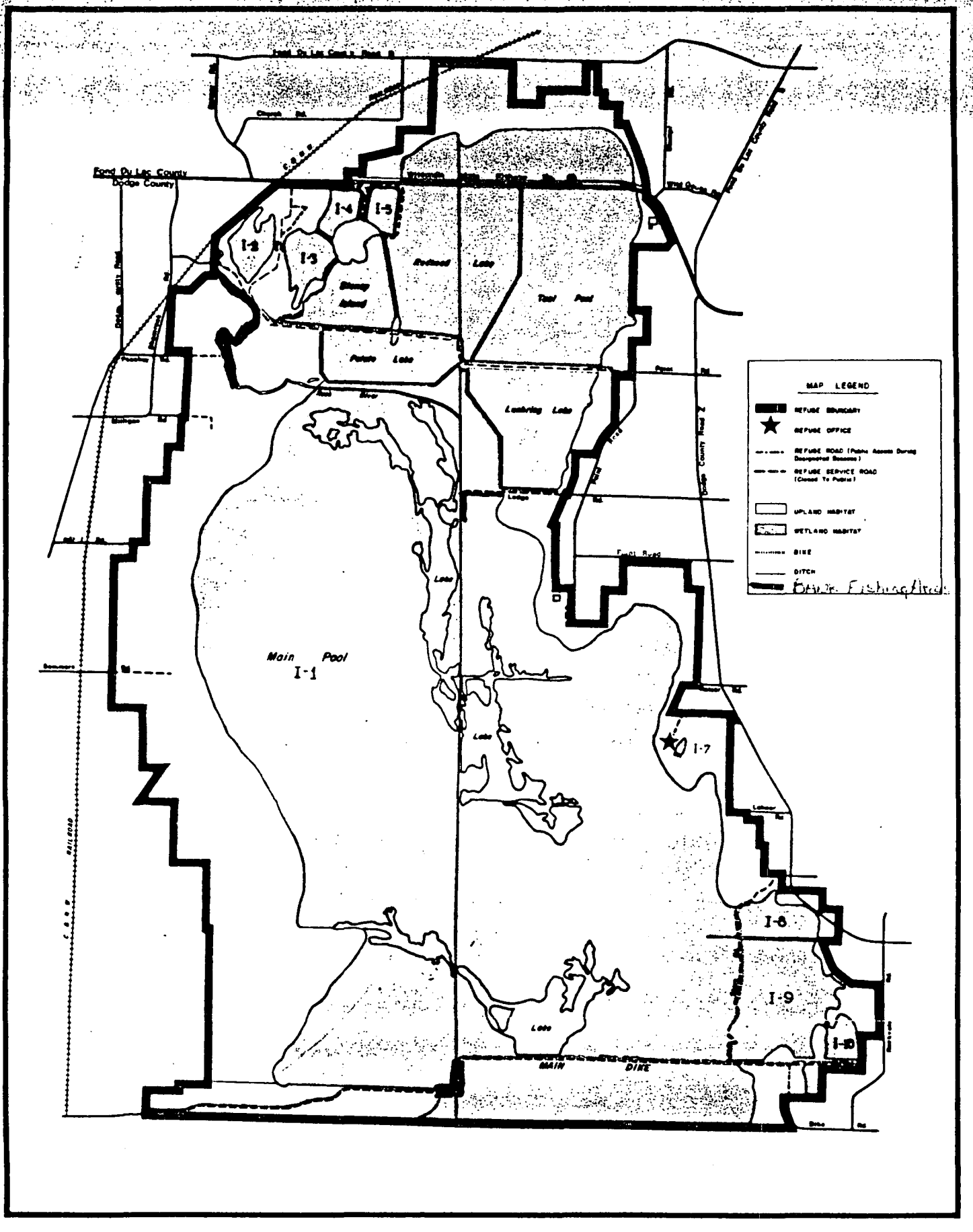
III. Management History

Since the late 1960's management of the marsh fishery has been aimed at the reduction of rough fish, principally carp, to enhance waterfowl and game fish habitat. In the early 1970's an extensive poisoning program was carried out. For a number of years, after treatment (as documented by studies), the habitat for waterfowl was greatly improved.

However, since the late 70's, even though spot chemical treatment has taken place, the carp and bullhead populations have increased to the point where the aquatic plants have dramatically declined as a result of the very turbid water conditions.

Sport fishing has been an ongoing activity for many years. Fishing has taken place in designated areas as listed below. No boats are allowed on the refuge, thus bank fishing is the only method use.

Chester Bridge/Peachy
Strooks Ditch/Leadge Road
Main Dike/Ditch
(see map showing fishing locations)



HORICON
NATIONAL WILDLIFE REFUGE

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

N

SCALE
0 1/2 1 1 1/2 2 MILES
0 1 2 KILOMETER

JULY 1983

DODGE AND FOND DU LAC COUNTIES, WISCONSIN

REFUGE LOCATION

RFO 81046

The fishing season runs from mid-April through mid-September and follows State regulations.

The principal species caught include bullheads, carp and northern pike. Bullhead fishing is very popular in the area. Game fish including northern pike are very scarce in the anglers bag and most fisherpersons would like to see increases in this area.

Over the past five years a fish trap has been operated on the refuge in the Rock River by a commercial fishing enterprise. This has been done through an agreement with the State DNR. Over the years an average of 100,000 pounds of carp have been removed annually. This activity has been hit and miss and is related directly to the economic demand for carp. This is not a reliable method for carp removal.

During the 1982-83 winter an electric weir was placed at the radial gate on the Main Pool. It was activated for the 1983 spring runoff season. It was extremely effective as it prevented fish from migrating upstream into the refuge.

IV. Relations with State Department of Natural Resources Fishing Objectives

The DNR's principal goal for the Rock River drainage is as follows: "maintain aquatic communities dominated by indigenous fauna and flora for the benefit of people--people interested in sport fishing, nature study, and other expressions of outdoor recreation". The above goal was described in the Final Environmental Statement, Rehabilitation of the Rock River, April 14, 1975. In communications with Jim Congdon, this statement remains accurate with the addition that for the Horicon Marsh (both State and Federal Portions) major emphasis is in providing a fishery which is not detrimental to wildlife and in particular waterfowl habitat. In reviewing this plan, Mr. Congdon in his letter of January 3, 1985, concurred with our management strategy (copy of letter attached).

To date we have shared information regarding the fishery resource which has been of benefit to both the FWS and DNR. Cooperation included treatment methods, commercial operations and electric weir placement and operation. We expect to continue to work together in the fishery area.

V. Future Management Actions and Desired Results

To reach refuge objectives as stated in IB. the following actions are proposed.

Rough Fish Control

1. The refuge will continue to maintain and use the electric weir to stop upstream rough fish migration.

2. The refuge will use water manipulations to place stress on the rough fish population in the winter. Impoundments will periodically be drawn-down to facilitate commercial removal, winter kill or chemical treatment. Winter drawdown will be recommended in the Annual Marsh and Water Management Plan. Winter drawdowns will have the greatest impact on the muskrat population. Cattail may increase due to a decrease in muskrats. However, within a year new muskrats should fill this void. Most other aquatic vegetation should only be affected if we maintain the drawdown through the upcoming growing season.

3. Chemical treatments using rotenone will be utilized to control carp within the marsh. Treatment plans will call for the gradual lowering of the marsh water levels until an elevation of approximately 855.90 MSL (74.50 Horicon Datum) is reached. The drawdown will begin in mid-summer with a completion date of January 1 anticipated. At the 855.90 MSL elevation water will be confined to the Rock River, ditches and deeper bays of the marsh. Approximately 2100 acre feet of water will remain. With the drawdown and the formation of ice on the marsh it is anticipated that the carp will concentrate in the Rock River and ditches, however, certain areas within the deeper bays may contain ample water supplies to sustain fish life.

   To aid in the search for possible concentration areas it may be feasible to implant up to twenty-five carp with radio transmitters in late fall. Activity could be monitored weekly to find areas of fresh water and monitor effectiveness of the treatment.

   Chemical treatment with rotenone will take place through the ice in January or February when water levels and ice conditions are favorable for a successful treatment. Approximately 1,000 acre feet of water will be treated incompassing approximately 40 miles of river, ditches and bays. From 1,500 to 2,000 gallons of rotenone will be needed to effectively treat these areas. The treatment will be supervised by fisheries personnel from the U.S. Fish and Wildlife Service and the Wisconsin Department of Natural Resources. Ten to twelve people will be needed to complete the project within a two day period. No clean-up of dead fish will be required as they will quickly sink to the marsh bottom and decompose prior to ice breakup in the spring.

   The goal of the winter treatment project is to reduce carp and bullhead abundance within the marsh to levels where water quality and habitat conditions will improve substantially thereby benefiting waterfowl and game fish populations. A total rough fish kill project is not anticipated as it is both unrealistic and cost prohibitive.

   Following the winter chemcial treatment project preventative measures will be taken to limit reinfestation of the marsh to present levels. The electric weir will be operated in the main water control structure at the main dike to reduce rough fish migration back into the marsh. Spot rotenone treatments will also be undertaken within the marsh during the spring and summer months whenever rough fish concentrations

occur around water control structures or other localized areas. Restocking of certain native game fish species will be undertaken to fill the void in the habitat created by the removal of the carp and to provide a predatory fish population on young carp. These preventative measures will reduce the rough fish spawning population in the marsh, however, the carp and bullhead population is expected to build back to a size where winter chemcial treatments will be needed every five to ten years to maintain favorable marsh habitat conditions for waterfowl and game fish.

4. The refuge will continue to work with the DNR and the Service Fishery Biologist on fisheries management issues concerning the Horicon Marsh.

5. The refuge will continue to allow and encourage the commercial removal of rough fish. The fish trap in the Rock River will be remodeled to increase its effectiveness. Commercial demand is subject to the capricious nature of the market price and cannot be relied on as a primary control method.

The above actions are primarily aimed at controlling rough fish populations. Managers are in agreement that rough fish will never be totally eradicated from the marsh. However, keeping the population within certain limits should improve the water quality and aquatic habitat for other fish species and waterfowl.

Increased Sport Fishing Possibilities

1. Removal of rough fish will help restore game fish habitat. To supplement marsh fish population the Service will look at restocking certain native game fish populations to the benefit of the refuge and recreational sport fisheries.

2. Areas which are opened to bank fishing will be improved as needed to prevent erosion. Gravel will be placed in beatdown areas and areas along the Main Ditch at Ledge Road and the Main Dike. Boat fishing will continue to be disallowed.

Annual Management Review

A meeting will be held annually between the refuge staff, the Service's Fishery Asssistance Biologist and the DNR fish manager from Horicon. The discussion will center on this plan's and the Marsh and Water Management Plan's management recommendations. Also progress made towards achieving the stated goals and objectives will be evaluated. If substantive changes are recommended and approved this plan will be amended as required.

VI. Public Coordination

The draft of this plan was sent to numerous groups, organizations and other interested parties. Five responses were received and are on file at the refuge. Two responses were negative toward chemical rough fish control. The

others were generally supportive of objectives and methods.

-Mr. James Congdon, Area Fish Manager, Wisc. DNR
-Ms. Bernice Popelka, President, Kettle Morain Audubon Society
-Ms. Carol Beim Nulsen, Regional Respresentative, National Audbon Society
-Mr. Jim Wallendal, Citizen
-Mr. John Krapfl, Citizen

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

1210 N. Palmatory St.
Horicon, WI 53032

January 3, 1985

3600

Jim Lennartson, Refuge Manager
Horicon National Wildlife Refuge
Route 2
Mayville, WI 53050

MGR.	
ASST. MGR.	
ASST. MGR.	
I & R SPEC.	
JAN 7 '85	
MGR. TRAINEE	
ADM. ASST.	
MAINT. MAN	

Dear Jim:

I have reviewed your fishery management plan for the Horicon National Wildlife Refuge. The plan is in agreement with our objectives for management of the fishery in the Upper Rock River. Our management plan for the state end of the marsh is essentially the same as the plan which you have outlined.

I have enjoyed the very cooperative attitude which you and your staff has extended to us and look forward to working with you to manage the fishery in this important waterfowl area.

Sincerely,

James Congdon
Area Fish Manager

JC:co

cc Gordon Priegel