The Director, BSF&W, Washington, D.C. (RF)

April 2, 1969

Regional Director, Boston, Mass.

STATEMENT OF MANAGEMENT OBJECTIVES and OPERATIONAL CRITERIA - Missisquoi Refuge

Enclosed for your approval and comments are the subject documents. Unless we are advised to the contrary, planning will continue along the lines presented.

By copy of this memorandum, we are requesting Ed Addy to comment on the Statement of Management Objectives directly to your office, with a copy to us.

PSSuich/cf

Attachments

cc: Ed Addy Sent 5/19

Geese

STATEMENT OF

MISSISOUOI N.W. REFUGE

MANAGEMENT OBJECTIVES

INTRODUCTION

Missisquoi Refuge is located on the delta of the Missisquoi River in northwestern Vermont near the north end of Lake Champlain. Historically, the delta of this river first belonged to the Iroquois Indians. The Abnakis, led by their great chief, Grey Lock, drove off the Iroquois, planted corn, and built their huts on "the great sticky place", "a great swamp", "a place of much waterfowl and much grass"--the Missisquoi. It is said that the Englishman, Johne Graye, arrrived here in 1564, but the first white settlers in the area were the French. Today, half the population have French names and a fourth of them still speak the language. The first church in Vermont was built here by the Abnakis under Jesuit direction. Eventually, the French were driven out by the British and the British by the Americans.

This is the only federal refuge on the Champlain-Hudson River Valley flight lane in the Atlantic Flyway. The State of Vermont has three waterfowl management areas on Lake Champlain: Mud Creek--six miles west of the refuge; Sand Bar--24 miles south; and Dead Creek--58 miles south. Parker River Refuge is 190 miles southeast; Montezuma Refuge, 240 miles southwest, and Brigantine Refuge, 375 miles due south.

Presently, the refuge and the adjacent waters of Lake Champlain are the main waterfowl concentration area for that branch of the Atlantic Flyway which extends from the mid-St. Lawrence River to the northern New Jersey coast. Peak concentrations of 10,000 ducks occur in the fall, and a peak of 2,500 geese occurs in the spring. Black ducks and wood ducks predominate. Annual production the past decade has averaged 1,000 ducks.

In 1943, the Migratory Bird Conservation Commission approved 6,560 acres for acquisition.

This specific location was selected because it is a traditional and strategic migration area and is suitable for development and improvement of waterfowl production habitat.

Acquisition is 65 per cent complete (4,680 acres). The Vermont Fish and Game Department owns 500 acres adjacent to the southeastern corner of the refuge.

The refuge area is flat with extensive brushy bog, small marsh areas, and wooded swamp. About 640 acres of the refuge is upland, 440 acres of which are grassland, and 200 are upland timber and brush. Topography is such that it is feasible to raise the waterfowl productivity of the habitat by stabilizing water levels with a system of dikes and water control structures.

The river and lake levels recede progressively, from spring flood levels to low fall and winter levels. Spring flood waters provide a firm water supply to recharge refuge pools. Summer precipitation is nearly adequate to offset the evapotranspiration rate.

OBJECTIVES

The following objectives will serve as guidelines for management and development of the refuge. These wildlife and recreational goals are based upon the ecological and physical potential of the refuge. These objectives are listed in order of priority.

It will be an objective of the Missisquoi Refuge to:

 Annually contribute as many ducks as practical to the flyway and to sustain the traditional use of the Missisquoi Delta by migrant waterfowl.

The capacity of the refuge habitat will be increased through development and management to annually produce about 5,000 ducks, principally black and wood ducks. This habitat will have the capacity to support 150,000 spring and 500,000 fall duck usedays and 30,000 spring and 20,000 fall goose use-days.

By developing and managing areas such as Missisquoi Refuge, high quality production and migration habitat will be created to replace that which has been and is being lost throughout the flyway at an ever-accelerating rate.

 Provide environmental-education and wildlife interpretive programs and facilities for the benefit and enjoyment of the public.

In addition to presenting the traditional tenets of natural resource conservation, a unique opportunity exists for the refuge to inform the public of the international cooperation, concern, and efforts necessary to conserve and manage the waterfowl resource of North America.

 Encourage and maintain populations of all native species of wildlife at levels in an ecological balance which will not conflict with objectives of higher priority.

Beaver and muskrat will be managed as tools to enhance waterfowl habitat. To minimize waterfowl predation, especially during the nesting season, raccoon, skunk, and fox populations may require reduction.

4. Establish a breeding flock of Canada geese. It is anticipated that up to 200 goslings can be annually produced. These trophy birds will provide refuge visitors the opportunity to observe and photograph them and will increase the hunting opportunities in the local area.

OPERATIONAL CRITERIA

MISSISQUOI NATIONAL WILDLIFE REFUGE

Water control facilities will be required to convert the low-value wetlands into productive waterfowl habitat. Water levels in impounded areas will be managed to provide optimum habitat conditions for nesting waterfowl and for the production of aquatic foods for migrants. Limited water control is currently possible on 600 partially impounded acres. Elsewhere, the water level at any one time is the same as the level of Lake Champlain.

Seasonal lake levels vary from two to six feet annually, being high in the spring and low in the fall and winter.

By May 1 of each year, 6,000 acres of the approved refuge area (6,560 acres) are inundated to a depth of 1.5' to 3.5'. By July, water levels usually recede to a level which stimulates the growth of woody plants; consequently, much of the refuge is covered by dense, bogtype vegetation, such as spirea, sweet gale, and leatherleaf. Large, dense areas of buttonbush also exist.

To meet waterfowl objectives, it will be necessary to provide as many acres of water as possible up to two feet water-depth. It will also be necessary to have the capability to hold the water at any level up to the maximum design level of the control structure for management purposes. The design level should provide for the exclusion of river flood waters. Stable water levels are necessary by May 1 of each year for nesting waterfowl. Control structures should be designed to charge or dewater pools within a 15-day period. Inverts should be low enough to dewater pools by

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gravity down to the level of Lake Champlain. Pools may be drawn down after freeze-up.

Pools will be charged as soon as possible after ice breakup in the Missisquoi River to provide the maximum nesting habitat for waterfowl. Water levels will be manipulated to promote optimum habitat for both nesting and migrant waterfowl. Experience with "Goose Bay Pool" indicates that the average monthly rainfall (3.5"), June through September, is sufficient to maintain favorable water levels during the summer and fall months. Portable pumps will be used, if needed, to attain objective water levels. All structures should be equipped with double fish screens, with minimum space between, to exclude carp, bowfin, bullheads, and pike.

Timber will be cleared to permit construction of dikes and structures only. A strip of timber up to 200 feet wide will be left standing on the outside of perimeter dikes to minimize damage to both dikes and structures by ice and water in the lake or rivers.

II. LAND USE MANAGEMENT

A. Cropland

No upland crops are required to meet waterfowl use objectives. Former croplands have been seeded to grass.

B. Grassland

Currently, there are 442 acres of grassland on the refuge. After acquisition and development are complete, 500 acres of grass or grass/legume will be managed for nesting cover and Management will consist of haying and, when needed, herbicidal control and/or prescribed burning. The local demand for hay is moderate, and the demand for grazing is low. Soil and moisture conservation practices will be applied. Periodic reseeding of grasslands will be necessary for optimum goose utilization.

Small potholes (70' x 30' average) will be constructed in topographically adaptable sites in grassland areas to create optimum nesting conditions for dabbling ducks. Water depth will average no more than two feet.

C. Timber and Brush

Timber and brush remaining after development will be preserved as wildlife habitat and to protect dikes from the erosive action of ice and water.

D. Economic Use

Fur trapping and haying will be used as management tools to maintain optimum waterfowl habitat.

III. SERVICE FACILITIES

A. Buildings `

- Retain the office, service building, and oil house at headquarters; the storage building at Mac's Bend;
- Remove all other sheds located at various places on the refuge; and

3. Build a 30' x 40' steel, unheated equipment storage building, with gravel floor, one 20' opening with sliding doors, and a walk-in door on the Island Unit.

B. Roads and Trails

- Year-round access roads will be provided to all water control structures.
- Fair weather trails will be needed to operational sites for use of refuge personnel. Dikes will be used for these trails where possible.
- A winding two-way access road will be required from Tabor Road to the proposed waterfowl display pool at Otter Creek Point.
- 4. A one-way, self-guided tour route will be provided utilizing all or portions of the dike system where possible. This route will begin at the display pool, follow a southerly direction over several islands, and terminate at Tabor Road.
- A two-way access road will be needed from Tabor Road to the four proposed boat-launching sites on the Maquam Unit.

C. Fences

Twisted smooth-wire fences are required to permanently define boundaries contiguous to privately-owned property. Barbed wire will be used to control grazing. No fences are required along public roads. Standard fence plans (Rev. 10/2/62) will be used. About 14 miles of the boundary are now fenced and an additional 1.6 miles will need to be fenced.

A predator-proof fence will be required around the display pool. No engineering will be required.

D. Posting

All boundaries, including both sides of interior public roads, will be appropriately posted at a maximum interval of 1/10 mile. In areas of poor visibility, the posting interval will be such that a sign can be seen from any direction. Except on areas to be acquired, all posting has been accomplished.

IV. UTILITIES

Existing telephone service and single-phase electricity at headquarters are adequate for present and future requirements.

V. PUBLIC USE FACILITIES

A waterfowl display pool will be constructed on Otter Creek Point. This pool should have an average water depth of no more than two feet.

As presently authorized, fishing access will be permitted at designated areas. Two parking areas have been developed along State Route 78 for fishermen. Boat-launching ramps have been built at both sites.

Parking areas and boat-launching ramps will be built in adaptable locations to facilitate hunting and fishing access.