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Review and Approvals

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Submitted by                      Date

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Area Office                      Date

Missisquoi Refuge  
Refuge

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Regional Office                      Date

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## I. GENERAL

### A. Introduction

The Missisquoi National Wildlife Refuge is located in Franklin County, Vermont only one-quarter mile from the U.S.-Canadian International Boundary along Lake Champlain. The refuge was established February 4, 1943 with the purchase of 1,582 acres. Subsequent acquisitions have enlarged the refuge to its present 5,651 acres.

Much of the Missisquoi Refuge contains a landscape differing only slightly from the days of the Indians. The name "Missisquoi" is the European version of an Abasaki Indian word meaning "land of much waterfowl and much grass."

### B. Climatic and Habitat Conditions

On April 4, 1976 Lake Champlain rose to a record 101.65 feet mean sea level, about  $2\frac{1}{2}$  feet above the normal spring peak. The Missisquoi Delta shared in the damage caused by the flooding. With precipitation about 6 inches above normal, the lake remained exceptionally high, usually in excess of 1 foot and in late summer more than 3 feet above normal. Stoplogs were left in place in the water control structure to prevent the Missisquoi River from flooding back into the pools. Management level of 96.5' msl was never attained in the Cranberry Pool.

The flooded timber provided excellent tree crotch nesting for Blacks and Mallards, and overhead cover for broods. The arrowhead and burreed was excellent both for horizontal brood cover and feed in the fall for the migration. The wild rice, usually abundant, was almost non-existent this year. Overall, the conditions were excellent though a little short-lived as on October 28, our pools were frozen.

Vermont proved to be a land of extremes where temperatures can vary, this year,  $120^{\circ}$  in a three month period. On January 24, the low was  $-30^{\circ}$  and on April 18, the record setting temperature of  $91^{\circ}$  was reached. Records are maintained at Refuge Headquarters.

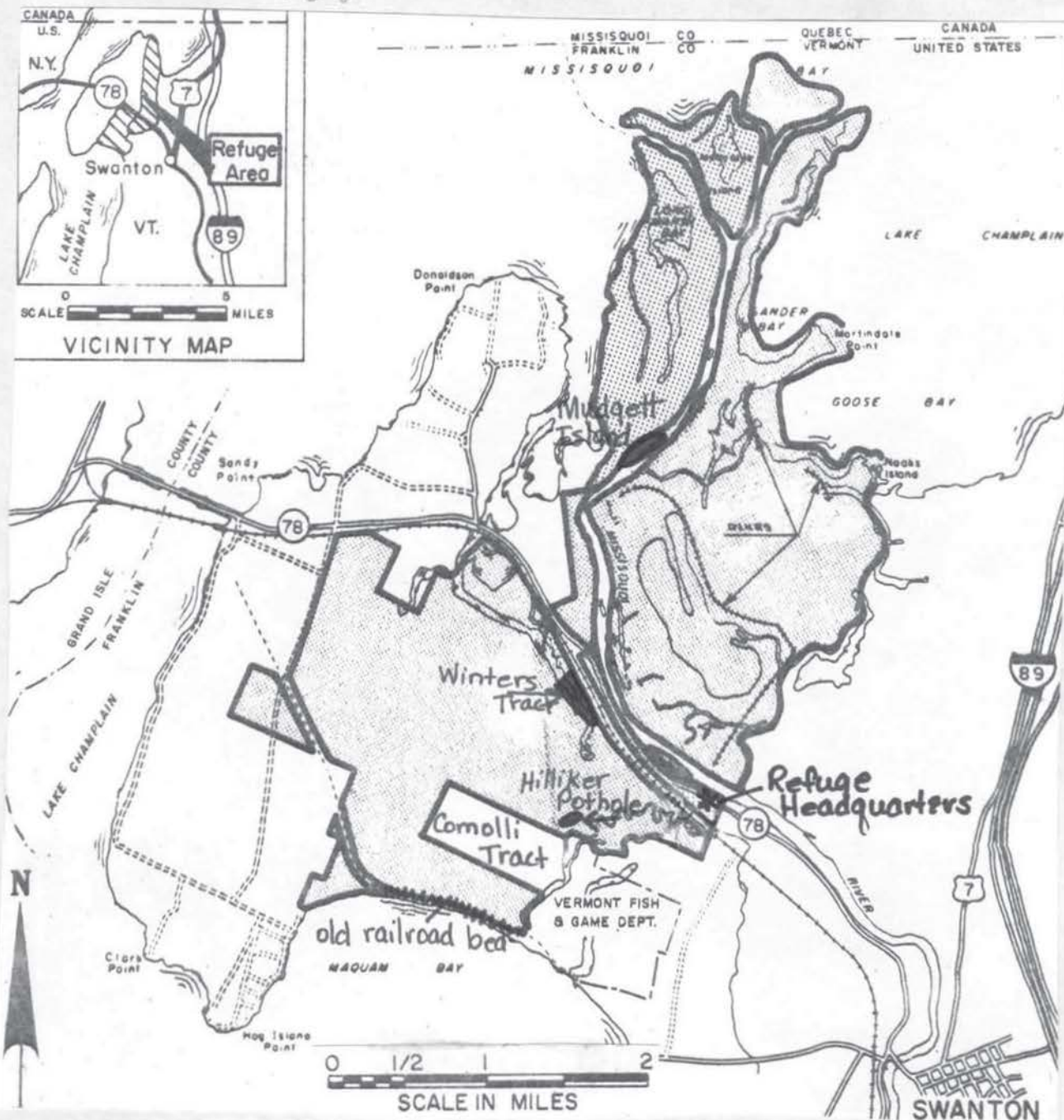
### C. Land Acquisition

#### 1. Fee Title

The Webb Tract of 857 acres was conveyed to Missisquoi in early July by The Nature Conservancy. Total acreage now, 5,651.

The Missisquoi Refuge has four inholdings with access a problem. In the past, access to two areas, Comolli Tract and Hilliker Pothole, was gained by the Maquam railroad bed. Flooding this spring made this road impassable. Another inholding, the Winter Tract, is near main highway 78 and parking on refuge land to gain access decoys other hunters to this area. Mr. Morrill has a cottage on Mudgett Island and uses the Macs Bend Access Road. A permit system was established to alleviate some of these problems.

*No. Not carried out then*



## 2. Easements

None.

## D. System Status

Missisquoi is functioning at NFIO because of lack of personnel. Waterfowl production and public use is functioning slightly higher than NFIO.

The current refuge objectives in need of revision are; waterfowl maintenance, hunting programs and interpretation. The other refuge objectives are adequate at the present time but could stand updating.

Missisquoi was able to meet all the advices.

There seems to be a lack of continuity between PFMIS and PPBE. There has been program planning for several years with no money resulting. There is some indication for hope in more funding with "Enclosure 2" and the "Bicentennial Land Heritages Program."

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

As Missisquoi has been without the services of a maintenanceman since October, 1975, no new construction or major maintenance was performed.

A leak in the Water Control Structure in the Cranberry Dike was discovered in 1972, and either funding, flooding or lack on manpower has prevented the repair.

Our access road to Macs Bend was damaged in the spring flooding and only minor repairs made. The heavy equipment; tractor, bulldozer and barge are not operational, due for the most part, to non-use.

*barge is operational, slip is not.*

### B. Maintenance

Only minor maintenance was performed such as lawn care, snow and garbage removal. The headquarters building is sorely in need of paint both inside and out, however, we had a beautiful bed of flowers, a neat lawn and hoped our visitors wouldn't mind the peeling paint.

### C. Wildfire

Nothing to report.

### III. HABITAT MANAGEMENT

#### A. Croplands

Three Cooperative Farming Agreements were in effect in 1976. Two agreements, in their second year of the five-year cycle, seeded a hay mixture with oats as a nurse crop. The third cooperator, in his final year of the five-year cycle, harvested only due to poor health.

Approximately 90% of the Canada Goose, Snow Goose and deer use days on refuge is on this cropland.

*NOT TRUE -  
100% in Cranberry + BMS*

#### B. Grasslands

A total of five Special Use Permits was issued for the sale of 127 acres of standing hay. Total revenue \$336.00.

One Special Use Permit was issued to Robert Carman of West Swanton for pasturing of young stock in field 11 for 48 AUM. Total revenue \$48.00.

Mr. Kermit Mayo of Milton again renewed his Special Use Permit to keep 30 beehives in three different locations on refuge. Revenue \$7.50.

Total revenue for all uses \$391.50.

#### C. Wetlands

High lake levels prevented any manipulation of water levels in the refuge pools. It is not yet known what problems Missisquoi faces in the future if the proposed dam is built on the Richelieu River, the outlet for Lake Champlain. The levels of the lake are of prime importance to the management and future of the Missisquoi Refuge as a waterfowl production area.

#### D. Forestlands

Missisquoi harvests no timber nor manages forests. The periodically flooded woodlands provide excellent habitat for nesting waterfowl, especially Black ducks.



E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

The status of the wilderness area remains unchanged.

G. Easements for Waterfowl Management

Nothing to report.



## IV. WILDLIFE

A. Endangered and/or Threatened Species

No endangered or threatened species known on refuge.

B. Migratory Birds1. Waterfowl

Waterfowl started returning to the Missisquoi Delta in late March to find most of the artificial nesting structures either completely submerged or at the least wet. A great deal of time was spent locating and raising the boxes in time for the nesting season.

Spring populations were estimated at 8,000-10,000 Canada Geese, 500 Mallards, 700 Blacks, 150 Wood ducks, 150 Green-winged Teal and 100 Ring-necked ducks. With personnel problems at Missisquoi, we do not have adequate or accurate data to even estimate production. The I.J.C. Studies reported ground nesters, Blacks, Mallards and Teal production and brood survival as excellent this year due mainly to high water.

Fall flight populations peaked at 5,000 Mallards, 6,000 Ring-necks, 2,000 Blacks, 1,000 Blue-winged Teal and 800 Woodies. A combination of good production, brood survival and a resting area provided by the closing of our impoundments to all hunting, resulted in the largest concentrations of waterfowl in 10 years, according to biologists and hunters alike. Freeze-up of our pools in late October, finally pushed the birds out of the area.

2. Marsh and Water Birds

The largest Great Blue Heron Rookery in Vermont on Shad Island now consists of about 320 nests and platforms. Green Herons, American Bitterns, Black-crowned Night Herons, Gallinules, Virginia Rails and Pied-billed Grebes were here as usual in low numbers.

3. Shorebirds, Gulls and Terns

Woodcock again nested in surrounding higher areas due to high water. Snipe were present by June, but probably in lower numbers than normal. No more than 30 Snipe were estimated. Black Terns were here in normal numbers - 300.

Missisquoi Bay in Canada - not re

if so why do this va show an output report is sma

#### 4. Raptors

No eagles were observed or reported this year. A pair of Osprey returned again to the refuge, with no confirmed nesting reported. A few pair of Barred and Great Horned Owls, residents of the refuge are occasionally heard but scarcely observed.

#### 5. Other Migratory Birds

The Warbler migration was excellent again this spring. In late December, a flock of 150 Snow Buntings was observed.

### C. Mammals and Non-Migratory Birds and Others

#### 1. Game Mammals

Despite the fact that much of the refuge was flooded throughout the spring, summer and fall, the refuge harbored a few deer. Four deer were seen on the "Island" and fourteen on the mainland. Populations continue to be low as harsh winters and dogs take their toll of deer.

#### 2. Other Mammals

A beaver house count was conducted by Vt. Fish & Game Biologists, I.J.C. Study, with 25 lodges found on refuge. Numerous complaints from both landowners and town selectmen prompted refuge personnel to instigate a trapping program for the 1977 trapping season. *reason was damage to oak trees in Mahram Cr & Black Cr area.*

Muskrat house counts were also conducted by the biologists. Aerial flights and ground census for burrows covering at least 50% of the refuge showed this: 568 houses aerial, 56 ground burrows with an average of 1-3 'rats/house. Thus, muskrat populations were estimated at 1250.

Coyotes still live in the West Swanton area and one den site is known. Their calls can be heard for miles around.

Red fox are more numerous than in previous years. An adjacent landowner, Howard (Buster) Cassavoy, chased two fox out of his yard this summer. Evidently, they had every intention of making his house cat dinner for their young. *Refuge population down - not one observation on refuge this year.*  
Populations of rabbit, hare and squirrel continue to be low.

Raccoons were numerous in spite of high water. Perhaps this newspaper article explains it.



**LIVELY PETS** — Tracy Comstock, 4, of West Swanton has three lively baby raccoons which were found after the mother coon had climbed inside a chimney on the house and delivered them. The coons are about five weeks old and have been pets for about two weeks. Tiny, Charley and Rosey will be released to the Missisquoi Wildlife Refuge.

This little girl pulled these raccoons in a wagon in the Kiddie Parade, Swanton Summer Festival. Special Agent Brown resolved the matter and the 'coons were not left at the refuge.

### 3. Resident Birds

Populations of Ruffed Grouse are quite low again due to high water. Few observations were made.

#### 4. Other Animal Life

The Walleyed Pike run up the Missisquoi River past headquarters was early and slow. Walleye spawn not only in the rivers flowing into Lake Champlain but also along the lake shore and marshes. The water dropped sharply about one foot and hundreds of fish were seen in the fields along the river, trapped.



## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

Missisquoi has a great deal to offer visiting waterfowl but actually little to offer in terms of public use. The YCC, this summer, cleared and boardwalked a one-mile trail directly - *part only - 100', not entire trail* behind the Refuge Headquarters and with the acquisition of the Webb Tract another three-mile hiking, bicycling trail was added.

#### 2. Off-Refuge

Several news releases were issued this year, mainly dealing with hunting. Refuge Manager, George O'Shea, gave four narrated slide talks as well as being involved with the "Atlas Breeding Bird Survey," Woodcock Singing Ground Census and a lecture at the Third Annual Vermont Conference on Birds at Lyndon, VT. Refuge Manager, Tom Mountain, who entered on duty September 12, less than one month before the Vermont waterfowl season opened, presented a radio talk show regarding the new Youth Waterfowl Hunt and changes in our hunting areas, as well as introducing himself to the community.

Films "So Little Time" and "Cry of the Marsh" were available to civic and church groups.

### B. Recreation

#### 1. Wildlife Oriented

The Webb Tract of 857 acres was conveyed to Missisquoi in early July and plans were made to establish this area as a Youth Waterfowl Area during the hunting season. This was a cooperative effort involving Federal, State and Ducks Unlimited Personnel. Participation was less than expected with only twelve youngsters. However, by the end of the season, enthusiasm was high and public response was favorable. A great deal of interest and a few suggestions have been shown for a similar program in 1977.

Public interest and use soars at Missisquoi in the autumn. Public use was estimated at 5,000 visits for the month of October as compared to September at 1,300.

One step taken this year was the closing of our impoundment area to all hunting. In the past, these areas were open to

upland game and deer. It is felt this closing provided a resting area for waterfowl and contributed greatly to high concentrations of ducks on the refuge.

## 2. Non-Wildlife Oriented

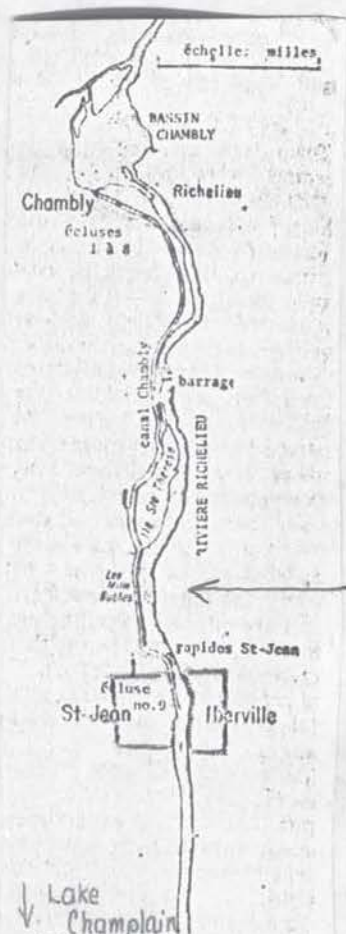
Missisquoi is completely wildlife oriented with perhaps one exception. In August, blueberry pickers flock to the Maquam Bog with pots and pans, insect spray and youngsters but rarely with a compass. Each year many people get turned around and lost. Refuge personnel usually only hear of the ones who spent the night. No problems of this nature occurred this year as high water kept the bog flooded and the blueberry production low.

## C. Enforcement

Seventeen cases were made on refuge this year by Federal and State Personnel; eight unsigned duck stamps, five unplugged guns, one trespass and two over-limit violations. Fines ranged from \$25.00 to \$125.00 for a four duck over-limit.

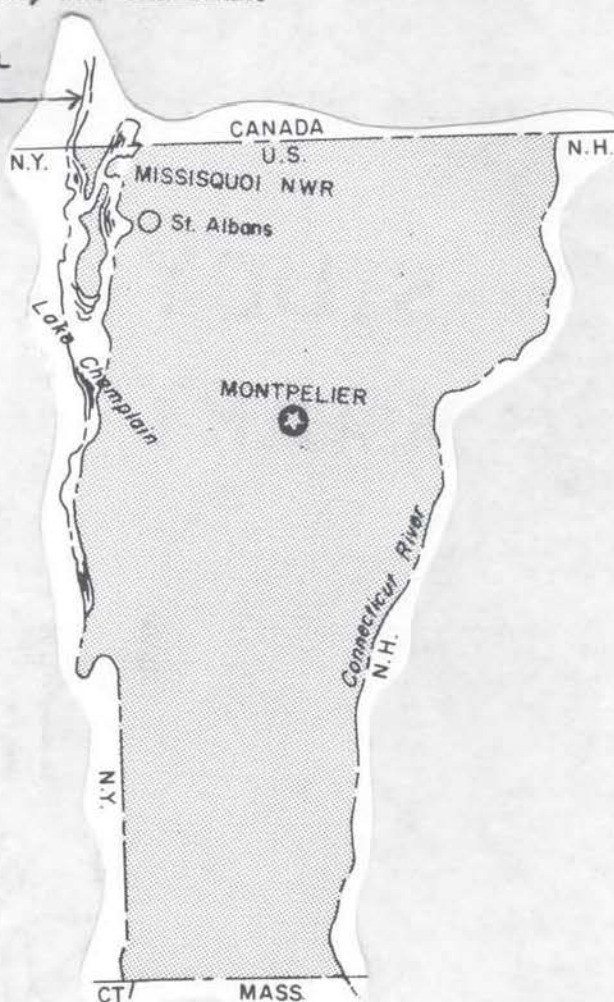
Cooperation by Vermont State Fish and Game Personnel was excellent from Commissioner Ed Kehoe to field personnel. Special Agent Howard Brown, stationed at Missisquoi, not only tends to his regular duties as an agent, but spends many hours patrolling the refuge. For nine months of this year, "Brownie" was the only Law Enforcement Official at Missisquoi.

## VI. OTHER ITEMS

A. Field Investigations

THE CANADIAN government has proposed construction of a dam at the point in the Richelieu River labeled Rapides St. Jean on this map. Also a rock reef, just south of the proposed new dam site would be removed, in addition to some dredging work. The dredging and removal of the rock reef would allow more water to flow through this bottle necked part of the river thus alleviating the annual high water problems in the river south of St. Jean and in Lake Champlain.

The Canadian Government has proposed a dam on the Richelieu River, the outlet to Lake Champlain. As any lake fluctuation will have a major impact on the wetlands of Lake Champlain, the International Joint Commission instigated an intense two-year study involving waterfowl, vegetation, furbearers and fish. As Missisquoi is the largest marshland on the lake, it was extensively involved in the studies. The Refuge Headquarters is situated such as to provide a meeting place for I.J.C. members to plan, discuss and review operations for their studies. Former Regional Director, Richard Griffith, was chairman.





## B. Cooperative Programs

Two YCC staff and twelve enrollee positions were filled for the YCC Program in 1976, temporarily alleviating the manpower shortage here. The non-residential camp began on June 28 and terminated August 20. Alec Campbell, Camp Director, and Anthony Brainerd, Environmental Education Specialist, entered on duty a week prior to camp opening to familiarize themselves with the refuge and to organize upcoming work projects.

Major work projects completed were; development of a one-mile nature trail, fabrication of 35 wood duck boxes, painting signs, reposting the boundary, construction of two foot-bridges on the nature trail and the clearing of channels to the Youth Waterfowl Hunting areas.

Our total YCC budget was \$14,400.

## C. Items of Interest

A refuge revenue sharing check for \$3,409.52 was presented to Franklin County in 1976.

An Abnaki Indian Tribe in the Swanton-Highgate area of Vermont sought to acquire land and free, unlimited hunting and fishing rights and for inclusion of tribal members in the guardianship of the Missisquoi Refuge. Late-duck Governor, Thomas Salmon, granted them official recognition in November and the hoopla that followed that announcement is making news yet.

Missisquoi experienced the departure of two refuge managers this year. George O'Shea left for The Great Dismal Swamp on September 12. Tom Mountain E.O.D. at that time and in December transferred to Seney Refuge, Seney, Michigan.

Administration of Missisquoi was placed under Parker River Refuge in Newburyport, Massachusetts in August.

Credits: This report was written and typed by Clerk-Typist, Gail Vanslette. Some information and alot of moral support supplied by Parker River Refuge and Vermont Fish & Game Biologists.

## D. Safety

Safety memos and magazines were read and discussed as received. No accidents were reported for either refuge staff or YCC.