CROP DEPREDATION AREAS IN MANITOBA,

WITH RECOMMENDATIONS FOR ALLEVIATING WATERFOWL CROP DAMAGE.

PHASE II REPORT ON DEPREDATIONS, MANITOBA

G. D. Adams,
Canadian Wildlife Service.

L. Bidlake,
Man. Dept. of Mines,
Resources and Environmental
Management.

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Introduction

The Canadian Wildlife Service is formulating a new policy aimed at alleviating waterfowl crop depredations through cooperative agreements with the three prairie provinces. Assistance of the Wildlife Service was requested by the provinces of Alberta and Saskatchewan, to meet the high costs of providing compensation payments to landowners suffering recurrent and heavy crop damage. Payments on crop damage claims have exhausted funds allocated for that purpose in the province of Saskatchewan. There are also indications that the number of crop damage complaints has increased over the past five years (1965-69) (Weaver 1970), and more increases are likely. Thus, the Canadian Wildlife Service has considered an amendment to the Canada Wildlife Act whereby the Service will assume more responsibility in, and provide coordination with, the provinces in the alleviation of crop depredations.

In the phase I report by Weaver (1970), priority areas suffering recurrent crop damage due to waterfowl depredations were delineated for the prairie provinces. In Manitoba 13 priority areas were designated on the basis of the frequency and intensity of crop damage complaints. This report attempts to elaborate and refine the information available on crop damage and suspected staging areas. Also some background information on crop damage control in Manitoba is provided by Mr. L. Bidlake of the Dept. of Mines, Resources & Environmental Management. Further, the methodologies for alleviating crop damage are evaluated with recommendations for additional measures which could be enacted by the Canadian Wildlife Service, if depredation conditions become more severe.

Acknowledgements

During the preparation of this report consultations were made with Mr. R. Webb, former chief of operations, Mr. J. Howard, acting operations chief, Mr. R. Urban and Mr. D. Davies, wildlife biologists with the Dept. of Mines, Resources & Environmental Management. Information on land assessment was provided by Mr. J. Westdal of the Lands Branch.

Sources of Information

Information on the locations of priority depredation areas was obtained from the phase I report and maps by Weaver (1970). Most of the data was

furnished from the library or files of the Operations Division of the Dept. of Mines, Resources & Environmental Management. Waterfowl census figures were obtained from the provincial department, from C.W.S. files or from Ducks Unlimited. Land ownership descriptions were derived from the 1967 land-use map of Manitoba: and assessment values for various quarter sections were obtained from the Manitoba Land Assessment Office. Canada Land Inventory maps and information were utilized to provide descriptions of the major migratory staging areas.

Objectives

1. To outline and appraise the current crop damage control program in Man.
2. To delineate areas subject to waterfowl damage and to indicate the probable source of feeding-flocks of birds.
3. To locate, rate and assess staging areas that are contributing to waterfowl damage problems.
4. To provide some estimates of waterfowl flock sizes utilizing these staging areas.
5. To furnish land ownership information on staging areas.
6. To list present locations, acreages and costs of lure cropping.
7. To recommend possible additional sites for lure cropping, and to present land assessment values for these sites.
8. To provide general recommendations for alleviating crop damage, especially in a critical depredation year.

WATERFOWL DEPREDATION PROGRAMS IN MANITOBA

The Manitoba Department of Mines, Resources and Environmental Management has for about 20 years been involved in attempting to alleviate crop damage to privately owned cereal crops throughout most of the province. During most of this time depredation control activities have been in the form of conservation officer participation of assisting landowners with the aid of acetylene exploders and cracker shells. The magnitude of the problem varied from year to year, depending upon weather conditions, waterfowl populations, and the geographic area of the province.

During the 1950's a departmentally initiated program of waterfowl feeding stations and lure cropping was tried for several years in order to alleviate or prevent waterfowl damage to cereal crops. This program was not continued and virtually no lure cropping was tried again until about 1965 when one or two small crops were used in the Grant's Lake Game Bird Refuge 20 miles north-west of Winnipeg. Since 1970, the development of a new program has led to fairly intensive lure cropping, land purchase with provision for compensation.

The magnitude of the depredation problem, not only by migrant and staging waterfowl, but also by resident ungulate populations such as deer and elk, was recognized in 1969 and a three-pronged program was developed which hopefully would reduce the number of complaints of damage by both waterfowl and other wildlife to cereal and forage crops. Mr. Robert Webb, formerly Chief of Wildlife Operations, was instrumental in bringing this program into effect in the summer and fall of 1970. Basically, a fund was set up to provide monies for the purchase of lure crops land for lure crop development, and ultimately, compensation on a limited basis to landowners experiencing cereal or forage crop loss or damage by waterfowl or other wildlife species. Monies for this fund, called the Wildlife Control Fund, are accrued from the purchase by all hunters of a Wildlife Certificate for $2.25. Each hunter must purchase one certificate each year in addition to his regular game licences to qualify him to hunt.

Waterfowl depredation control costs vary with circumstances but are basically equipment, and labour. Many Conservation Officer man-days plus seasonal time are spent on depredation control each fall. An average of figures for 1969 and 1970 were taken in order to quantify the magnitude of expenditure. Excluding lure crop development cost, depredation activity costs the department approximately $37,000.00 annually. Lure cropping

prior to 1970 was incidental but in 1970 cost $10,340. In 1971, costs for about 24 lure crops are expected to run from $35- 40,000. Land purchases have yet to be made under the terms of the wildlife control fund but may go in excess of$6000 before the end of the fiscal year. Compensation to land-owners is not being paid at present until such time as this aspect of the fund is completely defined.

At the present time, waterfowl depredation control activities cost Manitoba approximately $70-75,000. The cost will even be greater once some form of compensation is paid.

The areas where most depredation activities take place are adjacent to major staging areas for field- feeding waterfowl. Although the list may not be complete, the areas listed below are probably those where most activities take place.

1. Delta Marsh Area
2. Netly Marsh Area
3. St. Andrews Bog Area
4. Grants Lake Area
5. Whitewater Lake Area
6. Big Grass Marsh Area
7. Dog Lake Area
8. Marshy Point Area
9. Riverton and Hodgson Areas
10. Swan Lake Area
11. Dauphin Lake Area
12. Carrot River Valley Area.

Although there are undoubtedly many areas where depredation does take place, the control activities are not of the same magnitude as those exerted in those areas listed above.

Since the inception of the wildlife control fund, the initial costs of waterfowl depredation control have risen. It is hoped, however, that through experience with lure cropping, and with private land being purchased for lure crop development, that the long range cost of depredation control will decrease. If lure cropping remains successful in reducing crop loss, as it did in 1970, then this aspect of the program will have achieved its

purpose. The total cost to government, however, cannot help but increase once some form of compensation for crop loss becomes available. Although the funds themselves will come from the hunter supported Wildlife Control Fund, the cost of administering the fund and assessing claims will be a brand new expense. Since we do not have any means of estimating, at present, the actual value of crop loss to depredating waterfowl, the magnitude of the problem still remains only partially identifiable.

Criteria for Depredation Regions and Staging Areas

The criteria for selecting problem staging areas were based upon the perennial use of the area by large flocks of mallards, pintails and Canada geese, particularly adjacent to a grain farming region, and the close proximity of crop damage complaints. Numerous other complaints were received, especially in southwestern Manitoba. Few depredation areas were defined there because of the scattered location of the damaged sections, and because it was difficult to relate the section in question to a particular staging area. Collectively there are numerous lakes and potholes south of the Riding Mountain which hold staging birds of sufficient numbers to contribute to severe depredations in some localities. However, due to the year to year variation in use, and the shifting of flocks from one staging area to another there is no consistent crop damage pattern of the magnitude reported for the following list of 20 depredation regions.

The subsequent list was derived from the list of priority areas identified by Weaver (1970) plus additional regions which experienced less intensive damage and which are closely associated with important staging areas. Some regions, such as in the vicinity of the Shellmouth Reservoir, may develop into potential high risk areas. In other regions such as the Whitewater Lake area, there is a past history of crop damage, although records of complaints were few during the 1965-69 period. The potential crop damage implications in this region are tremendous. Some areas, which are indicated, are generally known to sustain periodic and heavy crop depredations although the reporting rate is low.

Estimates of waterfowl numbers utilizing the various staging areas were based upon sequential aerial counts during the 1967-1969 period conducted by the Dept. of Mines, Resources & Environmental Management, the Canadian Wildlife Service and Ducks Unlimited. During 1968 and 1969, a concerted effort was made by the C.W.S. to coordinate all surveys carried

out by the various agencies. As a result, more staging areas were flown and a series of estimates were obtained during the fall period for each staging area covered. The figures in Table 1 represent the highest given count of waterfowl for that particular area, in a given year. Due to timing of survey flights, this estimate may not reflect the maximum flock size on the area. However, the figures represent, within a probable error of ± 30 percent, the general order of magnitude of flocks using the staging areas.

Land Assessment and Ownership

Most of the designated staging areas have at least a portion of their shoreline in crown land. The only exceptions are Maple-Hunter Lakes and most of Marshy Point. However, private land holdings can control access to some extent at Whitewater Lake, Marshy Point, East Shoal Lake, Libau marshes, and Grants Lake. There is also limited crown land suitable for lure crops in most areas, and subsequently contracts and crop purchase agreements have to be negotiated on private holdings.

The following factors were considered in the selection of quarter sections suitable for lure crops (Table 3). Where possible, the quarters were additional areas that experienced crop damage in at least one year during the 1965-1969 period. In addition to crop damage, some quarters were selected because they were located in close proximity to the staging area. When neither condition applied, then the selected quarter was located contiguous to a quarter having a history of crop depredations. Usually the quarter with the lowest or medium assessed value was selected.

The list in Table 3 presents some possible land locations for additional lure crop sites, if needed. These locations are not the only suitable quarters, but are examples showing the approximate range of assessment values. Some of the suggested sites may be only of marginal value for crop production. However, these quarters and other possible locations should be considered if a large scale acquisition and crop purchase program is initiated.

Table 1.

SUMMARY OF AERIAL WATERFOWL CENSUSES

1967-69 Manitoba

MAXIMUM NUMBERS OBSERVED

Staging Area	Year	Total Ducks	Date	Total Mallards	Date	Total Canada Geese	Date
Netley	1967					215	Sep.21
	1968	47,880	Oct. 9	18,970	Nov. 6	45	Sep.23
	1969	43,500	Oct. 30	41,240	Oct. 30	160	Sep.23
Delta	1967					1,730	Oct.31
	1968	30,510	Sep. 17	6,350	Sep. 17	415	Oct.23
	1969	52,300	Nov. 6	48,680	Nov. 6	480	Oct.15
Marshy Point	1967					4,800	Sep.27
	1968	9,040	Nov. 6	8,340	Nov. 6	3,740	Nov. 6
	1969	3,840	Oct. 29	3,620	Oct. 29	3,045	Sep.23
North Shoal	1967	310	Sep. 21			200	Oct.11
	1968	13,160	Sep. 17	1,260	Sep. 17	105	Sep.23
	1969	12,630	Sep. 10	1,960	Sep. 10	150	Sep.23
East Shoal	1967	670	Sep. 21			1,020	Sep.27
	1968	16,560	Sep. 17	4,940	Sep. 17	745	Sep.17
	1969	12,930	Sep. 10	1,230	Sep. 10	215	Sep.23
West Shoal	1967	1,025	Sep. 27			1,070	Sep.27
	1968	82,360	Oct. 9	48,820	Oct. 23	1,025	Oct.23
	1969	17,350	Sep. 10	12,080	Sep. 10	690	Oct.15
St. Andrew's Bog	1967						
	1968	7,150	Sep. 23				
	1969	1,200	Sep. 23	740	Sep. 23		
Big Grass	1967					570	Nov.7
	1968	22,520	Oct. 23	20,570	Nov. 6	1,590	Oct.9
	1969	79,220	Oct. 30	77,520	Oct. 30	925	Nov.6
Grant's Lake	1968			20,000	Nov. 6		
	1969	5,450	Sep. 23	4,420	Sep. 23	330	Oct.15
Pineimuta L.	1967					380	Oct.18
	1968					410	Sep.26
	1969					350	Sep.23
Dog Lake	1967					1,000	Sep.21
	1968					990	Sep.26
	1969					1,690	Sep.23
Riverton-Hecla	1967					740	Sep.21
	1968					180	Oct.23
	1969	715	Nov. 6			760	Sep.23
Saskeram	1967					900	Oct.5
	1968					420	Sep.25
	1969	100,000+	Sep. 15				
Oak-Plum L.	1967	12,700	Sep. 20			400	Oct. 5
	1968	18,500	Oct. 30			280	Sep.26
	1969	19,450	Oct. 21			280	Oct. 8
Maple L.	1967	1,770	Nov. 1				
	1968	1,300	Oct. 23			80	Oct. 9
	1969	1,850	Oct. 21				

Staging Area	Year	Total Ducks	Date	Total Mallards	Date	Total Canada Geese	Date
Whitewater	1967	130,850	Oct. 5			2,000	Sep.26
	1968	80,000	Sep.18	16,500	Oct.9	400	Oct.3
	1969	50,000	Oct. 8			800	Oct.3
Rock	1967	13,000	Sep.26				
	1968	2,125	Oct.23				
	1969	3,400	Oct.14				
Shellmouth Reservoir	1969	38,000	Oct.14				

Table 2. LIST OF LURE CROPS AND CROP PURCHASE AGREEMENTS, MANITOBA, 1971.

District	Land Description	No. of Acres	Estimated No. of Bushels	Purchase Cost
The Pas	*12-55-29W	34		272.00
The Pas	*19-54-27W	42		378.00
The Pas	*Lot 93 Carrot Valley	88		792.00
The Pas	Lot 9 Carrot Valley	90	1,000 at .90	900.00
Swan River	NW 17-39-23W	30	1,050 at .90	945.00
Plumas	SW 3-17-11W	52.5	785.5 at .90	708.75
Plumas	NW 3-17-11W	38.5	1,732.5 at .90	1,559.25
Plumas	SW 27-17-11W	40	1,800 at .90	1,620.00
Gladstone	N½ 4-16-11W	98.6	3,550 at .90	3,194.00
Westbourne	SW 30-14-8W	52	3,600 at .90	3,240.00
Portage	NE 25-13-7W	53	1,855 at .90	1,669.50
Belleview	N½ 5-8-25W	40	880 at .90	792.00
Boissevain	*NW 3-4-21W	30		
Gypsumville	23-31-11W	60		2,580.00
Ashern	35-23-7W 18-24-7W 13-24-8W	142		6,000.00
Camper	NW 8-24-7W	45	2,475 at .73	1,806.75
Mulvihill	NE 34-23-7W	45	1,800 at .90	1,620.00
Lundar	35-19-5W	56		2,408.00
Riverton	NW¼ 28-23-4E	50		2,165.00
Lockport	NW 4-14-3E	70	2,800 at .90	2,520.00
Meadows	N½ SW 33-12-1W	52	2,340 at .90	2,106.00
Meadows	*NW 27-12-1W	75		675.00

* Denotes crown land contracts.

Table 3. LOCATIONS AND ASSESSED VALUES OF SELECTED QUARTER SECTIONS IN CROP DAMAGE AREAS. POSSIBLE LURE CROP LOCATIONS.

Municipality	Location	Acreage	Assessed Value
L.G.D. Consol (The Pas)	*NE 27-54-28W	*159.50	$1,350
	*SE 14-55-26W	161.00	300
	NW 11-55-28W	154.4	1,850
Mountain (Swan River)	NE 25-40-25W	157.00	1,550
	SW 1-39-25W	157.00	1,800
Lakeview	NW 3-16-9W	160.0	3,800
	SW 23-17-9W	160	2,150
	SW 17-17-10W	160	650
	SW 21-17-11W	160	600
Portage	SW 14-13-6W	160	3,450
	*SE 1-14-6W	160.5	1,950
	*SW 1-14-6W	160.5	3,050
Pipestone	27-7-26W	157	5,750
Brenda	NE 11-4-25W	160	3,050
	NW 12-4-25W	160	1,250
	NE 12-4-25W	160	2,150
Morton	SW 12-4-21W	160	5,250
	NE 23-3-21W	160	2,100
	NW 7-4-21W	163	5,550
Argyle	NW 23-3-13W	160	3,050
	NW 5-3-12W	160	4,700
Grahamdale	SW 24-31-9W	158.4	550
	SE 20-32-9W	160	1,800
Siglunes	SE 27-23-7W	160	1,150
	NE 13-24-8W	160	1,000
Coldwell	SW 25-18-5W	156.8	550
	SE 27-19-5W	160	600
Fisher	NE 7-24-3W	160	500
	SE 2-25-3W	160	2,950
	SW 25-24-4E	160	600
	SE 6-24-4E	160	1,400
Woodlands	NE 25-14-2W	159.7	2,800
	SW 25-14-1W	160	4,600
	SE 3-13-2W	160	1,250
St. Andrews	NE 35-15-4E	160	5,400
	SE 2-15-4E	160	7,250
St. Clements	NE 23-14-3E	160	4,550
	NW 1-15-5E	160	6,100
	SW 1-15-5E	160	3,150
	NE 30-15-6E	100	1,050

* Denotes crown land.

DELINEATION OF IMPORTANT DEPREDATION
REGIONS AND ASSOCIATED STAGING AREAS

I. Carrot Valley East - The Pas

Location: 55-27W
of Damage:

Suspected Staging Areas: Big and Pasquia Lakes

C.L.I. Rating: $2S_Z$

Acreage Staging Areas: 5,720 (Big L.) and 5,500 (Pasquia)

Distance of Damaged Sections
from Staging Areas (miles): 0-8

Ownership of Shoreline: Shoreline on Big Lake is all crown except community pasture on south side. South and west shoreline of Pasquia Lake is all crown. On north side, TP-54, R-27W sections 26-36, and sections 4-6, TP-55, R-27W are private holdings in the Pasquia Land Settlement Area.

Lure Crop Locations: 19-54-27W and Lot 9, Carrot River.

Description of Staging Area: Big and Pasquia Lakes are large shallow lakes which have been partially drained. Open water is considerably reduced, but fluctuates seasonally and yearly. Broad zones of Calamagrostis meadow border the lakes, and Phragmites in dense stands has invaded Big Lake. Pools of open water are bordered by stands of hardstem bulrush and whitetop. Pasquia Lake consists of scattered pools of surface water, some mud flats in late summer, and interspersed stands of bulrush and whitetop.

Waterfowl Use: Pasquia Lake has traditionally been a major concentration area for ducks. In the 1940's and in early 1950's, this lake was the chief source of major flights causing crop damage (Colls 1953) in the Carrot River Valley. Big Lake probably holds fewer birds, but large flocks have been observed flying from this lake into the Carrot River Valley.

II. Carrot Valley West - The Pas

Location: 55-27W, 55-28W, 55-29W

Suspected Staging Areas: Saskeram and Reader Lakes

C.L.I. Ratings: IS (Saskeram) $2S_I$ (Reader)

Acreage Staging Areas: 17,600 (Saskeram) and 13,200 (Reader)

Distance of Damaged Sections
from Staging Areas (miles): 0-8

Ownership of Shoreline: Saskeram and Reader Lakes are located in the Saskeram Wildlife Management Area. However, there are some Indian Reserves located in area: some land is grazed and in forage, and there is pressure to burn and drain areas adjacent to Saskeram.

Lure Crop Location: 12-55-29W, and Lot 93 Carrot Valley

Description of Staging Areas: Saskeram and Reader are large shallow lakes currently under water control by Ducks Unlimited. There are attempts to reduce water levels in the fall to make more areas attractive to ducks. Saskeram has both peaty and mineral shorelines, whereas Reader has predominantly a mineral soil shoreline. There is extensive shoreline development on both lakes with wide bordering Calamagrostis meadows, marshy bays and abundant aquatic plants.

Waterfowl Use: Up to 100,000+ waterfowl were estimated on Saskeram on Sept. 15/69 and 3,750 were observed on Reader Lake on Sept. 26/68.

III. Birch River

Location: 39-5W and 40-5W

Suspected Staging Area: Swan Lake

C.L.I. Rating: 3M

Acreage Staging Area: 15,400 (portion of lake)

Distance of Damaged Sections
from Staging Area (miles): 2-11

Ownership of Shoreline: Predominantly crown or unsurveyed except TP-41-24W which is partially privately owned or in Indian lands; and the Lenswood Community Pasture.

Lure Crop Location: NW 17-39-23W

Description of Staging Area: Swan Lake is a large, shallow, semi-brackish lake. The shoreline is complex, varying from peaty to mineral soil; and there are numerous bays, points and islands. There are extensive bordering meadows, with marshy bays, shoals and open shorelines.

Waterfowl Use: Primarily a canvasback staging area, but flights of mallards also concentrate on lake.

IV. Shellmouth

Location: 26-29W, 25-29W, 24-29W

Suspected Staging Area: Shellmouth Reservoir

C.L.I. Rating-Staging Area: 3M

Acreage-Staging Area: 16,100

Ownership of Shoreline: Private lands border the valley.

Description of Staging Area: A recently flooded reservoir on the Assiniboine River. Dimensions are: 42 miles long, and an average of .5 miles wide with maximum depths of 50 feet ranging down to less than 3 feet at the upper end of reservoir.

Waterfowl Use: With the anticipated development of a marsh at the northern end, this reservoir will probably attract increasing numbers of mallards. On Oct. 21/70, mallards occupied about 20% of an estimated flock of 7,000 ducks utilizing the reservoir. Depredation problems will probably develop in this area.

V. Big Grass

Location: 17-11W

Suspected Staging Area(s): Big Grass Marsh

C.L.I. Rating: $2S_Z$ and 3M

Acreage-Staging Area(s): 12,250

Ownership of Shoreline: Most of marsh is crown land but private holding border most of the marsh shoreline except sections 11, 26, TP-17-R-11W, and section 29, TP-17-R-10W.

Distance of Damaged Sections
from Staging Area(s): 0-8

Lure Crop Locations: NW3-17-11W and SW27-17-11W

Description of Staging Area: Large semi-permanent marsh with pools of open water fringed by hardstem bulrush and phragmites and extensive meadows of

whitetop, sedges, and reed grass. Subject to considerable flooding. Drained by the Whitemud River.

Waterfowl Use: A major migratory area in Manitoba. Often holds some birds in late fall long after other areas are frozen.

VI. Langruth

Location: 16 and 17-9W

Suspected Staging Area(s): Big Point - Sandy Bay Marshes

C.L.I. Rating: 3I and 5^{F}_{G}

Acreage Staging Area(s): Approx: 12,800

Distance of Damaged Sections
from Staging Area(s) in miles: 0-10

Ownership of Shoreline: Langruth Wildlife Management Area - some leased land, and Indian Reserve.

Lure Crop Location: None

Description of Staging Area: Lake shore marshes bordering west shore of Lake Manitoba. Subject to flooding from wind tides. Whitetop, bulrush marshes, open pools and associated broad meadows.

Waterfowl Use: Good waterfowl concentration area, especially along Lake Winnipeg shoreline.

VII. Pipestone

Location: 6 and 7-25W

Suspected Staging Area(s): Maple-Hunter Lakes

C.L.I. Rating(s): $2S_f$

Acreage Staging Area: 7,040

Distance of damaged sections
from Staging Area(s) in miles: 3-6

Ownership of Shoreline: Mostly private, except NE 25-6-26W and NE 20-6-25W.

Description of Staging Area(s): Large semi-permanent marshes, largely overgrown with bulrush, phragmites and sedges, but extensive whitetop meadows persist. Water is supplied by Stony Creek, an intermittent stream, but presently the mearshes have been partially drained by a ditch to the Souris River. Under water control to provide more acreage of hayland.

VIII. Oak-Plum Lakes

Location: 8-25W

Suspected Staging Area(s): Oak-Plum Lakes

C.L.I. Rating: 3M and $2S_I$

Acreage Staging Area: 7,040 and 17,270

Distance of Damaged Sections
from Staging Area (miles): 3-9

Ownership of Staging Area: Plum Lakes are in Public Shooting Grounds. Crown land is also located in NW portion of 8-25W adjoining Oak Lake. Also a small refuge.

Lure Crop Location: N½ 5-8-25W.

Description of Staging Area(s): Oak Lake is a moderately large alkaline lake not more than 10 feet in depth. Overflow and seepage from this lake recharges the Plum Lakes which are chiefly semi-permanent marshes characterized by well interspersed whitetop, cattail and bulrush stands, bordered by meadows. A water control at Oak Lake holds the lake at about 1,408 feet. Plum Lakes are drained by Plum Creek into the Souris River.

Waterfowl Use: The Plum Lake marshes are probably the finest of the large waterfowl marshes in Manitoba. Large numbers of ducks, whitefront geese, and Canada geese are attracted to the area in the fall.

IX. Whitewater Lake

Location: 3-21W and 4-21W

Suspected Staging Area: Whitewater Lake.

C.L.I. Rating: 3M and $3S_z$

Acreage Staging Area: 15,400 in 3M rating and 7,840 in $3S_z$.

Distance of Damaged Sections
from Staging Area(s) in miles: U_p to 16

Ownership of Shoreline: Bordered by private lands except for narrow strip of Public Hunting Land and a section in crown 35-3-21W.

Lure Crop Location: NW3-4-21W.

Description of Staging Area: A large windworked but very shallow lake with mean depth - less than 3 feet. The lake is semi-brackish, and supports luxuriant growths of sago pondweed and islands of bulrush and cattail at the eastern end. The shoreline water edge is controlled by such a shallow gradient that a drawdown of a few inches may expose several hundred feet of bottom. Extensive whitetop meadows and a marsh of bulrush, cattail and phragmites borders the lake. Excellent interspersion of shoreline edge.

Waterfowl Use: This lake is one of five major waterfowl concentration areas in southern Manitoba. Flock build-ups in excess of 100,000 ducks have been observed. The area also has a past history of severe crop damage.

X. Rock Lake

Location: 3-13W and 3-14W

Suspected Staging Area(s): Rock Lake and east marsh.

C.L.I. Rating: 3M

Acreage Staging Area: 3,410

Distance of Damaged Sections
from Staging Area: 3

Ownership of Shoreline: Private land, except NE7-3-12 which is crown.

Description of Staging Area(s): Rock lake which is a long, moderately shallow lake is situated in the Pembina Valley and is drained by the Pembina River. The lake has poor shoreline edge and a rather steep offshore gradient; but marshy flats occur at the west and east ends of the lake. The lake is drained by the Pembina River.

Waterfowl Use: Migratory waterfowl are attracted to the lake, and mallards usually utilize the marshes at the east end of the lake.

XI. St. Martin

Location: 31 and 32 - 9W

Suspected Staging Area(s): Pineimuta Lake

C.L.I. Rating: $2S_F$ and 3M

Acreage Staging Area: 9,200 (Pineimuta)

Distance of Damaged Sections from Staging Area: 1-10

Ownership of Shoreline: Most of Pineimuta Lake lies in crown or Indian Lands, except sections 23,24 and 26, TP-31, R-9W.

Lure Crop Location: Portions of 23-31-11W.

Description of Staging Area: Pineimuta Lake is a semi-permanent marsh, periodically flooded by the Fairford River. Emergent vegetation is primarily phragmites and bulrush, but whitetop meadows, pasture and haylands border the marsh.

Waterfowl Use: An important fall concentration area for ducks and Canada geese.

XII. Camper

Location: 24-7W

Suspected Staging Area(s): Dog Lake

C.L.I. Rating: $3S_N$ and 3M

Acreage Staging Area(s): 7,000 (portion of lake)

Distance of Damaged Sections
from Staging Areas (miles): 0-6

Ownership of Shoreline: Primarily crown, but bordering private lands control access.

Lure Crop Location: NW 8-24-7W, portions of 35-23-7W, 18-24-7W, and 13-24-8W.

Description of Staging Area: A large, very shallow but permanent alkaline lake with a very dissected shoreline featuring points, islands and marshy bays. The shore is generally mineral soil and stony, with sparse vegetation bordered by broad meadows dominated by wild barley.

Waterfowl Use: An excellent staging area for ducks and Canada geese. There is some production, and flocks of moulters use area.

XIII. Riverton

Location: 23-4E and 24-4E

Suspected Staging Area(s): Hecla-Riverton Marshes

C.L.I. Rating: $3S_I$

Acreage Staging Area(s): 6,160 (Riverton and 4,400 (Hecla)

Distance of Damaged Sections
from Staging Area(s) Miles: 1-9

Ownership of Shoreline: Primarily crown. Private farmland adjoins the Riverton Marsh.

Lure Crop Location: NW $\frac{1}{4}$ 28-23-4E

Description of Staging Areas: Large peatlands with associated pools and phragmites, whitetop, cattail and sedge marshes. Periodically flooded by wind tides from Lake Winnipeg, but currently affected by high water on lake. Extensive areas of flooded meadows on Riverton side.

Waterfowl Use: Important staging areas for mallards and Canada geese.

XIV. Fisher Branch

Location: 24-3W

Suspected Staging Area(s): Sleeve Lake, Otter Lake

C.L.I. Rating: 2SF

Acreage Staging Area(s): 2,750 (Sleeve) 4,620 (Otter)

Distance of Damaged Sections
from Staging Areas in miles: 1-12

Ownership of Shoreline: Mostly crown, except parts of sections 10 and 14, TP-24,R-4W. Sleeve Lake is in a refuge.

Description of Staging Area(s): Sleeve Lake is a shallow alkaline lake with a muck bottom and a peaty shoreline. A fringe of bulrush and interspersed phragmites is bordered by broad whitetop and sedge meadows. Otter Lake is similar, but has peaty shorelines and bordering sedge meadows.

Waterfowl Use: Both lakes support nesting Canada geese, and they serve as important migratory stops for Canada geese, mallards and canvasback.

XV. Clarkleigh - Oak Point

Location: 19-5W

Suspected Staging Area: Marshy Point

C.L.I. Rating: $2S^{F}_{I}$

Acreage Staging Area: 12,250

Distance of Damaged Sections
from Staging Areas in Miles: 1-6

Ownership of Shoreline: Most of TP-18, R-5W lies in a privately owned refuge. Public hunting is allowed on periphery in TP-19, R-5W. Bordered by private holdings.

Lure Crop Location: 35-19-5W

Description of Staging Area: A complex of whitetop meadows, bulrush, phragmites-cattail marsh, and a series of open pools and bays located behind a beach ridge, adjoining Lake Manitoba. Under the influence of wind tides, waters are infested by carp.

Waterfowl Use: A major concentration area for giant Canada geese and mallards. Potentially serious crop damage could be caused in this area.

XVI. Marquette-Woodlands

Location: 12-1W

Suspected Staging Area(s): Grants Lake, Shoal Lakes

C.L.I. Rating Staging Areas: $2S_{Z}$ (Grants Lake) 3M (Shoal Lakes)

Acreage Staging Areas: 770 (Grants Lake) 56,000 (Shoal Lakes)

Distance of Damaged Sections
from Staging Areas (miles): Up to 12+

Ownership of Shoreline: Private holdings except 33 & 34SW-TP-12-R-1W (Grants Lake). Most of shoreline of the Shoal Lakes are bordered by crown lands, except the east side of East Shoal in TP-16,R-1W, which is private, and the east shore of North Shoal Lake in TP-17, R-2W. West Shoal Lake is designated as a provincial game refuge.

Lure Crop Locations: $N\frac{1}{2}$ of SW33-12-1W.

Description of Staging Areas: Grants Lake is currently a drained marsh, with open water covering only a fraction of its former area. Vegetation is predominantly reed canary grass and whitetop. The Shoal Lakes are large windworked and shallow alkaline lakes with a mineral soil bottom. The shorelines are bouldery and sparsely vegetated, but there are numerous islands, bays and points.

Waterfowl Use: Large flocks of Canada geese, snow geese and mallards stage in Grants Lake and the Shoal Lakes. There is extensive field feeding by birds in the fields north of Woodlands and in the Marquette area.

XVII. Pigeon Bluff

Location: 14-3W

Suspected Staging Area: St. Andrew's Bog including Oak Hammock Marsh.

C.L.I. Rating: $2S_Z$

Acreage Staging Area: 4,400

Distance of Damaged Sections from Staging Area(miles): 0-4

Ownership of Shoreline: Private holdings and recent crown purchase except W½ 3-14-3E.

Lure Crop Location: NW 4-14-3E

Description of Staging Area(s): A low wet grassy area, with a remnant marsh (Oak Hammock) which is a partially drained, overgrown, alkaline marsh with a central area of open water fringed by bulrush. Most of basin is occupied by whitetop-sedge meadows and phragmites. The Balmoral Bog is situated in a ground-water discharge area. The province hopes to acquire control of all land holdings and reflood the marsh to provide a wildlife management area and refuge. Lure crops will be part of the management scheme.

Waterfowl Use: Attracts large numbers of Canada geese and mallards in the spring and fall.

XVIII - Netley Marsh (West)

Location: 15-4E and 16-4E

Suspected Staging Area: Netley Marsh

C.L.I. Rating: $2S_I$

Acreage of Staging Area: 47,250 (Netley-Libau)

Distance of Damaged Sections from Staging Areas (miles): 0-12

Shoreline Ownership: Interior of marsh is crown, but private land holdings adjoin most of marsh. There is a small refuge and public hunting grounds.

Description of Staging Areas: Large deltaic shallow lakes interspersed by channels, levees and flats drained by Red River. Flooding has currently reduced much marsh vegetation, but extensive marsh and meadows are present on the southern periphery. Very fertile.

Waterfowl Use: Historically, this marsh has been a staging area for thousands of waterfowl. It also supports high hunting pressure. Current flooding on Lake Winnipeg has considerably reduced shoreline edge and available loafing sites. Consequently the marsh has lower potential for producing and holding birds.

XIX - Libau Marsh

Location: 15-6E

Suspected Staging Area(s): Libau Marshes east of Red River.

C.L.I. Rating: $2S_I$

Acreage of Staging Area: Part of Netley: 47,250

Distance of Damaged Sections from Staging Areas(miles): UP to 14.

Ownership of Shoreline: Private lands border the narrow band of public hunting lands adjacent to open water.

Description of Staging Area: The east portion of the Red River Delta. Well interspersed shallow lakes, marsh and flooded meadow.

Waterfowl Use: Usually heavy staging use by mallards.

XX. Delta Marsh

Location: 13-6W, 13-5W, 13-7W, 13-8W

Suspected Staging Area: Delta Marshes

C.L.I. Rating: 3M and $3S_I$

Acreage of Staging Area: 42,000

Distance of Damaged Sections from Staging Area (miles): Up to 8.

Ownership of Shoreline: Mostly private crown land is located in sections 4 and 9-14-7W, and 1S and 4^{S}_{E} -14-6W, and 11-15-5W.

Lure Crop Location(s): NW-32-13-7W; NE-25-13-7W, and SW-30-14-8W.

Description of Staging Area: Marsh land developed on an old Delta behind a beach ridge on Lake Manitoba. Large open bays, interspersed marshes, dominated by Phragmites but including cattail and bulrush, and extensive bordering whitetop meadows and associated sloughs and isolated stream channels. The marsh is periodically affected by wind tides from Lake Manitoba; and it drains slowly into the lake if there is a water level gradient.

Waterfowl Use: The Delta marshes are considered to be one of the finest moulting and migratory staging marshes in Manitoba. Migratory flocks of ducks probably do not approach the magnitude of the flocks that utilized the marsh in the early part of this century. However, the flock build-ups are still impressive; and the threat of severe crop depredation is always present on the Portage Plains.

DISCUSSION

The Manitoba crop damage control program, which includes lure cropping and scaring techniques, appears to be functioning reasonably well in reducing crop damage. However, lure crops are more effective in some regions than in others; and although the number of complaints have been reduced, there are still incidents of severe crop depredations.

In 1970 three lure crops in The Pas region attracted about 265,000 bird days, which involved maximum daily numbers of 6,000 ducks, 500 geese and 600 cranes using a lure crop (Uchtmann 1970). Again in 1971, lure crops and scaring techniques appeared to lower complaints in The Pas, Gypsumville, Ashern and Riverton areas. Total seasonal duck day uses were estimated to be 150,000 at Gypsumville, 180,000 at Ashern and 170,000 at Riverton (Urban pers. comm.). However, in western Manitoba, many of the lure crops were not heavily utilized in 1971, with the exception of a lure crop (N 4-16-11W), near Big Grass Marsh, which attracted up to 50,000 mallards on Sept. 24 (Davies pers. comm.). The region which probably experiences the highest rate of depredation at present is the Big Grass Marsh area (Davies 1969).

Some attention may have to be focussed on controlling crop damage attributed to other species such as cranes and black birds. Currently the province is not involved in any program for controlling black birds, although the number of complaints has increased.

Although duck depredations are apparently under control in Manitoba, this situation may not continue indefinitely. The 1971 year was unusual in some respects. The reduced depredations cannot be attributed solely to the control program, although it was certainly a factor. Crops in southern Manitoba were harvested early. Some exceptions included the Interlake Region where swaths were still lying in the fields as late as mid October. Although no fall waterfowl surveys were conducted, the reports indicated that there were no large build-ups of mallards, except possibly at Pineimuta, Dog Lake, Riverton and Big Grass marshes. Large concentrations of the birds apparently did not remain in any area for very long. These factors, therefore, could have resulted in fewer cases of crop depredation.

Weather and water levels appear to be factors influencing the staging of mallards at certain sites. For example, wind tidal effects which resulted in a temporary drawdown of water on Riverton Marsh resulted in a

rapid build-up of mallards for a short period in 1971. Also the high water levels, and the lack of mud flats on Netley- Libau marshes, probably contributes to lower mallard use of this area. More normal lake levels, associated with a wet fall, could be decisive in attracting and holding large flocks of mallards which in turn could cause severe crop depredations.

Despite the sucess of the control program to date, the right combination of events such as weather, harvest conditions, and high waterfowl productivity could result in extensive and severe crop damage in some years. Under these conditions, the Manitoba control program would be hard- pressed to handle the number of complaints and to provide compensation to landowners. Therefore, there is a need for some contingency plan which would enable prediction of these events in advance,and provide some form of technical and monetary assistance to the province. Such a plan is currently under consideration by the Canadian Wildlife Service.

RECOMMENDATIONS

1. Reinstate a cooperative aerial survey program to monitor fall flights of waterfowl.
2. Conduct more intensive field surveys to determine numbers, origin, and flight patterns of waterfowl feeding in fields and utilizing lure crops.
3. Provide a contract for an assessor to determine the magnitude of crop damage losses in critical depredation regions.
4. Encourage the province to continue with the lure cropping program, by providing federal grants if necessary.
5. When additional measures are needed to alleviate crop depredations in a high risk year, the C. W. S. should establish a contingency fund to assist the province in the lease or purchase of additional private holdings and lure crops.
6. Additional purchases of land or lure crops may be necessary in such high risk areas as: Big Grass, Gypsumville, Riverton, Camper, Marshy Point, Delta and Whitewater. Some lure crops should also be located near Shoal Lake, Erickson and Virden.

7. In a severe depredation year, the C.W.S. should be prepared to provide immediate technical assistance in control programs, if assistance is requested by the province.

8. The C.W.S. should assume responsibility for crop damage attributed to migratory birds utilizing federally owned or managed lands.

9. The C.W.S. should be prepared to initiate crop damage control measures for cranes and non- game migratory birds.

10. A crop damage compensation program should not be implemented without consultation with the province, and only after the cost benefits of alternative means of depredation control are considered.

11. Where other measures such as intensive lure cropping fail to achieve any significant abatement of crop losses, then the C.W.S. should cooperate with the province in establishing an adequate control fund to reimburse those farmers that suffer heavy and recurrent crop losses.

12. Where given parcels of land are subjected to severe and repeated crop depredations, resulting in complaints and high compensation payments, it may be desirable to purchase such property and manage the land for lure crops.

13. Federal and provincial wildlife agencies should coordinate efforts and determine shared responsibilities and costs for a depredation control fund.

14. The implementation of the depredation control program should continue under the direction of the provincial wildlife agency which has the available experience and man power.

14. The C.W.S. and provincial wildlife agencies should develop coordinated contingency plans that can be implemented quickly to control crop depredations in a high risk year.

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