Interm Report
Presented to the Canadian Wildlife Service
From Ducks Unlimited Canada

The Greenfields Project 1991-92

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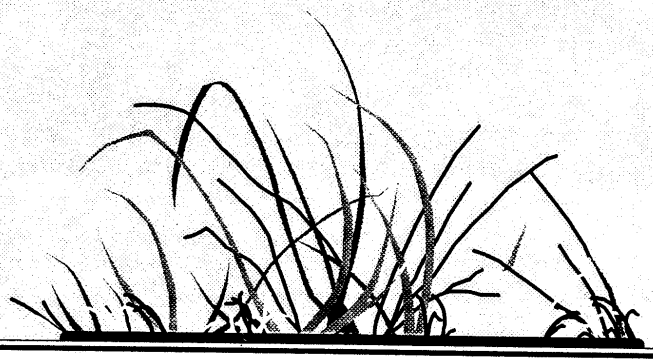

EXECUTIVE SUMMARY

The goal of the Greenfields Project is to develop a strategy that allows agriculture and wildlife to coexist on farmland in Delta. The program is a cooperative venture between farmers and wildlife agencies to address issues related to crop damage, land productivity and habitat.

The main component of the project is a cost sharing program that supports winter cover crops, an important soil conservation practice that also provides habitat for waterfowl. Greenfields paid for the seed and farmers contributed the planting costs to establish cover crops in the fall. Fields were monitored throughout the winter to find out the extent of waterfowl grazing. From November 1991 to March 1992, 1,368 acres (554 hectares) of cover crops, clover and grass fields were used by wigeon. This was 50% of the total acreage monitored by the Greenfields Project. Approximately 423 tons of biomass was removed from these fields, not including any regrowth that was also grazed.

Factors influencing wigeon grazing were identified through analysis of 52 winter wheat fields sampled in late November 1992. The planting date of a crop was the best indicator of whether a field was susceptible to grazing. Plant-date also has a direct influence on biomass and protein content. Results support the hypothesis that the stage of growth or maturity of a cover crop has more influence on grazing use than the actual crop type.

Another important factor influencing wigeon use was the surrounding landscape. This factor termed "edge effect" is the percent of dominant structures surrounding a field. There was a strong negative correlation of edge effect to the total percent of a field grazed. This may indicate that the more buildings and trees surrounding a field, the less likely it is to be grazed.

The relationship between water and wigeon grazing illustrates the complexity of interactions occurring. The distance of fields to water bodies did not correlate to grazing. The measurement used in the analysis was the shortest distance of a field to Boundary Bay or the Fraser River. However in the multiple regression analysis tests revealed that distance, was a significant factor in November when wigeon grazing began. In an analysis of variance test results revealed that there was no difference in the percent grazed between fields with and without persistent ponds, even though ponds were a significant factor in November, January and February.

The information gathered over the past two years suggests that the best options for reducing crop damage is to avoid late planted cover crops and use alternative management practices for soil conservation. There are few other options. Farmers cannot easily change field characteristics and have little flexibility in their management practices. To date there are no proven scare tactics that can be used at night, when grazing predominately occurs.

Trying to reduce crop damage and support soil conservation is not the only solution. Part of the overall strategy must include improving the cooperation and communication between the agricultural community and wildlife agencies. Farmers need to play an active role in decision making regarding the community they live and work in. Wildlife agencies need cooperation from land operators to secure habitat for the long term.

An alliance of farmers and wildlife supporters offers new opportunities to retain Delta's farmland for food production and wildlife habitat. Together groups can continue to meet the challenge to sustain the landbase for the long-term.

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THE COVER CROP PROGRAM

In the second year of operation the Greenfields Project monitored 2,405 acres (974 hectares) of cover crops. Most of this acreage (2,020 acres) was supported by reimbursing seed cost to farmers at $15/acre, for a total sum of $30,306. Fifty-five percent of the 90 fields registered with the project were winter wheat (Figure 1) with an average size of 26.7 acres (10.8 ha). Plant-date ranged from August 19 until October 10, 1991.

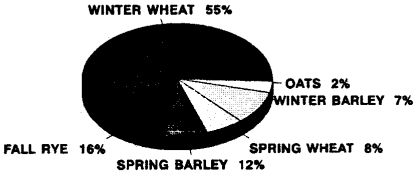

Figure 1: The percent of each cover crop type monitored in 1991-92.

The extent of grazing over winter was determined by monthly observations of field use. In the fall of 1991 wigeon started grazing around mid November, two weeks later than the first study year. A comparison of the two years shows more use in January and much less grazing in February and March (Figure 2) during the 1991-92 study year. Final field conditions were much better in 1991-92. More fields survived the winter with greater than 50% spring cover (Figure 3).

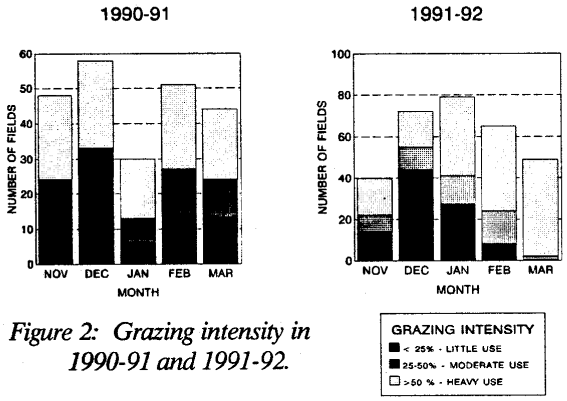

Figure 2: Grazing intensity in 1990-91 and 1991-92.

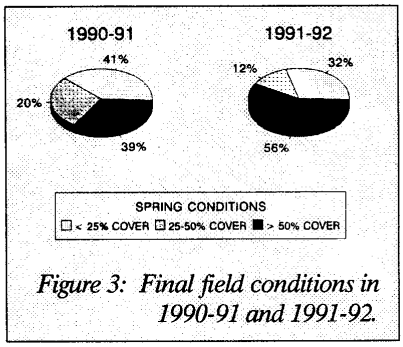

Figure 3: Final field conditions in 1990-91 and 1991-92.

The variation in grazing and crop survival is partly explained by weather. In 1991-92 overall warmer winter temperatures (Figure 4) allowed cover crops and grass fields to grow during milder periods, therefore increasing the amount of forage available. Cold temperatures in the first year may have increased the wigeon's energetic requirements and demand for forage.

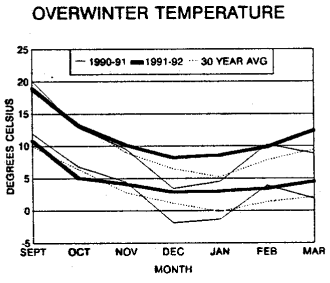

Figure 4: A comparison of monthly maximum and minimum temperatures.

Forty-eight percent of the total cover crop fields planted (1147 acres) were used by wigeon. Fields planted after September 15 comprised 78% of the acreage grazed.

These numbers do not fully illustrate the extent of grazing because Greenfields did not monitor all the fields in Delta. Map work identifying winter land use estimated that a total of 5,872 acres of cover crop were planted in the fall of 1991. Greenfields, therefore, monitored approximately 40% of the total cover crops planted in Delta (Appendix A).

Biomass samples collected in late November were used to estimate the quantity of forage available and grazed. From these samples the amount of biomass consumed by wigeon was estimated to be 325 tons (dry weight), 29% of the total 1110 tons estimated to be available (Figure 5). In addition 97 tons of biomass was removed from grass and clover fields monitored in the study. Overwinter growth or regrowth after grazing is not included in these figures.

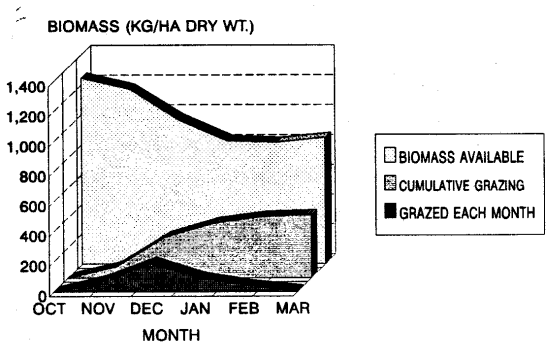

Figure 5: The quantity of biomass available and grazed from November 1991 to March 1992.

Baldwin & Lovvorn (1991) estimated that Delta's uplands need to support 4.38 million wigeon days. Mayhew's (1988) research, using perennial grasses, found that wigeon require 91.6 grams of forage per day. The total 423 tons removed from Greenfields accounts for 4.19 million wigeon days. This suggests that our figures are within the same ball park. Any discrepancy in these numbers can be attributed to variation in metabolizable energy of different cereals and grasses.

Field observations during the 1991-92 mild winter revealed that regrowth plays an important role in providing forage for wigeon. Despite ideal conditions for regrowth several fields appeared heavily grazed each time the field was visited. On field AS3, fall rye was planted Oct. 5/91, and exclosures were placed before grazing (Nov. 15), after the initial grazing (Dec. 2) and again in late winter (Feb. 14). On March 25/91 the exclosures were sampled. There was a significant difference in the quantity of biomass between exclosures and the remaining field that was bare (Figure 6).

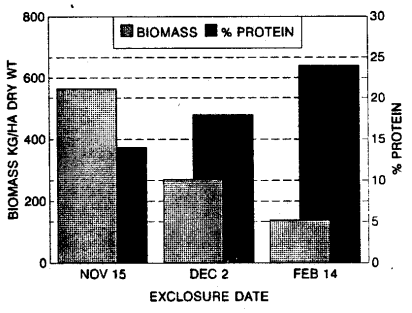

Figure 6: Biomass yield and protein content of fall rye from exclosures sampled on March 25, 1992.

This experiment proves that regrowth was repeatedly grazed, but does not provide an accurate estimate of the quantity regrazed. If the difference in the biomass between exclosures is used as an estimate of regrowth removed, then 426 kg/ha would be considered an additional loss, which is substantially more than the original November biomass measurement of 188 kg/ha. This is not a fair assessment because this method assumes that the rate of growth between ungrazed and grazed plants is the same.

More importantly, the biomass from the exclosure revealed that the youngest regrowth had the highest protein levels (Figure 6). This could explain why wigeon return to a previously grazed field, to forage again, rather than use another ungrazed area.

The data from 52 winter wheat fields were used to determine which factors contribute to field use. In a Spearman rank correlation several relationships were significant. Factors relating to plant-date, such as fall biomass and protein showed strong correlations with the percent of a field grazed from November to January as well as the total percent removed (Table 1). The susceptibility of late planted fields is confirmed by the significant relationship between of the quantity of biomass removed (lbs.) in November and plant date.

FACTORS RELATED TO GRAZING	TOTAL % USED	NOV %	DEC %	JAN %	FEB %	MAR %
	TOTAL LBS USED	NOV LBS	DEC LBS	JAN LBS	FEB LBS	MAR LBS
PLANT-DATE	*.635	*.429	*.490	*.359	.197	.210
	.037	*.366	.133	.019	.059	.116
FALL BIOMASS	*-.608	*-.449	*-.458	*-.314	-.151	-.141
	.020	*-.367	-.104	.053	-.010	-.025
FALL PROTEIN	*.412	.103	*.378	*.387	*.276	*.285
	.137	*.366	.124	.198	.196	.239
EDGE EFFECT	*-.515	-.271	*-.441	.040	-.144	-.111
	-.255	-.250	*-.360	.103	.080	-.171
DISTANCE	-.019	.227	-.087	-.120	.004	.011
	.087	.228	.067	.051	.022	.074

*Table 1: Correlation results showing significant relationships * between wigeon use and associated factors ($r_s 05 = .275$).*

Biomass and protein data came from samples taken in late November 1992. The fact that protein correlated with the percent removed in February and March reveals that high initial protein levels may be useful as an indicator for winter use. Protein content of forage is dependent on several factors including the amount of nitrogen available in the soil.

Evidence that field location was an important factor related to wigeon grazing first appeared when comparing grazing use of the same fields in the two consecutive years of study. Of the 21 fields monitored by Greenfields in both years, 70% were grazed or not grazed to the same extent as the first year. The remaining 30% had a significantly different planting date.

The results of the correlation analysis suggests that the surrounding landscape of each field, called the edge effect, is related to wigeon grazing. Edge effect, estimates the percent of the field perimeter having dominant structures (houses, barns & trees). Seventy-seven percent of the fields monitored by Greenfields had less than 25% edge effect. Table 1 illustrates that edge effect was correlated to the total percent of a field used and December grazing. Therefore the more buildings and trees surrounding a field, the less likely the field will be grazed.

An unexpected result was that the distance of fields to water did not relate to grazing use in the correlation. The shortest distance of the field to Boundary Bay or the Fraser River was used in the analysis. In retrospect the distance to daytime roosting sites or feeding areas would have been a better measurement to use, because not all water bodies are used by wigeon.

Multiple regression analysis further isolated the extent each factor influenced field use. Plant-date, fall biomass, edge effect and distance to water could explain 62% ($r^2 = .62$) of the variance in the total percent grazed (Table 2). Note that only 'P' values less than .05 are considered significant. When each month was analyzed separately different factors were significant for each month. In November, fall biomass, distance to water, ponds and plant-date were important, which is in contrast to December where fall protein and edge effect gave similar r-square values. In January and February the presence of persistent ponds was significant.

Surface water on fields is difficult to quantify. The presence or absence of persistent ponds was used in the analysis. This description was used because persistent ponds are not dependent on recent rainfall. The critical factor to consider is the length of time water sits on the field, not that water is present, because most fields in Delta have surface water after heavy rains.

PERCENT OF FIELD USE	FACTORS WHICH INFLUENCE FIELD USE	P VALUE
TOTAL (NOV-MAR) r-squared = .620	FALL BIOMASS	*.000
	EDGE EFFECT	*.000
	PLANT-DATE	*.003
	DISTANCE	.086
NOVEMBER r-squared = .354	FALL BIOMASS	*.001
	DISTANCE	*.001
	PONDS	*.017
	PLANT-DATE	*.049
DECEMBER r-squared = .326	FALL PROTEIN	*.000
	EDGE EFFECT	*.003
JANUARY r-squared = .183	PONDS	*.009
	DISTANCE	.059
FEBRUARY r-squared = .150	PONDS	*.020
	EDGE EFFECT	*.044
MARCH r-squared = .067	PONDS	.064

Table 2: Multiple regression analysis results.

The role ponds play in wigeon grazing was further analyzed through a Kruskal Wallis one way analysis of variance test. Results revealed that there was no difference between groups with and without persistent ponds. Ponds are renowned as important for attracting waterfowl. However, in this study, ponds were just one factor of several that influenced a field's susceptibility to wigeon grazing.

The analysis completed in 1991-92 will be repeated in 1992-93 to further test these results. This information is presented to provide insight into the complexity of interactions influencing a field susceptibility to wigeon grazing.

In another study, seventy of the fields registered with the Greenfields Project were surveyed for waterfowl once a week, both day and night, from January to March 1992, by CWS Biologist Andre Breault. During day surveys wigeon were sighted in only one field (MG4). This confirms the theory that wigeon use farmland predominantly at night. The night survey results were compared to Greenfield's fields use observations (Appendix B). The percent of fields out of the total 70 surveyed that had grazing and wigeon observations were 38%, 34%, 25% in January, February and March respectively. This illustrates the limits of detecting wigeon grazing by bird surveys alone. It also became apparent that Greenfield's observations may be underestimating use by wigeon. In February and March wigeon were seen feeding on 8 fields that had no recorded grazing use.

THE SCARE TACTIC PROGRAM

An extensive literature search was conducted to find methods that could be used to deter wigeon on perennial grass fields (Appendix C). From this search it became clear that many tested techniques on birds are not useful for our circumstances.

Scare tactics must work within certain constraints if they are to be effective in deterring wigeon. The most difficult criteria to overcome was that a scare tactic must be operable at night. All trials found in the literature were tested during the day. Deterrents also need to be effective over a large area since most fields are at least 20 acres (8 hectares).

The major problem in scaring birds is how quickly they habituate. Bangers, poppers, crackers, sirens and electronic noises are initially effective in deterring geese, starlings and blackbirds. However, habituation often occurs after a week of use. The same problem can also occur with ultrasonic devices.

Further limitations exist in populated areas because neighbours often complain when noise making devices are used at night. In some instances animal sounds have proven to be effective, particularly distress calls of starlings, blackbirds, gulls and geese.

In this study scare tactic methods were tested on wigeon using grass and clover fields. Newly seeded grass fields are particularly susceptible to damage when repeatedly grazed which can cause serious economic losses to farmers. Clover is also desirable forage. Sixty-one percent of the 331 acres of grass and clover monitored by Greenfields was used by wigeon.

Methods Investigated

Several visual deterrents were set up in grass fields to deter wigeon from grazing. Scarecrows built with reflective apparel, bells and pie plates were ineffective at deterring ducks. Ten 20-meter lengths of reflecting or metallic tape was placed throughout fields. At first we tied the reflecting tape directly to the four foot stakes at two heights. Problems arose when heavy winds would break the tape. A better method was to tie string to the stakes and then wrap strips of reflecting tape onto the string like fringes. Although this method is used to protect blueberry fields from starlings, it proved to be ineffective with wigeon using grass fields.

Other visual deterrents tried included nets and flags. Netting was strung up in a field to act as an intimidating barrier, but only proved both labour intensive and an eye sore. Flags on strings, similar to what is used at new car lots, also did not appear to deter wigeon grazing.

Electronic deterrents are potentially better methods because they are easy to use. Av-Alarms and taped distress calls of wigeon were placed in the fields. These noises seemed effective only for a limited time span. Our recorded wigeon distress calls were not very clear when broadcasted across a field which contributed to the ineffectiveness of this method.

To increase scaring effectiveness revolving lights were used with reflecting tape and noise makers. Strobe lights were also tried but appeared to have a limited range of illumination. The effectiveness of using sound and light to deter wigeon is inconclusive because the testing done was in February when little grazing occurred.

To date there are no proven methods of scare tactics that can alleviate crop damage in Delta. Methods to be further investigated include predator or distress calls on tapes, revolving lights with noise and the Phoenix Wailer (an ultra sonic device with a light). It is crucial that scare equipment is set up before duck grazing. Wigeon are more likely to ignore a scare tactic if they have already settled on a field. Habituation can be avoided by changing tapes (noises), frequencies of sonic devices or relocating equipment in the fields.

THE COMMUNICATION PROGRAM

The Greenfields Project directed extension efforts to informing people about the extent of wigeon grazing in Delta. Minimal time was allocated for this endeavour, but the level of communication was favourable.

The pilot study report entitled, "An Investigation into Field Grazing by Wigeon in Delta, B.C.", proved to be a useful document for illustrating the complexity of the wigeon grazing problem. The extensive time commitment given to the report was worthwhile. Several people with little knowledge of crop depredation found the report easy to comprehend.

A newsletter was produced every two months to update participants and other interested parties on topics related to the Greenfields Project. There are over 170 names on the mailing list plus copies are available at the local library. Although the newsletter was widely distributed, it is difficult to determine whether the information was extensively read. Balancing the need for interesting, topical articles with the necessity of reporting on issues related to Greenfields presented a challenge in publishing the newsletter.

Participating in local meetings or workshops was another avenue of information exchange that improved awareness of the Greenfields Project. These events were particularly valuable because they provided an opportunity for people to ask questions. The following is a list of meetings and events that Greenfields participated in since the beginning of the Project.

B.C. Institute of Agrologist	April 23, 1991
Delta Naturalists	May 13, 1991
Delta Farmers Institute Meeting	September 17, 1991
Delta Farmers Conservation Group's Field Day	November 5, 1991
Cover Crop Workshop sponsored by BCMAFF	January 15, 1992
PCJV Bus Tour	March 5, 1992
Delta Environmental Committee	April 7, 1992
Delta Agriculture Study Forum	March 25, 1992
White Rock Western Wilderness Committee	May 25, 1992
Fraser River Festival	June 8, 1992
Boundary Bay Wildlife Study Forum	June 9, 1992
The Provincial Problem Wildlife Management Advisory Committee	June 10, 1992

Media coverage is also a good avenue for public awareness. Greenfields was fortunate to attract attention from the media with little solicitation. Several articles were published on the Greenfields Project in the local Delta Optimist newspaper (Appendix D). The B.C. Agriculture Magazine did a feature on Wildlife Crop damage, including the Greenfields Project in November 1991. Ardcorp, a former sponsor of the Project, also published information on Greenfields in this magazine.

The Greenfields Project was also involved in two programs that aired on television. Country Canada, a CBC television show did a clip on Delta's crop depredation problems that aired in February 1992. Kid's Zone, from the Knowledge Network, aired a Sustainable Development program on Greenfields on August 28/92.

Communication also includes discussions and input from farmers. Conversations, which frequently occur during field work provide a opportunity to discuss new ideas and talk about agriculture and wildlife issues. A farmer survey was mailed out in May, 1992. A 30% response rate from participating farmers was fair, but reasonable considering it was sent out during their busiest season. Twelve of the 13 survey respondents felt agriculture & wildlife could coexist on Delta's farmland. Many comments reflect a desire for better communication between agriculture and wildlife agencies. More importantly farmers want to be involved in decisions affecting the local community.

Although the benefits of a Communication Program are difficult to quantify, resources should not be spared. Good communication between agriculture and wildlife advocates will only help in realizing habitat enhancement objectives on farmland.

DEVELOPING A STRATEGY

Developing a long term strategy to deal with wigeon grazing is the most challenging component of the Greenfields Project. On one hand the project is trying to prevent crop damage. At the same time Greenfields supports the planting of cover crops for soil conservation. Finding an acceptable balance between preventing losses and promoting cover crops that enhance habitat requires ongoing cooperation and communication between farmers and wildlife agencies.

There are few options to prevent crop damage. The planting date of cover crops is limited by the harvest date of preceding summer crops. Over half the vegetable crop land in Delta, planted to potatoes and corn, is often not harvested before mid September. The surrounding landscape cannot be easily altered, except for planting trees, but that would take years to have an effect. Removing ponds is no guarantee of reduced grazing, although it may decrease crop losses.

A more realistic goal is to focus on reducing crop losses, since many waterfowl rely on farmland for food and shelter. Cover crops planted before mid September, even if grazed, provide some benefits to the soil because of the well developed root system. The question is whether to encourage cover cropping after late harvested vegetables. Most crops seeded after late September, no matter what type, are susceptible to heavy grazing and provide minimal benefit for the land.

If Greenfields intends to continue the strategy of supporting practices that sustain agriculture through soil conservation, then alternatives are required. Other initiatives that provide winter cover and supplement soil organic matter should be promoted through the program. Potato farmers may have to rely on the rotational years to improve their soils, rather than planting winter cover crops that end up grazed by wigeon.

Finding methods to reduce grazing on grass fields is more difficult because both newly planted and well established fields are used by wigeon. The way in which grass is managed and the varieties planted appear to influence a field's susceptibility to grazing. The problem is that farmers are aiming for a high quality product, which is also desirable to waterfowl. To date there are no proven scare tactics that can be used at night when grazing predominantly occurs. Therefore, ways to alleviate pressure on grass fields still need to be identified.

There will always be uncontrollable factors that will influence the extent of field use. Weather is unpredictable and affects both plant growth and duck behaviour. There is also uncertainty on whether population levels respond to an increasing acreage of cover crops. Delta's farmland can be more heavily impacted if other habitat on the Pacific Flyway is lost.

In addition to reducing crop damage and promoting soil conservation, cooperation and communication complete an overall future strategy for the Greenfields Project. Farmers need to be involved in decisions regarding local wildlife management activities. Wildlife agencies faced with an difficult task of protecting habitat from continual development pressures with limited resources need community support.

An alliance between farmers and wildlife agencies is no longer an option, but a necessity. Groups should focus on common goals and share decision making. This will build trust and enable people to

work together more closely. The long term benefits are significant, especially since cooperation will become increasingly important as pressure on farmland surmounts. In addition associated benefits of improved communication can open up new opportunities in public education.

Old remedies to reduce conflict between agriculture and wildlife are losing effectiveness. Raster (1988) found that financial incentives tied to hunting are limited due to restrictions in hunting season, bag limits, and the total cost of participating in the sport. Compensation programs do little to control crop damage, secure habitat and are expensive to administer.

The ultimate goal of securing farmland requires a comprehensive strategy. Continuing to help farmers reduce crop damage and support soil conservation is the right approach. However, further effort must go toward promoting an alliance between the farmers and people who want to see the landscape remain available to wildlife. Cooperation and better communication gives flexibility to adapt to new issues that threaten to sustain the land base for the long term.

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APPENDIX A - Land Use Figures

Estimate of land use in Delta - November 1991

LAND USE IN DELTA'S AGRICULTURAL LAND RESERVE	ACREAGE	% OF TOTAL ACREAGE
BARE	5,756	26.5
GRASS/TURF	5,726	26.4
COVER CROPS	3,467	16
GREENFIELDS	2,748	12.6
OLD FIELDS	1,607	7.4
DEVELOPED	449	2.1
FRUIT	372	1.7
TREED	154	0.7
WINTER VEGETABLES	124	0.6
UNKNOWN	1,319	6.1
TOTAL	21,722	100

Note: Greenfields total acreage includes 2,405 acres of cover crops, 331 acres of grass fields and 58 acres of clover.

Delta Agricultural Study Figures (Klohn Leonoff Ltd et al 1992)

* Delta's Agricultural Land Reserve (ALR) consists of 25,165 acres (10,192 hectares). In the ALR the Delta Muncipality has zoned 23,200 acres (9,396 hectares) agricultural while the remaining 1,965 acres (796 hectares) is zoned non-agricultural (Alasken National Wildlife Area, Deas Island Park, Boundary Bay Airport).
* 51.6% of Delta's land base is zoned agricultural.
* The total estimate of land actively farmed is Delta is 17,845 acres (7,227 hectares).
* The area surveyed in the Delta Agriculture Study was 15,169 acres (6,143 hecatres).

Comparison of Estimates of Land Use

LAND USE IN DELTA'S AGRICULTURAL LAND RESERVE	DELTA AGRICULTURAL STUDY - 1991 FARMER SURVEY (15,169 acres)	ESTIMATE OF DELTA'S LAND USE NOVEMBER 1991 (21,722 acres)
VEGETABLE CROPLAND	54.0%	54.1%
GRASS/TURF	24.6%	27.8%
UNALLOCATED	4.5%	6.1%
FRUIT	2.9%	1.7%
IDLE/OLDFIELDS	9.2%	2.1%

APPENDIX B - Wigeon Survey Results

FIELD	CROP TYPE	%FALL GRAZED	JANUARY		FEBRUARY		MARCH	
			%GRASED	WIGEON	%GRASED	WIGEON	%GRASED	WIGEON
AH2	FR	99	1		1		1	
AH1	FR	83	5		5		10	
ER1	SB	98	1		0		2	
ER2	WW	95	5		5		2	
BRW1	FR	1	0		0		0	
DG1	WB	0	0		0		0	
JH1	SW	0	0		3		0	
JH2	FR	35	5		0		0	
JH3	SW	0	0		0		0	
ER2	WW	1	3		0		0	
AH3	FR	98	49		1		1	
DW1	SB	0	20	6	0		1	
EW4	WB	0	65	450	13		5	
DW2	WW	85	5	13	5		5	
DW4	WW	38	34	100	10	14	5	
JOG1	WW	6	7	30	1		0	
RHA2	WW	98	1	86	0	147	0	2
DHW3	WW	97	1		1		0	
DHW4	WW	3	0		0		0	
DHW5	FR	43	45		5		10	
DHW6	MIX	80	10		5			
SKN1	CLO	0	90	400	10		10	
DG2	WB	95	4	6	1	85	0	
DK1	WW	95	5		1	32	1	
HG1	WW	95	3		0	6	0	
HG2	WW	90	5		1		0	
JH5	WW	15	43	300	5		5	90
FAG1	SB	99	1		1		0	
FAG2	SB	99	0		0		0	
DG4	FR	100	0		0		0	
DG3	WB	100	0		0		0	
HG3	WW	65	5		18		1	
DK2	WW	30	25	130	15	140	5	
RHA1	WW	0	3		0		0	
RHA3	SB	5	83	131	5	37	1	142
JH2	WW	68	20	272	10	120	1	
JH3	WW	100	0		0	65	0	20
JH4	WW	83	11	118	5	37	1	
JH1	WW	78	7		30		15	
RH1	SB	0	0		0		0	
HG4	WW	96	5	750	5	150	1	
SLG2	GRA	57	25	60	40		5	
HG2	WW	90	5	140	1		0	
LG2	WW	97	1	1200	0	10	0	28
SLG1	GRA	30	15		5		0	
LG1	WW	25	15		5		1	
RH1	WW	0	0		0		0	
RHA4	SB	0	0		38		0	
SDH1	GRA	89	10		10		10	
SH1	SB	0	0		0	4	1	
SH1	SB	0	0		0		1	
KD3	WW	93	10	6	13		5	
SCD3	GRA	50	60		5	350	5	
KD1	WW	63	25		1		0	
SCD2	GRA	98	75		5		5	
SKD2	GRA	5	5		5		1	
SKD1	GRA	30	5		5		8	
BK1	WW	68	27		25		5	
BL1	SW	0	3		0		0	
BC1	FR	0	0		1		0	
BL2	SW	0	0		0		0	
EH1	WW	98	5	200	30		1	
LH1	WW	0	70		5	289	1	
LH2	OA	0	0		0		0	
KD2	WW	60	45		1		1	
DH1	WW	3	5		0		0	
DH2	WW	98	2		1		0	
DH3	WW	0	0		0		0	
JH1	WW	0	3		0		0	
JH1	SB	0	0		0		0	
RH1	WW	0	0	50	0		0	
RH1	WW	30	5		1		0	

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APPENDIX D - Newspaper and Magazine articles

Not everyone happy with Green Fields project

This winter the birds n the Fraser delta and Boundary Bay area an eat all they want rom farmers' fields hanks to the Green ields Project. But not ll are happy about the ew winter feeding gr- unds.

The Green Fields roject is an alliance f a number of groups nd organizations. he Delta Farmers' nstitute, local farm- rs, Ministry of Agri- ulture, Canadian Wildlife Service, Ducks Unlimited and thers have pooled to- ether for this experi- nental project.

"We are conducting esearch on the effec- iveness of planting inter cover crops to ttract water fowl and rotect soil over the inter," said Gerry ownsend, chief of ildlife conservation at the Canadian Wildlife Service on Westham Island.

In an attempt to try and decrease the concentration of birds in one area, the project hopes to disperse the birds throughout the fields of Delta.

The ministry gives one tonne of seed, consisting of wheat, to farmers who are willing to particpate. The wheat is planted in the winter months.

"Currently 30 farmers throughout Delta have agreed to participate in the program and about 1,000 acres have been planted in cover crops," said Jim LeMaistre, deputy municipal director of planning in a report received by Delta council January 14.

Dr. Art Bomke of U.B.C. Department of Soil Science, who is also involved with the project, claims the soil will be protected and replenished with organic matter when the cover crops are turned under. He also says infiltration of the winter rains into the soil will be increased.

"The benefit to us is the organic matter is replaced. The crops also give us soil structure which makes it easier to plow," said Hugh Reynolds, a farmer of Westham Island, who planted close to 220 acres of wheat for the project.

"The idea of the project is to have so much feed that the ducks don't ruin the low spots making for a slow start in the spring," he added.

The goal of the project is not just to feed the birds. The damage done by the birds to various crops planted in different ways will also be monitored.

"In each farmer's field a portion of the planted area will be protected from the birds to provide a site which could be compared to the rest of the field to determine the volume. ... consumed by the birds," said LeMaistre.

The project results shold be available in March at which time those involved will decide if it's a worthwhile venture to continue with every winter.

"We have to look after the birds anyway, so if we could show there's positive results we could maybe get into a paid position later on," said Reynolds.

Ald. Lois Jackson likes the idea of the Green Fields Project and believes it'll be beneficial to all.

"This (and last) council are concerned about the many problems the farmers are having. I'm pleased to see a number of farmers are taking advantage of the project."

But Ald. Ann Claggett has different thoughts about Green Fields.

"I don't think this will be the be all and end all to the damage that's been done to the farmers."

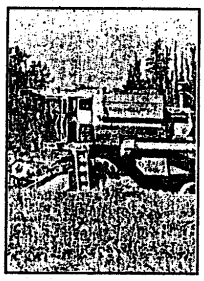
"Yes, I see they're trying to help the farmers and birds, but I wonder if it's too late for the farmers. Once you see a third runway at Richmond's airport more birds will go where there's lots of fields - Delta," she added.

Albert Weaver, president of the Delta Farmers' Institute, who is not participating in the program, shares Claggett's views.

"It's a token gesture. They (environmental groups involved) got a long way to go yet."

Weaver does say cover cropping is a good idea, but if a number of farmers do so every winter more birds may flock to Delta, possibly causing more damage than anticipated.

Delta Optimist January 16, 1991



Save fields and feed birds

This winter various species of birds from the Boundary Bay area will be filling themselves on wheat from local farmers' fields.

The Green Fields Project, initiated by agricultural, governmental and environmental groups, is attempting to save farmers' fields while keeping the birds fed.

The project is experimental this year, but if all goes well it may continue every winter. For story see page 3.

COUNCIL LISTENS

Local farmers voice concerns

Irrigation, crop damage top agenda

Local farmers were given the opportunity Tuesday evening to educate Delta council members on issues ranging from irrigation problems and crop damage to high taxes and environmental action plans.

Members of the Delta Farmers' Institute participated in a discussion with aldermen during the special meeting, a first between the new council and Delta farmers.

The topic topping the farmers' list was irrigation needs.

"We want council to ensure the farming community is enhanced by irrigation," said DFI president Albert Weaver.

Weaver says Delta is in dire need of more pumps to assist farmers with proper drainage.

Delta MLA John Savage, who also attended the meeting, agrees with Weaver.

"The area south of the railroad tracks in Ladner needs some vast improvements. In Richmond you have pumps every half a mile. You can go a long way in Delta before you find a pump. They're too sparse to help farmers with drainage."

Weaver referred to 1986 statistics for the cost to install extra pumps throughout Delta. He quoted a figure of $4.5 million for four pumps.

But the farmers' complaints didn't stop at irrigation.

They claim they're having problems with Harbours Board Land because they're charging unreasonable rental rates for the land.

Jack Bates, a third generation farmer, claims the taxes and leases for farmland in the area of the Roberts Bank Superport are outrageous.

Because rent and taxes are so high, farmers in that area can't afford to level their land properly which in turn causes the land to deteriorate rapidly.

By STACY ARMSTRONG
Staff Reporter

"These things could be accomplished with longer lease options, lower rent and lower taxes," said Bates.

Currently the farmers have a three to five year lease with a further three to five year option. "If we don't accept what's offered, we can't farm the land."

Each year farmers in that area pay $150 per acre for rent and a further $140 per acre for taxes.

Bates says the farmers would like to have a 20 year lease with a 20 year option.

Along the same lines, Robert Savage complained about the onerous amount of taxes farmers have to pay.

"Our land taxes are $33 to $70 per acre. In Alberta they only pay $.25 to $3 per acre and in Ontario they pay land taxes but they can then apply for a rebate," Savage alleged.

He added: "We are in direct competition with these areas and are suffering for it."

John Savage informed those in attendance that many farmers asked for relief of rent and taxes last year because of the heavy rains and

Continued on page 3

Taxes too high, farmers claim

Continued from page 1

cold spring.

When Mayor Beth Johnson asked John Savage if the government was any closer to considering giving farmers a tax break, he replied: "The government hasn't made a decision on how it'll handle farmland taxation."

Chief administrator Bob Collier says Delta collects well over $200,000 a year in taxes from farmers.

"We're looking for a break in any way; be it taxes, subsidies or whatever," stated Robert Savage.

But taxes and irrigation weren't the only things ruffling farmers' feathers.

The farmers are up in arms about the extensive damage being done to their fields by wildlife.

"In the past years farmers have noticed more and more damage being done to their crops. Soil compactions, soil erosion and thin wheaty fields are the results of feeding birds," said Clarence DeBoer.

"It's heartbreaking to watch the birds destroy our hard work."

DeBoer says the farmers are long past the number of birds they can handle. He would like to see compensation from the wildlife groups for the damage that's done by the ducks, geese and swans.

"Wildlife groups must pay their fair share in farm operating costs. If the birds consume one third of the crops these groups should pay for the losses. It's high time these environmental groups have gotten involved and contributed to the cost of farming."

DeBoer also claims the Green Fields Project, which involves feeding the winter birds to assess the damage they do to the fields, is useless.

"If this project (Green Fields) was to continue things would have to change because Green Fields serves us no purpose this way."

Hugh Reynolds, whose family has farmed in Delta for 100 years, says the bird population has to be controlled.

"Most of the time ducks and farmers can live side by side. The farmers can stand some grazing, but these geese and ducks stay all year and eat all year, and the ministry is still trying to increase the bird population," fumed Reynolds.

Ald. Ann Claggett asked Reynolds how the farmers would stand up against the government's Pacific Coast Joint Venture program. The half billion dollar project would have the government buying farmland and then turning it over to the birds.

"It sickens me. How can you fight those dollars? How are you going to stay farming when land is being sold and used to enhance the bird population?" questioned Claggett.

"We're going to have to work our butts off to help you," she added.

But Reynolds and others are confident the program won't come to fruition.

The more reserved issues left for the end of the meeting included farm roads and the construction of the North Delta athletic complex.

John Malenstyn says farmers shouldn't be driving their farm implements down public roads because the streets are narrow and dangerous.

He also mentioned "farm roads" should be closed to the public.

John Gourley says in order for other drivers and farmers to be safe on the roads, an overpass must be built at 34B Avenue over Highway 17. Back farm roads should also be considered.

He also requested that more signage, letting drivers know there is slow moving farm equipment on Delta's streets, be posted on municipal and provincial roads.

Gourley also spoke in opposition to the construction of the North Delta field complex at the junction of Highways 10 and 91.

"Placing a major park on farmland doesn't make sense. It should be built up on the hill where the people live."

He opposed the park being built on land located in the Agricultural Land Reserve for a number of reasons.

He claims the drainage opposes neighbouring farms, there's no bus connection to the area, it's unsafe because of the freeway and it's a very foggy area.

"The land also has historical value. The buildings hold a great deal of heritage. I would like to see the building claimed as a heritage barn," said Gourley.

The barn has been part of the land for years. It remained when the land was used as a golf course before Highway 91 was constructed.

Though the farmers walked away from the meeting with no concrete answers, they were satisfied knowing their concerns were listened to by council and staff.

Greenfields project targets grazing birds

Cover crops the answer, says local farmer

Farmers and wildlife officials are working together to find solutions to migratory bird grazing on Delta's farmlands.

The aim of the Greenfields project is to promote the widespread use of winter cover crops in Delta. But first, the problem of migratory bird use of farmers field must be addressed.

"One goal is to get wildlife people and farmers working together," said Theresa Duynstee, Greenfields project coordinator. "The more direct goal is to address the problem."

About 30 farmers and 77 fields are involved in the Greenfields project, which began this past fall.

"It's going well. Most of the farmers are addressing a problem that has been a sore thumb to them. We're not necessarily trying to feed the birds," Duynstee said.

"That's not what farmers want to do. That's not the purpose. That's not the goal," she stressed.

Hugh Reynolds, a farmer on Westham Island, has high hopes for the Greenfields project. If the results are positive, he hopes farmers will receive funding for cover crops.

"A good cover crop is just about the best thing we can do for ourselves," he said, because it allows farmers to get on their fields earlier, to do a better job growing, to produce a good crop, to limit weeds and to decrease the need for spraying.

Reynolds said participating farmers are feeding birds, but that is not the primary purpose. "I would say it has to help. The more you can provide feed everywhere for the ducks, the less specific damage you're going to get. If the two things can get done at one time, then why not?"

Migratory bird populations use agricultural lands as an extension of the estuarine foreshore, which can restrict attempts by farmers to grow marketable fall or early spring crops.

Trumpeter Swans congregated by the hundreds in a field on Westham Island last Friday. Crop damage caused by grazing wildlife has long been a complaint of area farmers and is one of the focuses of the Greenfields project. Photo by Jana Seale.

Wigeons, a type of duck, are a problem for Delta farmers. "They come in at night in big flocks. They work like a lawn mower. Farmers can't do much about it. And they can't hunt because it's dark," Duynstee said.

"We are investigating the problem — it is a very important step. It's just the first step, but you have to investigate a problem first."

The locations of Greenfields are distributed throughout Delta, even in areas that might not have problems with wigeons. "It's a general plan so we can pinpoint to see where the problems are," she explained. "The wigeons are the real problem. There aren't a lot of places for them to go."

Wildlife officials will also benefit from the findings because they are collecting "lots of good information," such as where the birds are going, how much they are eating, and what crops they are grazing, Duynstee said.

Greenfields is encouraging farmers and wildlife officials to communicate their concerns to each other, she said, which may resolve some of the conflicts that exist between the two groups.

"We want everyone to win. It's important to get the two groups together instead of fighting."

Preliminary findings will be presented at a meeting in March and final results are expected in June. "The spring should be really interesting," Duynstee said. "Hopefully we'll have a few answers."

The Canadian Wildlife Service, Ducks Unlimited Canada, the Delta Farmers' Institute, the B.C. Federation of Agriculture and the Department of Soil Science at UBC are involved in the project.

Greenfields not sole solution

A program to rejuvenate fields and feed wintering waterfowl may be beneficial to the farming community, but it isn't the solution to all the problems farmers are facing, according to the president of the Delta Farmers' Institute.

by Corry Anderson

"We don't view Greenfields as the answer to our problems," explains Albert Weaver, calling the project a "good start."

Outlined in a report to Delta council Monday, the federal-provincial Greenfields Project allows agricultural experts and wildlife agencies to examine the effects of migratory birds on winter cover crops.

Almost 30 farmers in Delta participated in the pilot program last winter. A total of 75 fields were monitored, ranging from Westham Island to 96th Street.

Farmers were to be paid for the seed, but were expected to do the planting themselves.

Greenfields Project coordinator Theresa Duynstee says the feedback from farmers on the project has been generally positive. She added that final research results will not be available until summer.

"I would say the project was a success," she commented. "We collected quite a bit of information. The farmers are happy to see someone actually working on addressing their concerns."

Weaver says cover crops do benefit the land, and the Greenfields Project proposes an avenue for farmers to plant cover crops and at the same time receive financial assistance from the government (purchase of the seed). However, he says cover crops are wasted if the birds ravage the fields, leaving nothing but mud in their wake.

He adds that the Greenfields Project doesn't solve all the problems of the agricultural community, nor does it claim to. He wonders if provincial and federal governments could take a few lessons from their European counterparts on supporting farmers.

Dairy farmer Clarence DeBoer agrees more government support is needed. He says if farming is to remain a viable industry, help is desperately needed, especially in the areas of irrigation and land-levelling.

And he says the most sensible way of going about helping the farmer is to look at methods of prevention rather than an after-the-fact remedy.

Delta Optimist May 8, 1991

Ducks continue to wreak havoc on crops

Farmers and ducks. Just ask members of the Delta Farmers Institute what they think about that combination.

The farmers, some aiming double-barrel animosity at the cunard nuisances, told Teresa Dynstee of the Greenfields Project Tuesday night: "You say spray the fields, we say spray the ducks" with shotgun pellets.

Farmers said that they could become so overrun with ducks "that four or five guys can just stand there firing away and get 20 of them in no time. They could keep on shooting, but it gets dark too soon."

The farmers are allowed to shoot ducks year round in order to protect their crops.

The Greenfields Project is a cover crop program supported by the Canadian Wildlife Service and Ducks Unlimited. The project is seeking ways of keeping the ducks from grazing on and destroying farmers' crops - and ending up as the soup course on farmers' tables.

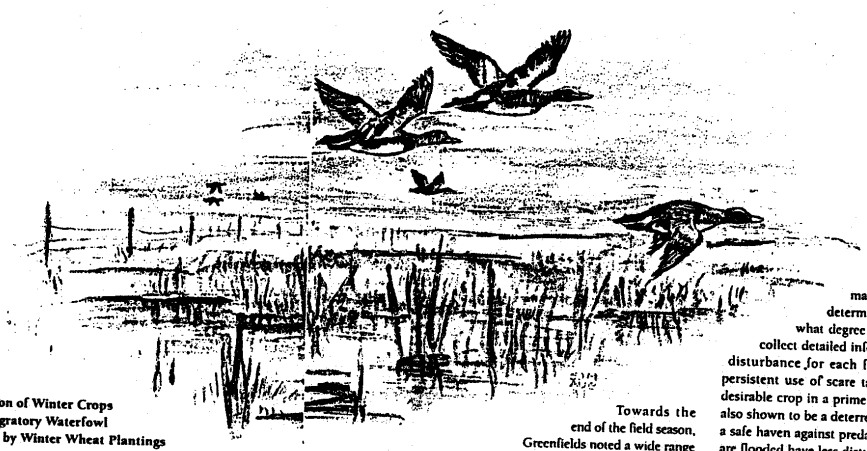
Dynstee emphasized that Greenfields wasn't a solution to the duck grazing problem, only a way of finding solutions.

But she also conceded that the farmers' losses were extensive. Last winter, some farmers suffered losses as high as 500 bales per acre as a result of duck grazing. No estimate was given as to the losses inflicted on the ducks by farmers.

Dynstee suggested a number of techniques to distract or scare the ducks away. Lure crops, voice activated recorders or strobe lights all had merit, she said, and needed further study as to their effectiveness.

Greenfields is in its second year of operations. Funding is guaranteed only to the end of the fiscal year. Presently it shares offices with the Canadian Wildlife Service in Delta.

Delta Optimist September 13, 1991



Protection of Winter Crops from Migratory Waterfowl Damage by Winter Wheat Plantings
(12006-75)
Delta Farmers' Institute, Delta

This ARDCORP project was a portion of a larger project known as "Greenfields" involving co-operation between farmers, the UBC Soil Science Department, the Canadian Wildlife Service, and Ducks Unlimited.

The Greenfields Project was initiated to assess the problem of waterfowl grazing of overwintering cover crops. In an attempt to spread out crop damage, 1,000 acres of winter wheat was planted in the fall of 1990 in Delta, BC. Other crops such as fall rye and perennial grasses were also monitored for grazing throughout the winter.

The data collected was used to document the location, time and amount of biomass lost through waterfowl grazing. In addition, analysis of forage quality and observations on surface water flooding were made in order to determine which fields were more susceptible to depredation.

Wigeon (a species of migratory waterfowl) started to utilize the agricultural fields in November and continued until the following April. Seventy percent of the total 75 fields monitored were grazed (50% of the field) by wigeon in either the fall or spring. Due to excellent growing conditions which prevail in Delta, many of these grazed fields regrew in the early spring. In March a second wave of grazing occurred on twenty five percent of the fields. It appeared that perennial grasses were being preferred over cover crops in the spring.

Grazing intensity could not be the only criteria used to determine the direct impact of wigeon grazing. Associated soil and climatic factors also had an influence on crop survival. Losses due to poor soil structure, drainage and winterkill influenced the condition of the crop in the spring.

Towards the end of the field season, Greenfields noted a wide range of conditions. While some fields, although grazed in the fall, looked well as if no utilization ever occurred, other fields had very little plant growth present indicating a loss to the farmer. The most serious economic loss occurs to the livestock producers whose fields, especially newly seeded, can be significantly degraded.

Fall planted crops are most susceptible to waterfowl grazing because of their high nutritional quality relative to other vegetation. Results from the forage analysis showed that winter wheat fields sampled in Oct-Nov had an average protein content of 27%. This declined to 16% by the following spring for the same fields. In contrast, perennial grass samples had an average protein level of 20%, both in the fall and spring, which may account for the preference in March.

Soluble nutrients as identified by neutral detergent fibre analysis (NDF) was relatively consistent for the cover crops but showed overwinter increases averaging 4% for the perennial grass fields. Fibre content by ADF analysis was stable for all crops except during the freezing weather in Dec-Jan where it increased slightly.

The initial grazing in November occurred around the same time as heavy rains flooded many fields in Delta. Surface water on each field was estimated throughout the season. The information recorded confirms that surface water attracts ducks, for often initial grazing began around ponded areas. But this does not mean that no water means no grazing, because 12% of the most heavily impacted crops had less than 5% water on the field at any one time.

The main factors affecting field utilization by grazing waterfowl are suspected to be influenced by two conditions. The most obvious is the crop quality, which includes the plant species, nutritional content, and biomass produced. Winter wheat and fall rye appeared to be equally preferred over spring cereals.

The desira
for perennial grass
partly dependent on
physiological growth stage.
Disturbance, which take
many forms, may also play a major ro
determining whether wigeon utilize a fiel
what degree is unknown since Greenfields did
collect detailed information on the amount and timir
disturbance for each field. However, it was observed
persistent use of scare tactics can prevent heavy grazing
desirable crop in a prime location. Traffic from Highway 99
also shown to be a deterrent for wigeon. Surface water is see
a safe haven against predators by wigeon, therefore fields wi
are flooded have less disturbance for the ducks.

Finding the best option to resolve the waterfowl gra
problem is difficult because the needs of both farmers
wildlife must be incorporated into the solution. Our metho
planting 1,000 acres did not prove to spread out the damag
may have reduced losses to some farmers but there were
many fields which were extensively utilized. Would plant
more crops work? At this point we do not know, but susp
that the gregarious nature of wigeon to travel in large flo
may prevent these ducks from spreading out.

The approach which tries to reduce crop damage by chang
farm management practices or using scare tactics had so
merit, but tends to move the problem to other fields, rather th
stop the grazing. The establishment of refuges benefits wildl
but has not proven to alleviate crop depredations. Compensati
for losses, although desirable by farmers, does not solve t
wildlife agencies' objective of trying to feed the waterfowl.

Another approach is to increase the farmer's tolerance
migratory birds using his land over winter. This would have
be negotiated on an individual basis, but can take the form of la
improvements or paying the farmers to grow crops specifical
for the birds.

Only through a co-operative effort can the wildlife/agricultu
conflicts be resolved. Improving communication and educatic
can facilitate discussions on what the most appropriate solution
There is still much research that needs to be done in relation
both waterfowl and land management.

A brief publication on "Strategies to Alleviate Overwinterir
Crop Damage by Grazing Waterfowl in Delta, BC" will discus
the various options available in more detail. This, in addition t
a more extensive technical report entitled, "The Utilization
Overwintering Crops by Grazing Waterfowl in Delta, BC" wi
complete the findings of Greenfields' first year. Both are schedule
for distribution in September 1991. ■

Ardcorp Technology Transfer Program
Project Summary Series: Volume 3

B.C. Agriculture Magazine September 1991

Lure Crops
Offer Solution to Problem Wildlife

Story and photos by Shannon Malmberg

For more than 100 years, farmers and wildlife shared British Columbia's farmland. They co-existed peacefully, each in their own life-sustaining niche.

In recent years, however, that peaceful co-existence has become strained. Farmers throughout B.C. are finding it more and more difficult to withstand wildlife eating, trampling and nesting in their crops.

For many farmers, the situation has turned desperate. Their crops are being devastated — and with them the income they need to support their families and keep their farms solvent.

Environmental and wildlife enthusiasts insist wild animals and waterfowl be protected and preserved.

Farmers have no desire to harm nature's animals. But few can afford to lose their crops year after year.

Consider the predicament of Comox dairy farmer Edgar Smith.

Smith's farm is located right under the Pacific Flyway, the migratory path trumpeter swans take to and from Alaska. In fact, the Comox valley is home to one tenth of the world's trumpeter swan population (1,100-1,300 birds) each winter.

Once on the verge of extinction, trumpeters owe their survival to an aggressive campaign mounted by the American and Canadian governments. They signed a treaty and imposed steep fines for shooting the birds in order to save the swans from extinction.

Efforts to protect the swans are an example of a government initiative that worked — perhaps too well. The birds have flourished beyond civil servants wildest expectations. North America's trumpeter population soared from about 1,000 in the 1930's to 14,000 today.

But neither government has allocated any funding to feeding the ever-increasing number of birds, laments Smith. That responsibility has fallen onto farmers' shoulders. Their fields have become the birds' supper table.

Swans have voracious appetites, he says. Weighing in at 20 to 30 pounds, these beautiful birds consume 10 pounds of grass per day — about the same as a mature sheep or 25% of what it takes to feed a cow.

Swans raze farmers fields — and profits.

Imagine "1,500 of these birds on the fields from Thanksgiving to Easter" and you can understand the severity of the problem, advises Smith.

Not only do they devour farmers' crops, the swans "literally eat the roots right out of the ground."

Each year swans damage 2,000 acres of cropland that would otherwise provide fodder for cattle and sheep or vegetables for consumers, estimates Smith. The crop damage Valley farmers suffer totals $200,000 to $250,000 each year.

With the Pacific Coast Joint Ventures program (PCJV) pumping $500 million into waterfowl preservation over the next 15 years, the number of birds wintering in the area will likely rise. The damage they do to farmers' fields only promises to get worse.

> Planting crops to attract wildlife and waterfowl sounds crazy. But farmers participating in the Greenfields Project are finding that growing feed for the birds reduces the crop damage they sustain.

Across the Georgia Strait, lower mainland farmers aren't much better off.

Each year 500,000 to 1.4 million birds, among them mallard, pintail, green-winged teal and wigeon ducks, Canada Geese and trumpeter swans stop over in the Fraser River delta area, making it the highest density waterfowl resting spot in Canada.

The Boundary Bay and Reifel migratory bird sanctuaries are visited by birds on their flight south each fall and north each spring.

Owing to Delta's mild climate and plentiful supply of feed, many birds stay the winter. At first they feed on weeds, grass and sedges in the bay. When they run out, the birds move onto farmers' fields in order to stay alive.

Over-wintering wigeons are the worst. Like swans, one of their favorite entrees is the tender shoots of farmers' cover crops — fall-seeded winter wheat and fall rye.

When birds descend it's by the thousands. Soon, all that's left is a barren field.

Winter vegetable growers face the same larceny.

A flock of birds can finish off an entire field in a few sittings, says vegetable grower Hugh Reynolds. He grows corn, potatoes, peas, beans, wheat, strawberries and cover crops on 200 acres located right next to the Reifel Bird Sanctuary.

To protect his cover crops, Reynolds tried a variety of scare tactics, including hunting, but the birds feed at night when hunting is illegal. Wigeons and swans have helped themselves to Reynolds' crops for decades.

His neighbours are suffering a similar fate. Collectively, Delta farmers' losses run into the thousands. In addition to losses sustained as a result of crop damage, there are lost opportunity costs.

Many farmers have stopped growing high-value crops, like winter cauliflower, says Reynolds. They can no longer grow them. The financial losses are too great.

Instead they're seeding second rate hay because clover and alfalfa are too attractive for ducks.

Rather than taking drastic, publicly unacceptable measures, farmers are piloting an innovative program they hope will restore the agriculture-wildlife balance.

They're investigating the use of special crops to reduce waterfowl damage.

At first glance, planting crops that might attract wildlife and waterfowl sounds crazy. But preliminary results obtained by farmers

participating in the year-old Greenfields Project indicate the timing is right."Our vegetable crops use the bulk of the land for 70-120 days in the late spring and summer, says Reynolds. The largest requirements for waterfowl are in the fall, winter and early spring.

That means farmers can plant crops the birds like to eat.

Last fall, with $50,000 from the Ducks Unlimited, Canadian Wildlife Service, Wildlife Habitat Canada, the University of British Columbia and *ARDCORP*, 30 Delta Farmer's Institute members planted 1,600 acres to winter wheat, spring wheat and fall rye grass.

"A flock of birds can finish off an entire field in a few sittings." Hugh Reynolds, Delta vegetable grower.

The B.C. Ministry of Environment's Youth Corps helped monitor the fields last winter under the supervision of Greenfields project co-ordinator Theresa Duynstee.

Properly managed fields with a good soil structure and drainage can withstand a fair amount of grazing, explains Duynstee.

While planting lure crops helps, Delta farmers would like to install irrigation and tile drainage systems and laser level their fields to get excess moisture off of them so crops aren't sitting in a pool of water throughout the winter, attracting birds and delaying farmers' spring work. But they're afraid their land might be pulled out from under them before they have enough time to recoup their investment.

Right now farmers leasing land can only obtain short-term agreements. Even more discouraging is the possibility that land may be pulled out of the Agricultural Land Reserve (ALR) for a golf course or residential development.

If farmers had some assurances that the land was going to remain agricultural, they'd make the improvements, she says. But they don't know if the land will be designated for farming in two or five years.

Taking farmland out of production only makes the problem worse, says Duynstee.

The reason wigeons have become such a problem isn't that their numbers have increased dramatically. The real reason is that the number of acres available to support the birds has decreased, Duynstee explains. Prime farmland is being lost to golf courses, urbanization and other developments. That means more intensive grazing of remaining land.

Before real progress can be made, wildlife preservationists and environmentalists must stop attacking farmers.

Instead, the two sides need to start communicating, says Duynstee.

A basic understanding of farmers' predicament on the part of environmentalists would be a big step in the right direction, says Delta dairy farmer Clarence DeBoer.

It's not that farmers dislike wildlife. Quite the reverse. Seeing wild game is one of the benefits most farmers enjoy about their occupation. All farmers want is to be able to continue farming.

A case in point: Despite the tremendous losses he has suffered, Reynolds doesn't want to see the birds stopped from wintering or feeding in the Delta area. He just wants to restore the balance and resume producing the crops he used to grow.

"The Greenfields Project, permanently established, would be a way to do it," he says enthusiastically. Planting lure crops to feed the birds would give farmers greater control over where the birds feed.

With lure crops, wigeon damage could be minimized and farmers could go back to growing winter crops profitably, says Reynolds.

"The reason wigeons have become such a problem is that the number of acres available to support them has decreased," Theresa Duynstee, Greenfields project co-ordinator

All that's needed is someone to help pay the bill.

Farmers, wildlife enthusiasts and environmentalists, observes Duynstee, want essentially the same thing — balance and harmony. "That's what gives me my optimism."

DeBoer shares Duynstee's view and predicts the Greenfields Project will engender some much needed communication between farmers and wildlife preservationists.

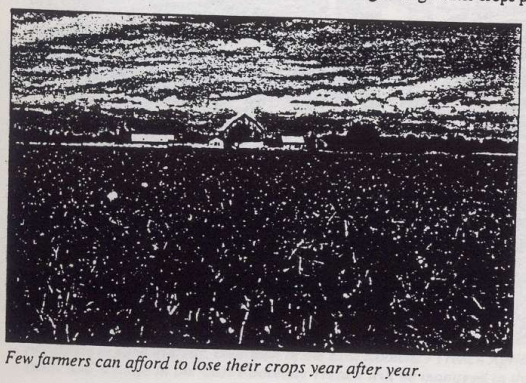
"Greenfields is bringing these problems out into the open," says DeBoer, who runs 400 cattle on 320 acres and must often reseed his grass in the spring and purchase supplementary feed to make up for what the wigeons ate. "It's educating groups that, before now, didn't listen to farmers' problems. It's getting the communication going."

Wildlife enthusiasts need to understand what's at stake. Total crop production grown in Delta is worth $45 million. The issue is too important to ignore because agriculture con-tributes so much to Delta's economy.

"A basic understanding of farmers' predicament on the part of environmentalists would be a big step in the right direction," Clarence DeBoer, Delta dairy farmer.

For some Delta farmers the gravity of the situation is acute, DeBoer says. Compensation must be provided before it is too late. If producers go broke, birds (and consumers) will go hungry.

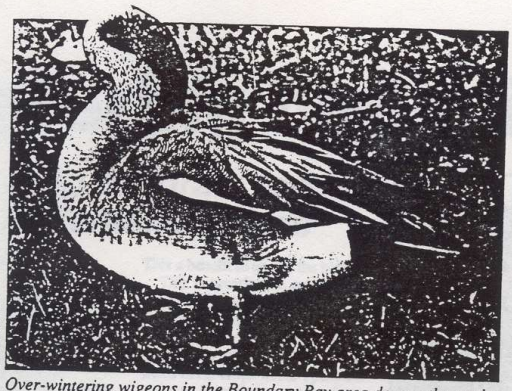
Wildlife preservationists and environ-



Few farmers can afford to lose their crops year after year.

Farmers' fields have become the birds' supper table.

DIANNA LYNN LUNDGREN



JUDY WALTERS

Over-wintering wigeons in the Boundary Bay area devour the tender shoots of farmer's fall-seeded winter wheat and fall rye.

mentalists should also take time to thoroughly evaluate the long-term impact of the changes they're lobbying for. Typically, preservationists want more and larger bird sanctuaries. But that can backfire.

Bird sanctuaries are located on or near prime farmland. Expansion only diminishes the number of acres available for feeding waterfowl during the winter. As well, hot spots develop. Eventually, fields located next to sanctuaries become over-grazed. Production declines, further exacerbating the situation.

If people genuinely want wildlife and waterfowl to flourish they should be willing to pay farmers to feed wild birds and animals.

Says Smith: Preservationists need to understand that farmers have had enough and feel the public should shoulder the financial responsibility of compensating farmers for their losses.

Faced with the prospect of more trumpeter swans, thanks to the PJV waterfowl enhancement program, Comox Valley farmers' are requesting funding for a lure crop program like Greenfields.

Farmers are willing to seed their fields purely to sustain swans through the winter, says Smith. But at $100/acre, financial assistance is needed. Money used to seed lure crops will boost farmers' overwinter productivity and enable them to steward their land better, Reynolds points out.

Alternatives to the proposal are few, says Smith. With reseeding costs running at $500/acre, farmers can't bear the cost of feeding the birds much longer.

The government has to decide if it wants agriculture to continue in the Comox valley, Smith says.

If government doesn't act on farmers' recommendations, they will either have to physically transport the swans to a new area or allow farmers to take appropriate action, says Smith, who remains optimistic that government will seize the opportunity to solve a wildlife problem in a way that keeps both farmers and non-farmers happy.

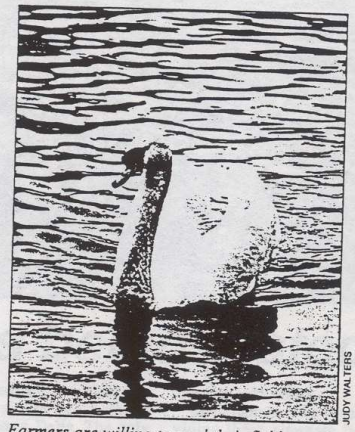
Getting environmentalists and farmers to work together would help alleviate almost every wildlife problem, opines chairman of the East Kootenay Trench Agriculture/Wildlife Committee John Murray, who was given $350.000 out of the Sustainable Environment Fund to look into Kootenay cattlemen's complaints about elk vying for the same vegetation as their cattle and predators preying on both.

In addition to assessing the situation and developing solutions, part of Murray's goal is to reduce tensions caused by "50 years of fighting and distrust."

According to producers, haystacks are being torn down and eaten in the lean, winter months and hay fields are being heavily grazed during the spring and early summer.

"They're going to go where the ice cream is," Murray says of the 28,000 elk residing in the East Kootenays. Making matters worse, the elk are growing increasingly reluctant to leave farmers' fields after the winter because feeding is so easy, he explains.

Wildlife preservationists, however, are opposed to letting farmers take action to reduce the damage.



JUDY WALTERS

Farmers are willing to seed their fields purely to sustain swans through the winter, but at $100/acre, financial assistance is needed.

JUDY WALTERS

According to John Murray, chairman of the East Kootenay Trench Agriculture/Wildlife Committee, cattle and wildlife in the East Kootenay Trench will be managed in the best interest of both.

Murray's objective is to get both sides to the table to air their grievances. From there, the 13 members of the committee are to develop, by consensus, a strategy which satisfies the needs and desires of both farmers and environmentalists. To ensure that the public doesn't feel left out of the process, the Committee is soliciting their input and assistance in resolving the problem.

Researchers are conducting a detailed elk and predator inventory and thorough vegetation analysis, says Murray, who headquarters in Cranbrook. Ranchers will be asked to quantify the value of the damage the elk are doing.

"Cattle and wildlife in the Trench will be managed in the best interest of both," Murray says. "One needs the other."

For every wildlife problem facing farmers today, the first step to finding solutions is getting both sides to sit down to work it out, he says. Without communication, solutions that don't satisfy both parties' needs result.

"Wildlife needs agriculture. And agriculture needs wildlife to foster political and public support. That will ensure that farmland remains farmland," says Duynstee. BC Ag

Wintering birds find many friends

Cover crop program feeds birds, replenishes fields

y Stacy Armstrong

Winter is often a time when irds have to scrounge for food. lut this winter, Delta's feathered riends will find plenty to eat in rmers' fields.

Normally, fields are the last lace farmers want to find birds. his season is different, however. ocal farmers are planting their inter cover crops and allowing e birds to eat away.

A total of 40 Delta farmers have lanted over 2,000 acres with vari- us types of wheat, rye, barley and ats — delicacies for wintering ildlife.

The planting initiative is called e Greenfields project, a coopera- ive venture between local farm- rs, Ducks Unlimited and the anadian Wildlife Service.

The project's oal is to identify trategies which an sustain crop roduction and rovide overwin- er habitat for nigratory birds, xplains Theresa uynstee, project oordinator. How o reduce crop osses on high alue grass fields s also being ooked at.

"The idea isn't really to feed the irds. The farmers are planting the rops because they're good for eplenishing the organic matter in he soil. The crops are also being lanted because the more cover rops, the less damage to specific ields," says Duynstee.

By planting numerous acres with inter crops, the wigeon, swans nd other predators don't concen- rate on the grass or clover fields.

East Ladner farmer John Malen- tyn believes the initiative is a step n the right direction.

"It's a nice start. It's helping to pread the bird population out. If ve didn't have these cover fields he land would be as bare as mud. This a benefit to us and the birds."

This is actually the second year for Greenfields. Last winter, farmers also planted cover crops. The damage to fields appeared to be much less than previous years when cover crops weren't planted.

As an incentive to get the farmers involved with the project, Greenfields pays each of them $15 per acre. This money, however, doesn't cover the complete cost of the seed and man hours involved.

Robert Savage, who farms vegetables in East Ladner, says the cost of caring for a winter crop is about $50 an acre. Since he benefits from the plantation, he doesn't worry about kicking in some of his own time and money.

This is the second year Hugh Reynolds, a Westham Island farmer, has participated in Greenfields. Last year he planted wheat cover crops, but this year he's got wheat, barley and red clover. He says he's glad to be a part of the solution and is confident the program will be a success.

> ***"It's a nice start. It's helping to spread the bird population out. If we didn't have these cover fields the land would be as bare as mud. This a benefit to us and the birds."***
> John Malenstyn

While the land is being replenished and the birds are eating well, Greenfields volunteers are keeping a close eye on the birds and how much they're consuming.

"We're gathering a great deal of information on wigeon grazing. There's probably tens of thousands of migratory birds coming to these fields. What we don't know is whether they're staying only in Delta," says Duynstee.

The cost of the Greenfields project for this year and next year is about $300,000, the bulk of which comes from the federal government through the Canadian Wildlife Service.

The program is expected to continue as long as the farmers are willing to participate.

Westham Island farmer Hugh Reynolds is participating in the Greenfields project for the second year. He believes the idea of planting cover crops to feed birds and revitalize fields is a positive move. *Photo by Jeff Mikus.*

Scare tactics being tested

If you can't beat them, scare them.

That's one of the alternatives the Canadian Wildlife Service is opting for in its attempt to get birds off farmers' fields.

Thousands of birds flock to the fields in Delta every winter to graze. When the birds finish their feed, the grass and clover fields are often nothing but a mud puddle.

To deter such activity, the CWS is testing out various scare techniques.

"There are several different things we're trying — scarecrows, propane cannons, popper shells and decoys," says Colin Copland, CWS senior enforcement co-ordinator.

The CWS finds wigeons to be the most difficult birds to scare. Studies have tested ways to deter starlings, mallards and numerous species of geese, but wigeons still remain a mystery.

The only reported success in scaring wigeon off fields has been in California. This was done with a combination of propane cannons and strobe lights.

Propane cannons or exploders which produce a loud bang at regular intervals are two methods being tested in Delta. The only problem with the cannons is they must be used day and night to be effective which doesn't sit well with neighboring residents.

Popper shells, another scare option, involve shooting blanks into the sky from a 12 gauge shotgun. The blanks resemble fireworks in that they explode and make noise.

Planting a stuffed or cardboard eagle in the fields is also a possibility, as are flags, reflecting tape, strobe lights and distress calls, explains Copland.

"We usually recommend any of these techniques. But once the birds realize there's no hunting going on they'll learn."

If the problem becomes chronic, the CWS can issue kill permits. For the most part, the CWS allows the hunters to take care of the problem.

The efficiency of a device depends on whether alternate feeding areas exist. If they don't, birds will take chances and begin to ignore scare tactics.

Delta farmers have begun providing those alternate feeding grounds by planting winter cover crops with the help of the Greenfields project. The scare program is an offshoot of Greenfields.

Theresa Duynstee, Greenfields project co-ordinator, says the CWS is looking for farmers who want to participate in the scare program.

"In early February, Greenfields will be setting up trials to see whether alternate scare techniques are effective. Twenty perennial grass fields will be divided in half, using scare techniques on one side and leaving the other as a control," says Duynstee.

Observation and biomass sampling will determine which method is most effective. Scare tactics using strobe lights, scarecrows, reflecting tape and broadcasting the sound of wigeon-flocks leaving a field will all be tried.

Any interested farmer who has a grass field larger than 15 acres with a history of wigeon damage is asked to call the Greenfields office at 946-7820.

Publisher's PERSPECTIVE
by Tom Siba

There's more than one way to pluck a duck

It was encouraging to see the article in Friday's Optimist on the success of the winter cover crop program. This project sees a reimbursement to local participating farmers from Ducks Unlimited and the Canadian Wildlife Service for planting winter crops of wheat, rye, barley and oats. As well as providing a source of feed for wintering waterfowl, the winter crops replenish the organic materials in the soil. The Greenfields project is a cooperative project which benefits both the farmers and the wildlife.

For a long time, environmentalists and Delta farmers have been in conflict over issues such as land use and bird habitat. The environmentalist lobby was interested in retaining all farmland and protecting all wildlife. The farm community didn't want to be restricted in the use of their land if farming proved unprofitable. As well the large congregations of birds in the Boundary Bay/Fraser Delta area was costly to them as the birds caused severe damage to their crops. The Greenfields project has managed to bring the two sides together on some common ground which has helped both sides achieve some of their objectives.

This project should serve as an example to the community that taking a rational cooperative approach to disagreements can lead to solutions which are beneficial to all concerned. A "win-win" approach is much preferable to the "win-lose" approach which is too often taken. Hopefully, the business community and the environmentalists can also start to find some common ground. The day is long past when business and industry can ignore environmental concerns. Paving over the countryside and polluting the rivers and ocean are becoming unacceptable and businesses must learn to survive in an environmentally concerned society.

However in the midst of our collapsing economy, it is obvious that economic activity is necessary if we are to maintain our living standards. At some point we have to stop mortgaging our children's futures and start paying our own way. A sense of environmental responsibility as well as financial responsibility is necessary if we are to leave our children and grandchildren something other than a bankrupt cesspool. To prevent this occurrence we will need more communication and cooperation and less conflict and closemindedness.

Delta is ideally placed to make cooperation work. Situated close to a major metropolitan centre and on the route from that centre to the next two largest cities in the region, Delta can expect a great deal of development pressure over the next decade. Fortunately the South Arm of the Fraser River formed an impediment to growth for many years and Delta still has options open to it as to how it is going to develop. Delta has a concerned and active populace. We have the ability to see what has happened in neighbouring municipalities such as Richmond and Surrey and decide if we wish to emulate them.

My feeling is that most of the population wouldn't wish to follow the path those municipalities have blazed. The small town feel and the surrounding rural area is very important to Delta residents. However residents also require some level of services and employment opportunities. To satisfy these needs and make Delta a truly "livable community", some level of development is necessary. The moderate majority has to work together to achieve these objectives. Cooperation and communication, not grandstanding, will eventually bring about satisfactory solutions. The Greenfields project is a good start and a beacon for others to follow.

Letters

Proposed bird sanctuary does not fly with farmers

Madam Mayor & Members of Council:

This letter is being written regarding comments made by Ald. (Lois) Jackson at the Feb. 3 council meeting. Ald. Jackson has the misconception that the farming community could benefit from a 2,000-acre wildlife reserve being formed on marginal farm land along Boundary Bay. She based her comments on the Greenfield's Project currently taking place in Delta.

The farmers are only allowed to plant a maximum of 20 acres each and are paid $15.00 for each acre planted. The total budget for Greenfield's is $150,000 a year and the farming community only receives a total of $30,000. The Greenfield's Project was established as a research program to determine the types of crops being damaged, the amount of damage taking place and the areas most affected by the birds.

The program is also to explore ways to lessen the amount of damage taking place. The only benefit the farming community has received so far, is the fact that the research has demonstrated that the birds do eat a substantial amount of our crops and the damage is on the increase. The money the farmer receives for planting the cover crop is far less than the actual cost. We are limited to a maximum of 20 acres per farm and often the cover crop is eaten so there is no benefit to the soil. The program has only one more year of funding and there is no indication at this time that additional funding will be available to continue the program.

Theresa Duynstee has spent a lot of time and energy promoting the program and has accumulated a lot of data on the issues discussed above. I hope her efforts will bring about a much improved program and a substantial amount of money for crops lost during the growing season along with increased payments for cover cropping in the winter season.

I would like to take this opportunity to thank Ald. (Ann) Claggett for her support on behalf of the farming community. She realizes the serious problem the Reifel Bird Sanctuary has caused for the farming community on Westham Island. If 2,000 acres of farmland in the Boundary Bay area is used to replace habitat lost because of the third runway expansion at Vancouver Airport, agriculture as we know it today, will cease to exist in Delta.

I thank you for your attention regarding this matter and hope my comments will clarify the farming community's position.

Albert Weaver
President of The Delta Farmers Institute

Letters to the Editor

Greenfields seeks solutions to wildlife/farming problem

Mayor Beth Johnson & Delta council:

After reading Albert Weaver's letter (South Delta Today, Feb. 16) I feel compelled to clarify the wildlife crop damage situation and aspects of the Greenfields Project.

First of all, it is true farmers are feeding thousands of birds. Potatoes, corn and other unmarketable vegetables which remain in fields after harvesting are extremely popular with waterfowl. Other wildlife benefit from the abundance of insects, invertebrates, seeds and rodents which inhabit farmland.

Unfortunately, among all this, there are a few problem species which cause significant economic loss to some farmers. The most notorious is the American wigeon, a duck that overwinters in Delta and is renowned for its vegetarian diet. They eat cover crops such as winter wheat and perennial grass fields grown for livestock.

Farmers have tried several methods to prevent losses with little success. The Waterfowl Crop Damage Compensation Program, which exists in the Prairies, is not available here. A few years ago the province turned down an offer by the federal government to participate in this 50-50 cost sharing program.

The Greenfields Project is looking for alternatives to deal with the wigeon grazing problem. A report from the first year entitled 'An Investigation into Field Grazing by Wigeon in Delta, B.C.' is now available and can be obtained by calling 946-7820.

The other significant crop damage problem is with Canada Geese. They seek newly seeded corn and have been found feeding on peas and beans. Unlike wigeon which forage extensively at night, hunting is still effective in alleviating the goose problem.

The Greenfields Project has chosen a cost sharing program because there are some benefits for the farmer. Many cover crops still provide green manure in the spring. Difficulty does arise however, because not all farmers are affected to the same degree, some will end up with bare fields. It is not a perfect situation, but it is an improvement over last year, and things will continue to evolve as changes are needed.

The reimbursement of $15 covers the cost of the seed. A limit of 50 acres per farmer ensured that all farmers had the opportunity to participate. Once the deadline passed, several of the larger land holders were able to double their allotment.

The real benefit of this project to the farming community is that it provides an opportunity for wildlife agencies and farmers to work cooperatively to resolve a difficult situation. Only through education and communication can problems such as this be appropriately addressed.

Almost $40,000 of the budget has gone directly into the farmers' pockets. In addition Greenfields has spent considerable time and money investigating and setting up a scare program on the high value perennial grass fields.

The rest of the money pays for the wages and operating costs for myself and an assistant who monitor over 100 fields in Delta throughout the winter. Much of our time is also dedicated to extension activities which focus on educating people about local farming/wildlife interactions.

An event which should not be missed is the Greenfields Field Day, Friday, Mar. 20th, which will include a comprehensive bus tour looking at the wigeon grazing situation. Details will be in the next Greenfields newsletter.

On a final note, I would like to emphasize that the last thing wildlife agencies want to do is negatively impact a farmer's ability to run a viable business. The alternative to agriculture is urbanization, which is wildlife's biggest threat to existence here in the Fraser River delta.

Theresa Duynstee
Greenfields Project Coordinator

Seeking solutions for farmer-wildlife conflicts

Wayne Temple (hat) from UBC explained the importance of cover crops during Greenfields Field Day last Friday. The Greenfields project attempts to find common ground where farmers and wildlife can co-exist. Photo by Taras Kovaliv

Greenfields project measures success of cover crops

by Stacy Armstrong

As the group made its way through the damp fields it was obvious thousands of webbed feet had also been there for a visit.

The triangular foot prints belonged to the aggressive wigeon which had stopped at the field to graze. And graze they did, leaving nothing but a mud covered plot of land in their wake.

That's the state of many fields which are the testing grounds for the Greenfields project.

Last Friday, co-ordinators of Greenfields, a program created to find a way in which farmers and wildlife can successfully co-exist, conducted a field day. The purpose was to give those who were interested a first-hand look at the project.

A handful of people from Canadian Wildlife Services, Ministry of Environment, Ducks Unlimited, Delta's planning department and many more, suited up in rubber boots and made their way through the test fields on Westham Island, Ladner and East Delta.

The tour began at Rod Swenson's farm on Westham Island. From there everybody piled into a school bus and were off to have a look at what Greenfields and the farmers were up to.

"If I've learned anything from this project it's that you can't predict the behavior of wigeon," said Theresa Duynstee, Greenfields co-ordinator and tour guide.

As the tour bus left the island, Duynstee pointed out various fields. One of those was a 20 acre plot planted with a winter wheat cover crop. The field had never been touched by wigeon. That wasn't the case for a field up the street which had been completely wiped out by the birds.

As the group left Westham Island, Duynstee provided a refresher course on Greenfields.

> *"Cover crops cover and protect the soil. They add nutrients and protect the soil from heavy rains. They also form water and air pockets in the soil so the roots can breath."*
>
> Theresa Duynstee, Greenfields co-ordinator

Farmers who are interested in participating in the project plant various types of cover crops. Duynstee and her partner Elsie Krebs then monitor the fields for wigeon use. The farmers are paid for every acre they plant. The program also involves testing various scare tactics. Scare techniques include noises, lights, flags and decoys.

The first stop of the tour was Canoe Pass Farms on the Roberts Bank back-up lands. The land is farmed by Duncan and Ken Montgomery who grow potatoes, corn and beans. The acreage is planted with cover crops of spring barley, winter wheat and mulch crop during the idle months.

"Cover crops cover and protect the soil. They add nutrients and protect the soil from heavy rains. They also form water and air pockets in the soil so the roots can breath," Duynstee told the group.

Some of the cover plots at Canoe Pass Farms had been grazed thoroughly. Others hadn't been touched because they were planted months earlier.

"The late planted crops are the most susceptible to grazings. Spring barley and wheat grow much taller so the wigeon don't like it as much," said Duynstee.

But an early crop isn't always safe. There is still a chance it'll get eaten. Sometimes the crops are so heavily grazed they don't grow back. The ideal balance would be a field that was slightly grazed, leaving enough cover crop for the soil while at the same time feeding the birds.

Duynstee and Krebs determine the amount of crop the birds have eaten by looking at what's left under the protected netted areas scattered throughout the fields.

After touring Canoe Pass, the group boarded the bus and made its way through some more Greenfields sites.

One field of red clover had been eaten by wigeon in January, but the birds had left a large ring, or tide line. The birds don't like feeding close to lights or buildings so they leave a ring of uneaten grass behind.

Another observation point in Ladner was a reclamation site. Duynstee said the 80 acre plot will be levelled, drained and planted in an attempt to revive it. The lease land had been poorly managed for many years.

"Some of these farms are popular with the wigeon. The location may be just as important as the type of foliage being grown," said Duynstee.

The last points of interest were some farms in East Delta. The farms in that neighborhood are mostly livestock so the owners just grow grass to feed their animals. These lush grass fields are inviting to the wigeon.

"Cover crops aren't as necessary here because the crop is always there. But the wigeon using grass fields is a big problem," Duynstee said.

The bus stopped at a field on 88th Street which is testing various scare tactics. The group of about 30 headed to the back of the field where colorful flags flapped in the breeze. The ground looked like a bomb testing area with wires and apparatus scattered everywhere. The equipment was to operate the lights and sound makers.

Duynstee said the birds tend to get used to the noise created by the sound makers so a combination of lights, because the birds feed at night, and sound is being tested.

> *"We (Greenfields) have one more year left. I'm not sure what we'll do next. The farmers and wildlife people will have to sit down and discuss it."*
>
> Duynstee

To date, no information on scare techniques specific to wigeon has been tabulated. For that reason, Greenfields has had to resort to trial and error.

After two years of planting, scaring and testing, Duynstee and her partners have found no real answers on how to keep the birds and the farmers happy.

"We (Greenfields) have one more year left. I'm not sure what we'll do next. The farmers and wildlife people will have to sit down and discuss it," said Duynstee.

Friday's tour ended with a gathering at the Rod and Gun Club where everybody feasted on a barbecue beef dinner and refreshments.

Delta Optimist March 25, 1992

AGRICULTURAL REPORT

Greenfields takes aim at grazing damage to farms

by Theresa Duynstee

Delta's farmland not only supports a vibrant agricultural industry, it also provides irreplaceable habitat for thousands of migratory birds.

Of the many species which overwinter in the Fraser River delta, there are, unfortunately, a few species of waterfowl which cause economic losses for local farmers.

The Greenfields Project was initiated to investigate crop depredation by the American wigeon, a duck with a voracious appetite for fall seeded cover crops and grass fields. Cover crops, such as winter wheat or fall rye, are planted in September as a land stewardship practice to protect the soils from winter rains and add organic matter.

Although wigeon first appear in Delta in September, they do not feed extensively on farmland until November. People often don't notice their presence because the ducks feed on farmland at night when they are less likely to be disturbed.

However, a watchful eye can easily identify grazed fields. Wigeon often start feeding around ponds and can continue until the entire field is almost bare. It looks like a lawnmower was used on the fields except for ungrazed edges by roads and buildings.

The American wigeon is the most abundant duck in Delta in the winter with an estimated population of 68,000.

Greenfield's cost sharing program began in the fall of 1990 with a co-operative effort from the Delta Farmers' Institute, Canadian Wildlife Service, B.C. Federation of Agriculture (Ardcorp), Ducks Unlimited Canada, U.B.C. Soil Science and Wildlife Habitat Canada.

Research was conducted to evaluate the extent of grazing. During the past two winters farm fields were monitored to document where wigeon were grazing and what factors contribute to field use and crop losses. This information will provide a basis on which future strategies can be developed.

Finding solutions is difficult. Some farmers are heavily impacted with extensive crop losses and puddled soil, while other fields come through the winter looking great. Factors which contribute to crop losses, such as planting date and field location, cannot be readily changed. Philosophical discussions on who should bare the cost of maintaining wildlife adds complexity to the issue.

However, this is just a first step. A commitment from various groups and agencies is needed to sustain a viable farming community and wildlife habitat in Delta.

For more information about the Greenfields Project call 946-7820.

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Farmers go on field trip

Tour provides look at crop, habitat enhancement program

by Corry Anderson

Uncertainty over the Roberts Bank back-up lands and the recent withdrawal of Delta's main cannery crop processor have dealt a devastating blow to the local farming community.

Hanging in the balance is the three-year-old Greenfields habitat/farmland enhancement program.

"It's the farmers' economic situation — that's what is going to make or break the wildlife habitat," said Greenfields' project co-ordinator Theresa Duynstee last Friday.

Local farmers, naturalists, and wildlife experts came together on Westham Island for the annual Greenfields "Field Day." Duynstee delivered an overview and project update to the small crowd at the event.

> ***"It's really important that farmers do plant cover crops because they play an important role."***
> Theresa Duynstee

She stressed that for wildlife to proliferate, their habitat — farmers' fields — must also survive. Fields provide both food and shelter to migratory and resident wildlife.

"We want to get the public thinking more about the relationship between wildlife and farming and that if they want to preserve wildlife, they have to support the farmer."

The Greenfields mandate is to encourage among farmers good stewardship and conservation practices that benefit both the soil and the wildlife. Funded through the Canadian Wildlife Service, Greenfields entices farmers to plant cover crops by paying for the necessary seed.

The cover crops, such as clover, then become a controlled food source for the bird population. In its third winter now, the Greenfields project monitors 125 fields for this activity.

"It's really important that farmers do plant cover crops because they play an important role," said Duynstee.

The loss of Royal City Foods as a crop processor is forcing farmers to change the crops they plant. Crops such as beans and peas will be replaced by potatoes, which follow a different cover crop schedule.

"It is bad news for the birds no doubt. There could be less acreage for the birds," she said.

In addition to encouraging the birds to use certain fields, Greenfields also attempts to discourage their presence in other areas with scare tactics.

Among the scare tactics is a $3,000-$4,000 ultra sonic sound emitter that creates a zone of "unfavourable" sounds. Ducks will not tolerate the noises and seem to have stayed away. Duynstee said the birds have, however, still been grazing on the sound periphery.

Another method that hasn't been tested by Greenfields because of Delta's rural/urban interface is a propane cannon which gives a loud blast.

Another initiative aimed at preserving agriculture and wildlife is the recently incorporated Delta Farmland and Wildlife Trust. Noel Roddick, a director of the trust, said the program works in conjunction with Greenfields.

Greenfields co-ordinator Theresa Duynstee uproots an example of the clover which farmers can use as cover crops, and birds such as wigeon can eat. Photo by Corry Anderson

As an example, he told the Greenfields congregation that some of the damage birds cause to farmers' fields could be mitigated by better drainage and irrigation practices, which are supported by the trust.

"We started out with the realization that wildlife people and farm people have a lot in common. So we decided to use that common ground."

Greenfields is scheduled to come to an end this year. However, the project may be given a new lease on life because of its success.