

ANNUAL REPORT 2020



**Delta Farmland
& Wildlife Trust**

Partners in Stewardship





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& Wildlife Trust**

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Our Mission

Delta Farmland & Wildlife Trust (DF&WT) is a non-profit organization that promotes the preservation of farmland and wildlife habitat on the Fraser River delta (Cities of Delta and Richmond) through co-operative land stewardship.

Challenges to Farming and Wildlife Conservation

Farmland on the lower Fraser River delta is ideal for food production because of the fertile soils and relatively long growing season. The area is also important for a diversity of migratory birds that use the delta as a stop-over before they continue their journey or spend the entire winter. Despite the suitability of the area for farming and wildlife, there are challenges facing both.

The heavy silt/clay soils of local farms are prone to degradation when overworked by machinery. Tractors and other farm equipment can compact the soil and intensive tillage speeds the breakdown of soil organic matter, a crucial component of soil fertility.

Farmers can fallow (rest) land by planting grasses and clovers and leaving the field alone for a period of time, however many farms simply cannot afford to take crop fields out of production.

Wildlife, especially migratory birds, are also challenged to survive in the increasingly developed landscape of the lower Fraser River delta. Almost 80% of the marsh present a century ago has been drained and only 600 hectares of grassland are present in the Municipality of Delta, compared to an estimated 6,000 hectares before 1890. Native shrubs and tree communities have dwindled as well.

Farmland Stewardship in Action

Delta Farmland & Wildlife Trust has developed stewardship programs to address the challenges facing agriculture and wildlife conservation.

Through the stewardship programs, local farmers are eligible for cost-share payments when they plant crops that are beneficial to wildlife and/or agricultural production. The management guidelines that farmers follow to be eligible for the programs are guided by extensive research. Each program addresses a specific example of wildlife conservation and/or agricultural production.

The **Grassland Set-aside Stewardship Program** pays farmers to fallow land, which improves soil fertility, while providing habitat for a diversity of grassland raptors, wading birds, songbirds, small mammals, and pollinating insects.

The **Winter Cover Crop Stewardship Program** helps cover the cost of establishing vegetative cover on fields before winter, which protects the soil from erosion, improves soil fertility, and provides feeding habitat for herbivorous waterfowl and shorebirds.

Through the **Hedgerow Stewardship Program**, linear corridors of native shrubs and trees are planted along farm fields to provide habitat for songbirds, raptors, and beneficial insects.

Similar corridors of grasses are planted along field edges through the **Grass Margin Stewardship Program**. Farmers can also apply to cover some of the costs of soil amendments and management through the **Soil Amendment (previously named Field Liming) and Laser Leveling Stewardship Programs**. Lime maintains soil pH at optimum levels so that plants can grow effectively and laser leveling improves drainage on fields that are prone to flooding.

The **Forage Enhancement Pilot Program**, which was established in 2017, assists grass forage producers with the costs to over- and re-seed their forage fields as a result of waterfowl grazing. This pilot provides support for the enhancement and continued provision of high-valued grass forage fields for dairy cattle feed and as vital waterfowl foraging habitat.

Summary of Stewardship Programs in 2020

Delta Farmland & Wildlife Trust stewardship programs are designed to contribute to agricultural soil fertility and wildlife habitat availability, while mitigating conflict between wildlife and farming operations.

In 2020, \$501,850 was disbursed in cost-share payments through our stewardship programs. This was a new record for the organization. Forty-three farmers and landowners participated in the 2020 stewardship programs. Approximately 3,693 ac (1,495 ha) of farmland was enhanced with either a winter cover crop or grassland set-aside. A 175 m hedgerow was also planted in October. The Forage Enhancement Pilot saw record enrolment as a result of increasing intensity of waterfowl grazing on grass forage fields.



STEWARDSHIP PROGRAM	ACRES	RATE (\$)	TOTAL (\$)
Grassland Set-aside			
1-year	131	400	52,400
2-year	141	400	54,000
3-year	112	400	44,800
4-year	56	400	22,400
4+ year	56	400	20,800
Total	496	–	194,400
Winter Cover Crops	3,197	50-65	187,210
<i>Spring Cereals, Winter Cereals, Cover Crop Mixes and Clovers</i>			
Forage Enhancement Pilot	673	75	50,475
Laser Levelling	208	–	25,825
Soil Amendment	1,000	30	27,107
<i>(*tonnes of lime/ gypsum)</i>			
Farmscape			
Hedgerows	9.21	400	1,262
Grass Margins	11.72	400	4,688
Hedgerow Construction	0.13	–	10,884
Total			16,834
Stewardship Programs Total			501,850

Grassland Set-aside Stewardship Program

The **Grassland set-aside (GLSA) Stewardship Program** incentivizes farmers to seed a grass-legume mixture on agricultural land and leave it fallow for 1 to 6 years to improve soil productivity and provide habitat for wildlife. Farmers commonly enter fields into the GLSA program to restore degraded land, transition fields into organic production or diversify options for crop rotations. A \$400/acre cost-share is paid for each year of enrolment in the program. Farmers who choose to plant a grassland set-aside with grain may harvest the nurse crop in the first year (harvest reduces a farmer's cost-share to \$200/acre). Grassland set-aside's support dense populations of Townsend's vole, which is the primary food source of many raptor bird species in the region. Approximately 510 acres are enrolled in the program annually.

■ For more information on Grassland Set-asides, visit <https://deltafarmland.ca/our-programs/grassland-set-aside-stewardship-program/>



Figure 1: Extent of 2020 Grassland Set-aside Program

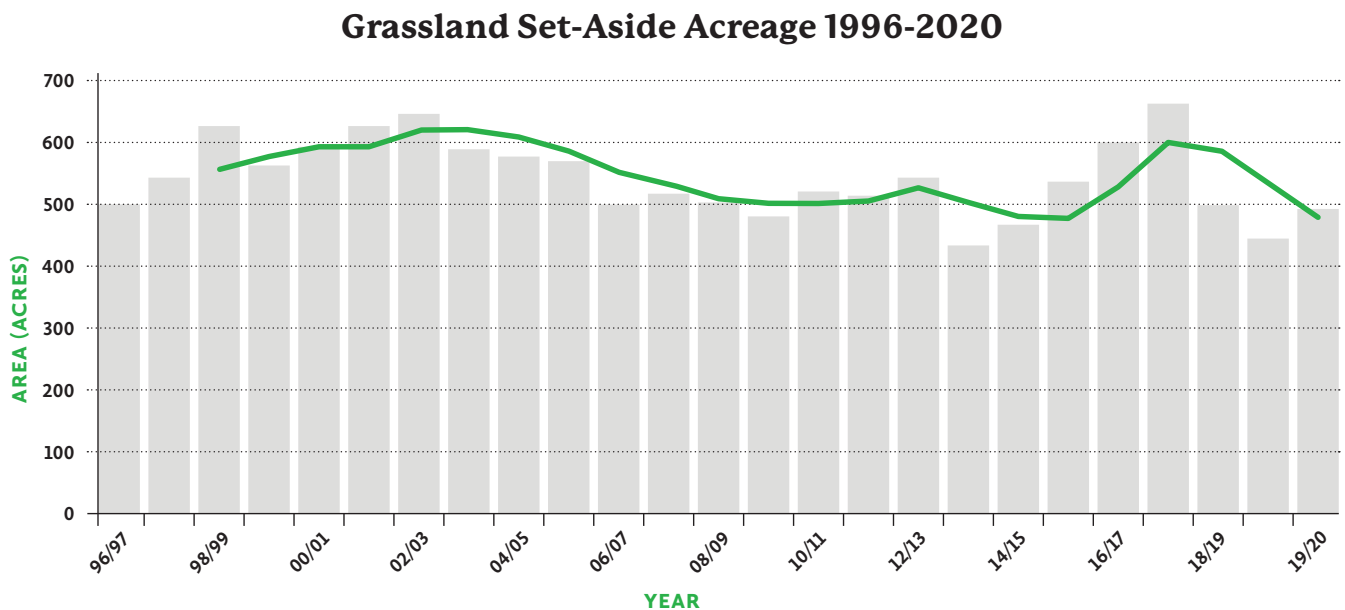


Figure 2: Historical acreage of Grassland Set-aside program enrollment from 1996 to 2020 (The line is a 3-year running average).



ROLE IN LOCAL CROP ROTATION

Grassland set-asides (GLSA) are short-term fallows that improve soil quality. Short-term set-asides have been

shown to reduce soil compaction and improve soil structure. Aggregates are clumps of individual soil particles that form the basis of soil structure. Aggregate stability is a measure of the resistance of aggregates to physical disturbances. Short-term GLSA increase aggregate stability which can improve water infiltration, water retention, soil aeration, space for root growth and habitat for soil organisms. Set-asides with forbs also provide habitat for beneficial insects which may improve yields of adjacent fields that are planted with pollinator-dependent crops. The program also allows farmers to transition to organically certified production by fallowing their field during the 3-year chemical free period.



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ROLE IN WILDLIFE CONSERVATION

Grassland set-asides mimic the grasslands that were abundant on

the lower Fraser River delta prior to 1890 (when land clearing and draining for agriculture began) and are therefore ideal surrogate habitat for wildlife. Populations of small mammals, especially Townsend's vole, establish under the thick canopy of grass and provide prey for predatory birds. These include raptors (Northern Harrier, Short-eared Owl, Barn Owl, Rough-legged Hawk, Red-tailed Hawk, and American Kestrel) and wading birds (Great Blue Heron and American Bittern).

Grassland set-asides provide habitat for a diversity of arthropods, including pollinating insects like bumblebees. Arthropods can also serve as a food source for shrews and insectivorous birds, including Barn Swallows and Western Meadowlarks.

Set-asides also provide nesting habitat for grassland birds. Savannah Sparrows and Common Yellowthroat nests can be found in set-asides and occasionally reports of Northern Harrier nests. Short-eared Owls and Western Meadowlarks may nest in set-asides but this has not been confirmed. It is thought that breeding populations of Western Meadowlarks have been extirpated from the lower Fraser River delta.



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Winter Cover Crop Stewardship Program

Farmers in Delta can plant cereal grasses, clover, or annual forage grasses as a cover crop. Cover crops can be under-seeded into growing crops (e.g. cereal grains and silage corn) or planted after cash crops (e.g. beans, peas, and potatoes) are harvested. Farmers receive between \$60 and \$65/acre to seed winter cover crops. The majority of cover crops are seeded in late summer and early fall.

■ For more information on winter cover crops, visit <https://deltafarmland.ca/our-programs/winter-cover-crop/>

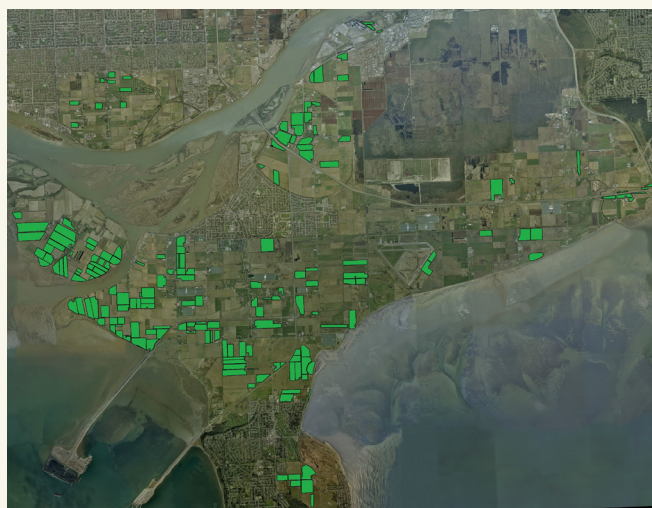


Figure 3: Extent of 2020 Winter Cover Crop Program

Winter Cover Crop Acreage 1996-2020

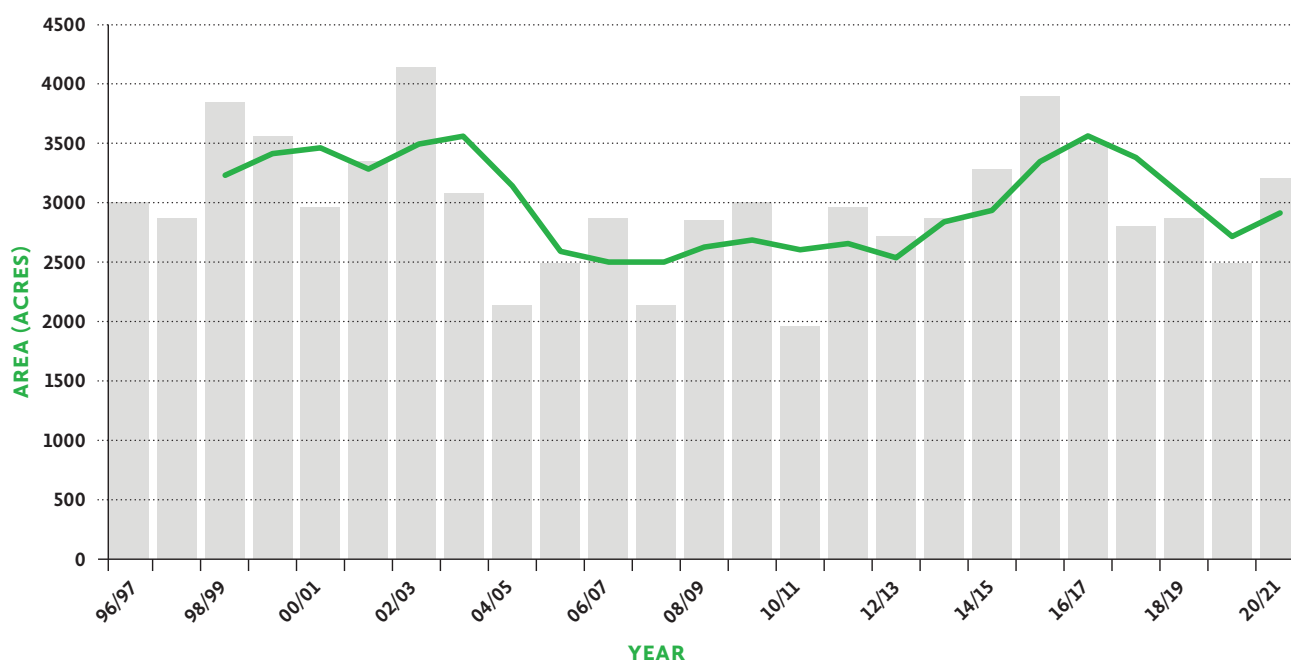


Figure 4: Historical acreage of Winter Cover Crop program enrollment from 1996 to 2020 (The line is a 3-year running average).



ROLE IN LOCAL CROP ROTATION

The foliage of cover crops provides ground cover, preventing rain-induced soil erosion, while the roots increase soil porosity and break up compaction. Cereal cover crops scavenge nutrients that would otherwise leach from the soil during heavy winter rains. The cover crop can be incorporated in spring as a green manure to increase soil organic matter. Soil organic matter improves soil structure, increases the water holding capacity of soil, and increases the infiltration of water. Clover cover crops can fix nitrogen and offset the need to use synthetic fertilizers. While directly improving soil health, cover crops can also provide many other agricultural benefits. Cover crops can shade weeds and some release allelopathic compounds that inhibit weed growth, reducing the farmer's usage of chemical controls.



ROLE IN WILDLIFE CONSERVATION

Cover crops mainly benefit herbivorous waterfowl, providing them with a protein-rich food source during staging and wintering periods. Lesser Snow Geese, American Wigeon, Northern Pintail, Mallard, and Trumpeter Swans are all species that frequently feed on winter cover crops. To a lesser extent, Canada Geese, Cackling Geese, Greater White-fronted Geese, Tundra Swans, and Green-winged Teal feed on cover crops. Several species of shorebird have been identified using cover crop fields as well. Wilson's Snipe use the dense vegetation of early planted cover crops as shelter, and Dunlin and Black-bellied Plover have been observed feeding on invertebrates on grazed cover crop fields. In one instance, a group of 18 Northern Harriers was observed roosting in an oat cover crop that had grown higher than 50 cm.



OTHER BENEFITS

Grasses grown for hay and pasture (perennial forage) can be grazed by waterfowl, reducing harvest yields and potentially requiring fields to be reseeded. Winter cover crops can act as lures, drawing waterfowl away from hay and pasture, and provide them with an alternative source of feed. While cover crops have not resulted in a complete abatement of grazing on hay and pasture, they offset some of the loss that growers would have otherwise experienced.



Hedgerow Stewardship Program

The Hedgerow Stewardship Program covers the costs to establish linear rows of native trees and shrubs along field edges. Over 25 hedgerows totaling 10 km in length have been planted through the Hedgerow Stewardship Program. Hedgerows provide year-round habitat for wildlife. Over half of the bird species found on farmland can be attributed to hedgerows.

■ For more information on Hedgerows, visit <https://deltafarmland.ca/our-programs/hedgerow-grass-margin-stewardship-programs/>



ROLE IN LOCAL CROP ROTATION

The ecology of hedgerows is complex, and although it is difficult to determine exactly how hedgerows contribute to crop production, current research supports their role in providing habitat for predatory, parasitoids and pollinating insects. Beneficial insects are known to support biological pest management and increase crop yields. Pollinating insects are required for fruit set in a number of local agricultural crops, including tomatoes, berry crops (blueberry, strawberry, raspberry, and cranberry) and cucurbits (squash, zucchini, pumpkins, and cucumbers).



ROLE IN WILDLIFE CONSERVATION

Hedgerows provide feeding habitat for songbirds and raptors. Many hedgerow songbirds feed upon the berries from fruiting shrubs or the insects living in the hedge. Accipiter hawks like Cooper's and Sharp-shinned Hawk will hunt smaller songbirds within the hedge. Raptors, like the Red-tailed Hawk, Rough-legged Hawk, Short-eared Owl, and Northern Harrier will use hedges as perch sites. Surveys conducted of hedgerows in Delta, including those established through DF&WT's stewardship program, indicate that older, more structurally developed hedgerows provide habitat for a wide variety of bird species.



Grass Margin Stewardship Program

Like hedgerows, grass margins are linear strips of habitat running along the edge of agricultural fields. DF&WT encourages farmers to use the same mixture of forage grass and clover used in grassland set-asides when planting margins. Farmers are eligible to receive \$400/acre for grass margins enrolled in the program.

■ For more information on Grass Margins, visit <https://deltafarmland.ca/our-programs/hedge-row-grass-margin-stewardship-programs/>



ROLE IN LOCAL CROP ROTATION

Grass margins can provide physical breaks between fields, especially fields that require buffer zones for organic certification. When margins are planted along ditch edges, the grass can trap soil that would erode off the field during heavy rains, preventing the ditch from filling with sediments. When grass margins contain clover, they can provide feeding habitat for pollinating insects.



ROLE IN WILDLIFE CONSERVATION

Similar to grassland set-asides, grass margins can provide habitat for small mammals which are prey for raptors and wading birds. Raptors may also roost in grass margins during winter; Short-eared Owls have been flushed from grass margins during field surveys. Grassland songbirds nest and feed in the grass margins.



Forage Enhancement Pilot Program

In 2017, the Forage Enhancement Program was initiated to assist grass forage producers with the increasing intensity of grazing that their forage fields are experiencing over the winter season. Through the Forage Enhancement Pilot Program, DF&WT is sharing the costs associated with over- and re-seeding forage fields in the spring due to waterfowl grazing. The goal of the program is to support the enhancement and continued provision of these high-valued fields both for dairy cattle feed and as vital waterfowl foraging habitat.

■ For more information on the Forage Enhancement Program, <https://deltafarmland.ca/our-programs/forage-enhancement-pilot-program/>



ROLE IN LOCAL CROP ROTATION

Perennial grass forage fields provide the bulk of feed for dairy cattle herds in Delta. Waterfowl grazing of perennial grass forage fields creates a considerable cost to many Delta forage producers including lower forage yields, reduced harvest quality (protein), a reduction in cuts (i.e. 4-5/year to 3/year), and at times destroyed plantings that require re-seeding. Impacts from waterfowl may also result in soil problems such as compaction and ponding. In some cases, grass forage fields must be re-seeded annually (as opposed to every 5+ years) at a significant expense.

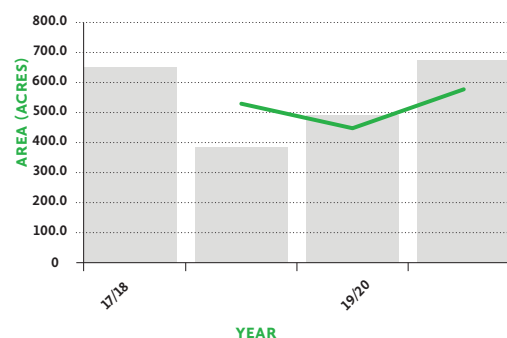
The costs to maintain perennial forage fields in some cases are reaching a level where it is no longer economically viable. This is causing some producers to plant annual forage fields and other forage crops (i.e. corn). The concern with regards to waterfowl is that annual forage fields may be tilled in the fall and left bare over the winter season. Bare fields tend to dry out quicker in the spring, permitting earlier access and planting, which is critical for nutrient management. However, the consequence of this practice is fields that once provided significant foraging habitat for waterfowl are no longer available over the winter and migratory season. This decrease in perennial fields may exacerbate the issue elsewhere by increasing pressures on remaining grass forage and winter cover cropped fields.



ROLE IN WILDLIFE CONSERVATION

Grass forage fields mainly benefit herbivorous waterfowl, providing them with a protein-rich food source during staging and wintering periods. Lesser Snow Geese, American Wigeon, Northern Pintail, Mallard, and Trumpeter Swans are all species that frequently feed on grass forage fields. Past research conducted by DF&WT has identified perennial forage fields as providing some of the highest quality foraging habitat for migratory waterfowl.

Forage Enhancement Acreage 2017-2020



Laser Leveling Stewardship Program

DF&WT has been offering its Laser Leveling cost-share program to farmers since 1996. Through the program, co-operators are eligible to receive up to 50% of the cost of leveling, up to a maximum cost-share of \$125/acre (\$309/ha) and a maximum of 100 acres (40 ha) leveled.

■ For more information on Laser Leveling, visit <https://deltafarmland.ca/our-programs/laser-leveling-and-field-liming-stewardship-programs/>



ROLE IN LOCAL CROP ROTATION

Drainage is an essential component of productive agriculture, especially in areas that experience periods of heavy rainfall. On the Fraser delta, heavy rains occur during the winter months and poor field drainage can lead to soil erosion, soil compaction, and salt accumulation. Field topography plays an important role in how water is drained from a field. Steeply sloped fields can lose significant amounts of topsoil as fine particles are washed away by water runoff. Water pools in low areas and is unable to drain, and the weight of water in these areas is significant enough to cause compaction. Furthermore, these areas take longer to dry in spring, delaying farmers' access to portions of their fields. When the puddles do dry, the osmotic pressure can pull significant amounts of salt from deeper in the soil profile to the surface, thereby impacting crop production.

Delta farmers have access to laser leveling services which can recontour their fields to maximize drainage, and minimize water ponding and soil erosion. Using GPS, stationary laser towers, and computer software, a laser leveling plough is pulled by a powerful tractor and can accurately recontour a field. The plough fills in low areas and removes soil from high points, and fields can be contoured to either be completely level, sloped, or crowned, depending on the field's characteristics.

Laser Levelling Acreage 1996-2020

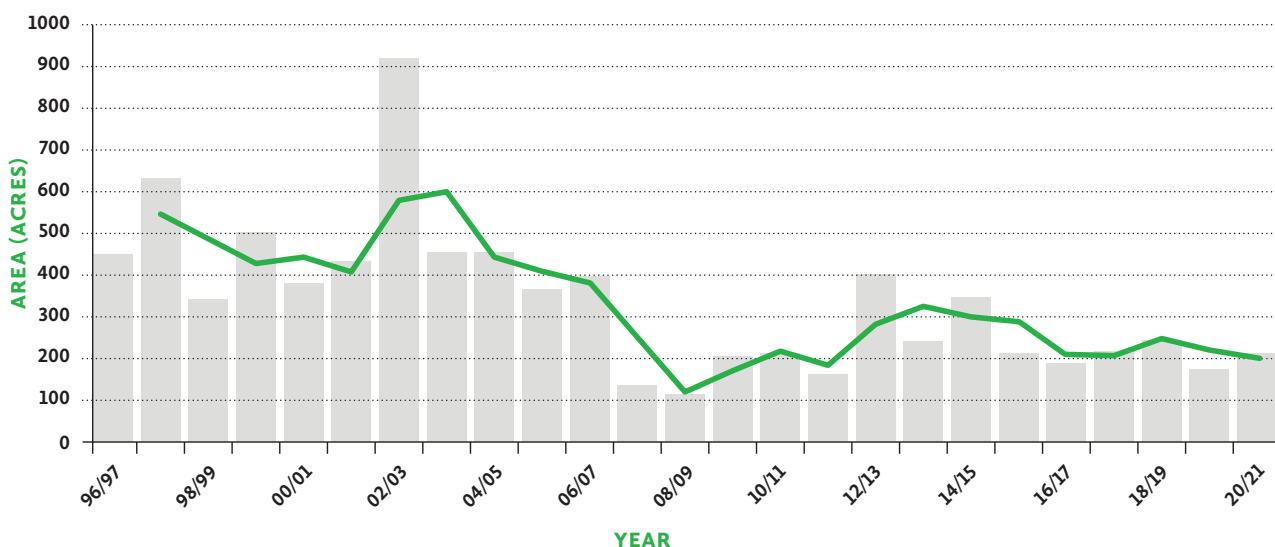


Figure 5: Historical acreage of Laser Leveling program enrollment from 1996 to 2020 (The line is a 3-year running average).

Soil Amendment (Formerly known as Field Liming) Stewardship Program

Farmers in Delta have had access to DF&WT's Soil Amendment cost-share since 2004. Through the program, farmers have been eligible to receive \$30/tonne of lime applied, to a maximum of 2 tonnes/acre applied on a maximum of 100 acres. In 2019, gypsum was added to the program as a pilot.

■ For more information on the Soil Amendment Stewardship Program, visit <https://deltafarmland.ca/our-programs/laser-leveling-and-field-liming-stewardship-programs/>



Tonnes of Lime and Gypsum 2003-2020

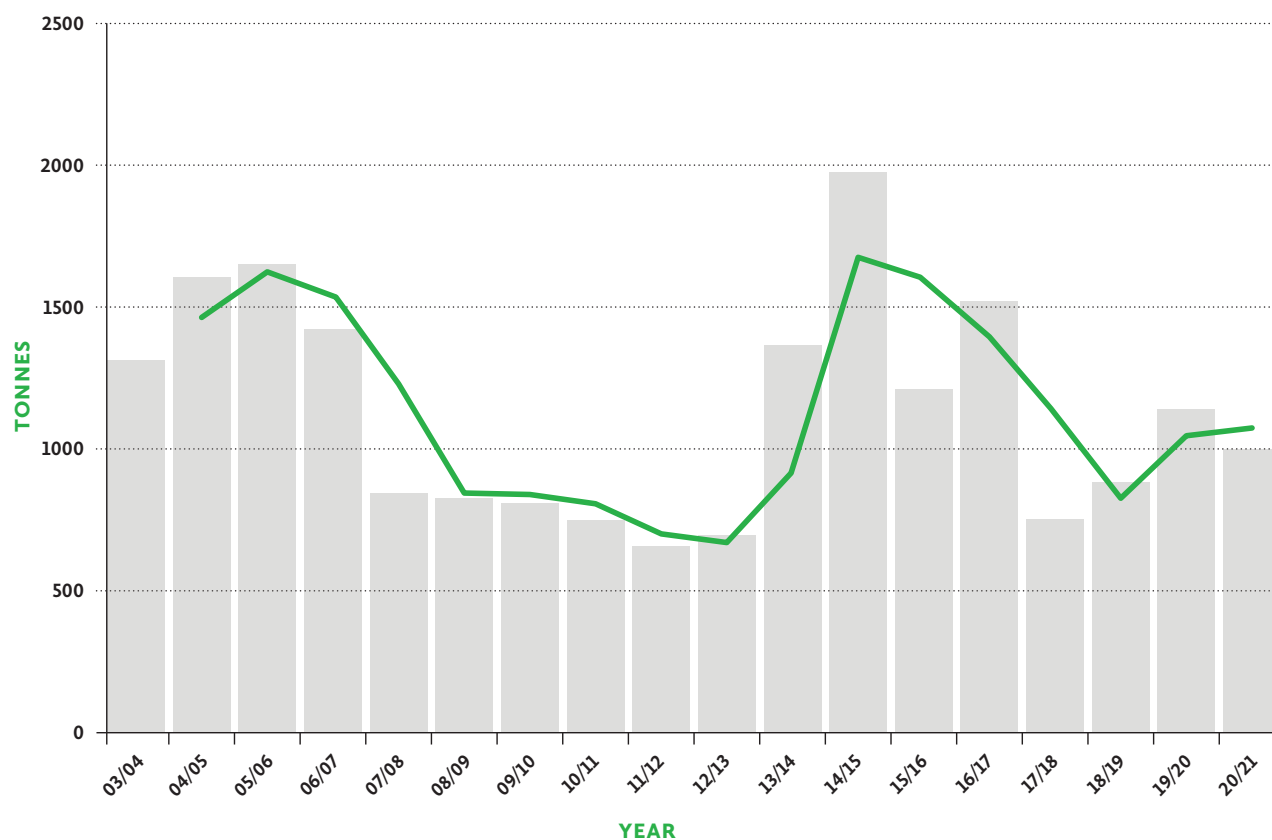


Figure 6: Historical tonnage of Soil Amendment program enrollment from 2003 to 2020 (The line is a 3-year running

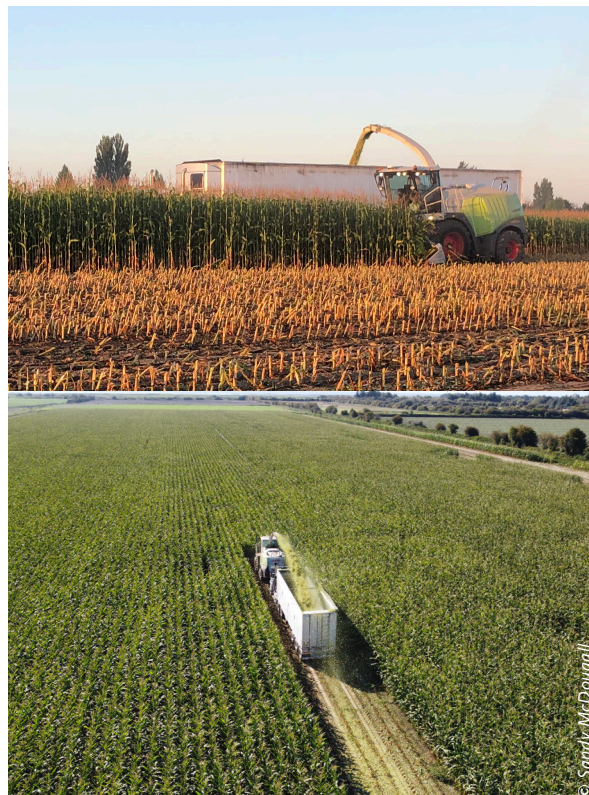


ROLE IN LOCAL CROP ROTATION

Soils become acidic when there is an accumulation of positively charged hydrogen ions (called cations). There are several ways soils become acidic. Heavy rains can leach away positively charged ions like calcium, magnesium, potassium, and sodium. Excess nitrogen fertilizer that is not taken up by crop plants can be oxidized to acids by soil microbes. When soils become too acidic, plants are unable to take up nutrients efficiently.

The application of lime to fields allows farmers to adjust soil pH to levels that maximize yield potential, particularly for vegetable crops. While many factors, such as the kind of crop, soil type, and climate, influence the effect of liming a field, it can be generally stated that the application of lime on all moderate to strong acid soils will improve and maintain productivity. At a cost of over \$120 per tonne (which includes transportation to the field and spreading), lime is an important investment in the stewardship of agricultural soils.

Gypsum is a soil amendment that has been applied to agricultural soils for hundreds of years as a source of plant nutrients (calcium and sulfur) and as a means to improve soil structure (increases soil aggregation).¹ In sodic and heavy clay soils, gypsum reduces the dispersion of soil particles and soil surface crusting, which can increase water infiltration and plant seedling emergence. Delta's heavy silt/clay soils and vicinity to the ocean make them prone to compaction and salinity issues. With climate change projected to increase soil salinity and spring/fall precipitation, incorporating additional methods to mitigate soil salinity and structural degradation is important for maintaining the long-term productivity of Delta soils.



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1 – Chen, L. & W. A. Dick. 2011.

Gypsum as an agricultural amendment: General use guidelines. Retrieved from <https://fabe.osu.edu/sites/fabe/files/imce/files/Soybean/Gypsum%20Bulletin.pdf>

Summary of Outreach Completed in 2020

Delta Farmland & Wildlife Trust communicates the results of its work to the general public in a variety of formats including: field tours, reports, news articles, social media (Instagram and Facebook), community events, lectures, presentations, website features and in the publication of our bi-annual newsletter, "Farmland & Wildlife." Due to Covid-19, outreach was significantly impacted resulting in reduced opportunities to engage the general public. After running for 14 years, we unfortunately had to cancel our annual "Day at the Farm" agricultural awareness event. Most field tours and presentations were also postponed or cancelled. As a result, there was greater focus on our digital communications through various social media platforms.

The Trust was also recognized in the media on numerous occasions including (but not limited to):

DELTA OPTIMIST

- "Putting fund from Tsawwassen Springs development to good use" (April 18, 2020)
- "Protecting Delta's farmland and wildlife habitat" (July 11, 2020)
- "Benefits of agriculture go well beyond food production" (August 9, 2020)
- "Delta Farmland and Wildlife Trust: Promoting the preservation of farmland " (October 29, 2020)

- "Hungry migrating birds converge on Delta fields" (December 25, 2020)

CANADA'S NATIONAL OBSERVER

- "Non-union bees make blueberries thrive- but only if they have a home" (August 28, 2020)



Highlights of the range of outreach activities given during the 2020 year:

OUTREACH TYPE	AUDIENCE	ATTENDEES
Presentations	Pacific Agriculture Show Horticultural Growers' Course – Farmers, industry representatives	30
	Vancouver Bird Week - General public, birders	64
	University of British Columbia Applied Biology 260 - Students	36
Field Tours	Ducks Unlimited Canada - Board of Directors	30
Program Updates	City of Delta Agriculture Advisory Committee meeting – City staff, councillors and farmers (Four meetings)	15
Newsletter	DF&WT Farmland & Wildlife Newsletter (Summer and Winter Issues)	900+
Publications	Agronomy – “Nitrogen Dynamics Following Incorporation of 3-Year Old Grassland Set-asides in the Fraser River delta of British Columbia” (article)	



Summary of Research Completed in 2020

Demonstrating Long-Term Improvements in Soil Productivity on Delta Farmland

In 2015, DF&WT in partnership with the University of British Columbia's Faculty of Land and Food Systems began a five-year research project with federal funding delivered by Investment Agriculture Foundation of BC. The project evaluated the effects of short (2 year) to medium (4 year) term recurrent grassland set-asides on enhancing soil quality, and was completed in the spring of 2020.

Six graduate and over thirty undergraduate students participated in the study. Project results found that grassland set-asides improved soil structure, reduced soil compaction, and improved nutrient cycling and yields of select crops.

Assessing the Impact of Restoring Semi-natural habitat on farmland on agricultural productivity

In 2020, DF&WT began another multi-year research project in partnership with the University of British Columbia with funding for the project provided by the Governments of Canada and British Columbia through Agricultural Partnership, a federal-provincial-territorial initiative. The program is delivered by the Investment Agriculture Foundation of BC.

The three-year study is examining the impact of DF&WT planted hedgerows, grassland set-asides (GLSA) and floral strips on beneficial insects and pests, and how these insect populations impact crop yields of blueberries. The overall goal of the project is to evaluate (1) how restoring portions of agricultural land with semi-natural or natural habitat (e.g. hedgerows, GLSAs, and floral strips) can support populations of beneficial versus pest insects in the region and (2) what impact alterations of these populations have on blueberry crop yields and overall profitability for growers located throughout the Lower Mainland and Fraser Valley.





Over 25 sites including DF&WT planted hedgerows, remnant hedgerows, grassland set-asides, floral set-asides, and annual crop fields were sampled for pollinators, predatory and parasitoid insects, and crop pests during the 2020 summer season.

Cost-Benefit Analysis of Stewardship Programs – Zbeetnoff Agro-Environmental Inc.

An in-depth analysis of the costs and benefits of DF&WT's stewardship programs was completed in 2020. The analysis quantified the costs and benefits to farmers for undertaking management practices promoted by DF&WT's stewardship programs. This assessment also reviewed the adequacy of stewardship program cost-share rates in relation to farm level benefits and costs. Surveys of stewardship program participants was also completed to identify current perspectives and needs of farmers enrolled in the programs.

Ecosystem Services Assessment of Stewardship Programs – Dr. Gillian Kerr

In conjunction with the cost-benefit analysis, an ecosystem services assessment was completed that entailed a literature review; interviews with farmers; an online survey with local wildlife and environmental organizations and funders; and a preliminary economic evaluation of select stewardship programs.

Impacts of Livestock Grazing of Grassland Set-asides on Wildlife – Sara Yeomans (BCIT Ecological Restoration Program Summer Internship)

This three-month study from May to July, assessed the effects of livestock grazing of grassland set-asides (GLSA) on small mammal and raptor abundance. Study results found that vegetation structure and composition were relatively similar in grazed and un-grazed GLSAs with the exception of grass height that was lower in grazed GLSAs. Townsend's vole abundance was higher in un-grazed versus grazed GLSAs. Northern Harrier abundance was greater on grazed GLSAs; however, harriers spent more time hunting on un-grazed GLSAs. The results of this study suggest that wildlife habitat values differ between un-grazed and grazed GLSAs.

Vegetation Surveys of Winter Cover Crop Fields – Brooklyn Hillman (DF&WT Field Technician)

Cover crop vegetation surveys were completed over the 2019/20 winter to assess the extent of water-fowl grazing occurring on fields planted with a cover crop. Winter cover cropped fields were surveyed three times over the winter season (Oct. 2019, Dec. 2019 and Mar. 2020) to measure vegetation height and cover. A total of 113 cover cropped fields were surveyed. By March 2020, 55 fields (50%) were grazed to the roots and only two fields showed no evidence of grazing. Overall, winter cover crops decreased by 63% in cover and 66% in height from October 2019 to March 2020.

Species-at-Risk Surveys of Grassland Set-asides – Brooklyn Hillman (DF&WT Field Technician)

Barn Owl, Short-eared Owl and Pacific Great Blue Heron use of grassland set-asides was monitored over the 2019/20 winter season to assess the effectiveness of grassland set-asides for providing species-at-risk habitat. Herons were detected in over three quarters of fields and owls were detected in half of surveyed fields. Observations show owls are using set-asides extensively for foraging, indicating the abundance of prey species in these fields. Additionally, 11 incidental observations of Short-eared Owls flushed from set-asides during the day suggest set-asides provide useful roosting habitat.



Assessing Waterfowl Use of Agricultural Lands in Delta & Richmond, BC – Brooklyn Hillman (DF&WT Field Technician)

Assessing Waterfowl Use of Agricultural Lands in Delta & Richmond, BC is an ongoing study that began in 2016 to assess waterfowl use of agricultural land in the Fraser River estuary. The study is a partnership with Canadian Wildlife Service and Ducks Unlimited Canada. The study is quantifying and assessing patterns in waterfowl use between crop types and over time, and is also being used to quantify the benefit of cover crops to waterfowl.

Over the course of 30 survey days conducted between October 2019 and March 2020, a total of 37,429 waterfowl were observed, comprising ten different species. Waterfowl were observed foraging in crop fields and DF&WT's cover cropped fields. Of the 202 surveyed fields, 32 fields were enrolled in DF&WT's Winter Cover Crop (WCC) stewardship program and 17 fields were enrolled in the Cereal Habitat Enhancement Program (CHEP). Fields enrolled in the WCC program supported a greater density of waterfowl than the overall average at 1.36 birds/ha while CHEP fields supported a lower density at 0.39 birds/ha. Additional surveys over the next couple seasons will be required in order to provide an accurate assessment of waterfowl use of traditional and novel cover crops.

■ All final reports are available on our website at www.deltafarmland.ca/library



Statement of Financial Position

UNAUDITED, FOR THE YEAR ENDED DECEMBER 31, 2020

Assets	CURRENT	2020 (\$)	2019 (\$)
	Cash	95,291	248,298
	Term deposits	198,681	73,958
	Contributions receivable	173,459	139,855
	GST receivable	10,962	8,007
	Prepaid expenses	6,000	88,200
	Total current assets	484,393	558,318
	Restricted cash	171,700	262,522
	Long term investments – at cost	104,393	102,838
	Capital assets	295	295
		760,781	923,973
Liabilities	CURRENT	2020 (\$)	2019 (\$)
	Accounts payable	71,788	141,539
	Payroll liabilities	196	1
	Deferred revenue	171,700	262,522
	Total liabilities	243,684	404,062
	Net assets	517,097	519,911
	Total liabilities and net assets	760,781	923,973

Statement of Operations and Changes in Net Assets

UNAUDITED, FOR THE YEAR ENDED DECEMBER 31, 2020

Revenue		2020 (\$)	2019 (\$)
FUNDING			
	Delta Agricultural Society	135,000	135,000
	Gov't of Canada Cdn Wildlife Service	120,000	120,000
	Vanc Fdn: YVR Wildlife Stewardship Fund	127,375	124,202
	Investment Agriculture Foundation (I.A.F)	133,598	48,518
	B.C. Waterfowl Society	36,000	31,000
	Wildlife Habitat Canada	35,000	35,000
	Ducks Unlimited Canada	61,836	30,000
	Habitat Conservation Trust Foundation	20,000	20,000
	Vanc Fdn: Boundary Shores	21,758	21,216
	City of Delta	50,000	50,000
	Tsawwassen Golf Course Compensation Fund	13,750	13,750
	City of Richmond	9,700	10,000
OTHER			
	Donations	28,981	29,398
	Fundraising - BBQ	-	63,797
	Fundraising - DATF	-	34,418
	Interest and other income	3,639	10,991
	Total revenue	796,637	777,290
Expenses		2020 (\$)	2019 (\$)
PROJECTS			
	Remittances to co-operators	490,967	402,770
	Executive Director	53,294	43,763
	Travel and mileage	3,685	4,204
	I.A.F Project	136,489	45,688
	Monitoring and evaluation	26,073	47,768
	Farmscape maintenance	3,617	9,885
	Farmscape construction	7,266	21,362
	Total project expenses	721,391	575,440
GENERAL			
	Administration, office, society costs	73,153	81,955
	Fundraising - BBQ	1,008	40,406
	Fundraising - DATF	1,002	32,105
	Conservation education, communication	2,897	21,159
	Total general expenses	78,060	175,625
	Total expenses	799,451	751,065
	Excess of revenue over expenses	(2,814)	26,225
	Net assets, beginning of year	519,911	493,686
	Prior period adjustment	-	-
	Net assets, end of year	517,097	519,911

YVR Wildlife Stewardship Fund

As a result of the construction of a parallel runway and associated developments at the Vancouver International Airport between 1992 and 1996, approximately 350 ha of wildlife habitat were drastically altered. The affected area consisted primarily of farmland providing a wide range of habitats typically associated with agricultural landscapes. Based on a series of habitat assessments and wildlife surveys conducted in the affected area, it was determined that a wide range of wildlife species would be impacted by the airport expansion.

Approval of the airport expansion was contingent on a mitigation/compensation program that addressed the loss of wildlife habitat and resulting displacement of wildlife. At the time, the Federal Government committed itself to protecting or replacing wildlife habitat so that no net loss of habitat capability resulted from the parallel runway

project. A total of 318 ha of land had been secured for the purposes of wildlife habitat and agriculture in the vicinity of the lower Fraser River delta. Although securing these lands and conducting habitat enhancement on them contributed to the goal of no net loss of habitat capability, it did not compensate for all loss. Additional habitat capability on privately held lands was identified through land stewardship activities that promote wildlife use.

To meet additional requirements, a Wildlife Compensation fund (YVR Wildlife Stewardship Fund) was established to finance land stewardship activities on private lands in perpetuity. This fund (\$2.25 million) was granted to the DF&WT who transferred it to the Vancouver Foundation as an endowment fund. Yearly returns from the fund are utilized to pay for core programs administered by the DF&WT.

ALLOCATION OF FUNDS FOR THE 2020 PROGRAM YEAR

PROGRAM/EXPENSE	AMOUNT (\$)	PERCENTAGE (%)
Hedgerow and Grass Margin Stewardship Programs	\$16,615.00	13%
Grassland Set-aside Stewardship Program (Inc. research)	\$55,302.00	43%
Communications	\$4,278.00	4%
Monitoring & Evaluation	\$13,035.00	10%
Administration, Coordination	\$38,145.00	30%
Total	\$127,375.00	100%

Boundary Shores Compensation Fund

(Vanc Fdn: Boundary Shores)

The development of the Boundary Shores Golf Course just southwest of the Boundary Bay Airport contributed to a loss of farmland and wildlife habitat. Covering 62 hectares of previously farmed land, the course removed approximately 16 hectares of old-field and 36 hectares of waterfowl winter grazing habitats. It had been estimated that the loss of the balance of 10 hectares, which represented old-field habitat, may be mitigated through landscape management within the footprint of the golf course.

In 1990, the developers of the Boundary Shores Golf Course agreed to pay \$531,720 to the City of Delta as part of a mitigation and compensation package for 52 ha of altered habitat in the vicinity of the proposed golf course. These funds were to be used as a conservation fund (hereafter referred to as the Boundary Shores Compensation Agreement Fund or BSCA Fund) to purchase, lease, or manage land for wildlife habitat. Both the Canadian Wildlife

Service and British Columbia Ministry of Environment suggested that the funds be used for the replacement of lost old-field and waterfowl grazing habitat. The comments of both government agencies were the basis of the Habitat Compensation Trust Agreement between the City of Delta and the developers of the Boundary Shores Golf Course. Under the Habitat Compensation Trust Agreement, the developer and the City of Delta agreed that the Municipality would transfer the funds to an existing or yet to be established entity whose objectives shall relate generally to the conservation of the Lower Fraser delta ecosystem.

Under an agreement between DF&WT and the City of Delta, the funds were to be managed as outlined in the Boundary Shores Compensation Fund Management Plan. The compensation funds as well as \$33,866 in interest earned by the City of Delta during their possession of the funds were transferred to the DF&WT in November 2000.

ALLOCATION OF FUNDS FOR THE 2020 PROGRAM YEAR

PROGRAM/EXPENSE	AMOUNT (\$)	PERCENTAGE (%)
Grassland Set-aside Stewardship Program	\$8,703.00	40%
Winter Cover Crop Stewardship Program	\$8,703.00	40%
Administration, Coordination	\$4,352.00	20%
Total	\$21,758.00	100%

Tsawwassen Golf & Country Club Habitat Compensation Fund (TG&CC Habitat Compensation Fund)

The redevelopment of the Tsawwassen Golf and Country Club at Highway 17 and 52nd Street resulted in a 22-hectare loss of farmland and wildlife habitat. The parcel developed had not been farmed for a number of years and, as a result, transitioned into old-field habitat which supports many birds of prey, owls, herons and grassland songbird and wildlife species. There was no opportunity to mitigate loss of old-field habitat and compensation of lost habitat capacity needed to take place at other locations on the delta.

In 2008, the developer agreed to pay \$300,000 to the City of Delta as part of a mitigation and compensation package for 22 hectares of lost farmland and old-field habitat. These funds were to be used to facilitate the long-term financing of surrogate habitat elsewhere within the lowlands of the Fraser River delta. Under the Development Agreement the funds were earmarked to fund ongoing grassland set-aside agreements with local farmers.

ALLOCATION OF FUNDS FOR THE 2020 PROGRAM YEAR

PROGRAM/EXPENSE	AMOUNT (\$)	PERCENTAGE (%)
Grassland Set-aside Stewardship Program	\$13,750	100%

Our Supporters

Delta Farmland & Wildlife Trust would like to recognize the agencies that provided funding to deliver the full extent of our stewardship programs and research for the 2020 fiscal year.

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Vancouver Foundation

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Ducks Unlimited Canada

BC Waterfowl Society

Habitat Conservation Trust Foundation

Habitat Stewardship Program

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