



# Delta Farmland & Wildlife Trust

## 2018 Annual Report

*"Conserving farmland and wildlife  
through co-operative land stewardship."*



### **Cover Photo Credits**

Top: City of Delta GLSA sign, Drew Bondar

Bottom Left: Snow and Cackling Geese landing and grazing on a winter cover crop field (Nov. 2018),  
Drew Bondar

Bottom Right: Snow and Cackling Geese grazing on a winter cover crop field (Nov. 2018), Drew Bondar

Thank you to everyone who has provided photographs to Delta Farmland & Wildlife Trust. If you are interested in contributing your own photos of wildlife and farming, please contact DF&WT at 604-940-3392 or [dfwt@dccnet.com](mailto:dfwt@dccnet.com).

### **Our Supporters**

The Delta Farmland & Wildlife Trust relies on additional funding to deliver the full extent of our stewardship programs. We would like to recognize the agencies that provided funding to our Stewardship Programs for 2018.

**Delta Agricultural Society**  
**Vancouver Foundation**  
**Environment and Climate Change Canada**  
**Ducks Unlimited Canada**  
**BC Waterfowl Society**  
**Habitat Conservation Trust Foundation**  
**Habitat Stewardship Program**  
**City of Delta**  
**City of Richmond**

**and**

**Private Donations**

## Delta Farmland & Wildlife Trust: Our Mission

DF&WT is a non-profit organization that promotes the preservation of farmland and wildlife habitat on the lower Fraser River delta (Municipality of Delta, City of 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 the soils are fertile and the region has a relatively long growing season. The area is also important for a diversity of migratory birds that either use the delta as a stopover 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.



Grass forage field with City of Vancouver in background



Potato Field

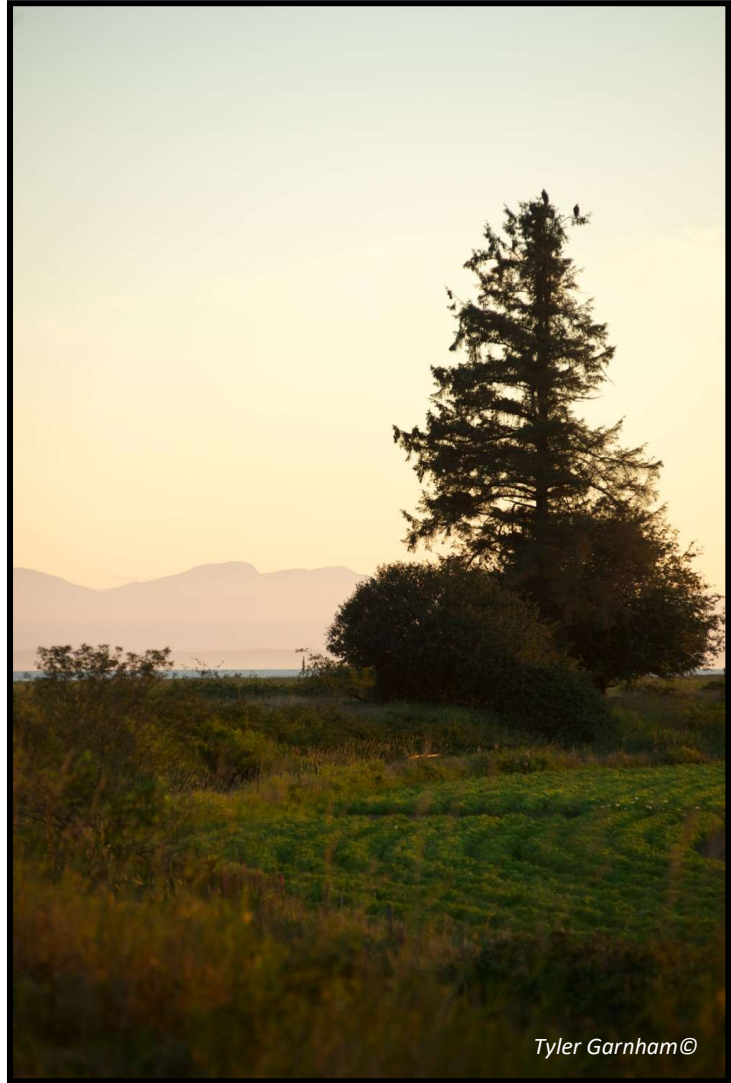
Tyler Garnham©

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

DF&WT 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 **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.



*Tyler Garnham©*

By providing solutions to farmers that are compatible with their crop rotations, the DF&WT Stewardship Programs are contributing to the availability of wildlife habitat and the long-term viability of local farming operations, which ensures that land will continue to be available for food production and wildlife conservation.

## Summary of Stewardship Programs in 2018

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. During the 2018 fiscal year DF&WT provided cost-shares totaling **\$379,951** excluding staff time and administration costs. A 460 m long hedgerow was also planted in September costing \$17,170, which brought the total cost-share payments for 2018 to **\$397,121**.

| <b>Stewardship Program</b>  | <b>Acres</b> | <b>Rate</b> | <b>Total</b>        |
|---|--------------|-------------|---------------------|
| <b>Grassland Set-aside</b>  |              |             |                     |
| <i>1-year</i>   | 151          | \$300.00    | \$40,650.00         |
| <i>2-year</i>   | 72           | \$300.00    | \$21,600.00         |
| <i>3-year</i>   | 76           | \$300.00    | \$22,800.00         |
| <i>4-year</i>   | 136          | \$300.00    | \$39,600.00         |
| <i>4+ year</i>  | 65           | \$300.00    | \$19,500.00         |
| <b>Total</b>  | <b>500</b>   |             | <b>\$144,150.00</b> |
| <b>Winter Cover Crops</b>   |              |             |                     |
| <i>Spring Cereals, Winter Cereals, Cover Crop Mixes and Clovers</i> | <b>2,897</b> | \$50-55     | <b>\$148,845.00</b> |
| <b>Forage Enhancement Pilot</b>                                     | <b>387</b>   | \$75        | <b>\$29,025.00</b>  |
| <b>Laser Levelling</b>  | <b>245</b>   | -           | <b>\$30,605.00</b>  |
| <b>Field Liming (*tonnes of lime)</b>                               | <b>884</b>   | \$30.00     | <b>\$23,012.10</b>  |
| <b>Farmscape</b>  |              |             |                     |
| <i>Hedgerows</i>  | 8.70         | \$300.00    | \$948.00            |
| <i>Grass Margins</i>  | 11.22        | \$300.00    | \$3,366.00          |
| <i>Hedgerow Construction</i>  | 0.34         | -           | \$17,170.00         |
| <b>Total</b>  |              |             | <b>\$21,484.00</b>  |
| <b>Stewardship Programs Total</b>                                   |              |             | <b>\$397,121.10</b> |

## Grassland Set-aside Stewardship Program

Local farmers in Delta and Richmond are able to fallow land through the Grassland Set-aside Stewardship Program. Individual fields are planted with forage grasses and clovers and can be enrolled in the Set-aside Program for up to 4 years (extensions to 5 or 6 years on a case-by-case basis). During that time, farmers receive cost-share payments to offset rent, seed, equipment, and labour costs (\$300/acre each year). 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 \$150/acre). For more information on Grassland Set-asides, visit [www.deltafarmland.ca](http://www.deltafarmland.ca).



**Figure 1: Extent of 2018 Grassland Set-aside Program**

### Role in Local Crop Rotation

Grassland set-asides (GLSA) are short-term fallows that replenish soil organic matter. Soil organic matter is made up of the residue from dead plants, fungus, and soil organisms. Soil organic matter is crucial to maintaining agricultural production, as it influences soil structure (e.g., aggregate stability), water retention, drainage (by increasing soil macro-pores), soil microbial activity, macro invertebrates (e.g., earthworms), nutrient storage and nutrient uptake by crop plants. Additionally, the roots of grasses, and especially clover, can bore channels through compacted soil, thereby increasing drainage and aeration. The program also allows farmers to transition to organically certified production by fallowing their field during the 3-year chemical free period.

### Role in Wildlife Conservation

Grassland set-asides mimic the grasslands that were abundant on the lower Fraser River delta (LFRD) prior

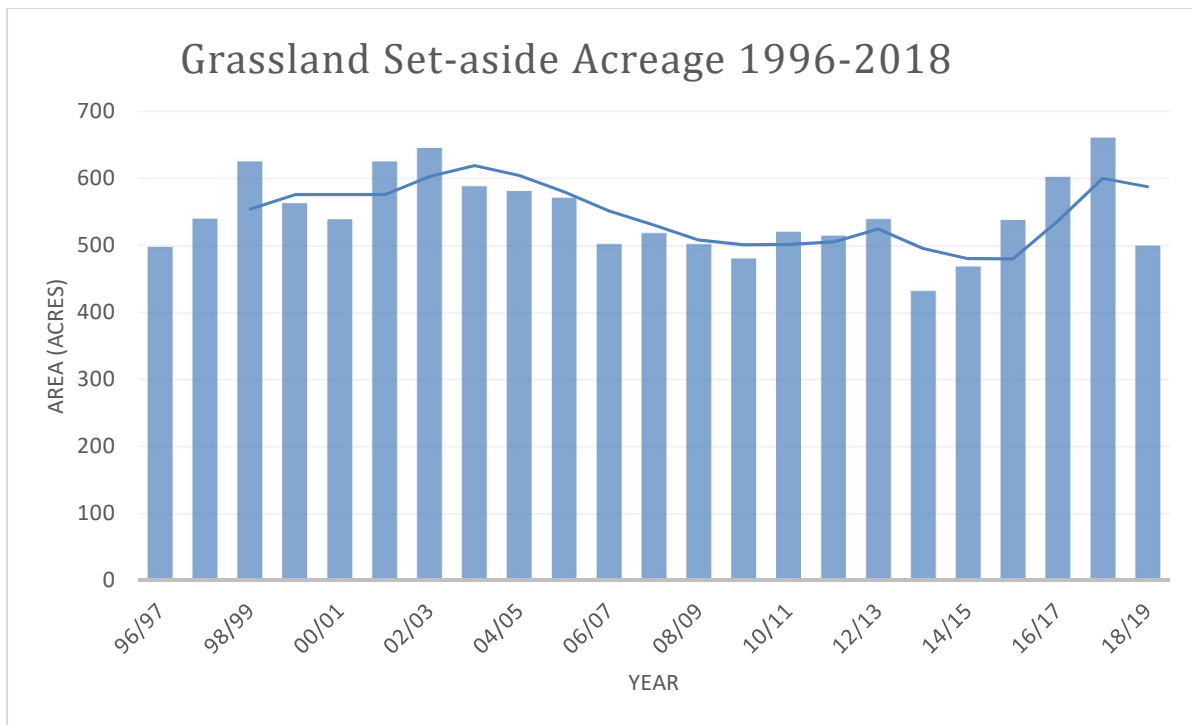
to 1890 (when land clearing and draining for agriculture began) and are therefore ideal surrogate habitat for wildlife. Populations of small mammals, especially Townsend's vole, establish under the thick canopy of grass and provide prey for predatory birds. These include raptors (Northern Harrier, Short-eared 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 occasional 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.

### Other Benefits

The organic matter that accumulates in grassland set-asides and benefits soil quality also acts as a pool of carbon, temporarily locking it away into plant tissue and the soil. Although this stored carbon is released from a set-aside's soil when it is returned to crop production, the planting of new set-asides ensures that a dynamic, yet relatively consistent, pool of carbon is sequestered from the atmosphere.



**Figure 2: Historical acreage of Grassland Set-aside program enrollment from 1996 to 2018 (The line is a 3-year running average).**

## 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 \$50 and \$55/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 [www.deltafarmland.ca](http://www.deltafarmland.ca).



**Figure 3: Extent of 2018 Winter Cover Crop Program**

### Cereal Habitat Enhancement Pilot

Due to a recent decrease in operations of a local large-scale vegetable processor, DF&WT initiated a pilot project in 2016 to include spring-sown grain fields as a sub-component within our Winter Cover Crop Stewardship Program. As more acreage is being planted to grain because of the decrease in pea and bean contracts, this new DF&WT pilot program gives farmers an additional stewardship option. This program assists in supporting winter cover crops that have been established through the adequate re-distribution of residual seed from grain crops after harvest. If this spilt seed is adequately re-spread across the field, it has been observed that a cover crop can be established over the fall season that is equivalent to that planted following our management guidelines under our Winter Cover Crop Stewardship Program. In order to verify these observations, field evaluations have been conducted over the past two years and results support that CHEP fields are equivalent to WCC fields regarding vegetation composition. This program assists farmers who are having to adjust their crop rotations as a result of the loss of pea and bean contracts, as well as ensure more acres are planted to a winter cover crop.



### 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.

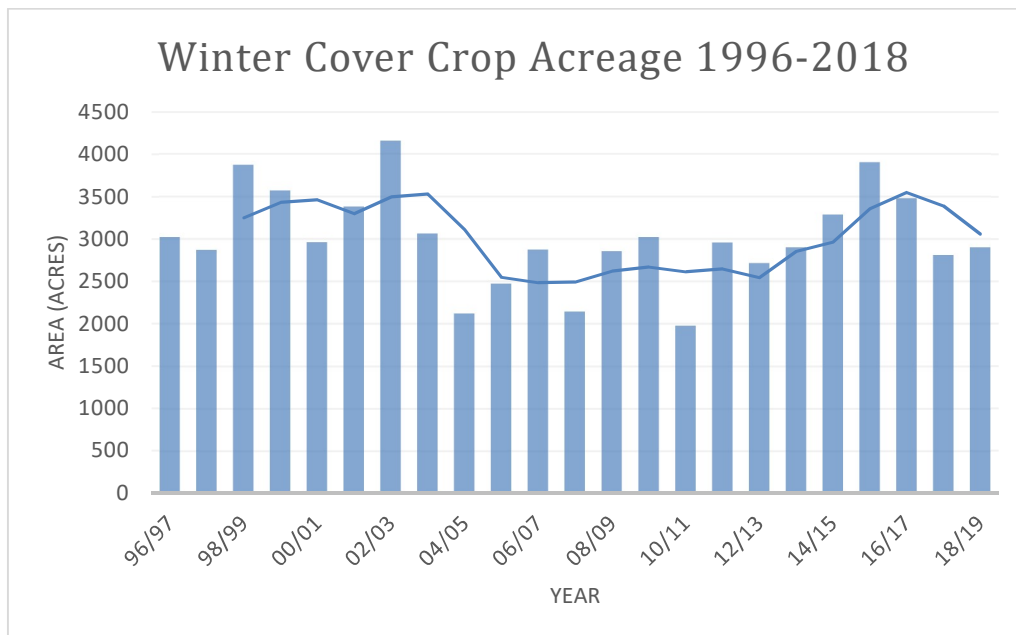


Figure 4: Historical acreage of Winter Cover Crop program enrollment from 1996 to 2018 (The line is a 3-year running average).

## **Forage Enhancement Pilot Program**

In 2017 DF&WT, in partnership with Environment and Climate Change Canada, initiated a two-year Forage Enhancement Pilot Program. The program is designed 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. This will support the enhancement and continued provision of these high-valued fields both for dairy cattle feed and as vital waterfowl foraging habitat. In 2017, twelve participating farmers enrolled 651 acres totaling \$48,825 in cost-share payments. In 2018, eight participating farmers enrolled 387 acres totaling \$29,025 in cost-share payments.

### **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 cost upwards of \$400-650/acre.

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 will 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 will no longer be available over the winter and migratory season. This decrease in perennial fields will 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.

## **Hedgerow Stewardship Program**

Hedgerows in Delta are rows of native trees and shrubs planted along field edges. For more information on Hedgerows, visit [www.deltafarmland.ca](http://www.deltafarmland.ca).

### **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 wider 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 \$300/acre for grass margins enrolled in the program. For more information on Grass Margins, visit [www.deltafarmland.ca](http://www.deltafarmland.ca).

### **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.

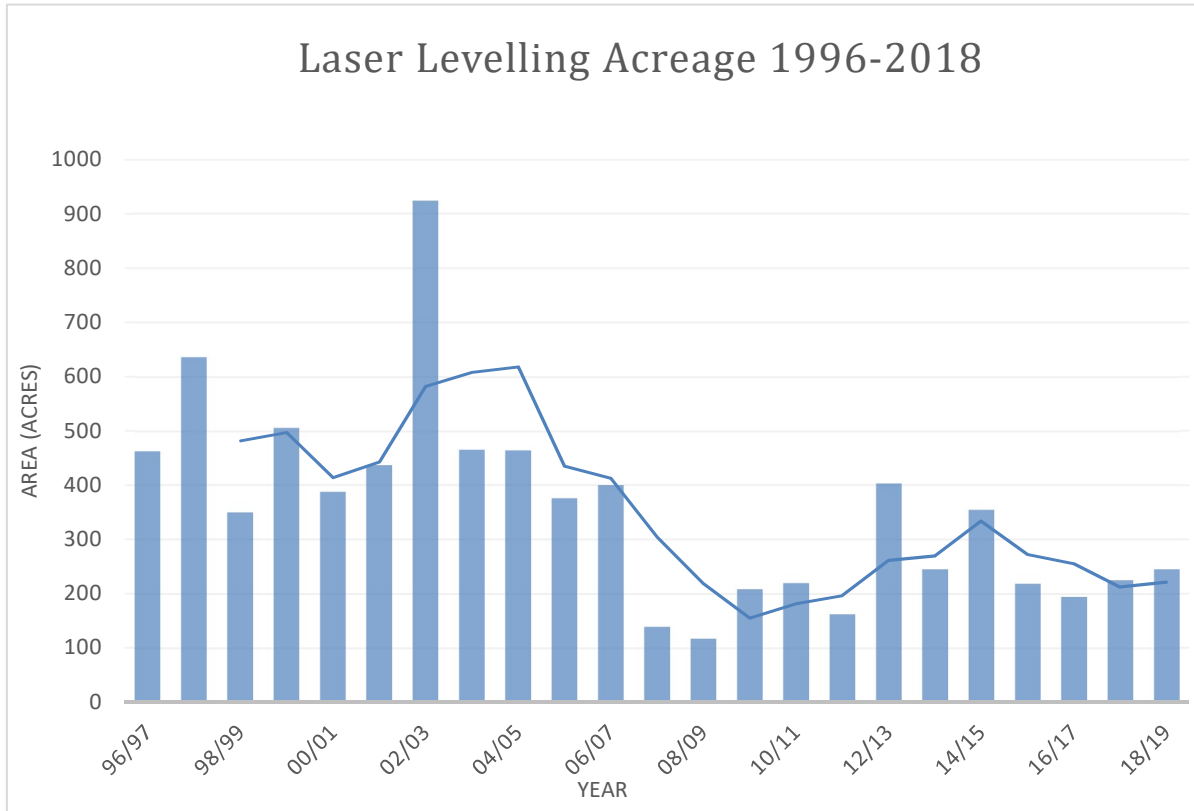
### **Laser Leveling Stewardship Program**

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 50 acres (20 ha) leveled. For more information on Laser Leveling, visit [www.deltafarmland.ca](http://www.deltafarmland.ca).

### **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.



**Figure 5: Historical acreage of Laser Leveling program enrollment from 1996 to 2018 (The line is a 3-year running average).**

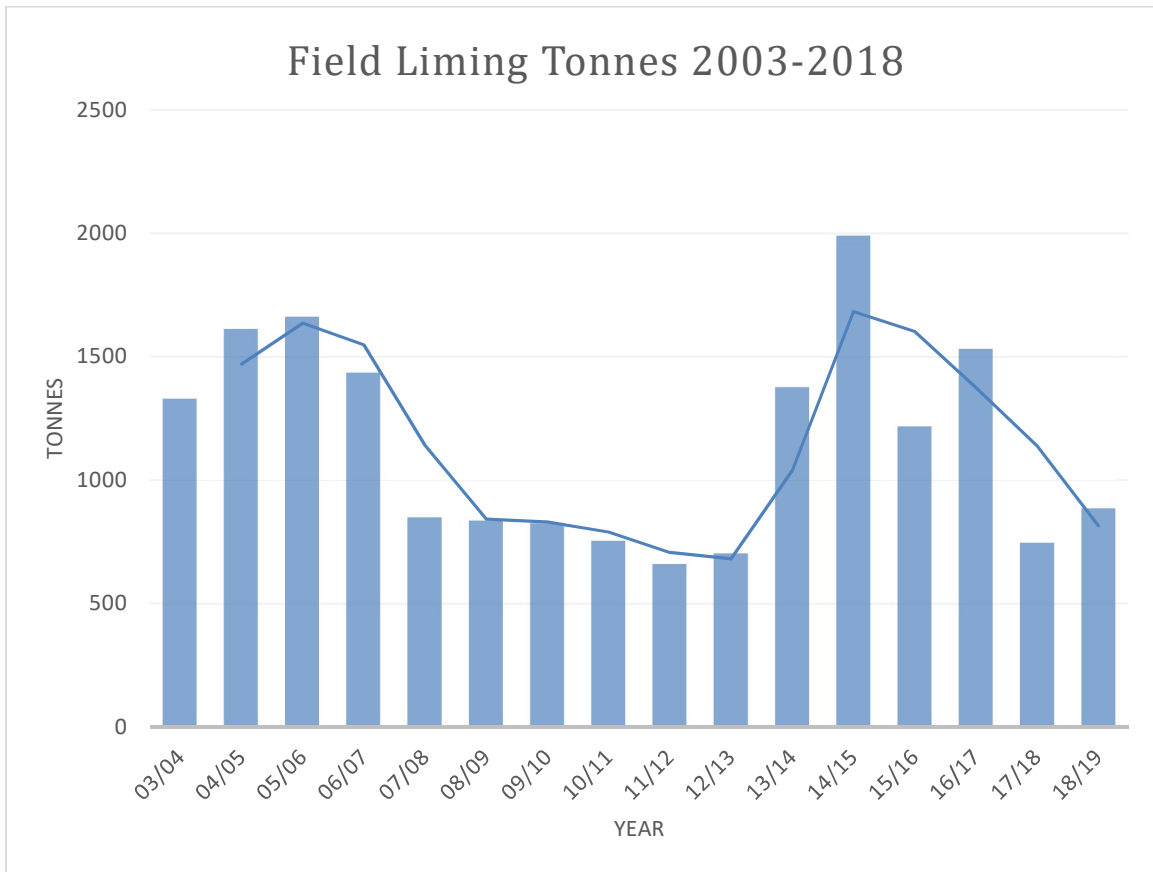
### Field Liming Stewardship Program

Farmers in Delta have had access to DF&WT's Field Liming cost-share since 2004. Through the program, farmers are eligible to receive \$30/tonne of lime applied, to a maximum of 2 tonnes/acre applied on a maximum of 100 acres. For more information on Field Liming, visit [www.deltafarmland.ca](http://www.deltafarmland.ca).

### 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 approach a level that maximizes 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 \$100 per tonne (which includes transportation to the field and spreading), lime is an important investment in the stewardship of agricultural soils.



**Figure 6: Historical tonnage of Field Liming program enrollment from 2003 to 2018 (The dark green line is a 3-year running average).**

## Impact of Stewardship Programs Over 25 Years

2018 marked the DF&WT 25<sup>th</sup> anniversary. Over the course of this quarter-century, DF&WT has supported local farmers in the annual provision of over 1,500 hectares of critical wildlife habitat for resident and migratory birds. Approximate total acres enrolled and cost-share payments made for each stewardship program include:

| Stewardship Program          | Total Acres Established/Enrolled        | Total Cost-Share Payments* |
|------------------------------|---|----------------------------|
| Winter Cover Crop            | 79,545                                  | \$3,559,490                |
| Grassland Set-aside          | 12,675                                  | \$3,482,235                |
| Hedgerow                     | 9.5 km (8.7 acres)   25 hedgerows total | \$347,900                  |
| Laser Levelling              | 8,130                                   | \$894,300                  |
| Field Liming                 | 18,405 tonnes                           | \$503,540                  |
| Forage Pilot (1999, 2017-18) | 1,240                                   | \$87,850                   |
| <b>Total</b>                 |   | <b>\$8,875,315</b>         |

*\*Records for cost-share payments for early years of the organization were incomplete and as a result were estimated. This included the winter cover crop cost-share rate from 1993-1998 (estimated to be \$40/acre), cost-share payments for the Grassland Set-aside Stewardship Program from 1996 to 1998, and cost-share payments for the Laser Levelling Stewardship Program from 1996 to 1998 (estimated based off average cost-share payments from 1999 to 2018). Data for the Grass Margin Stewardship Program was difficult to compile and thus was excluded. Details for past hedgerow plantings were incomplete and thus establishment costs were estimated based off available information.*

## Summary of Outreach Completed in 2018

Delta Farmland & Wildlife Trust communicates the results of its work to the public-at-large in a variety of ways: including field tours, reports, social media (Instagram and Facebook), community events, lectures, presentations, website features and in the publication of our bi-annual newsletter, “Farmland & Wildlife.” In 2018, we held our 13<sup>th</sup> annual “Day at the Farm” agricultural awareness event, which attracted over 4,000 visitors from communities across the Lower Mainland. The event is an excellent outreach activity for communicating the non-market benefits of agriculture in the Fraser River delta, including wildlife conservation. The list below highlights the diversity of outreach activities and presentations given during the 2018 year.



Field Tour with E.S. Cropconsult Scouts

| <b>Date</b>   | <b>Audience</b>   | <b>Outreach Type</b>                 | <b># of Attendees</b> |
|---------------|---|--------------------------------------|-----------------------|
| Jan. 15, 2018 | DF&WT "Farmland & Wildlife" Newsletter Subscribers  | Newsletter                           | 900+                  |
| Feb. 14       | City of Delta Innovative Funding Workshop – Delta Farmers, ECCC Staff, Delta Staff, Conservationists  | Presentation                         | 45                    |
| Feb. 15       | City of Richmond Staff  | Presentation                         | 2                     |
| Feb. 20       | Ladner Business Association   | Presentation                         | 50                    |
| Feb. 24       | City of Delta Heritage Week Community Event – Delta Residents   | Display Booth                        | 100                   |
| Feb. 27       | Biodiversity Training Workshop – Environmental Farm Plan Advisors, Environmental Professionals  | Presentation                         | 30                    |
| Apr. 5        | Delta Farmers' Institute Annual General Meeting – Delta Farmers   | Briefing of Program Updates          | 40                    |
| Apr. 11       | British Columbia Institute of Technology (BCIT) FWR Program Advisory Committee meeting - FWR Staff & Students, and Industry Representatives | Briefing of Program Updates          | 17                    |
| May 5 & 6     | Orphaned Wildlife Rehabilitation Society Open House – Lower Mainland Families   | Display Booth                        | 3,000                 |
| May 10        | Pitt Meadows Ag. Advisory Committee meeting - Pitt Meadow Farmers & Councilors  | Presentation                         | 16                    |
| June          | Ladner Memorial Park – Ladner Residents   | Permanent Sign about DF&WT installed |                       |
| June 5        | Wildlife Habitat Canada - Staff and Directors   | Presentation                         | 25                    |
| June 8        | BC Ministry of Agriculture Staff and Agricultural Land Commission Staff   | Field Tour                           | 25                    |
| June 19       | City of Delta Agriculture Advisory Committee  | Update of Programs                   | 10                    |
| Aug. 1        | DF&WT "Farmland & Wildlife" Newsletter Subscribers  | Newsletter                           | 900+                  |
| Aug. 17       | E.S. Cropconsult Co-op Students   | Field Tour of a GLSA                 | 20                    |
| Aug. 19       | Richmond Garlic Festival – General Public   | Display Booth                        | 2,000                 |
| Aug. 22       | PNE "Ag. in the City" Fair – General Public   | Display Booth                        | 1,000                 |
| Aug. 25       | International Ornithological Congress – General Public  | Display Booth                        | 2,250                 |
| Sept. 8       | DF&WT Day at the Farm – Lower Mainland Families   | Farmland Awareness Community Event   | 4,000+                |
| Sept. 11      | Quest University – Students   | Field Tour                           | 20                    |
| Oct. 15       | Vancity fundraiser shred-a-thon – Tsawwassen Residents  | Fundraiser                           | 50                    |
| Nov. 23       | BCIT FWR Class - Students   | Field Tour                           | 30                    |
| Nov. 29       | MP Carla Qualtrough & Bird Studies Canada   | Field Tour                           | 3                     |
| Dec. 6        | Delta Farmers' Institute Meeting – Delta Farmers  | Briefing of Program Updates          | 25                    |
|               |   | <b>Total =</b>                       | <b>14,558</b>         |



## ***Day at the Farm***

"Day at the Farm" is an initiative integral to Delta Farmland & Wildlife Trust's Farmland Awareness Campaign. 2018 marked the 13th anniversary of this free, community-building event, which educates people of all ages about the importance of agriculture and the non-market environmental services that farmland provides. Residents of the Lower Mainland have the opportunity to directly interact and engage with local farmers and farms. The event provides a hub for cooperative collaboration between farmers and community members to ensure long-term sustainability and widespread awareness of our local agricultural landscape. Over 4,000 people attended the event from across Metro Vancouver. Event attendees included:

- 4H Calf Club
- BC Ag. in the Classroom
- BC Cranberry Growers Association
- BC Dairy Association
- BC Egg Board
- BC Fresh
- Bird Studies Canada
- Canadian Wildlife Service (Environment & Climate Change Canada)
- Delta Farm Roots
- Delta Naturalists
- E.S. Cropconsult
- Farm Credit Canada
- Fraser Valley Conservancy
- Orphaned Wildlife Rehabilitation Society
- Society Promoting Environmental Conservation
- Stewardship Centre for BC
- University of British Columbia
- Urban Bee
- Vancity
- West Coast Seeds



## Summary of Research Completed in 2018

### **The effects of short-term grassland set-asides on soil properties in the Fraser River delta of British Columbia – Jason Lussier (MSc. Thesis)**

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 is evaluating the effects of short (2 year) to medium (4 year) term recurrent grassland set-asides on enhancing soil quality. Results will assist farmers in optimizing the management of their set-asides and will ultimately contribute to sustaining agriculture as a viable industry in Delta for the foreseeable future.

*The effects of short-term grassland set-asides on soil properties in the Fraser River delta of British Columbia* is the second of four theses to be produced through this five-year research project entitled: *Demonstrating Long-term Improvements in Soil Productivity on Delta Farmland*. The objectives of this project are to evaluate:

- 1) The effects of Grassland Set-asides (GLSA) on soil quality;
- 2) How the effects of GLSA on soil quality vary with the duration of set-aside;
- 3) How the incorporation of GLSA into a crop rotation affects soil nutrient cycling and subsequently crop yield; and
- 4) How differences in soil nutrient cycling and yield vary with the duration of the set-aside.

*The effects of short-term grassland set-asides on soil properties in the Fraser River delta of British Columbia* addressed objective one of the project, which entailed the assessment of one and two year set-asides on select soil properties including soil organic matter, bulk density, aeration porosity, and mean weight diameter. Results support that two-year-old set-asides can improve soil structure and reduce soil compaction. Complete results can be accessed at <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0364281>. The study was also published in the Canadian Journal of Soil Science in February 2019 entitled: Short-term effects of grassland set-asides on soil properties in the Fraser River delta of British Columbia.

### **Land Bird Abundance and Diversity in Planted Hedgerows, 2016 & 2018 – Mae Whyte (BCIT Ecological Restoration Program Summer Internship)**

In 2015, DF&WT in partnership with the British Columbia Institute of Technology Ecological Restoration program began a multi-year summer internship that is evaluating landbird use (i.e. species richness and abundance) of DF&WT planted hedgerows throughout Delta. The internship is assessing the relationship between hedgerow age, vegetation composition and landbird use. Results from the 2018 internship, which included a comparison between 2016 and 2018, found that generally older hedgerows had higher species abundance, richness and Simpson's diversity. The final report is available upon request.

## **Assessing Waterfowl Use of Agricultural Lands in Delta & Richmond, BC – Olga Lansdorp (DF&WT Field Technician)**

In 2016, DF&WT in partnership with Canadian Wildlife Service and Ducks Unlimited Canada began a multi-year project assessing waterfowl use of agricultural land throughout Delta and south Richmond. Existing information on waterfowl use of agricultural lands has become dated. This project intends to collect up-to-date information by surveying a selected sub-set of fields in Delta and south Richmond throughout the migration and winter periods. Surveys will quantify and assess patterns in waterfowl use between crop types and over time. Surveys will also be used to quantify the benefit of cover crops to waterfowl.

This updated information will enable accurate assessments of the degree to which current waterfowl populations are supported by agricultural land, and will support efforts to conserve and maintain farmland and 'waterfowl-compatible' agricultural practices. The project will also assist in quantifying the value of the DF&WT's Winter Cover Crop Program for waterfowl, to garner continued and additional support for the program.

Over the course of 28 survey days conducted between October 2018 and March 2019, a total of 139,309 waterfowl were observed, comprising eleven different species. The waterfowl species observed from greatest to least abundant were Snow Goose (*Chen caerulescens*), Mallard (*Anas platyrhynchos*), American Wigeon (*Anas americana*), Trumpeter Swan (*Cygnus buccinator*), Northern Pintail (*Anas acuta*), Cackling Goose (*Branta hutchinsii*), Canada Goose (*Branta Canadensis*), Green-winged Teal (*Anas crecca*), Northern Shoveler (*Anas clypeatae*), Gadwall (*Mareca strepera*) and Greater White-Fronted Goose (*Anser albifrons*). The majority of the birds observed were Snow Goose (106,623), Mallard (16,532) and American Wigeon (13,077), together accounting for 97.8% of the total waterfowl observed during the study period.

Waterfowl were observed foraging in crop fields and DF&WT's cover cropped fields. American Wigeon, Canada Goose, Mallard, Northern Pintail, Snow Goose and Trumpeter Swan were all observed on cover cropped fields. Snow Goose was recorded at the highest abundance at 194/hectare. 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.

## **Analysis of Cereal Habitat Enhancement Pilot – Olga Lansdorp (DF&WT Field Technician)**

In 2016, DF&WT initiated a pilot to support spring planted grain fields as a viable winter cover crop (WCC) pending specific management criteria. In order to ensure that these fields were equivalent to fields planted under the WCC Stewardship Program, an evaluation has been conducted over the past couple winter seasons. The evaluation assessed whether the vegetation on Cereal Habitat Enhancement Pilot (CHEP) fields was similar to that of WCC fields. CHEP and WCC fields were assessed in October of 2017 and 2018 for vegetation height and percent cover. Results support that CHEP fields are equivalent to WCC fields regarding vegetation composition. Various management techniques for preparing the field and spreading the spilled grain were also investigated. Results from the analysis did not identify any single technique to be superior to others. CHEP fields were also and will continue to be monitored through the *Assessing Waterfowl Use of Agricultural Lands in Delta & Richmond, BC* surveys.

**STATEMENT OF FINANCIAL POSITION**  
**Unaudited, for the year ended December 31, 2018**

**ASSETS**

|                                       | <u>2018 (\$)</u> | <u>2017 (\$)</u> |
|---------------------------------------|------------------|------------------|
| <b>Current</b>                        |                  |                  |
| Cash                                  | 57,939           | 139,115          |
| Term deposits                         | 155,448          | 189,797          |
| Contributions receivable              | 180,628          | 115,194          |
| GST receivable                        | 2,223            | 2,690            |
| Prepaid Expenses                      | 6,000            | 12,000           |
| <b>Total Current Assets</b>           | <b>402,238</b>   | 458,796          |
| <b>Restricted cash</b>                | <b>192,428</b>   | 201,266          |
| <b>Long term investments- at cost</b> | <b>96,429</b>    | 96,416           |
| <b>Capital assets</b>                 | <b>295</b>       | 388              |
|                                       | <b>691,390</b>   | 756,866          |

**LIABILITIES**

|   | <u>2018 (\$)</u> | <u>2017 (\$)</u> |
|---|------------------|------------------|
| <b>Current</b>                          |                  |                  |
| Accounts Payable                        | 5,276            | 59,417           |
| Payroll liabilities                     | -                | 2,294            |
| <b>Deferred revenue</b>                 | <b>192,428</b>   | 201,266          |
| <b>Total Liabilities</b>                | <b>197,704</b>   | 262,977          |
| <b>Net assets</b>                       | <b>493,686</b>   | 493,889          |
| <b>Total Liabilities and Net Assets</b> | <b>691,390</b>   | 756,866          |

**STATEMENT OF OPERATIONS AND CHANGES IN NET ASSETS**  
**Unaudited, for the year ended December 31, 2018**

|  | <u>2018 (\$)</u> | <u>2017 (\$)</u> |
|--|------------------|------------------|
| <b>REVENUE</b>                                     |                  |                  |
| Funding:   |                  |                  |
| Delta Agricultural Society                         | 135,000          | 135,000          |
| Vanc Fdn: YVR Wildlife Stewardship Fund            | 119,669          | 113,474          |
| Gov't of Canada Cdn Wildlife Service               | 140,000          | 144,000          |
| Ducks Unlimited Canada                             | 40,000           | 25,000           |
| Investment Agriculture Foundation (I.A.F)          | 24,259           | 48,518           |
| HCTF   | 20,000           | 20,000           |
| Vanc Fdn: Boundary Shores Corporation of Delta     | 20,442           | 19,383           |
| TG&CC Habitat Compensation Fund                    | 15,000           | 15,000           |
| Wildlife Habitat Canada                            | 13,750           | 13,750           |
| B.C. Waterfowl Society                             | -                | 30,000           |
| City of Richmond                                   | 36,600           | 35,380           |
|  | 10,000           | 10,000           |
| Other:   |                  |                  |
| Donations  | 24,240           | 21,600           |
| Fundraising - BBQ                                  | -                | 745              |
| Fundraising - DATF                                 | 24,290           | 21,800           |
| Interest and other income                          | 1,239            | 7,914            |
| <b>Total revenue</b>                               | <b>624,489</b>   | <b>661,564</b>   |
| <hr/>  |                  |                  |
| <b>EXPENSES</b>                                    |                  |                  |
| Projects:  |                  |                  |
| Remittances to co-operators                        | 380,456          | 417,248          |
| Program coordinator                                | 36,583           | 29,336           |
| Travel and mileage                                 | 2,075            | 2,467            |
| Program supplies                                   | -                | 1,839            |
| Monitoring and evaluation                          | 24,062           | 11,492           |
| Farmscape maintenance                              | 5,100            | 8,000            |
| Farmscape construction                             | 17,170           | -                |
| I.A.F Project                                      | 53,127           | 60,957           |
| <b>Total project expenses</b>                      | <b>518,573</b>   | <b>531,339</b>   |
| General:   |                  |                  |
| Administration, office, society costs              | 70,122           | 89,908           |
| Fundraising - BBQ                                  | 137              | 20               |
| Fundraising - DATF                                 | 31,307           | 24,337           |
| Conservation education, communication - newsletter | 2,553            | 5,013            |
| Total general expenses                             | 104,119          | 119,278          |
| <b>Total expenses</b>                              | <b>622,692</b>   | <b>650,617</b>   |
| <hr/>  |                  |                  |
| <b>Excess of revenue over expenses</b>             | <b>1,797</b>     | <b>10,947</b>    |
| <b>Net assets, beginning of year</b>               | <b>493,889</b>   | <b>482,942</b>   |
| <b>Prior period adjustment</b>                     | <b>(2,000)</b>   | <b>-</b>         |
| <b>Net assets, end of year</b>                     | <b>493,686</b>   | <b>493,889</b>   |

### ***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. A breakdown of how these funds were allocated for the 2018 program year are listed in the following table:

| <i>Program/Expense</i>                                   | <i>Amount (\$)</i>  | <i>Percentage (%)</i> |
|--|---------------------|-----------------------|
| Hedgerow and Grass Margin Stewardship Programs           | \$50,800.00         | 42.5%                 |
| Grassland Set-aside Stewardship Program (Incl. research) | \$9,360.64          | 7.8%                  |
| Communications (Day at the Farm and DF&WT Newsletter)    | \$11,641.00         | 9.7%                  |
| Monitoring & Evaluation                                  | \$11,966.94         | 10%                   |
| Administration, Coordination (staff wages)               | \$35,900.82         | 30%                   |
| <b>Total =</b>   | <b>\$119,669.40</b> | <b>100%</b>           |

### ***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 153 acres of previously farmed land, the course removed approximately 39 acres of old-field and 90 acres of waterfowl winter grazing habitats. It had been estimated that the loss of the balance of 24 acres, 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 129 acres 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 (CWS) and British Columbia Ministry of Environment (MOE) 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. A breakdown of how these funds were allocated for the 2018 program year are listed in the following table:

| <i>Program/Expense</i>                     | <i>Amount (\$)</i> | <i>Percentage (%)</i> |
|--|--------------------|-----------------------|
| Grassland Set-aside Stewardship Program    | \$8,176.64         | 40%                   |
| Winter Cover Crop Stewardship Program      | \$8,176.64         | 40%                   |
| Administration, Coordination (staff wages) | \$4,088.28         | 20%                   |
| <b>Total =</b>                             | <b>\$20,441.56</b> | <b>100%</b>           |

***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 55-acre loss of farmland and wildlife habitat. The parcel developed had not been farmed for a number of years and as a result had 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 on site 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 55 acres 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. A breakdown of how these funds were allocated for the 2018 program year are listed in the following table:

| <i>Program/Expense</i>                  | <i>Amount (\$)</i> | <i>Percentage (%)</i> |
|---|--------------------|-----------------------|
| Grassland Set-aside Stewardship Program | \$13,750           | 100%                  |