Farmland and Wildlife

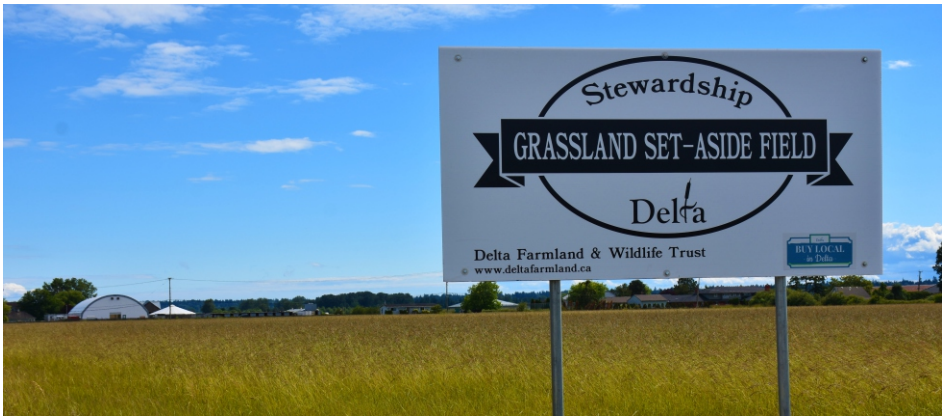
Newsletter of the Delta Farmland & Wildlife Trust | Vol. 24 No. 1 | July 2018

25 Years of Farmland and Wildlife Conservation

- Drew Bondar -

2018 marks the Delta Farmland & Wildlife Trust's (DF&WT) 25th 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.

Since the Winter Cover Crop Stewardship Program was transferred from Ducks Unlimited Canada to DF&WT in 1993, roughly 76,645 acres have been enrolled in the program totaling $3,530,875 in cost-share payments. To put this into perspective, that area is just about twice the size of Delta.



The Grassland Set-aside Stewardship Program, established in 1996, promotes the planting of fields with a grass/clover seed mix to be left fallow for up to six years. So far the program has covered 12,055 acres totaling $3,170,495 in cost-share payments. The Laser Levelling Stewardship Program has supported the levelling of approximately 7,885 acres of farmland since its inception in 1996, totaling $863,680 in cost-shares. While the Field Liming Stewardship Program has cost-shared over 17,525 tonnes of lime totaling $480,530. Sixteen hedgerows have also been established through the Hedgerow Stewardship Program, with estimated costs around $245,000 (excluding cost-share payments for area of land removed from production). Altogether these stewardship programs have disbursed $8,290,600 back into the local farming community to support land stewardship and the viability of farming in a region that continues to face increasing challenges. With an average of 40 co-operators participating in one or more programs per year, this equates to about $207,265 per farmer in total cost-share payments over the past 25 years.

None of this would have been possible without support from our long-term partners. One funder in particular has been monumental in supporting DF&WT since the beginning. The Delta Agricultural Society has provided over $4,000,000 in support. DF&WT would not be what it is today or have maintained its level of success over the past 25 years without the direct support of the Delta Agricultural Society. Other significant program funders (i.e. dollar amount excluding BBQ fundraiser, "Day at the Farm," and research project contributions) include:

- Delta Agricultural Society = $4,008,022
- Endowment Funds (YVR and Boundary Shores) = $2,856,792
- Government of Canada (Canada Wildlife Service) = $1,212,082
- Ducks Unlimited Canada = $719,685
- BC Waterfowl Society = $488,467
- City of Delta = $195,000
- Vancity = $153,000
- Habitat Conservation Trust Foundation = $143,750
- Tsawwassen Golf Course Compensation Fund = $123,750
- Wildlife Habitat Canada = $120,000
- City of Richmond = $64,010
- Fundraising, donations, investment interest = $1,910,695

On behalf of the DF&WT, we are truly humbled and grateful for the support received from the local farming community and funders over the past 25 years. The hard work and commitment to land stewardship by the local farming community cannot be overstated. Moreover, without the continued generous support of our funders none of our stewardship programs would be possible. We look forward to another 25 years!

Join us for our 13th annual community agricultural awareness event.

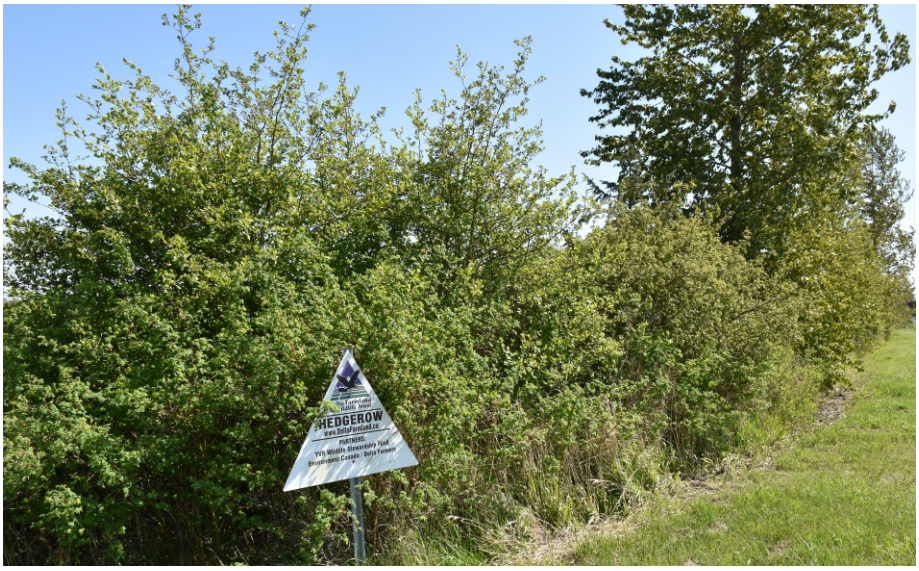
Saturday, Sept. 8th | 10am to 4pm

Westham Island Herb Farm

Hedgerows - An Agricultural Investment

- Drew Bondar -

Over the past 25 years, Delta Farmland & Wildlife Trust has assisted in establishing 16 hedgerows throughout Delta totaling 6.7 km in length. Another 220m hedgerow is planned for the upcoming fall. Hedgerows are linear barriers of native trees and shrubs usually associated with field boundaries. Within an agricultural landscape, hedgerows provide year-round habitat for a suite of species, including birds and insects, and can have a major influence on biodiversity conservation.[1] Preserving existing hedgerows and increasing the area of semi-natural habitat has been identified as one of the largest contributors to improving biodiversity on farmland.[2] Biodiversity is the foundation of a healthy functioning ecosystem and is critical for the provision of ecological goods and services that are essential for human beings.[3] Biodiversity contributes to things such as food security, human health, and clean air and water.[3] Increasing biodiversity within agricultural landscapes can also improve crop yields and reduce pressures from crop pests.



There are concerns when choosing to incorporate hedgerows on farmland, including: providing habitat for some crop pests; obstructing sunlight to sections of fields; reducing the area of land for agricultural production; and the costs associated with a new hedgerow planting that often surpass $10,000. However, between DF&WT's Hedgerow Stewardship Program and recent research that found increases in crop yields from improved pollination due to the provision of semi-natural habitat, including hedgerows on farmland can benefit a farm operation's bottom line.

Recent research out of Simon Fraser University shows that wild pollinators are needed to maximize yields in pollinator-dependent crops.[4] Crops such as highbush blueberry in British Columbia could potentially increase by 30% if pollination was maximized. It was determined that producers have the potential to make an additional $7,800/ha for Duke and $18,400/ha for Bluecrop blueberries if pollination is maximized through wild pollinators. These findings are further supported by a study that assessed 41 different crop systems across the globe.[5] The study found that "an increase in wild insect visitation enhanced fruit set by twice as much as an equivalent increase in honey bee visitation." It went on to conclude that honey bees can only supplement, not substitute, for wild bee pollination. For cranberries and blueberries, another study conducted in the Fraser Valley found that bumble bee abundance has a greater influence on berry mass than honey bee abundance.[6] This study's results concluded that bumble bees are the most important pollinators for blueberries and cranberries. A study in Michigan showed that blueberry fields adjacent to wildflower plantings had a significantly higher percentage fruit set, berry weight, and mature seeds per berry resulting in higher yields.[7] This increase in yields was sufficient to cover the cost of wildflower establishment and maintenance. For cranberries, bumblebees were found to collect pollen at a rate 1.4 times greater than honeybees.[8] It was noted that "bumble bees are more likely to be more effective pollinators than honeybees." In order to promote native pollinator populations, other studies found that "native bees respond positively to the abundance of wild flowering plants surrounding cranberry beds and highbush blueberry."[9]

For field beans, self-pollination alone achieved 15% pod set compared to open pollination with wild pollinators which achieved 36% pod set.[10] The result of open pollination with wild pollinators increased yields by 185%.

To increase crop pollination, year-round habitat is required to support abundant and diverse populations of wild pollinators.[11] Planting biologically diverse native-plant hedgerows along farm field borders has been identified as an important component for increasing a suite of agriculturally important insect species.

Another common concern with hedgerows is that they have the potential to lure managed honey bees away from pollinating cash crops. As some research has shown greater abundance of managed honey bees in hedgerows than in unmanaged weedy field edges this concern is valid.[12] The same study however, concluded that hedgerows act as net exporters of native bees into adjacent fields. As a growing body of research supports the importance of wild pollinators for reducing pollination deficits,[4] the increased

rate of crop pollination due to a higher abundance and diversity of wild pollinators as a result of the provision of hedgerow habitat may offset the increased concentration of managed honey bees in hedgerows.

In addition to increased yields, hedgerow habitat on farmland has been shown to support biological pest management by acting as reservoirs for natural enemies of pests.[13,14] A review of 24 different studies concluded that agricultural landscapes with increased complexity, i.e. hedgerows, grassy margins, etc. support higher populations of predatory insects.[15] Other studies show that hedgerow habitat supports higher ratios of beneficial insects to pests than in weedy field edges.[16-19] In another study assessing insects in tomato fields, "predatory lady beetles were more abundant and aphids were lower in fields with hedgerows, up to 200 m into fields[.]"[19] The same study found that fields with hedgerows were less likely to reach threshold pest levels requiring insecticide application. In another review of 72 independent case studies, it was concluded that "landscapes with higher proportions of semi-natural areas exhibited lower pest abundance or higher pest control in fields."[20] Although hedgerows may provide habitat for pest populations, current research shows that these populations are often mitigated through concurrent increases in predatory and parasitoid populations.

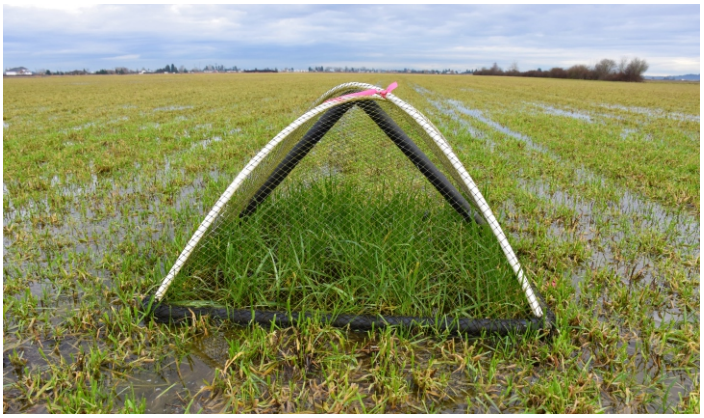
Between increased pollination services and biological pest control, incorporating hedgerows into a farm operation can result in increased revenue due to higher yields for pollinator-dependent crops and decreased costs associated with reductions in required pesticide applications. For a 16-hectare canola field with hedgerows, greater pollination from wild pollinators resulted in a 21% increase in yields equating to a US$151/ha increase in profit.[21] As well as a reduction in the average cost for aphid control from roughly US$25/ha for fields with no hedgerows to US$5/ha for fields with hedgerows.

As the costs to farm in a heavily urbanized region are exorbitantly high and the availability of land for production is at a premium, hedgerows for some operations may not be economically viable without some form of additional cost-share for the provision of ecological goods and services. However, for farms growing pollinator-dependent crops, perhaps the potential increase in yields and reduction in required insecticide applications may support the preservation of existing hedgerows or the establishment of new hedgerows. Although research evaluating the impacts of wild pollinators and beneficial insects on a farm operation's profitability is still in its infancy, many studies completed to date support the notion that hedgerows are an investment that will pay-off over time. Preserving existing farmland hedgerows and/or establishing new biologically diverse hedgerows will not only significantly contribute to the conservation of biodiversity, but may also be an opportunity for improving a farm operation's profits. If you're interested in learning more or planting a hedgerow on your property, please contact DF&WT. (References available on DF&WT website)

Forage Enhancement Pilot Program - Supporting Dairy Farmers & Wildlife

- Drew Bondar -

Every winter Delta supports hundreds of thousands of migratory and wintering waterfowl. Hungry waterfowl that stopover in the Fraser River delta during their annual migration forage on both foreshore habitat and adjacent agricultural land. Due in part to recovery efforts, some waterfowl populations, such as Snow Geese and Trumpeter Swans, have increased dramatically over the past couple decades. The increase in waterfowl populations, coupled with a reduction in soil-based farmland, has resulted in increased levels of waterfowl grazing on agricultural land. For perennial grass forage fields, which are meant to provide the bulk of feed for dairy cattle herds in Delta, the impact from waterfowl depredation continues to worsen. This creates a considerable cost to many Delta forage producers including lower forage yields, reduced harvest quality (protein), a reduction in cuts (i.e. 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 are now having to be re-seeded annually (as opposed to every 5+ years) at a cost upwards of $350/acre. A producer needing to re-seed 100 acres would add an extra $35,000 cost to their operation.



The current extent of this situation has brought Delta forage producers to a point where many are having to reconsider their current management practices. One change already occurring is the conversion of perennial forage fields to annual forage fields. The costs to maintain perennial forage fields in some cases are reaching a level where it is no longer economically viable.

(Continued on next page)

Forage Enhancement Pilot Program Continued...

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. Past research conducted by DF&WT has identified perennial forage fields as providing some of the highest quality foraging habitat for migratory waterfowl. This decrease in perennial fields will exacerbate the issue elsewhere by increasing pressures on remaining grass forage and winter cover cropped fields.

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 will be 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.

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