Farmland and Wildlife

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Lessons from the DFWT: A Model for Community Based Conservation - *Art Bomke and Wayne Temple*

In the Beginning: It's hard to believe that nearly 25 years have flown by since the inception of the Delta Farmland and Wildlife Trust (DF&WT). In spite of all of the tensions and misunderstandings of the day, there was truly a window of opportunity in 1992 to mobilize a community conservation effort. Arguably the most important contribution was from Mayor Beth Johnson's Delta Municipal government led by Councilor Wendy Jeske. Delta provided a conciliatory meeting environment, as well as technical and legal advice that enabled farmers and conservationists to come together to work out the details of an organization that would even-handedly strive to conserve and enhance wildlife habitat and support the sustainability of Delta farmers and their land base.

Landscape Approach: The principle espoused by the founders was that wildlife conservation efforts were best served by engaging and supporting the farmers who manage most of the uplands across the Fraser delta. This represented a policy change on behalf of the Government of Canada and the Canadian Wildlife Service. Regional Manager, Art Martell, and his staff deserve credit for shifting emphasis from the purchase of farmland to supporting conservation programs on farmer owned or rented land. Also, the vision for a landscape approach centered on the skills and knowledge of Delta farmers must be credited to the farmers themselves, notably Hugh Reynolds, John Malenstyn and Robert Savage.

Wayne's World: Coincident with the efforts to preserve and enhance wildlife habitat, the UBC Soil Conservation Group was working under the auspices of the Delta Farmers Institute to develop practical approaches to reversing soil degradation as exemplified by poor soil structure, impeded drainage and declining organic matter. Much of the on-farm project work was led by Dr. Wayne Temple, a versatile researcher who was as comfortable on a tractor as in the lab or at the computer. From this joint effort arose two programs that did double duty in improving soil health and creating habitat.

Greenfields: For a number of reasons, the Fraser delta had a high proportion of bare soils, especially during the rainy season. The Greenfields Project pioneered over-winter cover crops to protect soils, add organic matter and provide upland forage for waterfowl. It morphed into the longstanding Winter Cover Crop Program of the DF&WT.

Grassland Set-asides: For more severely degraded soils and/or for farmers who wished to transition to organic production, a Grassland Set-aside program was developed that fallowed the soil under a mix of mostly grasses that gave the soil a rest, added organic matter and effectively provided habitat for a range of species including birds of prey.

Wayne and I are proud of the role we played in providing the background research to establish protocols for these two key programs that continue under the DF&WT. Also, Wayne was seconded in the early days of the DF&WT to coordinate various programs until funding was adequate to hire the first of the line of excellent staff who manage and monitor the various programs of the DF&WT.

Boundary Bay Conservation Committee (BBCC): During the establishment of the DF&WT, BBCC members Edith Bettison, Dr. Mary Taitt and John Hatfield brought an important wildlife habitat conservation perspective to the formation of the Trust.

Ducks Unlimited (DU): It is important to recognize the positive role played by Ducks Unlimited, who took over the management of the Greenfields Project until it could be brought under the direction of the DF&WT. Theresa Duynstee guided the cover crop program in its early days both for UBC and for DU. DU spokesperson Kathleen Fry was a strong voice in those days advocating, not just for waterfowl habitat, but for programming that would enhance biodiversity and the sustainability of land-based farmers.

The DF&WT rocks! Through the years, the DF&WT has been a business-like, cost effective facilitator of the delivery of ecosystem services by farmers. It has stimulated and coordinated research to monitor the effectiveness of its programs in enhancing wildlife

Lessons from the DF&WT continued...

habitat and improving soil health. Truly, the DF&WT is a model for community based conservation initiatives.

This said, Wayne and I have to express two concerns regarding the future of the DF&WT and similar initiatives. First, we are disappointed that the DF&WT model has not been more widely emulated across BC. Perhaps the nature of the farming and wildlife interactions on the Fraser delta are more amenable to a win-win approach as most of the farming activities occur in the spring and summer, while peak wildlife use occurs overwinter. Other regions may find it more difficult, but not impossible, to institute support of ecosystem services by farmers and ranchers.

Whither the DF&WT? Funds to support the DF&WT programs have not grown to keep pace with inflation and the increased pressure on farmers as more wildlife habitat is alienated for urban and industrial development. The > 99% of BC citizens who are not farmers and our governments need to step up and support farmers who provide ecosystem services either via tax levies or increased philanthropy.

We simply cannot expect farmers to act on our behalf to manage farmland for wildlife habitat and be able to extract enough money from the marketplace for their products to cover costs of production and create and enhance habitat. Farmers are very efficient in doing the things needed for supporting wildlife and it is an ethical imperative for non-farmers to step up and help out. Perhaps this could form part of the process of mitigating the loss of agricultural land in our very limited areas with class 1 climate.

IAF Grassland Set-aside Project Update

- Drew Bondar

2017 marked the third- of a five-year research project that is evaluating the effects of short (2 year) to medium (4 year) term recurrent grassland set-asides (GLSA) on enhancing soil quality. The project is receiving federal-provincial funds delivered by the Investment Agriculture Foundation. GLSA have been used to remediate continuously cultivated soils as well as to provide valuable habitat for birds of prey in Delta for over two decades. As we are now half way through the project, two of the four research objectives have been completed.

Objective 1 assessed the effects of GLSA on select soil physical properties and soil organic matter during the first two years of establishment. Results showed an improvement in soil structure and a decrease in soil compaction in GLSA compared to adjacent fields with annual crop rotations. However, no significant improvements in soil organic matter were observed. It is also important to note that baseline soil properties were recognized to impact soil improvements in GLSA. High sodium content was one factor that was identified to have a large negative impact on GLSA establishment. Degraded (high sodium content) fields also appeared to improve at a slower rate than non-degraded fields, which as a result may require additional management practices, beside GLSA, to remediate. These findings support GLSA more as a rotational management practice for improving soil structural properties rather than as a practice to restore fields that are highly degraded.

Objective 2, focused on the assessment of medium term (4 year) GLSA on soil quality, is scheduled to begin in the spring of this year (2018).

The goal of Objective 3 was to quantify the amount of Nitrogen (N) available for crop production after the incorporation of a 3rd-year GLSA. Results for this objective of the study were inconclusive, with GLSA supplying a greater amount of plant available nitrogen (PAN) than a regularly managed field in one field season but not the other season. Overall results from this component of the study identified that GLSA can potentially improve PAN to subsequent crops. However, this is dependent on a number of factors including, but not limited to: weather, C:N ratio of biomass, fertilizer type, and timing between incorporation and crop planting.

Objective 4 is evaluating how differences in soil N cycling and crop yield vary with GLSA duration. Field work for this objective began in the spring of 2017 and included a degraded and non-degraded 3rd-year GLSA located on Brunswick Point. Soil sampling was conducted throughout the summer and will continue through the growing season of 2018.

Findings to date support previous research that has promoted GLSA as an effective management practice for soil improvements in continuously cultivated agricultural fields. Results from the study will be used to maximize the benefits of the GLSA Stewardship Program both for soil and wildlife conservation.

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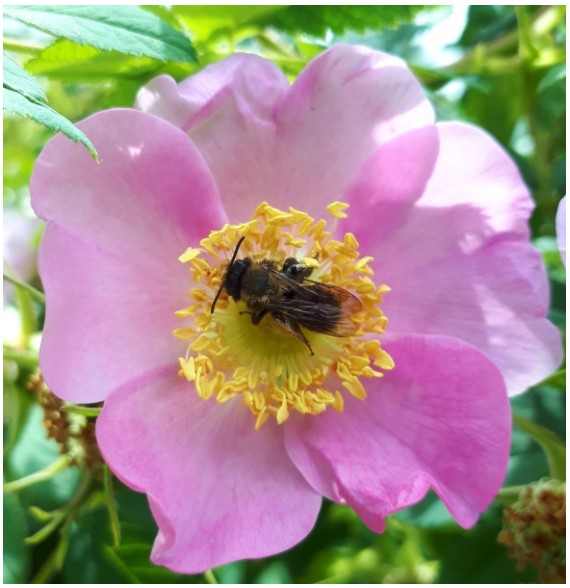
The value of field margins for wild bee conservation: research results

- Martina Clausen, M.Sc.

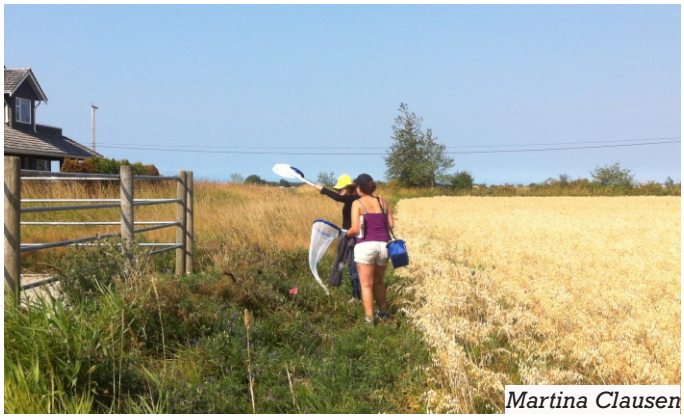
Wild bees provide essential pollination services to both agricultural crops and wild flowering plants. The decline of wild bees has been associated with a number of different causes, including the loss of natural habitats that offer food and nesting resources. Farm field margins offer additional floral resources to complement crops that are often blooming for short periods of time. However, many bees are active beyond the availability of these flowers. Protecting and/or restoring field margins with flowering plant species is an effective method for supporting wild bees and associated pollination services to surrounding habitats without taking land out of production.



Mining Bee (M. Clausen)

The DF&WT Hedgerow Stewardship Program provides funding to establish new hedgerows on farmland. DF&WT recommends a number of native trees and shrubs species for planting based on their associated wildlife benefits. However, how well these recommended plant species support insect communities, or more specifically, wild bees had not been evaluated.

That is why in 2015 I started a research project with DF&WT and the UBC Sustainable Agricultural Landscapes laboratory to determine: Do field margins planted with hedgerows consisting of native shrubs and trees increase wild bee abundance and diversity, in comparison to pre-existing hedgerows and grass margins? To address this question, I surveyed bees and flowers, and recorded bee-flower visitations in these three different field margin types during the summers of 2015 and 2016.



Martina Clausen

Surprisingly, I found that planted hedgerows do not necessarily lead to more abundant and diverse wild bee communities compared to pre-existing hedgerows and grass margins. In fact, overall wild bees collected from flowers and pan traps were more abundant and diverse in grass margins than in both hedgerow types. Further, wild bees showed a preference for non-native, herbaceous flower species mostly found in grass margins while only a few recommended plant species for hedgerow plantings were visited.

Based on these findings, I prepared recommendations to help DF&WT improve their hedgerow program. First, hedgerow plantings could be optimized to better support wild bee communities by enhancing plant species composition to guarantee flower diversity and availability for bees throughout the season. Protecting grassy areas from pesticides and mowing after peak bloom creates additional foraging opportunities. Lastly, synergies with the Grassland Set-aside Stewardship Program could be achieved, where some DF&WT co-operators have been experimenting with planting novel pollinator set-aside seed mixes that may provide greater nectar and pollen resources for wild bees.

DF&WT has been in discussion with a local seed supplier to potentially establish a grassland set-aside mix that includes a higher ratio of flowering plants that are highly attractive to a variety of wild bee species, such as *Trifolium* spp., *Vicia* spp., and *Phacelia* spp., while simultaneously contributing to soil health. The recommended plant species list for hedgerow establishment is also under revision to include more native shrub and tree species that have been shown to attract wild bees. With these actions, the DF&WT is further improving its commitment to help wild bee populations and I am very happy to have been able to contribute this research to their efforts.

Getting our Ducks in a Row - *Olga Lansdorp, M.Sc.*

This fall and winter, you may have spotted a couple of people with binoculars stopped by the side of the road, scanning an empty field. "What are they looking for?" you may have wondered, or maybe you knew... In Delta a pair of binoculars can only mean one thing: birders!

We at the Delta Farmland and Wildlife Trust have been working with Canadian Wildlife Service and Ducks Unlimited to measure the waterfowl use of different types of farm fields in Delta. We're only a few months in to the second year of the project but so far a few trends are popping out. Waterfowl appear to prefer harvested potato fields to other field types. Remnant potatoes left in a field after harvest are a valuable food source for hungry waterfowl.

In terms of what we've been seeing through our binoculars, the most commonly spotted waterfowl was Mallard. We've seen Mallard throughout Delta in flocks up to 1,500 birds. Another common sighting was Trumpeter Swans, which were seen over twenty times on farm fields, in flocks as large as 94 birds. We also spotted large flocks of 1,200 to 4,000 Snow Geese several times, on a harvested grain, a potato and a cover cropped field.

One important conclusion of the research is that farmland does indeed support waterfowl, and the DF&WT is proud to continue supporting our farmers to enable them to provide this much-needed habitat!

Wildlife Tidbits *by John Hatfield*

Wigeon have long ago adapted to field feeding at night during the winter months. They take advantage of what light is reflected off low lying clouds from greater Vancouver to feed on cover crops on the Fraser River delta. It has been noted that they will concentrate on cover crops within roughly one kilometer of well lit greenhouses. This light not only provides good visibility from the greenhouses, but again also gives off light reflected from low lying clouds.

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New DF&WT Office Coordinator!

DF&WT is excited to welcome our new Office Coordinator - Valerie Miller. A long-time Ladner resident, Valerie is looking forward to working with and supporting two of the best things about Delta- the local farming community and world class wildlife.

Thank you to our 2017/18 Stewardship Program Supporters!

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