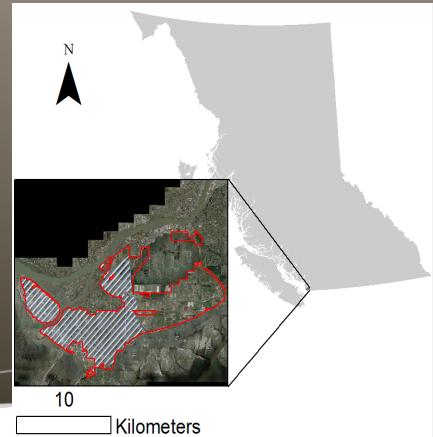


Farmland Hedgerows

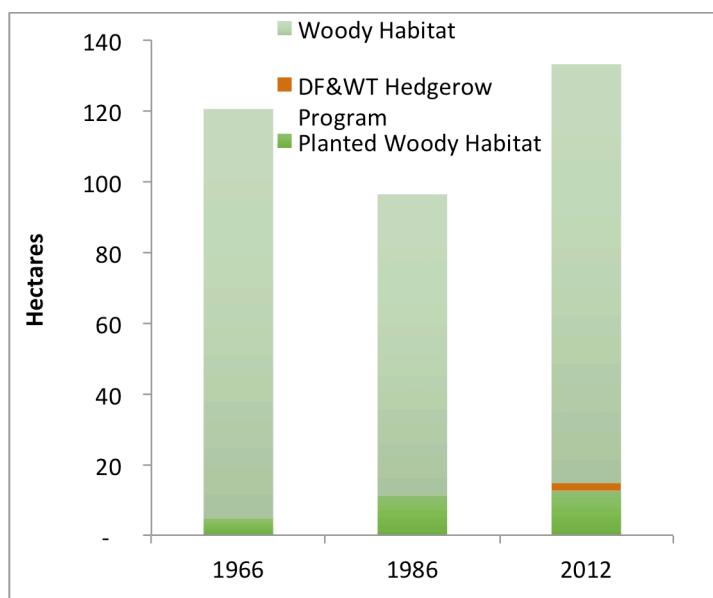
Findings from the Landscape Analysis of the Delta, BC Hedgerow Study
S.M. Smukler, C. Terpsma, A. Rallings, B. Thiel and M. Krzic

Hedgerows are trees, shrubs and grasses bordering the edges of farm fields that provide habitat for a wide range of organisms. The Delta Farmland & Wildlife Trust (DF&WT) has worked to plant hedgerows on farmland in the lower Fraser River Delta since 1995 to increase this type of woody habitat. The DF&WT in collaboration with the Sustainable Agricultural Landscape Laboratory at the University of British Columbia (UBC) analyzed the historical changes of woody habitat in the region using air photos. Satellite data was used to assess the three possible potential future scenarios for the management of woody habitat on the agricultural land reserve in Delta.



Historical Changes in Landscape Woody Habitat

To determine patterns of landscape change over time, three sets of air photos from 1966, 1986 and 2012 were analyzed. Between 1966 and 1986, there was some decline in woody habitat overall but little change between 1966 and 2012. From 1966 to 1986 the area of planted woody habitat doubled, and then increased by another 30% from 1986 to 2012. 20% of this increase was due to the efforts of the DF&WT Hedgerow stewardship program .



DF&WT Supports the Establishment of Hedgerow Habitat on Farms

Average costs per linear meter of hedgerow
\$55

Average costs per ha
\$158,000

Estimated cost to plant all Delta field edges and roadways with hedgerows (159ha)
\$25 million

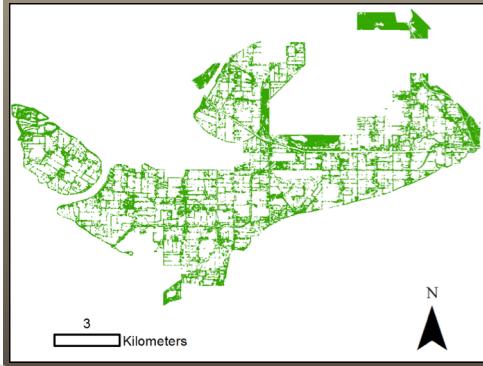
For more information about the Hedgerow Stewardship Program or the research on hedgerows see: <http://www.deltafarmland.ca/>; <http://sal-lab.landfood.ubc.ca/>
“Hedgerow Benefits & the Delta, BC Hedgerow Project”
“Findings from the Farm-scale Analysis of the Delta, BC Hedgerow Study”
“Findings from the Landscape Analysis of the Delta, BC Hedgerow Study”



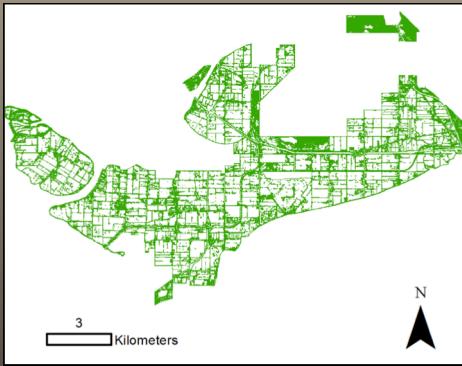
Future Scenarios of Delta's Perennial Habitat

"Business as Usual"

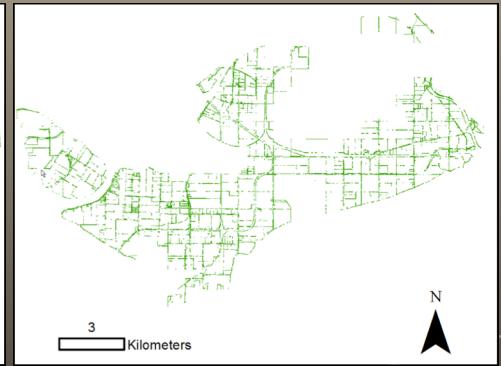
The total habitat area (1781 ha) is maintained at the area observed for 2013.



"Maximize Hedgerows" The total habitat area is enhanced (1942 ha) by planting all the farm edges and roads with hedgerows.



"Agricultural Expansion" The total habitat area is reduced (345 ha) by conversion to agricultural production except road and parcel edges.



Measuring the Value of Habitat

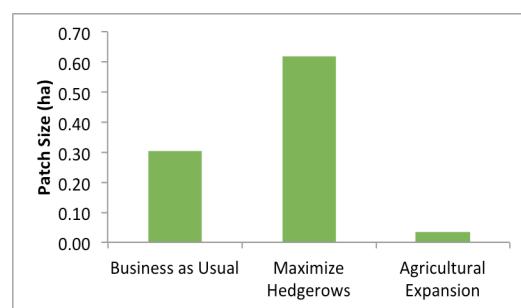
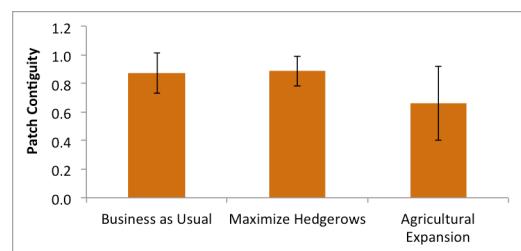
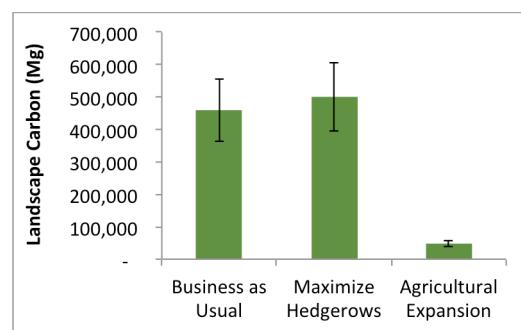
Landscape Carbon storage is valuable for reducing the impacts of climate change, and so we measured the amount of carbon stored in the branches and roots of trees and shrubs as well as the soil.

Patch Contiguity is the degree to which individual habitat patches are connected to neighbouring habitat. Large contiguous patches result in larger contiguity index values which indicate greater benefits for wildlife^[1].

Patch Size Indicates the mean size of the contiguous area of habitat. Larger patch sizes are likely to better support wildlife^[1].

Scenario Outcomes

- There are no major differences in carbon stocks between the "Business as Usual" or the "Maximize Hedgerows" scenarios.
- The conversion of habitat to farmland in the "Agricultural Expansion" scenario would result in 150,000 metric tonnes of carbon dioxide being lost to the atmosphere and a landscape
- Patch Contiguity cannot be differentiated for the three scenarios
- Patch size is far higher in the "Maximize Hedgerows" scenario



References: ^[1] McGarigal, K., S. Cushman, and E. Ene. 2012. FRAGSTATS v4: Spatial Pattern

