



Promoting Biodiversity in Canola Cropping Systems

Ecosystem Services on the Canadian Prairies

**International Rapeseed Congress, Berlin
June 19, 2019**

*Gregory Sekulic, Agronomy Specialist - Peace
Canola Council of Canada*

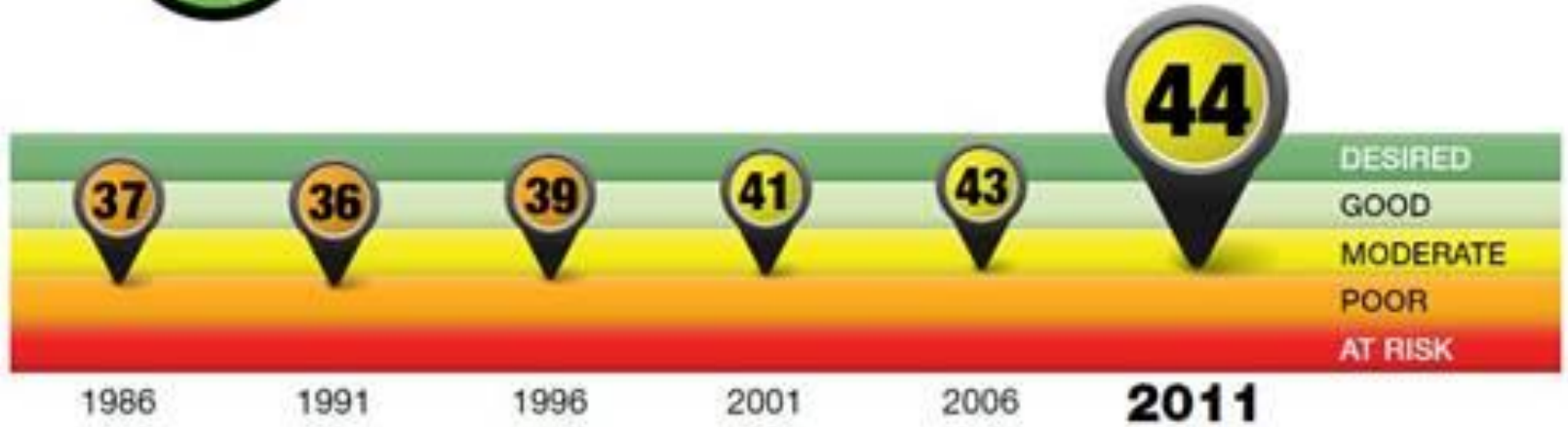
Messages for the Taking

-home, or otherwise

- **~15% of the land in Western Canada continues to experience habitat loss (2011)**
- **Literature supports positive relationships between crop yield and uncultivated land**
 - Ecological services can be valued
 - Current research underway in Canada
- **Natural insect controls are far more grotesque and horrific than insecticides**



Biodiversity Compound Index



Wildlife Habitat on Farmland Index



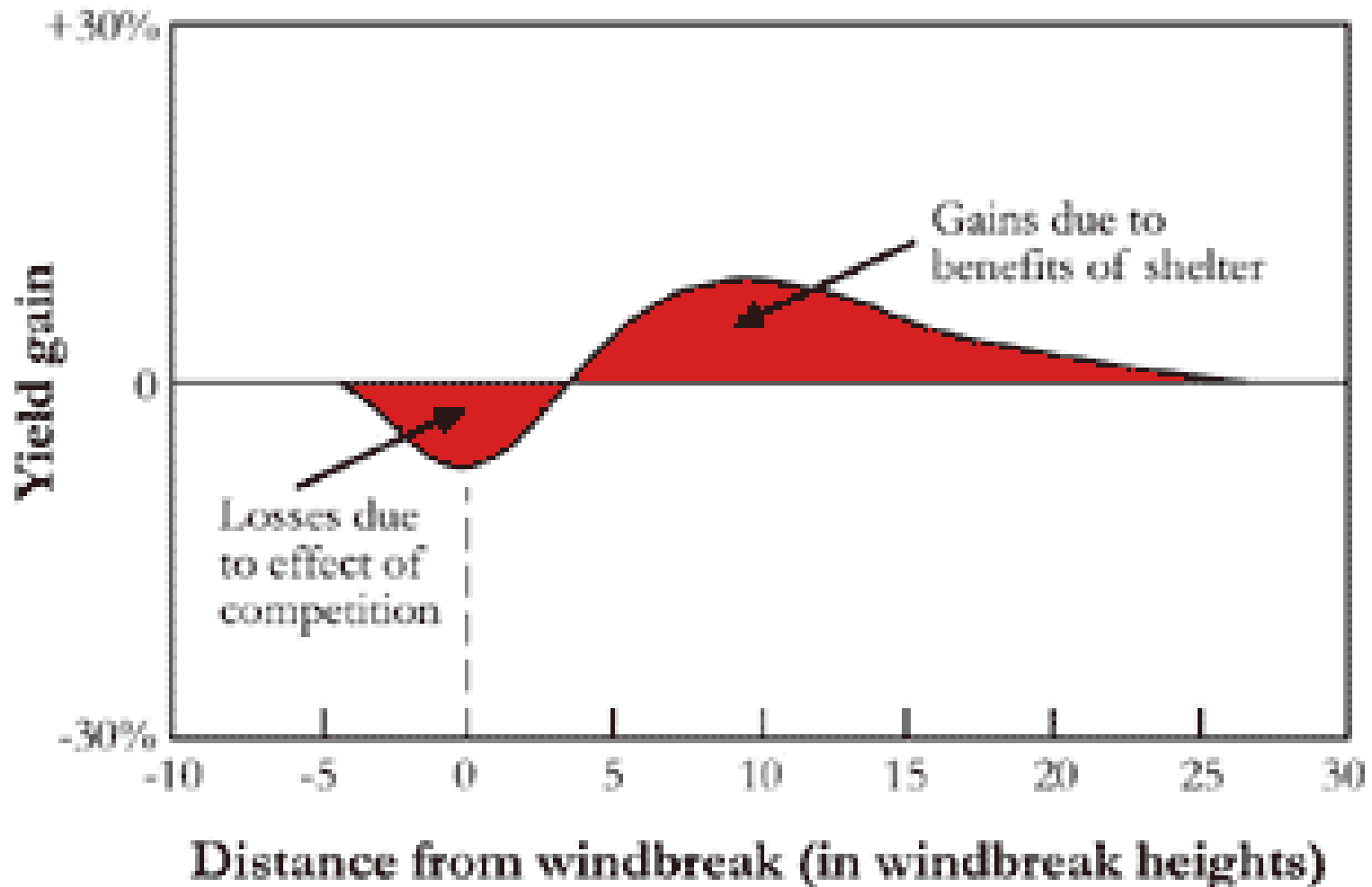
The Tragedy of the Commons



This habitat largely exists on private land.
How do we incentivize producers to
maintain or enhance it?



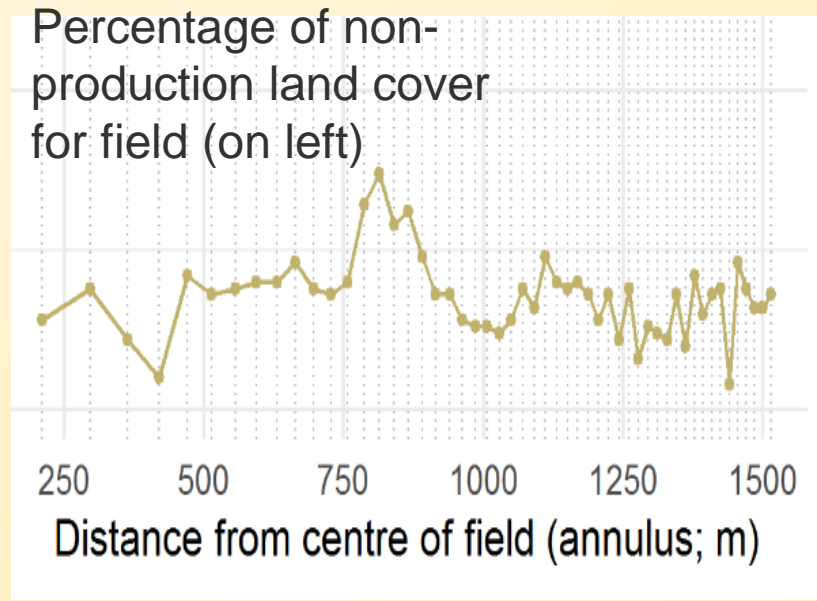
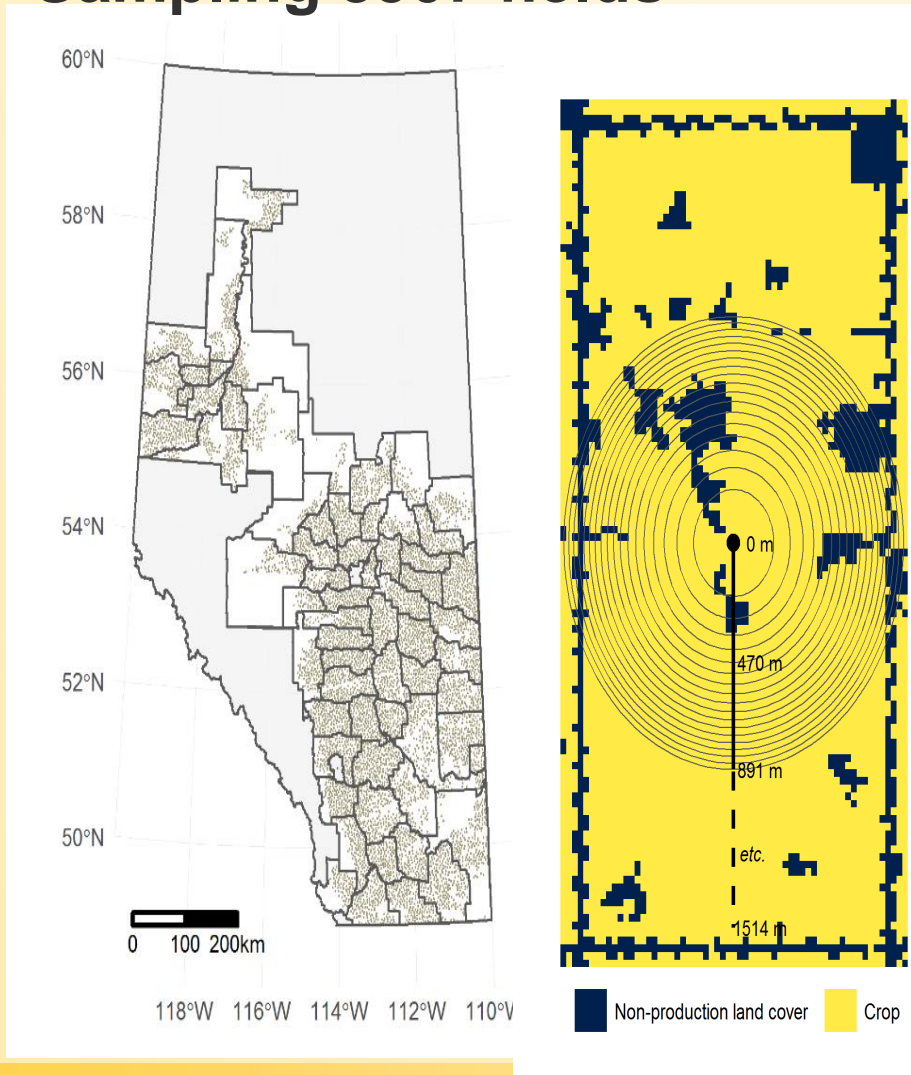
In tillage systems, yield gains consistently outweigh competition losses (Cleugh, 1997)



Does non-production land cover affect yields?

Landscape and yield

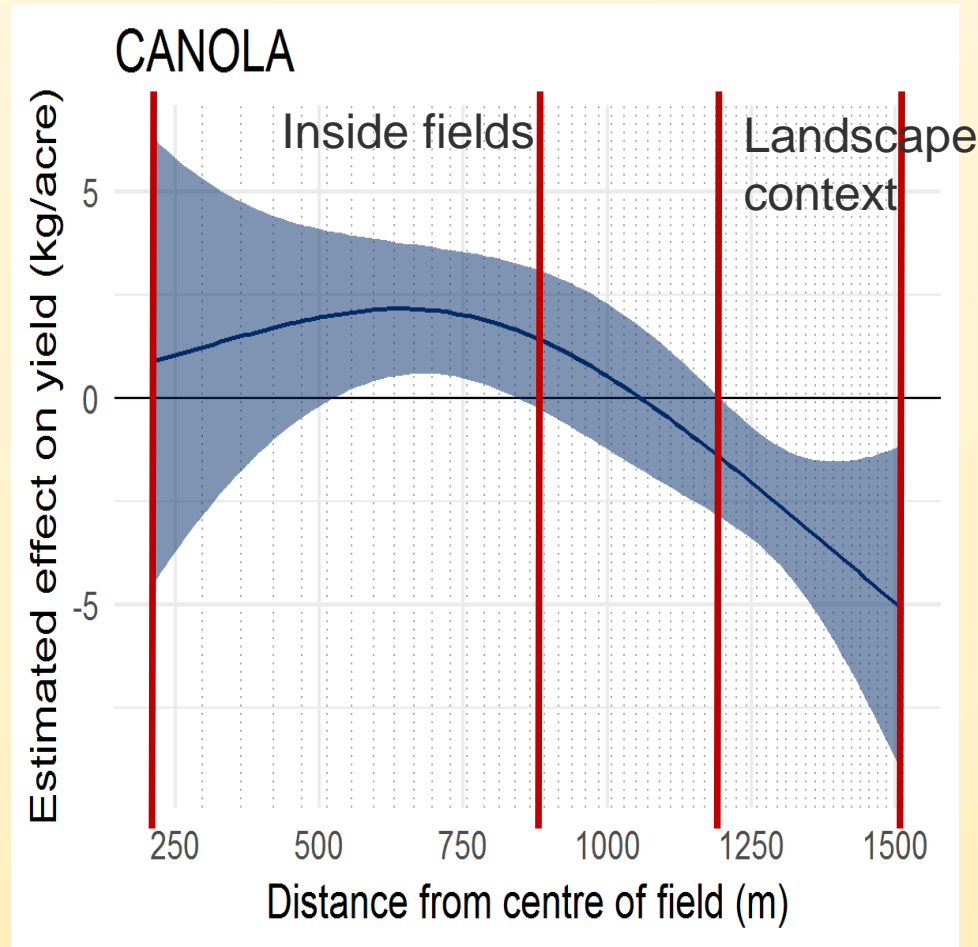
Sampling 8507 fields





Does non-production land cover affect yields?

Landscape and yield

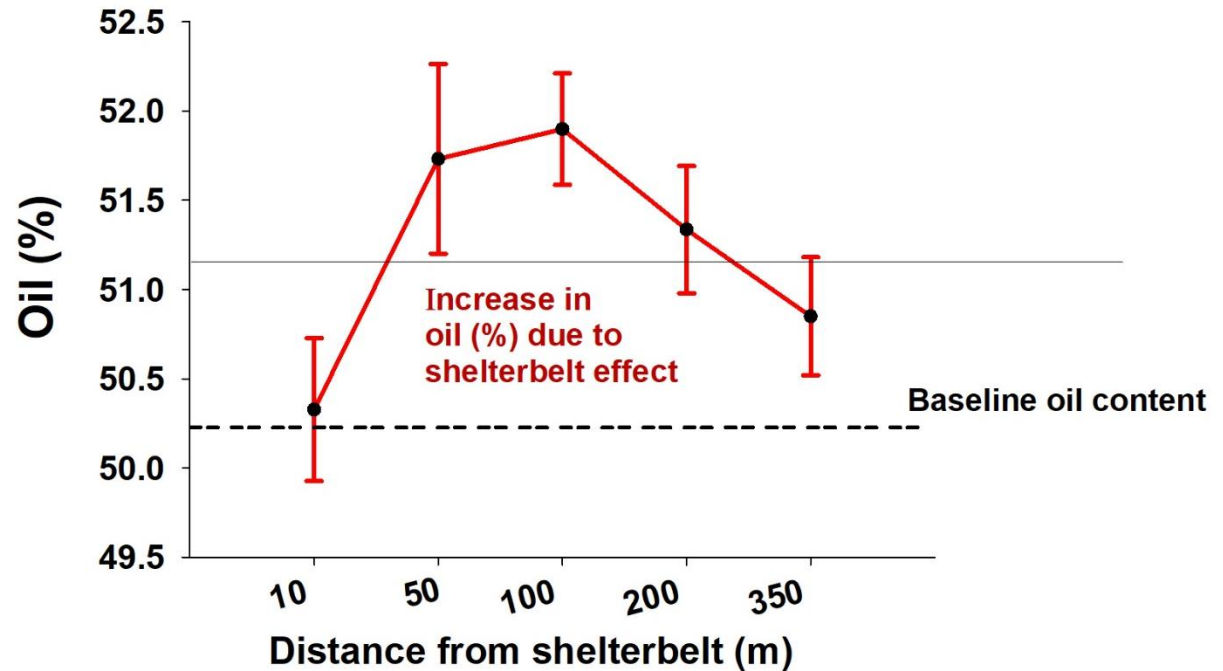


Results – oil production

(based on 2017 sites data)



Shelterbelt site

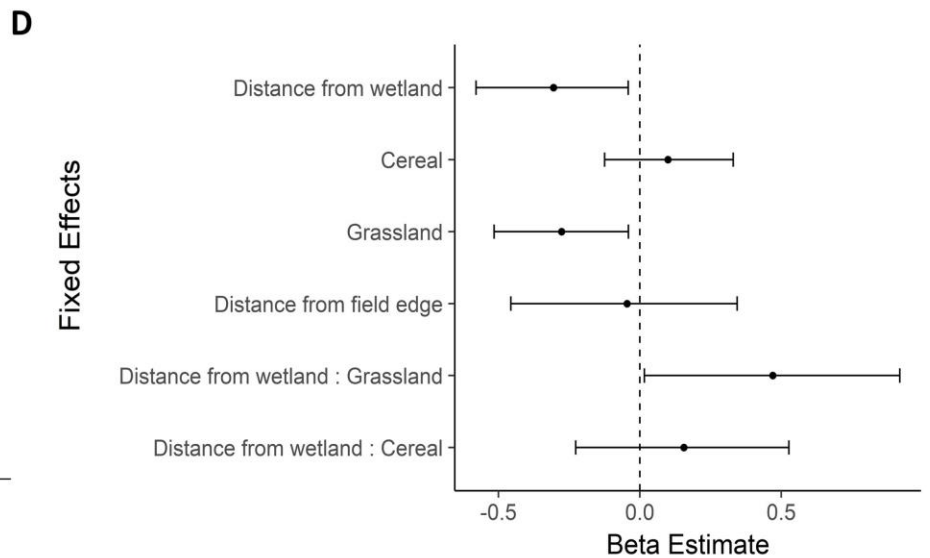
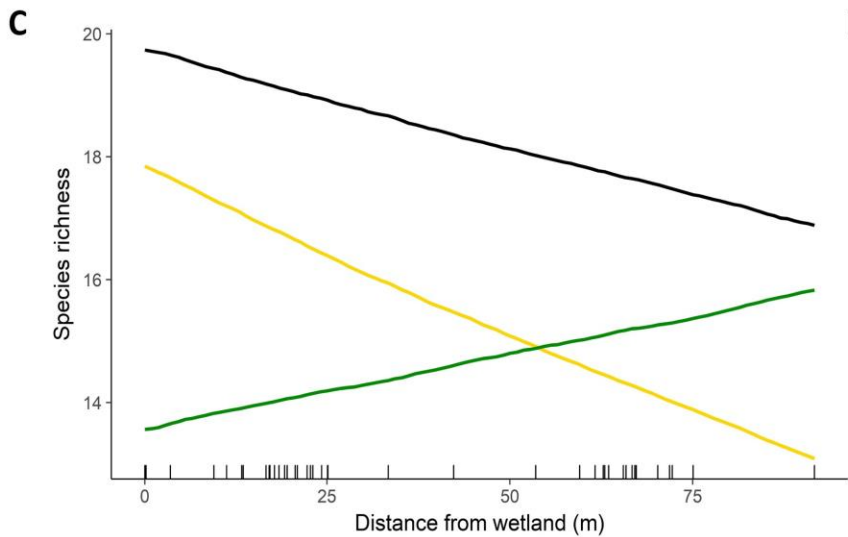
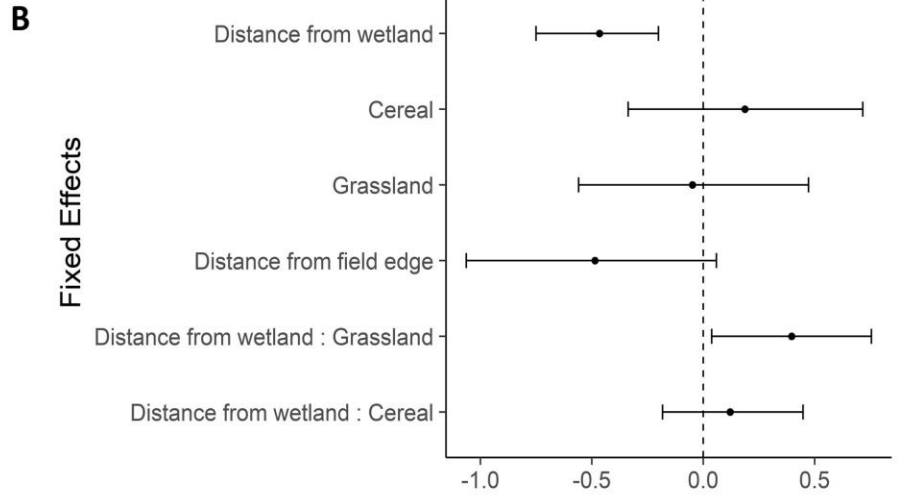
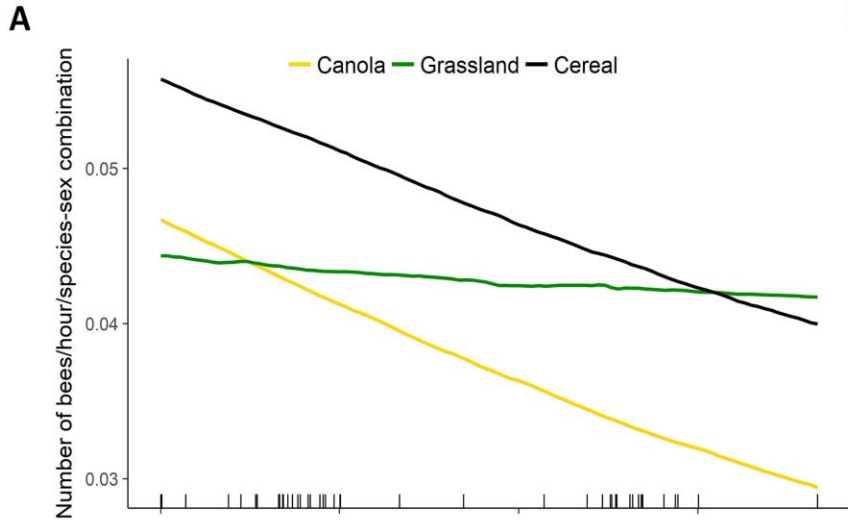


Oil production

Shelterbelt sites: 1321.22 kg/ha

Open field sites: 1286.12 kg/ha

**2.7% increase in yield
in terms of oil production**



Vickruck, Jess & Best, Lincoln & P. Gavin, Michael & Devries, James & Galpern, Paul. (2019). Pothole wetlands provide reservoir habitat for native bees in prairie croplands. *Biological Conservation*. 232. 43-50. 10.1016/j.biocon.2019.01.015.

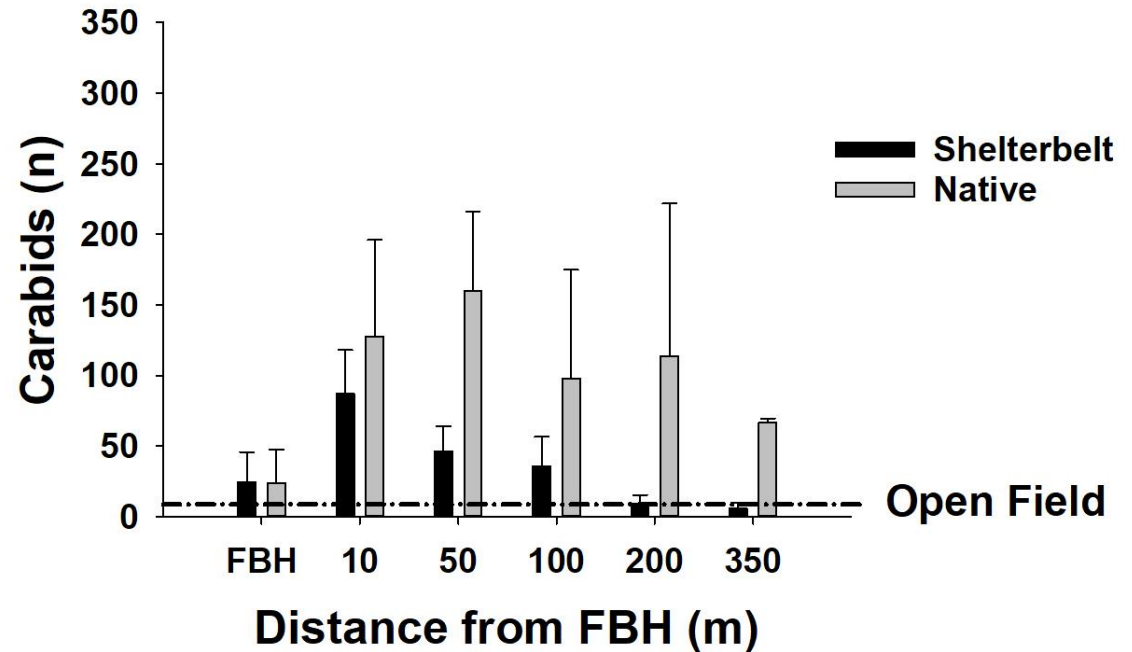
Objective 2

Determine the **potential risk/benefits** to adjacent field crops

Carabids



Site 4A, 4B, 4C/June 2017



Diversity of natural enemies in the Prairies is very high!

Nearly 400 identified species of ground beetle (carabidae)

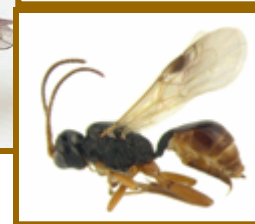
Over 800 species of spiders

Over 1400 species of Parasitoid wasps

> 1160 Ichneumonidae, 250 Braconidae

Nearly 400 identified species of bee

> Solitary, mason, carpenter, bumblebee...



Mounted specimen,
Diadegma insulare.
J. Ogradnick

The Arena of Death





Gregory Sekulic

sekulicg@canolacouncil.org

@sekulicccc

The promotion and conservation of biodiversity in agricultural landscapes is essential, as even highly intensified modern agriculture to some extent remains dependent on species-mediated services for obtaining sufficient yields (Tscharntke et al., 2012).