

Diversity and Abundance of Bees in Canadian Prairie Agroecosystems

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Abstract

Wetland remnants are a common feature within the Prairie Pothole Region of Saskatchewan and are threatened due to increased conversion to agricultural land. Wetlands found in this region are embedded in these agricultural matrices and may act as an important nesting and floral resource for many native bee taxa. Bees were sampled using standardized methods in order to quantify the role that these wetlands play in supporting native bees. The purpose of this study is to determine whether conserved natural habitats, such as wetlands, within a highly cultivated landscape support native bee and pollinator diversity that is both ecologically and economically beneficial.

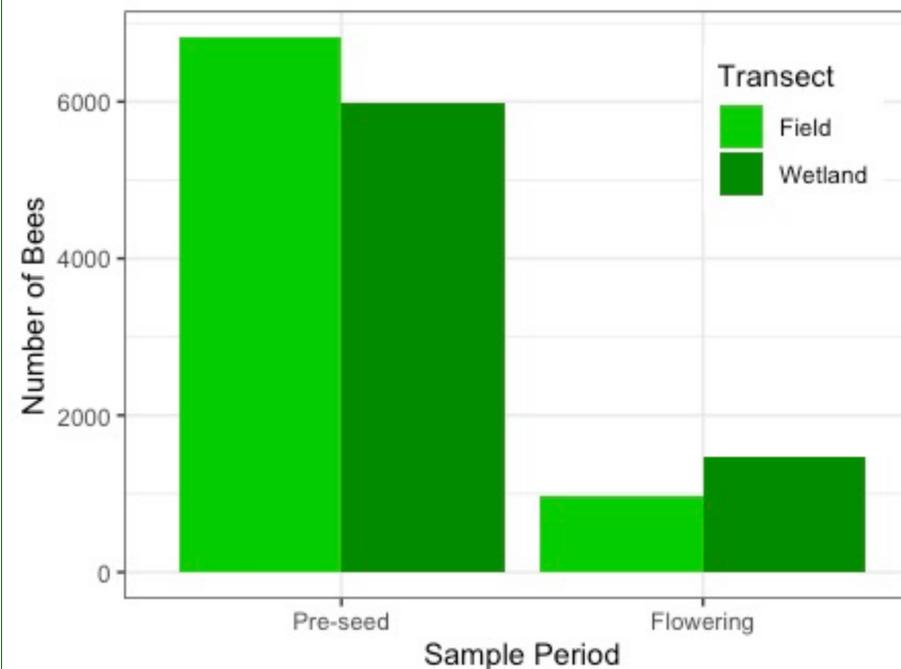
Materials and Methods

- Bees were sampled using standardized pan and blue vane traps from 15 sites between Peterson and Humboldt, SK in the summers of 2018 and 2019
- 5 sites each of: perennial grassland, wind pollinated crop and animal pollinated crop
- Each site had two 150m transects, one at a wetland edge and one at a field edge
- Each transect had four sets of traps, spaced at 0m, 25m, 75m and 150 intervals along the transect
- Pan traps were left for 24 hours, and vane traps for 7 days during each sample period
- Bees were sampled from two periods: Pre-flowering (May) and Flowering (July)



Results

All bees collected in the summer of 2018 have been identified to genus. A total of 14,011 bees, belonging to 22 genera were collected in May and July of this sample season. 56% of the bees collected were small solitary sweat bees (*Lasioglossum* spp.) and 29% were bumblebees (*Bombus* spp).

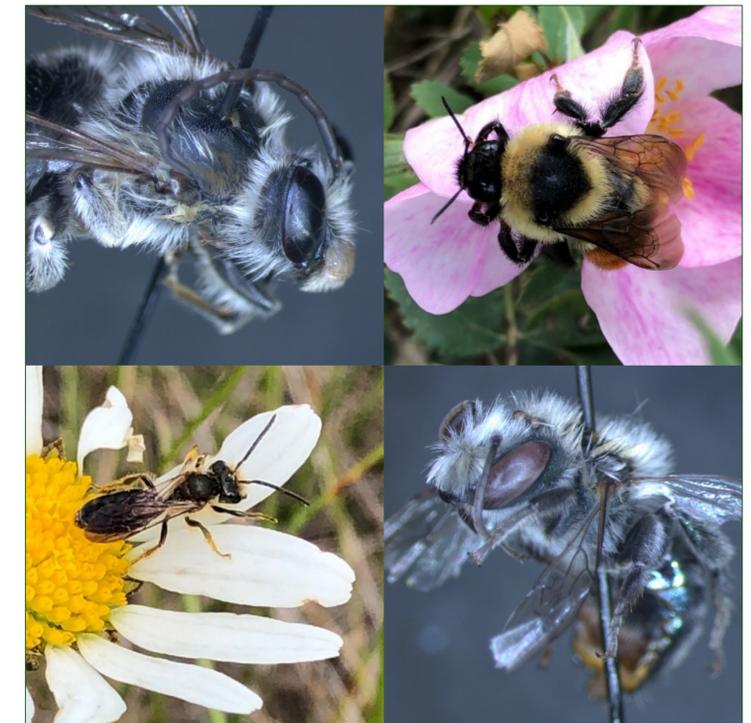


Above. The total number of bees collected from each transect during the pre-seed (May) and Flowering (July) periods in the summer of 2018.

The abundance of bees collected during the pre-seed period was found to be higher at the field transect than at the wetland transect. Sites are primarily bare ground during this period of the growing season, therefore traps have a higher catch rate and this may not be indicative of habitat preference. During the flowering period though, the abundance of bees at the wetland transect was 1.5 times higher than that of the field transect. Results from the flowering period are more indicative of habitat preference due to floral and nesting resource use. Bees from further sample periods and a second growing season remain to be identified and will further support these preliminary results.

Preliminary Conclusions

Preliminary results indicate that wetlands may provide important habitat for native bees in Saskatchewan agroecosystems at different periods throughout the year. This diversity encompasses species predicted to be pollinators of wild flora and canola, such as bumble bees and honey bees, as well as multiple species of native bees. Bees collected from the 2019 season remain to be identified and if preliminary trends hold, it would greatly justify further studies on management of wetlands as habitat for native bees in Saskatchewan agroecosystems.



Acknowledgments

