

Retaining Canada's Grasslands Using Carbon Offset Markets

Project Overview

Canadian grasslands are increasingly being recognised as a globally important carbon sink, and as one of the world's most endangered biomes. Only 20 percent of native grasslands remain intact in Canada and continue to be lost primarily due to conversion to cultivation for annual crops¹. In Alberta alone, the estimated annual loss of over 125,000 ha of perennial grasslands leads to the loss of soil carbon stocks equivalent to burning 1.2M barrels of oil².

The main driver of land conversion is economic; landowners can often generate more income from cash crops than from grazing livestock, with less risk; recent developments in commercial crop varieties that enable crops to be grown in marginal soils and climates are compounding the issue. Statistics Canada report a six-million acre increase in cropland and a 2.2-million acre decrease in agricultural grassland between 2011 and 2016 (Statistics Canada. Table 32-10-0406-01_Land Use, 2019).

Grassland habitats that are primarily used for raising livestock, provide additional ecological, economic and societal benefits, including:

- Carbon sequestration and reduced greenhouse gas emissions
- Water quality benefits
- Flood and drought alleviation
- Soil health improvements
- Air quality benefits
- Public health benefits
- Recreational, cultural, therapeutic and heritage benefits
- Biodiversity and species at risk preservation and enhancement
- Micro-climate management
- Climate and environmental resilience

The preservation of grasslands therefore contributes to many ecosystem services that benefit society, and has been highlighted as one of the most significant climate change mitigation approaches for Canada³. Typically, Canadian grassland managers are not compensated for these societal benefits.

¹ Nature Conservancy Canada (2020) – Celebrate Native Prairie Week

(<https://www.natureconservancy.ca/en/blog/celebrate-native-prairie-appreciation-week.html#.YCWAd2hKiUk>)

² Calculated from source data in (Bremer 2008) and (Gage, Olimb and Nelson 2016), and US EPA Greenhouse Gas Equivalencies Calculator (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>). See 'Wetland and Grassland Retention and Restoration as an Effective Carbon Management Strategy in Alberta' at: https://abnawmp.ca/wp-content/uploads/2020/09/Wetlands-and-Grasslands-as-Carbon-Management-Business-Case-FINAL_web.pdf

³ Drever, C. R., Cook-Patton, S. C., Akhter, F., Badiou, P. H., Chmura, G. L., Davidson, S. J., Desjardins, R. L., Dyk, A., Fargione, J. E., Fellows, M., Filewod, B., Hessing-Lewis, M., Jayasundara, S., Keeton, W. S., Kroeger, T., Lark, T. J., Le, E., Leavitt, S. M., LeClerc, M. E., Lemprière, T. C., Metsaranta, J., McConkey, B., Neilson, E., St-Laurent, G. P., Puric-Mladenovic, D., Rodrigue, S., Soolanayakanahally, R. Y., Spawn, S. A., Strack, M., Smyth, C., Thevathasan, N., Voicu, M., Williams, C. A., Woodbury, P. B., Worth, D. E., Xu, Z., Yeo, S. & Kurz, W. A. (2021-in press). Natural Climate Solutions for Canada. Science Advances.

Recognizing the carbon sequestration benefits (and complimentary ecosystem goods and services or co-benefits) of grassland retention will provide value to both the landowner and Canadians. Despite evidence of continued losses of Canadian grasslands and associated ecosystem services², there is no current large-scale incentive framework to recognize the carbon stores through grassland conservation. Until there is a large-scale and effective framework that incentivizes conservation of grasslands, landowners will continue to convert grasslands to cropland, opportunities for grassland conservation will diminish, and progress towards achieving Canada’s climate targets will be severely hampered.

Through the Climate Action Reserve (CAR) Canada Grasslands Protocol (see: <https://www.climateactionreserve.org/how/protocols/canada-grassland/>) carbon offsets can be generated for grassland preservation and continued carbon storage in grassland soils. Carbon offsets from this protocol can generate additional financial value to Canadian grasslands, recognizing important contributions to achieving Canada’s climate change and biodiversity goals.

The objective of this project is to pilot the CAR Canada Grasslands Protocol on grasslands across Canada to provide an alternative revenue stream to landowners for the conservation of at-risk grasslands. In short, the project will:

1. Test the technical and practical feasibility of the CAR Canada Grassland Project protocol and refine to an updated version (1.1) which incorporates key learnings from the pilot project.
2. Develop and test commercial and contractual terms between key parties to grassland carbon projects and determine acceptable terms and conditions and roles and responsibilities that align with the needs of each party for a more efficient system.
3. Test remote sensing technologies to reduce carbon project costs and minimise disruption to landowners.
4. Demonstrate feasibility for a protocol for Canadian compliance markets through testing alignment with the Alberta and Canadian compliance carbon offset systems.

Pilot Project Partners

