

## **Linkages of wetland pond nutrients with land use and biogeochemical drivers in Canada's Prairie Pothole Region**

SHAKIL AHMED, University of Saskatchewan; Helen Baulch (University of Saskatchewan), Angela Bedard-Haugh (University of Saskatchewan), Laura McFarlan (University of Saskatchewan), Colin Whitfield (University of Saskatchewan)

This study aims to investigate the linkages of wetland nutrients with land use and biogeochemical drivers in Canada's Prairie Pothole Region (PPR). The study investigates a total of 150 pothole wetland ponds in PPR distributed across the three provinces: Alberta, Saskatchewan, and Manitoba. Using a comprehensive suite of physicochemical data collected for the ponds in spring and summer, we used a statistical approach to investigate drivers of nutrient patterns in these surface waters. Despite very high across-pond and across-season variability in pothole water chemistry for many parameters, including nutrients, local land use appears to be linked to observed nutrient concentrations. Investigations of land use suggested differing influences of cropland and grassland/pasture on nutrients in the surface water. Our results suggest that wetlands surrounded by natural vegetation have lower amounts of total nitrogen (TN) and total phosphorus (TP). For nitrogen, the coverage of selected crop types is significantly related to total nitrogen (TN) concentrations. We use a multivariate model to explore predictability of TN and TP according to land use and chemical variables with mixed success, with TP better linked to land use, and TN more strongly related to pond chemistry. The estimated linkages and insights from the study would be useful to identify the management priorities and targets for Canada's PPR.