

LEVERAGING SCIENCE

to Guide Waterfowl Habitat Conservation

INVESTING IN WATERFOWL PRODUCTIVITY IN THE PRAIRIE POTHOLE REGION

A comprehensive study analyzing the impact of breeding and wintering habitat on waterfowl productivity in the Prairie Pothole Region (PPR) from 1961 to 2019 revealed a decline in productivity (see Figure 1). The researchers also highlighted a strong correlation between winter habitat availability and dabbling duck productivity the following spring.

“**We recommend states prioritize habitat conservation on both breeding and wintering areas. When considering the entire Prairie Pothole Region, our work suggested that duck production in the Canadian prairies was the largest and most influenced by the negative effects of wetland loss and agricultural intensification. State investments in the Canadian prairies will bolster duck production and ensure robust fall flights from Canada to the US.”**



~ Dr. Weegman, lead author and Ducks Unlimited Canada Endowed Chair in Wetland and Waterfowl Conservation at the University of Saskatchewan

Dr. Weegman and his team recommend prioritizing conservation investments in the PPR to counteract agricultural intensification and wetland loss, especially in Alberta parkland and prairie, Saskatchewan prairie, and Manitoba parkland, all regions of emphasis for Fall Flights.

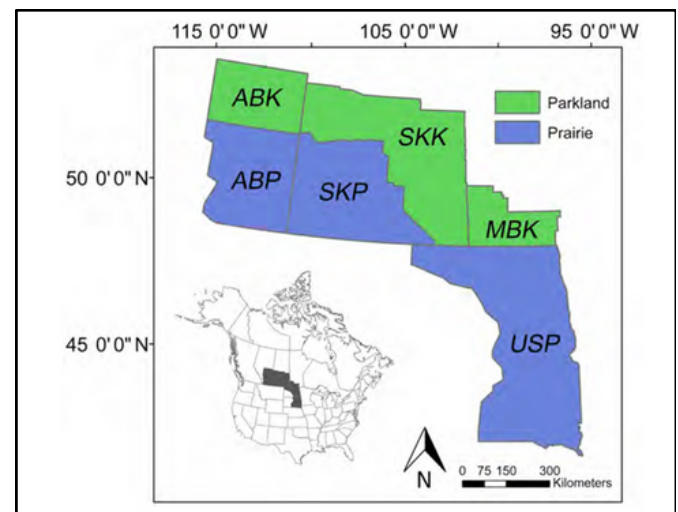
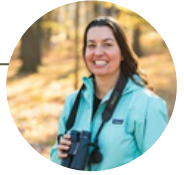


Figure 1: Map of six ecostrata in the Prairie Pothole Region in Canada and the U.S.

Source: <https://doi.org/10.1002/eap.2979>

USING PREDICTIVE MODELS TO GUIDE INVESTMENTS IN EASTERN CANADA

Another study examined the influence of habitat features on the abundance of 16 waterfowl species in eastern Canada, based on waterfowl survey and remote sensing data from 2001 – 2015 (see Figure 2 for study location). Unlike the PPR, where agricultural intensification and grassland loss are primary threats, this research found that water and wetland habitats are the primary drivers of waterfowl abundance in the east.



We often think more is better in terms of habitat conservation, but we discovered that there are habitat threshold effects that vary by species. For example, once 14% of a 25-km² plot is covered in wetlands, additional wetland coverage has diminishing effects on most dabbling duck species.

~ Dr. Frei, lead author and Research Scientist with Environment and Climate Change Canada

Dr. Frei's team developed maps based on their predictive models to depict where wetland habitat enhancement would most increase species abundance (see Figure 3). Ducks Unlimited Canada and their Eastern Habitat Joint Venture partners will integrate these models and maps into conservation planning, ensuring states' Fall Flights investments are directed where they will have the greatest impact.

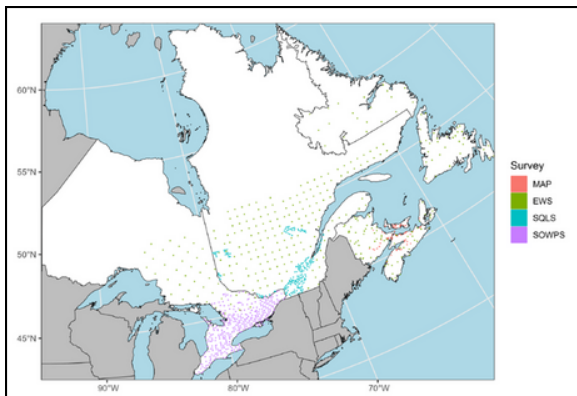


Figure 2: Map of survey plots across the study area, including the maritime agricultural plot survey (MAP), the eastern waterfowl survey (EWS), the Southern Quebec Lowland Survey (SQLS), and the Southern Ontario waterfowl and wetlands plot survey (SOWPS). Provinces in white are part of the Eastern Habitat Joint Venture. Source: <https://doi.org/10.1007/s10980-024-01946-5>

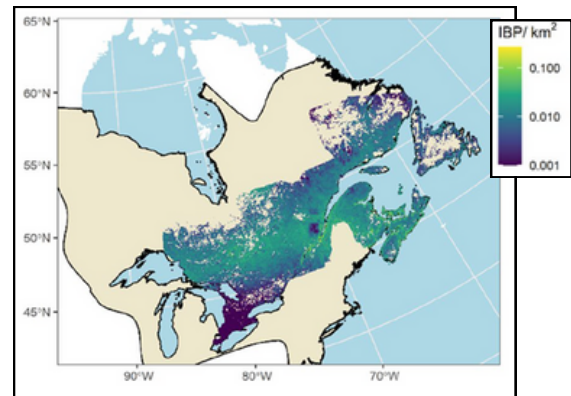


Figure 3: Predictive map showing where increasing the amount of wetland habitat will result in the greatest increase in breeding pairs of black ducks. Source: <https://doi.org/10.1007/s10980-024-01946-5>

MAXIMIZING FALL FLIGHTS' IMPACT WITH SCIENCE

For state agencies, these two studies exemplify how Fall Flights conservation delivery partners are investing in science to make data-driven conservation delivery decisions. They are using science to identify priority areas for waterfowl habitat conservation, select conservation strategies, and continually refine their approach for maximum impact