

SCIENCE STORIES

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credit: Ducks Unlimited Canada

LASTING BENEFITS FROM SHORT-TERM CONSERVATION AGREEMENTS

IN THE AGRICULTURAL LANDSCAPES OF THE CANADIAN PRAIRIES, CONSERVING HABITAT AND SUSTAINING AGRICULTURAL PRODUCTIVITY ARE BOTH VITAL GOALS. NOW, A STUDY IS LOOKING INTO HOW SHORT-TERM CONSERVATION AGREEMENTS WITH AGRICULTURAL LANDOWNERS CAN HAVE LONGER-TERM BENEFITS FOR BOTH GOALS.

Research has shown that term agreements can provide habitat conservation benefits during the agreement period. Such agreements also offer the flexibility that most agricultural producers want and financial incentives to undertake practical conservation measures that can fit with the producer's agricultural operation.



Dr. Lauren Bortolotti
credit: Ducks Unlimited Canada

Dr. Lauren Bortolotti, a research scientist with [Ducks Unlimited Canada \(DUC\)](#), is collaborating on this study with Dr. Joe Bennett, a professor at Carleton University, and Dr. Tim Alamenciak, a postdoctoral researcher in the [Bennett Lab](#).

Bortolotti explains that Prairie agricultural producers are key players in waterfowl habitat conservation. "The Prairie Pothole Region, which includes parts of Alberta, Saskatchewan and Manitoba as well as some U.S. states, is the most important landscape for breeding ducks in North America.... This region is also very heavily agricultural, and most of the land is privately owned. This means that conservation in this landscape must happen in partnership with landowners and farmers and other land stewards like Indigenous communities."

Accordingly, DUC offers a suite of [landowner programs in Alberta](#) and the other Prairie Provinces so producers can find options that work for their own specific situation. These programs include: options to protect habitat in perpetuity, such as conservation easements; short-term agreements, or 'term agreements', like the Forage Program or Marginal Areas Program agreements; and other initiatives, such as outreach activities.

"WE KNOW TERM AGREEMENTS BENEFIT DUCKS, BUT THEY ALSO BENEFIT THE [AGRICULTURAL] PRODUCER."

"We know term agreements benefit ducks, but they also benefit the producer," says Bortolotti. "And they give us the chance to work with more individuals - individuals who wouldn't sign up for our [permanent] programs."

ABOUT THE STUDY

Funded in part by the Alberta NAWMP Partnership's Science Fund, this study aims to evaluate the longer lasting, multifaceted benefits of term agreements as part of overall conservation strategies for Prairie agricultural landscapes.

Bortolotti notes that this type of research is a fundamental aspect of how DUC operates. "I'm part of the science arm of DUC, called the [Institute for Wetland and Waterfowl Research](#), and one of our



Dr. Tim Alamenciak
credit: Tim Alamenciak, Carleton University

primary functions has always been about evaluation of programming. This kind of evaluation is what enables adaptive management and also how we make conservation effective and efficient. We need to use limited resources well.”

“WE WANT TO GET A REALLY CLEAR UNDERSTANDING OF THE BENEFITS AND DRAWBACKS, THE BARRIERS AND FACILITATORS TO TERM AGREEMENTS.”

“Term agreements are quite popular but relatively understudied as compared with perpetual conservation easements. We want to get a really clear understanding of the benefits and drawbacks, the barriers and facilitators to term agreements,” says Alamenciak.

“Crucially, we are trying to understand whether short-term agreements

provide lasting benefits and what those look like so we can help conservation organizations to strategically allocate their limited budgets between permanent options, like easements and fee simple purchases, and term agreements,” he explains. “And more broadly, we are aiming to fill a gap in knowledge about how term agreements work and how effective they are.”

DURABLE HABITAT BENEFITS

The study, which started in 2024, has three phases. Phase 1 is nearing completion. It focuses on what happens to land parcels enrolled in term agreements between landowners and DUC under DUC’s [Forage Program](#) after the agreements end.

The Forage Program offers financial incentives for private landowners to convert annual cropland to tame (non-native) perennial forage grasslands for a 10-year term. The land covered by the agreement cannot be converted into annual crop production for the

term of the agreement. However, the landowners maintain control of the tame grasslands, usually using the land for grazing or haying.

The program also sometimes enrolls existing wetlands, native grasslands and trees on the quarter sections covered by the agreement, so those native habitats are protected for the same 10 years.

Compared to annual crops, perennial tame forages provide better habitat for nesting waterfowl, along with producing forage for livestock and generating other benefits such as conserving soil, water and biodiversity. However, perennial tame forages do not provide as good biodiversity habitat as native grassland.

For Phase 1, the research team used a dataset of 885 Forage Program projects covering almost 85,000 hectares across the three Prairie Provinces. Using Agriculture and Agri-Food Canada’s Annual Crop Inventory, the team determined the proportions of grassland,



Agricultural landowners are key partners in Prairie habitat conservation, so Ducks Unlimited Canada offers a suite of landowner programs including options for short-term conservation agreements. Credit: Ducks Unlimited Canada

cropland and wetland on each quarter section in the study, before, during and after the agreement's term.

To assess the program's habitat effects beyond the agreement period, the team conducted a reversion analysis and an impact evaluation.

Reversion analysis: In this analysis, the researchers determined if the quarter sections enrolled in the program remained in forage after the agreement ended or reverted back to annual crops. The dataset included sites with agreement start dates as early as 1994 and end dates before or in 2022, so at least one post-agreement year was included for each quarter section.

A large majority of projects did not simply revert back to annual crop production after the agreement's term ended. Alamenciak says, "We found that 46.6 per cent – nearly half of the quarter sections – kept grassland throughout the entire post-agreement period. Another 42.4 per cent kept grassland for some years of the post-agreement period. Only 10.8 per cent fully went back to annual crops for the whole post-agreement period."

Furthermore, he notes that some of the reversions back to annual crops appeared to be related to forage rejuvenation. Rejuvenation is a way to renew the productivity of a forage stand; it typically involves plowing an old sod-bound stand, then seeding the land to annual crops for about one to three years, and then seeding the land back to forage. He says, "We found that 56.8 per cent of the landowners who reverted back to annual crop agriculture converted back to grassland at some later point, which suggests that these farmers are committed to maintaining that grassland."

Impact evaluation: This analysis determined if the agreement sites were more likely to retain forage cover after the agreement ended, as compared with similar 'control' farmland sites that did not participate in the Forage Program. This comparison with control sites adjusts for situations in which farmers switch between perennial forages and annual crop production in a field as part of their normal farm operations, without participating in a Forage Program agreement. So, the comparison indicates how much of the forage retention pattern

could be attributed to Forage Program participation. The impact evaluation involved sites where agreements ran from 2010 to 2020, allowing for three years of post-agreement analysis.

"We found that agreement sites were twice as likely to contain grassland after the agreement ended as compared to the matched control sites. There was a 52.9 per cent chance of an agreement site having more than half grasslands versus a 25.1 per cent chance for the control sites," notes Alamenciak.

THE PHASE 1 RESULTS
"REALLY SUPPORT INCLUDING
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Overall, the Phase 1 results "really support including term agreements as a legitimate tool in a conservation organization's toolkit, alongside permanent options," he says.

"We have demonstrated that term agreements have some benefits outside of the term period. This can help conservation organizations prioritize how much of their budget and effort they put towards permanent agreements versus term agreements."

The researchers hope to publish their Phase 1 results in a peer-reviewed journal in the coming months.

GATHERING LANDOWNER INPUT

Phase 2 of the study involves surveying landowners who have participated in DUC programming on the Prairies. The purpose is to collect information about landowner motivations for engaging in DUC programs and to gather landowner opinions on their experiences with DUC.

Analysis of the survey data will look at the relative importance of various demographic, agronomic, social and economic factors that influence how landowners engage with DUC. For instance, the level of a landowner's

participation in these programs could be affected by factors like the farm's characteristics, the program's level of financial incentives, and the landowner's interest in habitat conservation, previous experiences with DUC, and/or concerns about restricting what the landowner or the next generation can do with the land, as well as other issues.

The team will also be conducting a geospatial analysis to examine what factors predict whether landowners retain perennial grassland cover or revert back to annual crop production.

The results from Phase 2 will provide a deeper understanding of the drivers of landowner decisions that affect habitat gain versus habitat loss. And that understanding will help conservation organizations to improve their landowner programs for better engagement with landowners and better outcomes for landowners and for habitat conservation.

Bortolotti notes, "Historically a lot of DUC's research on our programs has focused more on understanding biophysical benefits, for instance, do our programs benefit ducks, biodiversity, water quality, carbon. This study is unique in that it asks about other kinds of benefits from offering diverse conservation programs. So, we are bringing in more of a human element to understand the multifaceted benefits of conservation programs."

PUTTING IT ALL TOGETHER

"The third phase will involve integrating everything that we have learned in the first two phases into decision support tools and spatial conservation prioritization tools so people who are working on the ground – the conservation practitioners – can use this new understanding of term agreements and other landscape conservation options [to find optimal combinations of different types of programs]. We hope to use the third phase to develop those frameworks and to mobilize them within DUC and more broadly," says Alamenciak.

He emphasizes, "We are really motivated to make sure that these findings are used at conservation organizations."

Bortolotti notes that the study's outcomes will inform conservation planning



The Prairie Pothole Region is dotted with wetlands but it is also a strongly agricultural landscape. Credit: Ducks Unlimited Canada

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within DUC and will also be shared with DUC's partners in the [Prairie Habitat Joint Venture](#) (the regional NAWMP partnership to which Alberta NAWMP belongs). The findings will also help DUC communicate the benefits of its programming to funders and supporters.

This research will also contribute to broader conservation initiatives, including the [Kunming-Montreal Global Biodiversity Framework \(GBF\)](#), an international agreement that aims to reverse biodiversity loss. In particular, Alameciak points to Target 10 of the GBF, which calls for sustainable agriculture practices to increase biodiversity while maintaining food security. The study's findings show Prairie landowners can contribute to meeting important biodiversity goals.

Bortolotti adds, "What is great about these [term agreement] programs is this land continues to be productive

agriculturally but it is also serving conservation outcomes. We don't always have win-wins but this does seem a clear case of that. So, we're trying to shed light a little more clearly on the multifaceted benefits of this kind of approach to conservation in agricultural landscapes."

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