

2023 **ANNUAL** REPORT



Prairie Pothole
JOINT VENTURE

Letter from the Coordinator

The past year has been a time of transition and change for the Joint Venture, yet we remain committed and optimistic about the future of the Prairie Pothole Region. I was excited to be hired as coordinator in April 2023 but anxious to be stepping into the shoes of previous coordinators like Sean Fields. On his way to retirement, Sean reflected on the fact that many conservation themes from decades past are still pertinent today. Themes such as “agriculture and breeding bird conservation are compatible” continue to guide our work but we are adding new themes as well, like “healthy upland habitat provides clean water for communities” and “regenerative grazing mitigates climate change”.



With these themes in mind, the Joint Venture is adding new tools and contemporary messaging to get the biggest bang for our conservation investments while ensuring that the beneficiaries of conservation - all of us - are also seeing a big return. The body of work presented in this Report highlights the forward-looking approach of the Joint Venture and our partners. We are thinking outside the box, employing innovative techniques, and working with new partners to tackle the challenge of continued habitat loss.

We hope you enjoy the following stories of ground-breaking work and that the dedication and passion found within these stories inspire you in your own conservation efforts.

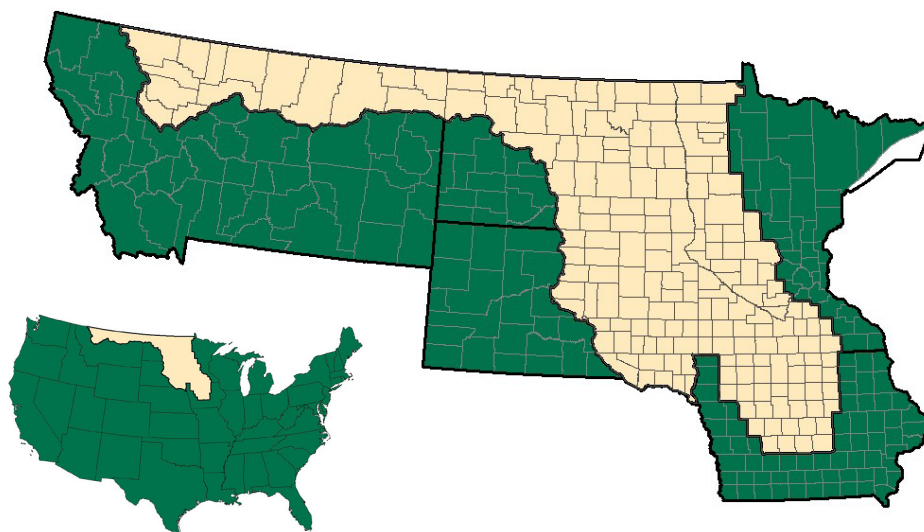
– Lauri Hanauska-Brown, PPJV Coordinator

We offer a special thanks to ConocoPhillips, who generously contributed funding to this and many other Joint Ventures again this year. Their contribution to the Prairie Pothole Region resulted in eleven agreements between the USFWS South Dakota Partners for Fish and Wildlife program and private landowners. These agreements led to grassland restoration on 893 acres and grazing management on 1,136 acres. In total, 91% of the acres were on USFWS perpetual easement tracts and the ConocoPhillips dollars were matched 1:1 by landowner cash and contributions.



In this Edition

- Integrating scientific tools with conservation planning to deliver projects that have multiple benefits for communities and wildlife.
- Working to conserve and store clean water in ways that benefit not just birds but also community members that may not know the difference between a mallard and a coot.
- Using the latest modeling techniques to show how habitat conservation benefits ducks, grassland birds, and pollinators alike.
- Learning about carbon sequestration and its compatibility with grazing.
- Using precision agriculture incentives to keep farms profitable.
- Supporting messages needed to reverse long held negative beliefs about fire and grazing.
- Expanding our data collection and research techniques to include using drones for duck nest and brood monitoring.
- Working to ensure ranches remain in the hands of the next generation by supporting the use of conservation easements and restoration through collaboration.
- Promoting soil health, regenerative agriculture, and mentorship opportunities for landowners looking to restore grasslands and improve rotational grazing capacity.



“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.”

– Margaret Mead





PPJV & NRCS: Targeting Conservation for Collateral Benefits

Photo: Jacquie Evans

Jacquie Evans, PPJV Science Integration Specialist

The PPJV supports the '[Montana Focused Conservation](#)' initiative by the Natural Resources Conservation Service (NRCS) through technical assistance and development of Targeted Implementation Plans (TIP). This past year, PPJV science integration specialist, Jacquie Evans, helped develop ten TIP projects and evaluate their collateral values to birds and wildlife using science and planning tools developed by the Habitat and Population Evaluation Team (HAPET) and other science partners.

One exciting example of this work is the [Golden Triangle Conversion of Expired CRP to Grazing Land TIP](#), developed in close partnership with Pheasants Forever. Since 2017, an estimated 60,000 acres of grasslands in north-central Montana have expired from the Conservation Reserve Program (CRP) and have been converted to cropland. This region contains at least another 190,000 acres of CRP that are at high risk of conversion - nearly a quarter of the grassland in this area! The goal of this TIP is to transition 20,000 acres of expiring CRP to grazing land by cost-sharing on necessary infrastructure and management plans. NRCS allocated a total of \$3.5

million in Environmental Quality Incentives Program funding for this project, to be spent over three years.

Projects like this are important for preserving the integrity of the remaining core grasslands in the Prairie Pothole Region and the bird populations they support. Using HAPET models, we estimate that transitioning 20,000 acres of CRP to grazing land will result in a 1% increase in priority grassland bird populations within the TIP area. Most of these populations are in steep decline, so even a modest positive response is notable! This TIP aligns with the Central Grasslands Roadmap framework that urges voluntary retention of vulnerable grasslands. Successful implementation of this TIP will directly contribute to achieving the PPJV Montana State Tactical Plan objective of conserving expiring CRP.

The PPJV is grateful to Montana NRCS for funding that supports PPJV staff involved in this important work.





Diverse Partnerships for Iowa's Habitat and Water Quality

Photo: Lowell Washburn

Mark Gulick, Iowa DNR

The Iowa Great Lakes watershed and surrounding area in northwest Iowa is a regionally important vacation destination and provides nationally important wildlife habitat. Driven by attributes associated with very good water quality in East and West Okoboji and Big Spirit Lakes, annual visitation tops 1 million and generates over \$3.5 million in spending. An exceptional habitat base featuring over 13,000 acres of public land and water (not counting large lakes) within the watershed features remnant and highly diverse reconstructed prairies as well as existing and restored wetlands and shallow lakes. This mixture of high-quality upland and aquatic systems and its location on the western edge of Iowa's Prairie Pothole Region makes the area a premier bird production and migration area. A portion of the area is designated as a State Bird Conservation Area, providing habitat for over 200 bird species.

Acquisition and restoration of critical habitats is driven by a diverse coalition of funding partners and sources, representing both local and national organizations as well as private individuals. While each has their own goals, improving and maintaining optimum water quality is the driving force that leads these entities to contribute significant time and treasure to the local resource. Resource professionals have divided the Iowa Great Lakes Watershed into 18 Resource Management Areas (RMA). Within these RMAs, professionals use sediment delivery models and other information to identify areas in most need of conservation. Private lands staff then use a multitude of tools to promote best management practices on private lands, and, in some cases, tracts are purchased from willing sellers when there is alignment with the public land goals of the Department of Natural Resources and U.S. Fish & Wildlife Service.

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The efforts of the Iowa Great Lakes Conservation Community have resulted in exceptional wildlife habitat and public recreation areas. The water quality results are real, measurable, and impressive: in the last 20 years, the average annual water clarity in East Okoboji and Big Spirit has doubled to about 6', and on West Okoboji, the deepest of the lakes at 136', average annual clarity is now over 20'. These visible accomplishments help to drive high levels of public support for this work, in turn driving further opportunities for habitat and water quality work in the watershed.



Lowell Washburn



West Hottes Lake RMA highlighting a beneficial mixture of public and private lands designed to provide optimum wildlife habitat and water quality enhancement attributes, such as remnant and restored prairie, existing and restored wetlands, and shallow lakes.





The Hunt for an Emblem of the Prairie: The Dakota Skipper

Photo: Luke Toso

Kevin Barnes, Luke Toso, & Neal Niemuth, USFWS

The Dakota skipper is a small butterfly endemic to the northern Great Plains that is emblematic of undisturbed native mixed-grass and tallgrass prairie. With the ongoing loss of native grassland throughout the PPJV and subsequent population declines, this species was listed as threatened in 2014 under the U.S. Endangered Species Act.

Like many of our native grassland birds and other pollinators, prairie skippers are indicative of functioning prairie habitat. These butterflies rely specifically on native grasses and flowers for their life cycle, spending most of their life as caterpillars that construct silk shelters at the base of native grasses. Adults emerge around the same time their host flowers bloom and must reproduce during a short window to sustain the population. If any of these elements are missing, the population may disappear. Skipper presence on the prairie indicates that the ecological needs of the species are present and the system is functioning naturally.

Skippers are difficult to detect and have a short flight period, but research is ongoing to help scientists and conservation planners understand this species' ecology. Biologists from the U.S. Fish & Wildlife Service Habitat and Population Evaluation Team and Ecological Services used a machine learning approach to [develop a landscape-scale species distribution model](#) that predicts relative probability of occurrence of Dakota skippers across portions of North Dakota, South Dakota, and Minnesota. The model indicated that Dakota skipper occurrence was positively associated with undisturbed grass containing high percent cover and biomass of perennial grasses and forbs while negatively associated with crop and restored grassland cover.

Several agencies are already using the model for decision support. USFWS Ecological Services, working in conjunction with the North Dakota Natural Resources Trust, used the model to inform survey efforts and identified a previously

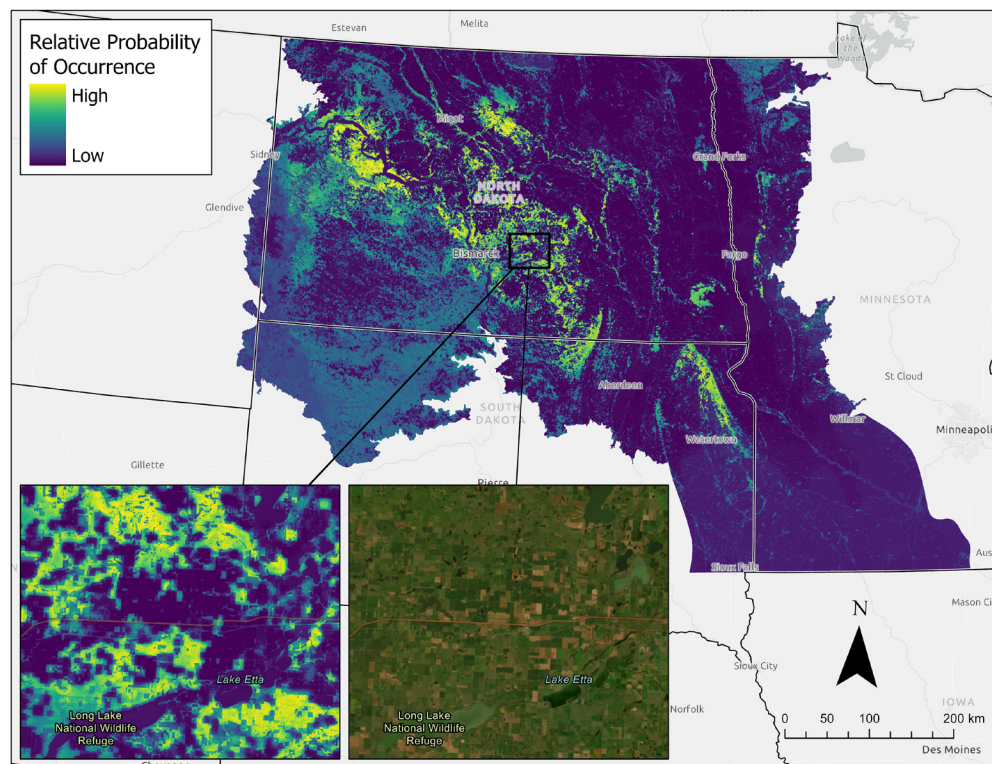
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unknown Dakota skipper population. The USFWS Refuges program is using the model to guide conservation delivery earmarked for pollinators, and the model has also been used to identify potentially suitable habitat that should be avoided by energy development. Additional research is needed to better understand the specific ecological requirements for the Dakota skipper, the potential for re-establishment on restored grasslands, and the influence climate change may have on life functions. The continuation of successful collaborative conservation work such as this can help ensure the necessary research and conservation are achieved to maintain the Dakota skipper and other emblems of quality grassland on the landscape.



Luke Toso



Relative probability of Dakota skipper occurrence for portions of North Dakota, South Dakota, and Minnesota indicated an association with prairie, especially east of the Missouri River, and strong avoidance of cropland. Two call-out boxes provide a depiction of this association near Long Lake National Wildlife Refuge with relative probability of occurrence on the left and aerial imagery on the right. High probability of occurrence (left) is associated with large patches of native grasslands (right) and low probability of occurrence is associated with crop fields and large bodies of water.





Managing Rangelands for Carbon Capture

Photo: Rebecca Phillips, PhD

Rebecca Phillips, Ecological Insights Corporation
Lewis Heaton, Heaton Ranch
Jesse Beckers, North Dakota Natural Resources Trust

Rarely do scientists, ranchers, conservationists, and energy production companies partner for the purpose of understanding how rangeland ecosystems function to draw-down carbon dioxide from the atmosphere. Now that excess atmospheric carbon dioxide needs to be removed and transferred below ground, several organizations are asking how this natural process could be enhanced to benefit the ecosystem and land values for ranchers.

Each partner in this project wants to know a) if rangelands can be managed to enhance carbon dioxide capture and b) the number of metric tonnes per year that are sequestered in rangelands. Ranchers like PPJV Management Board member Lewis Heaton assert that managed grazing results in more productive rangelands, but data is lacking on how managed grazing affects daily carbon

capture rates. The goal of this project is to apply advanced technologies to assess, in the field, how managed grazing alters the annual amount of carbon sequestered on a working ranch. Heaton hopes the research results will add value to rangelands through annual carbon sequestration payments at little or no risk to the rancher.

Currently, federal incentives favor measures that avoid carbon dioxide emissions or 'capture' carbon dioxide at the stacks of industrial facilities. Prices for these "carbon credits" vary but tend to range from \$40 - \$180 per metric ton of carbon dioxide, depending on how the carbon dioxide is used and stored. Natural carbon dioxide captured in rangelands is more difficult to quantify and consequently these natural systems fall into the voluntary market, where pricing may range from \$14 - \$40 per unit.

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This controlled study applies the international gold standard for carbon dioxide measurement (pictured below) covering two 50-acre pastures on Heaton's ranch. While a full accounting of findings will not be available until 2024, preliminary results show that grazing followed by recovery may result in greater atmospheric carbon dioxide uptake weeks after grazing, compared to uptake at an ungrazed pasture. Once published, Heaton and other ranchers can hopefully use the findings to add value to their rangeland by selling multi-year carbon contracts for capturing and sequestering carbon dioxide from the atmosphere.

This work would not be possible without the support of our funding partners, including the North Dakota Industrial Commission, North Dakota Game and Fish, Hess Oil Company, National Fish and Wildlife Foundation, North Dakota Grazing Lands Coalition, Northern Great Plains Joint Venture, The Nature Conservancy, and Ducks Unlimited.



An aerial photograph of a rural landscape. A large, irregular area in the center-right of the image is outlined in red. This area contains a dense forest of green trees and a large, dark, irregularly shaped pond. To the left of the red-outlined area is a large, flat, brownish field, likely a plowed agricultural field. In the background, there are more green fields, some smaller ponds, and a line of trees under a clear sky.

Reimagining Farming with Precision Conservation

Photo: Pheasants Forever, Inc.

Pheasants Forever, Inc. and Quail Forever

Through an innovative new ‘Precision Conservation’ incentive, farmers across the PPJV in Minnesota and Iowa can now get paid to farm their best acres while also tapping into existing financial assistance programs to get paid for conserving their marginal acres.

Using precision agriculture technology, staff from Pheasants Forever analyze field data to understand crop performance and profitability within a field. Unprofitable ‘red acres’ are identified and then a proposal is developed with different options available for the farmer to voluntarily change those areas into conservation cover.

The new ‘Precision Conservation’ incentive is paid on the higher quality acres that remain in production. The payment rate increases with the percent of conservation acres being adopted. Participating producers agree to maintain that management change for at least five years.

“The more problem acres that are moved into perennial cover, the higher the incentive payment rate is on the balance of the field,” said Josh Divan,

the Iowa State Coordinator for Pheasants Forever and Quail Forever. “Participants are motivated to focus production on their very best acres and to enroll unprofitable or problematic acres into a conservation program or other land use.”

In the PPJV, the unprofitable areas are often the prairie potholes themselves and by enrolling these areas in wetland conservation programs, farmers can improve farm income since crops are often damaged during wet years. Acres restored thanks to this new incentive contribute to the goals outlined in the PPJV Implementation Plan and requisite State Tactical Plans and continue the tradition of PPJV partnerships working alongside America’s farmers, ranchers, and landowners to deliver voluntary, incentive-based conservation objectives.

This incentive program was awarded a USDA Conservation Innovation Grant (CIG). Pheasants Forever has partnered with Practical Farmers of Iowa and the PPJV to deliver the \$1 million ‘Reimagining Modern Crop Fields’ CIG project.





Preserving the Prairie: Audubon Great Plains' Commitment to Conservation through Prescribed Fire

Photo: Audubon Great Plains

Audubon Great Plains

Before European settlement, Great Plains grasslands burned regularly; a given swath of tallgrass prairie in the eastern plains would have burned at least every three years. Periodic fires helped to renew grasslands and keep trees and shrubs from gaining ground. Despite this, fear of fire on the prairie and in the forests in recent times has led to misunderstanding and underutilization of prescribed fire as a habitat management tool.

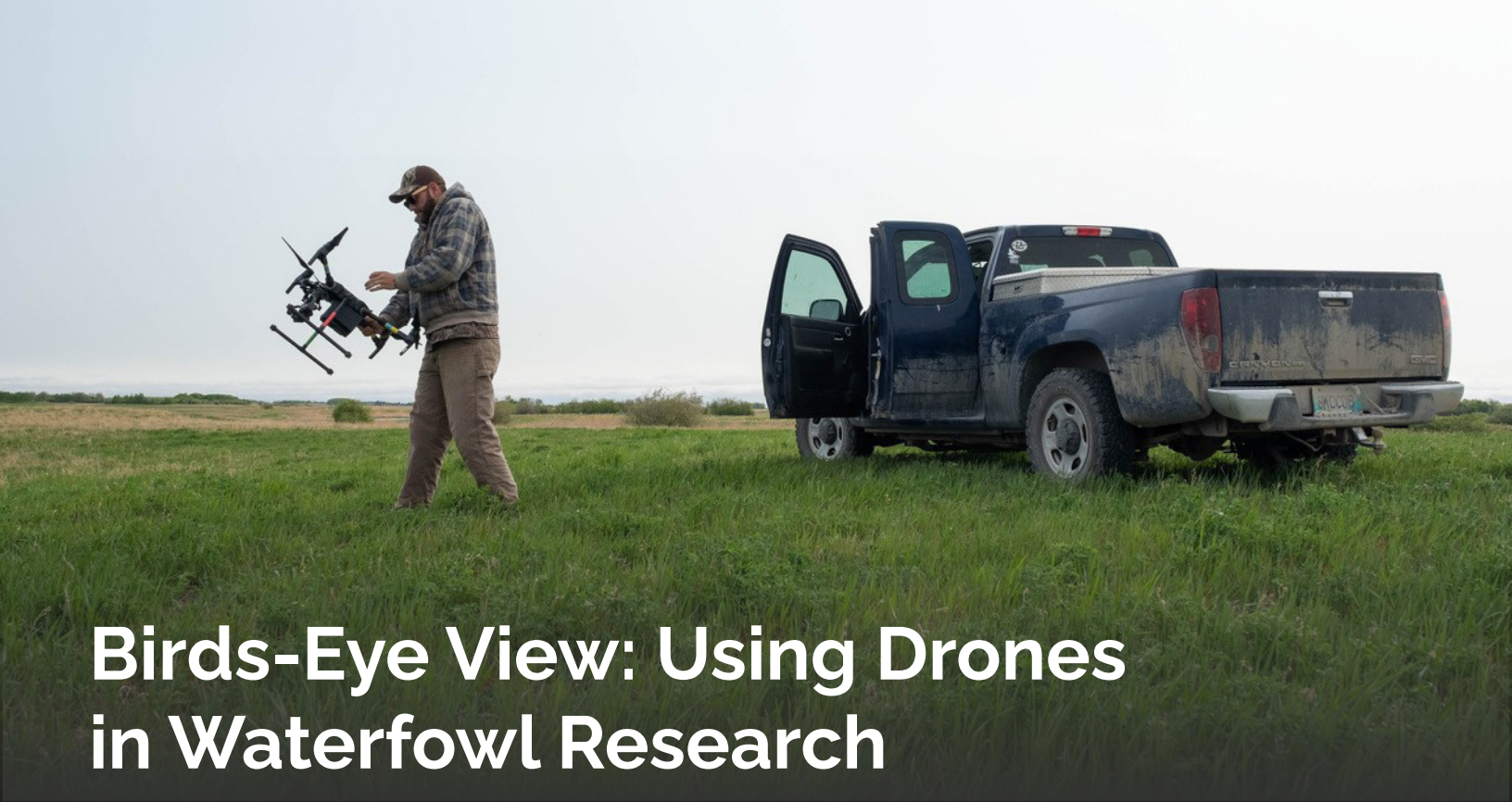
Contrary to long-held beliefs about fire and grazing, prescribed fire emerges as a powerful resource in nurturing the health and vitality of prairies. Prescribed fire mimics the natural processes that shaped grassland ecosystems, effectively controlling invasive species, improving species diversity, enhancing soil health, and fostering a resilient landscape for future generations. Embracing the practice of prescribed fire is a crucial shift in the approach to grassland management.

Partners within the Prairie Pothole Region are promoting the importance of fire and teaching land stewards how to burn with confidence.

Audubon Great Plains is dedicated to advancing conservation by utilizing prescribed fire and providing working lands assistance through various cost-share programs. Recognizing the crucial role that fire plays in maintaining healthy ecosystems, Audubon Great Plains collaborates with landowners, public agencies, and communities to advocate for and execute controlled burns. Additionally, Audubon works with partners to provide educational opportunities to raise awareness about the ecological benefits of prescribed fire and to provide hands-on learning opportunities.

Pheasants Forever, Audubon Great Plains, and The Nature Conservancy are sharing equipment, knowledge, and time to get prescribed fire back on the landscape. Partners are contributing to the purchase of mobile prescribed burn units that enable strike teams to work with landowners across large areas. Partners are also hosting prescribed fire field days to provide hands-on experience. This work and thoughtful approaches to fire ensure our landscape remains resilient for the benefit of future generations.





Birds-Eye View: Using Drones in Waterfowl Research

Photo: Delta Waterfowl

Delta Waterfowl Foundation

Duck populations are limited by breeding season events, and improving brood survival is of core interest to waterfowl managers. Scientists with Delta Waterfowl took advantage of a recent nest predator removal experiment to study how duck population demographics responded. As part of this study, drones were used to conduct breeding pair counts and estimate brood abundance and survival. The overarching goals were to determine the effectiveness of predator removal in boosting nest and brood survival and to develop less invasive methods of monitoring duck broods with drones.

Breeding pair counts utilized three different types of searches. The drone-based approach used thermal imagery and zoom cameras to record the species, sex, and social status for every duck observed. Once the drone survey was complete, observers walked the pond as if conducting a traditional pair count survey. A third count was conducted in which the observer made noise and

beat cattails to cause ducks to flush from the pond, assuming this approach would detect all ducks on the wetland. Initial results suggest the drone surveys were an efficient option for conducting breeding pair counts as they counted the same number of ducks as traditional methods, but in less time.

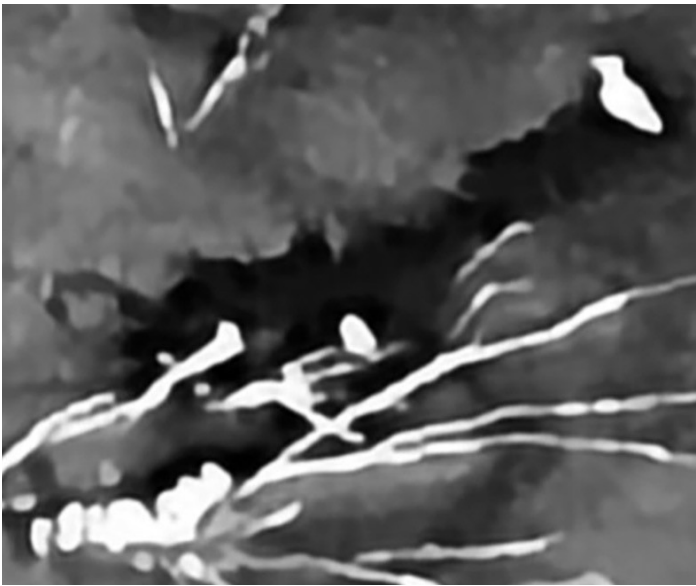
To conduct brood abundance surveys, observers worked in teams to count duck broods and record environmental conditions that might affect detection. When a brood was detected with the thermal camera, the drone operator identified the species, number of ducklings, and their age class using the optical camera. Past studies have conducted these same surveys which include unmarked broods and raised concerns about how accurate the detection rates were. This project takes the research a step further by deploying a novel two-step observation method using drones equipped with either radio-receivers or thermal and optical cameras. Observers first lo-

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cated radio-marked brood-attending females using a drone equipped with VHF receivers, then deployed a separate drone with thermal and optical cameras to count ducklings and look for nasal saddles that confirm the identity of the hen. By using unique markers with visual cameras and VHF radios to maximize detection rates, Delta will be able to compare these results with unmarked brood surveys and develop robust visibility correction factors.

This study illustrates the potential of Delta's pioneering drone research to advance waterfowl pair and brood production surveys. Traditional surveys may take hours to complete, given the secretive nature of broods and their tendency to take cover when researchers approach, which likely results in greatly underestimated counts. Drone surveys offer an effective way to detect a higher percentage of broods than a ground-based observer could see, and in a fraction of the time. The initial phase of evaluating drone technologies to monitor broods was partially supported with funding from the PPJV and Delta Waterfowl. Delta Waterfowl will continue this exciting project and expand evaluations with another field season in 2024.



Locating a brood with the thermal camera (left), then identifying it with the optical camera (right).



Partnering to Accelerate Restoration in the Eastern PPR

Photo: Mary Jo Hill, Pheasants Forever

Neil Powers, Fergus Falls Wetland Management District

The eastern Prairie Pothole Region of Minnesota is one of the most important areas in the Upper Midwest, contributing to the conservation of migratory bird populations as well as providing broad societal benefits such as water quality improvement and reduced downstream sedimentation. The U.S. Fish and Wildlife Service (USFWS) has already made a substantial investment in over 300,000 acres of Waterfowl Production Areas, National Wildlife Refuges, and conservation easement lands in Minnesota. Opportunities for continued habitat gain through protection and restoration remain at unprecedented levels. Conservation at this scale supports improved landscape function and is critical for building climate adaptation and resiliency capacity to ensure current and future biodiversity remains intact.

Through the collaboration and support of several organizations and programs, a partnership supported through PPJV funding was established to hire three full-time Pheasants Forever (PF) employees. The primary goal of this partnership is

to support habitat protection and restoration in the Morris and Fergus Falls Wetland Management Districts (WMD). PF habitat partnership specialists prioritized delivering wetland and grassland restoration associated with the acquisition of perpetual conservation easements administered by the U.S. Fish & Wildlife Service. Working directly with Partners for Fish and Wildlife biologists, these individuals reduced the backlog of acquired acres waiting for habitat to be restored.

Complex restoration efforts in the eastern PPR are commonplace given the extensive land alteration. Areas once tilled and drained for agricultural production are ecologically restored, offering a suite of benefits that is additive in nature. The “conservation gain” realized by this approach magnifies habitat availability and societal benefits to this area. Investments in habitat restoration in priority areas often have an immediate return in the form of increased wildlife use, capacity, and production.

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In 2023, a variety of habitat restoration and enhancement activities were completed on new wetland and grassland conservation easements. Wetland restorations, prairie plantings, and woody vegetation removal are often implemented to restore or enhance habitat. Between the two WMDs, PF employees completed 52 projects, impacting 1,820 upland acres and 788 wetland acres for a combined 2,608 acres of restoration accomplishments. When combined with efforts to perpetually protect wetland and grassland habitat through acquisition of conservation easements, more than 5,200 acres were protected and restored across both WMDs. Similar acreage and project goals are anticipated over the next several years. The partnership supporting this critical work helps ensure that habitat conservation for the benefit of priority species and local landowners will continue across the eastern PPR landscape.



Lindbloom wetland construction (left) and post-construction (right). Photos: Mary Jo Hill, PF.



Lacey Basin sediment removal (left) and post tile removal and scrape (right). Photos: Mary Jo Hill, PF.





Scaling Soil Health to Restore PPR Grasslands

Photo: Ducks Unlimited, Inc.

Ducks Unlimited, Inc.

Producers, especially those who have been looking at rotational grazing practices but have been deterred by cost, may find interest in a new program offered by Ducks Unlimited (DU) in partnership with the Natural Resources Conservation Service. With five years of USDA funding approved through the Regional Conservation Partnership Program (RCPP), the “Scaling Soil Health in the Prairie Pothole Region” initiative provides voluntary conservation incentives to farmers and ranchers looking to boost soil health, restore grasslands, and improve rotational grazing capacity for livestock on their properties. The RCPP partnership includes 20 conservation partners across South Dakota, North Dakota, and Montana, creating a \$17 million investment in prairie working lands.

The program will integrate regenerative agriculture practices by planting cover crops and small grains into reduced tillage fields. It will also promote the restoration of large tracts of native grasslands and provide livestock grazing infrastructure such as fencing and stock water development. Environmental and economic data will be collected by the RCPP partnership to prioritize connections

between farmers and ranchers to advance local soil health education and mentorship opportunities. DU’s conservation staff will offer financial and technical assistance to agriculture producers.

The primary focus of this effort is to help plant marginal cropland to diverse native perennial grasses and enhance grasslands through grazing. Partnerships are designed to prioritize the establishment of grasslands and the enhancement of existing grazing systems, and areas with a high density of wetlands are emphasized. Successful applicants will develop three- to five-year management plans to achieve specific objectives, receive incentives to collaborate and share data with project partners, and attend learning opportunities to maximize benefits achieved from applied conservation practices.

South Dakota is already on its second application process, and North Dakota is in the midst of its first. DU’s hope for this program is to help all project partners improve the landscape for generations to come, while at the same time providing a valuable service to local agricultural partners.





Prairie Pothole JOINT VENTURE

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Front & Back Cover Photo: Jacquie Evans