

Golden Triangle Conversion of Expired CRP to Grazing Land

Targeted Implementation Plan (TIP) FY2024–2026

Chester/Havre/Great Falls Work Unit

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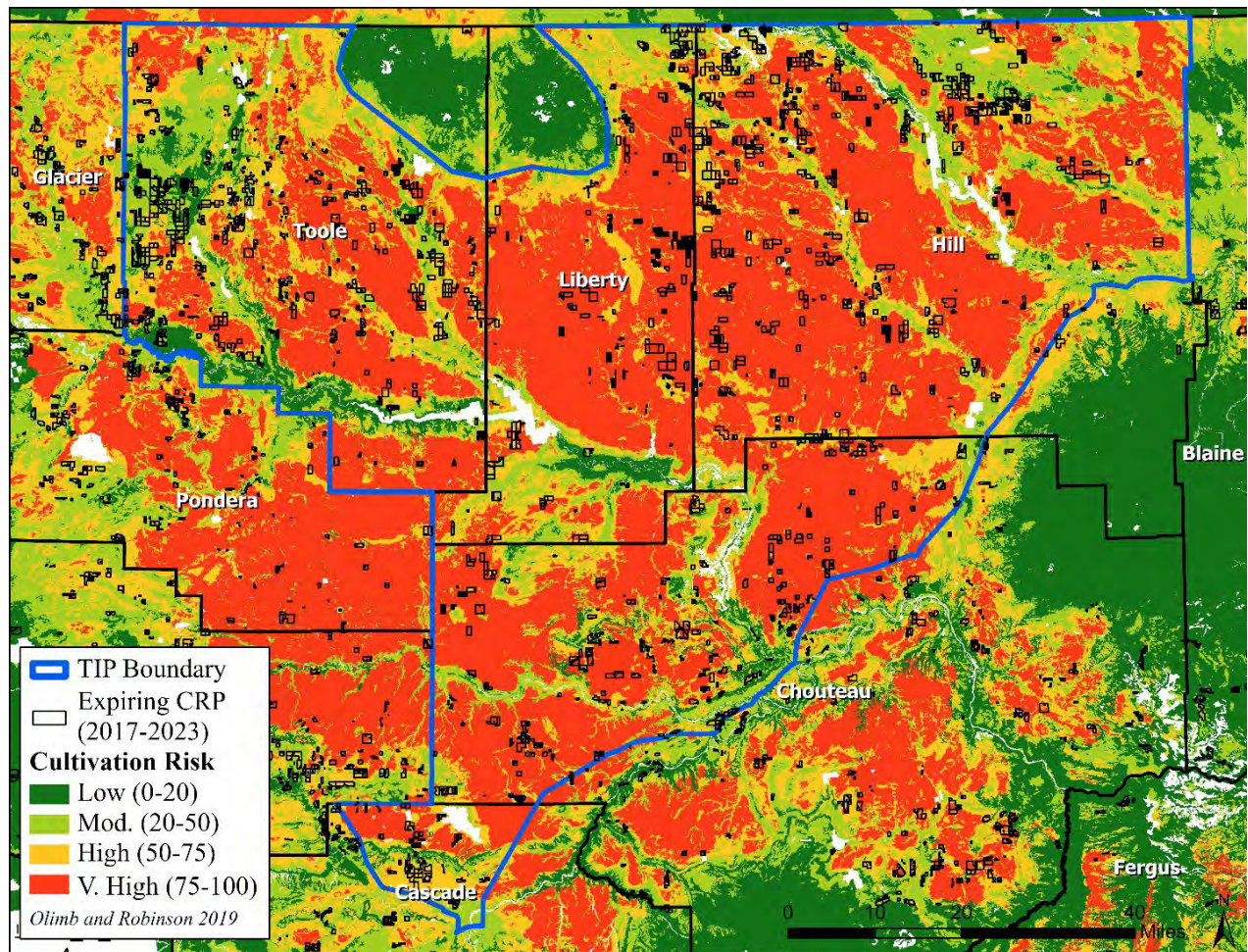


Figure 1. Cultivation risk (suitability for cropping based on climate, soils, and topography) and expired/expiring CRP (2017–2023) in the Golden Triangle region of Montana (Olimb and Robinson 2019).

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TABLE OF CONTENTS

TIP SUMMARY	3
Geographic Focus	3
PROJECT OVERVIEW.....	5
Background Information.....	5
Resource Concerns	6
Goals and Objectives	8
Proposed Alternatives.....	8
No Action Alternative	8
Alternative 1: Management and Infrastructure (selected).....	8
Alternative 2: Infrastructure	8
IMPLEMENTATION.....	9
Workload Management	9
Education and Outreach.....	9
Proposed Budget and Timeline.....	9
Partnerships	10
Anticipated Outcomes	11
Evaluating Outcomes.....	11
Ranking Questions.....	12
LITERATURE CITED.....	13

TIP SUMMARY

The primary goal of this TIP is to maintain previously expired or expiring CRP in perennial vegetation. Over 250,000 acres of expired and expiring CRP are at high risk of being converted to annual cropland in Montana’s Golden Triangle region. We expect to transition about 20,000 acres of expired/expiring CRP to grazing land by incentivizing the installation of necessary grazing infrastructure (water, fences) and creating sustainable grazing plans.

Resource Concerns:

Primary: inadequate livestock water quantity, quality, and distribution

Secondary: terrestrial habitat for wildlife and invertebrates

Tertiary: plant productivity and health

Estimated Budget: \$3,480,710 for 40 contracts

Timeline: Contracts will last 3 to 5 years. Sign-ups will occur over 3 years (FY2024–2026).

Geographic Focus

Description: Expired/expiring CRP acres in the Hill, Liberty, Toole, northeast Chouteau, and northern Cascade counties (4,543,877 ac; **Fig. 2**).

Reason: The TIP project area targets concentrations of CRP in areas with both high cultivation risk and high densities of priority grassland birds. The project area contains nearly a quarter (23%) of the 2017 to 2023 expired or expiring CRP acres in Montana. Also, expired CRP in this area is at high risk of being converted to cropland with 78% of the project area at high or very high risk of cultivation (**Fig. 1**). Conversion of expiring CRP to cropland is a major threat (**Table 2**) across all three work units and as such, should be addressed at a multi-county scale. In addition, maintaining grassland habitat in the project area is important for priority grassland bird species (see the **Wildlife Conservation Values Appendix**).

Table 2. 2017-2023 expired/expiring CRP acres (% in TIP) and average cultivation risk by county (Olimb and Robinson 2019). Rank compared to all Montana counties with 1 being the highest.

Area	Expired/Expiring CRP Acres	Rank	Average Cultivation Risk	Rank
Hill	90,838 (98%)	1	65	3
Toole	71,174 (99%)	3	57	6
Chouteau	67,424 (59%)	5	53	7
Liberty	35,890 (100%)	11	68	1
Cascade	25,080 (31%)	17	22	18
TIP Area	249,378	NA	71	NA

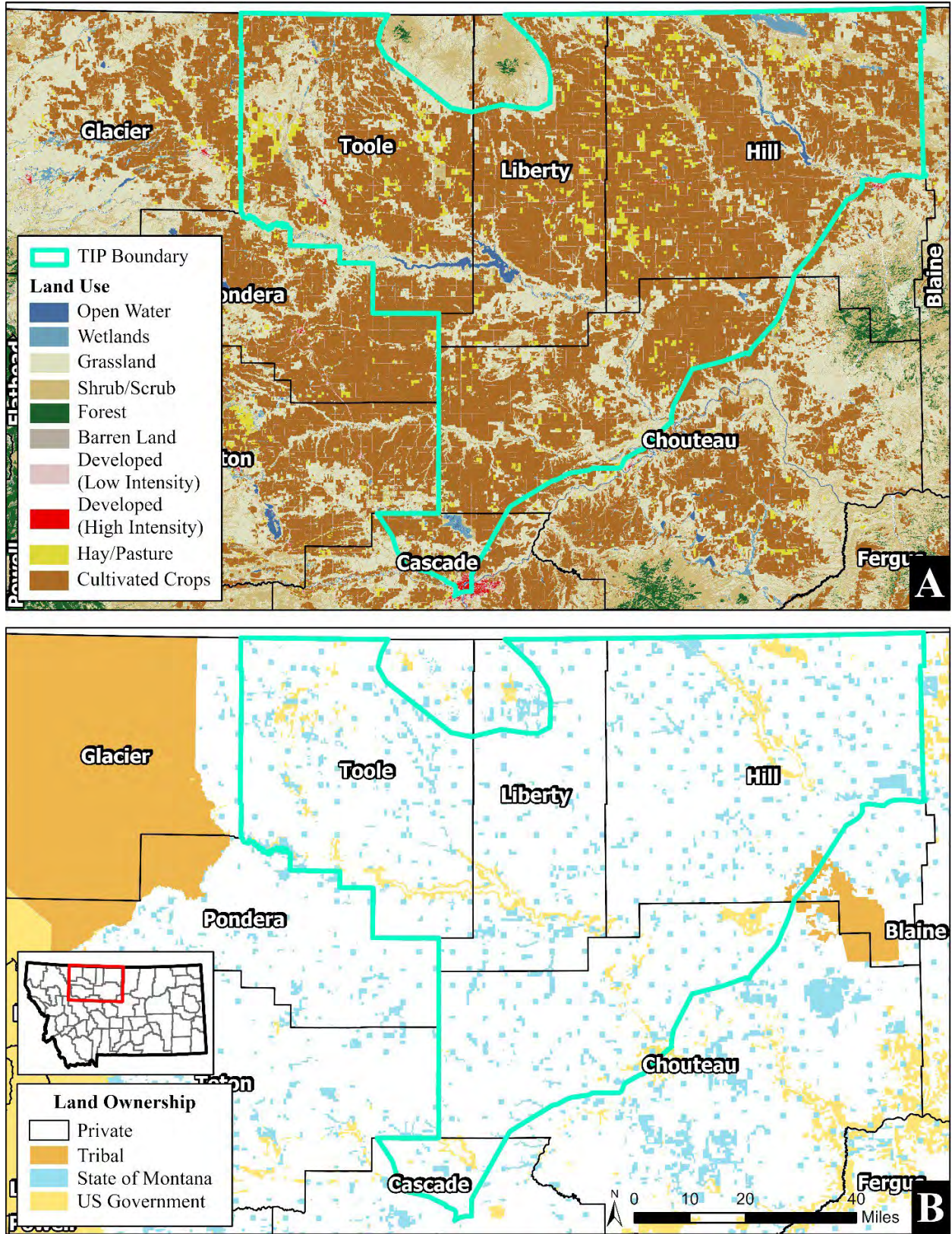


Figure 2. TIP area in relation to land use (A; USGS 2021) and land ownership (B).

PROJECT OVERVIEW

Background Information

Over the past 5 years (2017–2021) approximately 60,000 acres enrolled in Farm Service Agency’s (FSA) Conservation Reserve Program (CRP) have expired from the program and have been converted back into annual cropping operations in the project area (USDA-NASS 2022). From 2017 to 2022, a large proportion of expiring CRP acres were not eligible for re-enrollment in the program due to FSA species composition requirements that disallowed stands with > 50% Crested Wheatgrass (*Agropyron cristatum*) and/or Smooth Brome (*Bromus inermis*). Due to the high costs of renovating these stands to new species compositions, a producer’s easiest choice was often to convert these CRP acres back into annual cropland. This rule was rescinded in 2023, however conversion to cropland continues to be a substantial risk whenever CRP contracts expire. When CRP is converted back into annual cropping, years of conservation benefits for soils, climate, water quality, and wildlife are lost almost immediately.

Transitioning CRP into grazing lands is often the best option to balance financial needs for producers as well as keep conservation benefits on the ground. Yet, without financial support this is often not possible. Expired CRP acres have plentiful grass but lack necessary livestock infrastructure (water and fence) to allow for transition to grazing lands. Incentivizing these infrastructure practices will allow expired CRP acres to be integrated into grazing operations and will likely keep them intact for the long term, regardless of variation in CRP program funding.

Within the TIP area 249,382 acres of CRP have expired or will expire from 2017 through 2023 (**Table 1**)—a significant proportion of the grassland in the project area (~25%, NLCD 2021). Despite producing marginal crop yields at disproportionately high costs to wildlife habitat and other natural resources (Lark et al. 2020), these acres are at high risk of conversion to cropland (78% of the project area is at high or very high cultivation risk, **Fig. 1**). This risk only increases the longer expired CRP is out of the program without grazing infrastructure. For this reason—and because few CRP acres are expiring after 2023—it is imperative to implement this TIP as soon as possible.

Table 1. Expired/expiring CRP acres in the TIP area. Expired acres that later reenrolled are excluded.

Year	Expired/Expiring CRP Acres
2017	54,914
2018	39,395
2019	44,213
2020	35,017
2021	16,964
2022	23,991
2023	34,885
2024–2031	35,031
Total	
2017–2023	249,378

Resource Concerns

Conversion of perennial cover to cropland negatively affects every resource concern category (**Table 3**). Adding grazing infrastructure to expired CRP will prevent these negative effects, improve grazing management, and address our primary resource concern: *inadequate livestock water quantity, quality, and distribution*. Improved grazing management will in turn address our secondary and tertiary resource concerns: *terrestrial habitat for wildlife and invertebrates* and *plant productivity and health* (see **Table 4** and the **Wildlife Conservation Values Appendix**). Transitioning CRP to grazing land addresses resource concerns identified by the local working groups in all five counties in the project area:

County	Resource Concerns Identified in Long-Range Plans	Reference
Cascade	livestock water	2019, pg. 39
Chouteau	inadequate livestock water, fish and wildlife habitat, degraded plant condition on rangeland	2020, pg. 12
Hill	unreliable livestock water, rangeland plant health, conversion of CRP acres to cropland, loss of wildlife habitat	2020, pg. 13
Liberty	grazing lands, fish and wildlife habitat	2020, pg. 13
Toole	productive rangeland plant communities (water developments/cross fences), healthy wildlife populations	2019, pg. 13

Table 3. Summary of potential effects of CRP conversion to annual cropland by resource concern category. A goal of this TIP is to prevent the conversion of CRP to cropland.

Resource Concern Category	Effects of CRP conversion to Cropland
Soil	Increase soil erosion, organic matter depletion, and soil organism habitat loss
Water	Increase pesticide and nutrient input in water and inefficient use of natural available moisture
Air	Increase particulate matter from wind erosion (particularly on highly erodible land) and greenhouse gas emissions from equipment and tillage. Release of sequestered carbon and decrease in future carbon sequestration*
Plants	Degrade plant structure and composition and increase plant pest pressure
Animals	Decrease in terrestrial wildlife habitat and priority grassland birds (-0.20 birds per acre; see Appx.)

**The 249,378 expired/expiring acres of CRP in the TIP area sequestered the equivalent of nearly 123,571 metric tons of CO₂ (equivalent to ~15,500 homes' energy for one year) per year enrolled in CRP. If all 249,378 acres are converted to cropland, over 12 million metric tons of CO₂ would be released into the atmosphere (equivalent to >1.5 million homes' energy for one year; Spawn et al. 2019).*

Table 4. Summary of potential effects of CRP conversion to grazing land by resource concern category. A goal of this TIP is to promote the conversion of CRP to grazing land.

Resource Concern Category	Effects of CRP conversion to Grazing Land
Soil	Maintain soil organic matter, soil organism habitat, and low soil erosion rates.
Water	Maintain high water infiltration and naturally available moisture use.
Air	Maintain and potentially increase carbon sequestration rate (~0.50 CO ₂ metric tons per acre per year).
Plants	Improve plant health, structure, and composition.
Animals	Improve livestock water availability and terrestrial wildlife habitat. Increase priority grassland birds (0.27 birds per acre; see Appx.).

Goals and Objectives

The primary goal of this TIP is to maintain expired or expiring CRP in perennial vegetation and retain the ecosystem services (e.g., carbon sequestration, wildlife habitat, grazing economic opportunity) associated with perennial vegetation. The objective for this TIP is to retain 20,000 acres of expired or expiring CRP in perennial vegetation. This objective will be accomplished by incentivizing necessary grazing infrastructure (e.g., livestock water and fences) and prescribed grazing plans to aid in the transition of expired CRP to grazing land.

Proposed Alternatives

No Action Alternative

Expired and expiring CRP acres will be out of the program and no longer receiving annual payments. Without payments to keep the acres in perennial vegetation producers will have to find ways to keep these lands profitable and a part of their operation. Due to high costs of livestock water infrastructure, fence, and hay equipment many producers are likely to convert expiring CRP into annual farming operations. These annual farming operations are likely to have high tillage or chemical usage, high fertilizer application, and may have low diversity that degrades soil health and function. This alternative does not support the goals of the Local Working Groups.

Alternative 1: Management and Infrastructure (selected)

Under this alternative NRCS will work with producers to install wildlife-friendly boundary fences and cross fences, livestock water infrastructure, and create sustainable grazing rotations through prescribed grazing. Priority will be given to applicants that are willing to sign-up for prescribed grazing. Expired and expiring CRP lands will be integrated into grazing operations that are likely to keep them in perennial vegetation for the long term. This is the preferred alternative because it addresses the most resource concerns identified by the Local Working Groups over the short and long term.

Alternative 2: Infrastructure

This alternative would include the necessary grazing infrastructure (wildlife-friendly fences and livestock water) to transition expired and expiring CRP to grazing land, but it would not provide an option to encourage sustainable grazing management and stocking rates through prescribed grazing. This alternative would likely keep CRP lands in perennial vegetation for the long term. However, without prescribed grazing, poor grazing management is more likely to occur which would reduce the resilience of grazing lands to extreme weather and reduce, nullify, or even reverse the natural resource benefits gained by transitioning CRP to grazing land over the long term.

IMPLEMENTATION

Workload Management

At least 80% of the workload demands will be handled by the county field offices, including education and outreach. Some assistance may be needed from engineering staff to survey and design planned stock water projects. Additional assistance may also be needed from range management specialists to complete grazing land inventories on considered acres.

Education and Outreach

At least two outreach meetings (Liberty/Toole, Hill) and three workshop or educational tours (Cascade/Chouteau, Hill, Liberty/Toole) will be planned. Outreach meetings will provide a general overview on how to apply and participate in the EQIP program, as well as the program funding available through this TIP project. Workshops will have additional education on soil health principles, grazing rotations on tame grasses, setting appropriate livestock stocking rates, and integrating livestock into a farming dominated landscape.

With the assistance of the Prairie Pothole Joint Venture, targeted mailings were sent to ~270 producers with CRP acres that expired between 2020 and 2023 to gauge interest. As of April 2023, 11 producers (~3,700 acres) have expressed interest in a TIP contract. Further outreach will be conducted through another round of targeted mailings (2017–2019 expired CRP) and discussions during final CRP contract status reviews (2023–2026 expiring CRP).

Proposed Budget and Timeline

This TIP will require approximately \$3,480,710 to fund 40 EQIP contracts over 3 sign-up years (FY24–26; **Table 4**). The average sized EQIP contract for this TIP is estimated to require between \$60,000 and \$90,000 in EQIP funds. These contracts will last 3 to 5 years, with the first one to two years dedicated to installing grazing infrastructure followed by one to three years of prescribed grazing.

Table 4. Requested NRCS EQIP funds for an estimated 40 EQIP contacts (20,000 acres) split between three sign-up years. Cost based on FY23 EQIP Payment Schedule. 10% overage was added to the total cost to account for inflation and minor changes.

Practice	Scenario	Units ³	Cost	
533	Pumping Plant	Electric-Powered Pump, ≤ 5 hp ¹	40 1-hp. pumps	\$81,022
224	Aquifer Flow Test	Aquifer Flow Test	40 pump tests	\$56,812
642	Water Well	Typical well, 100 to 600 ft depth	20 500-ft. wells	\$508,000
614	Watering Facility	Permanent Drinking with Storage, 1,000 to 5,000 Gallons	40 at 2,000 gal./tank	\$207,200
516	Livestock Pipeline	Below Frost PVC, HDPE, IPS, PE	105,600 ft.	\$268,224
382	Fence	Barbed/Smooth Wire ²	633,600 ft.	\$1,514,304
382	Fence	Electric	52,800 ft.	\$87,120
528	Prescribed Grazing	Pasture, Standard	20,000 acres for 2 years	\$233,600
528	Prescribed Grazing	Pasture, Moderate	5,000 acres for 2 years	\$208,000
FY24 (10 contracts)			\$870,177	
FY25 (20 contracts)			\$1,740,355	
FY26 (10 contracts)			\$870,177	
Total			\$3,480,710	

¹ All scenarios will be adopted to allow for flexibility during planning.

² All fences will follow wildlife friendly guidelines (MTFWP 2012).

³ Based on the following assumptions: 3 miles of fence, 0.5 mile of pipeline, and 1 tank (plus pump, pump test) per contract; new well in ~50% of contracts (95% of wells in TIP area are ≤ 500 ft, MBMG 2023); ≤ 25% of contracts will cross-fence (electric fence); most contracts will include 528 Pasture, Standard for ≤ 2 years with a smaller subset doing 528 Pasture, Moderate.

Partnerships

- **Ducks Unlimited (DU)**— DU will support the NRCS field office in organizing outreach meetings, preparing targeted mailings, and will assist with some workshop funding needs. They will also help perform joint outreach supporting this targeted plan and their “Scaling Soil Health RCPP”. Partnership development is ongoing—there is no confirmed financial contribution at this time.
- **Pheasants Forever (PF)**— PF will support the NRCS field office in organizing outreach meetings, preparing targeted mailings, and will assist with some workshop funding needs. Pheasants Forever helps with NRCS capacity needs with two Farm Bill Biologists in the project area. PF Farm Bill Biologists can assist with planning, monitoring, and inventory as needed. In-kind contribution is undermined as it will vary depending on contracting workload.

- **Prairie Pothole Joint Venture (PPJV)**— PPJV will provide up to \$10,000 to support the NRCS field office with partnership development, communications, preparing targeted mailings, and financial assistance with workshops. PPJV provided technical assistance on this TIP proposal and will provide technical assistance for evaluating outcomes via their Science Integration Specialist. In-kind contributions for technical assistance on this proposal are approximately \$2,000 (PPJV Science Coordinator time/support).
- **World Wildlife Fund**— WWF can provide interested producers monitoring, financial, and educational support through their Ranch System and Viability Planning (RSVP) Program. WWF is already working with one producer in the priority area on a RSVP project to kickstart a livestock water and fencing project on expired CRP. There are no confirmed financial contributions from WWF at this time, however their RSVP program is complimentary to the TIP objectives and will likely be expanded by TIP funding.

Anticipated Outcomes

- **Maintain 20,000 acres of perennial cover:** Grasslands are among the most imperiled ecosystems in the world and grassland loss across the Great Plains, particularly in the Prairie Pothole Region, continues at alarming rates (Lark et al. 2020). Outcomes from this TIP directly support goals and objectives of the NRCS Working Lands for Wildlife Great Plains Grasslands Biome Framework (NRCS 2021).
- **Provide 20,000 acres of grazing opportunities:** This TIP will result in 20,000 acres of additional grazing opportunities in the project area that will facilitate grazing-based economies, farm diversification, and improve economic resiliency for agricultural producers. Diversification of operations through integrated crop-livestock systems reduces economic risk from producing a single commodity and helps producers maintain a more stable income (Smart et al. 2021).
- **Increase priority grassland bird populations by 1%:** Models predict converting 20,000 acres of expired/expiring CRP to grazing land may increase priority grassland bird populations in the TIP area by 1% (see **Wildlife Conservation Values Appendix**). While a 1% population increase may seem nominal, many of these priority grassland bird species are in steep decline so even maintaining their populations is a strong conservation benefit, much less increasing them.
- **Sequester the equivalent of $\geq 10,000$ metric tons CO₂ annually:** Models predict converting 20,000 acres of CRP to grazing land will maintain a sequestration rate of 10,000 metric tons of CO₂ equivalent per year (equivalent to ~1,260 homes' energy for one year). This rate will increase by 1.3 metric tons of CO₂ equivalent per year for every 1,000 acres of prescribed grazing implemented.

Evaluating Outcomes

Progress will be measured by completing annual contract status reviews. Both field office staff and the landowners will work to monitor plant condition through baseline grazing

inventories and then by annual grazing land monitoring, such as photo-point monitoring and clipped plots. The PPJV Science Integration Specialist will assist with evaluating outcomes by using, at minimum, the following spatially explicit tools to estimate the impact of TIP projects on unmeasured metrics:

- **Carbon Sequestration Rate:**
 - COMET-Planner (comet-planner.com)
 - EPA’s Greenhouse Gas Equivalencies Calculator (epa.gov/energy/greenhouse-gas-equivalencies-calculator)
 - Spawn et al. 2019 models (prevented loss)
- **Grassland Bird Populations–Change and Prevented Loss:** Fields et al. 2018 models (see Wildlife Conservation Values Appendix)
- **Plant Biomass:** Rangeland Analysis Platform (rangelands.app)

Ranking Questions

1. Are the majority of the offered acres expiring/expired CRP?
Yes No
2. How long will prescribed grazing (528) be contracted?
3 years 2 years 1 year Not contracted
3. What is the highest cultivation risk within the offered acres? (Olimb and Robinson 2019)
Very High (>75, red) High (50–75, yellow) Low or Moderate (0–50, green)
4. Based on the grassland bird map (see Fig. A3 in appendix), what is the highest number of priority grassland bird species core areas in the offered acres?
≥ 2 0–1

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APPENDIX – Wildlife Conservation Values

The Golden Triangle region in north-central Montana is known for its good wheat-growing conditions, but its importance to grassland birds is lesser known. This region is adjacent to one of the largest remaining tracts of grassland in the Great Plains. This large tract of grassland (**Fig. A1**) supports some of the highest densities of four priority grassland bird species experiencing steep population declines (54–99% of 25% population core areas for Baird’s Sparrow, Chestnut-Collared Longspur, Sprague’s Pipit, Thick-Billed Longspur) and high grassland bird species richness (**Fig. A2**), making it is one of the most important areas for grassland birds in North America. Maintaining grassland in the Golden Triangle region, on the edge of this relatively intact landscape, is of particular importance for preserving the integrity of this core grassland area and the grassland bird populations it supports (Niemuth et al. *in prep*). Unfortunately, due to its suitability for wheat-farming, little grassland remains in the Golden Triangle (23% of TIP area) and the grassland that remains is at risk of being cultivated, with nearly 78% of its land falling in the high or very high cultivation risk category (Olimb and Robinson 2019; see **Fig. 1** in TIP proposal). Consequently, maintaining current grassland habitats through the transition of expiring CRP to rangelands in the Golden Triangle directly supports landscape-scale conservation strategies for grasslands identified by both the Prairie Pothole Joint Venture (PPJV) and NRCS Working Lands for Wildlife Great Plains Grassland Biome Framework (PPJV 2017, NRCS 2021).

Given the importance of the Golden Triangle to grassland birds and its juxtaposition to extensive grassland and rangeland habitats, the TIP area was strategically located within the Golden Triangle to target areas with both high cultivation risk and high concentrations of the aforementioned priority grassland bird species plus Lark Bunting and Grasshopper Sparrow (**Fig. A3**) which are also PPJV priority grassland bird species (PPJV 2017). As much as 20–42% of the TIP area coincides with 50% core population areas for Chestnut-collared Longspur, Thick-billed Longspur, Grasshopper Sparrow, and Lark Bunting; additionally, 10% and 4% coincides with Baird’s Sparrow and Sprague’s Pipit 50% core area, respectively (Barnes 2022). Furthermore, the TIP area contains important wintering habitat for Mule Deer and Pronghorn (7% and 26% of TIP area, respectively) and supports substantial numbers of breeding ducks (>65,000 upland nesting duck pairs; HAPET and NPWRC 2021) and shorebirds (33% of TIP area supports at least one priority breeding shorebird species; PPJV 2017; Fig. 5).

Transitioning CRP to more active grassland management with grazing plans is likely to improve habitat for most of the six targeted grassland bird species (PPJV 2017, NRCS 2021). Individual grassland bird species vary in their response to land-use change (e.g., CRP to range), but there are generally two groups: species that prefer relatively taller, denser grass habitat (hereafter ‘dense-grass birds,’ Baird’s Sparrow, Grasshopper Sparrow, and Sprague’s Pipit) and species that prefer relatively short, sparser grass habitat (hereafter ‘sparse-grass birds,’ Chestnut-Collared Longspur and Lark Bunting). If all 2017–2023 expired CRP in the TIP area (~250,000 acres) transitioned to working grasslands, current species-habitat models predict a potential 35% (>600,000 birds) and 5% (>62,000 birds) increase in total abundance for sparse-grass birds and two target dense-grass species in the TIP area, respectively (Fields et al. 2018). This translates to a potential increase of approximately 24 sparse-grass and 2.5 dense-grass individuals of targeted



species for every 100 acres of CRP transitioned. Alternatively, if 250,000 acres of CRP in the TIP area was instead transitioned to cropland, a large decline in Baird's Sparrow (-14%, -2.7 birds per 100 acres) would likely occur. Grasshopper Sparrow populations decline dramatically in either scenario, but models predict local extirpation (>100% decline) if 250,000 CRP acres are transitioned to cropland. Sparse-grass bird species may be relatively less impacted by a transition to cropland because they are more likely to utilize cropland than dense-grass bird species. However, the grazing infrastructure and grazing plans provided in this TIP will help to maintain the diverse habitat structure needed by a broad suite of priority grassland bird species in this landscape.

Providing mechanisms for transitioning expiring CRP lands to grass-based agriculture aligns with the goals of the PPJV 2017 Montana State Tactical Plan, including an objective of enhancing 18,500 grassland acres through EQIP practices (PPJV 2017). The PPJV will support this TIP by providing technical assistance for evaluating outcomes via their Science Integration Specialist and financial and communications assistance (e.g., workshops, outreach) when possible.

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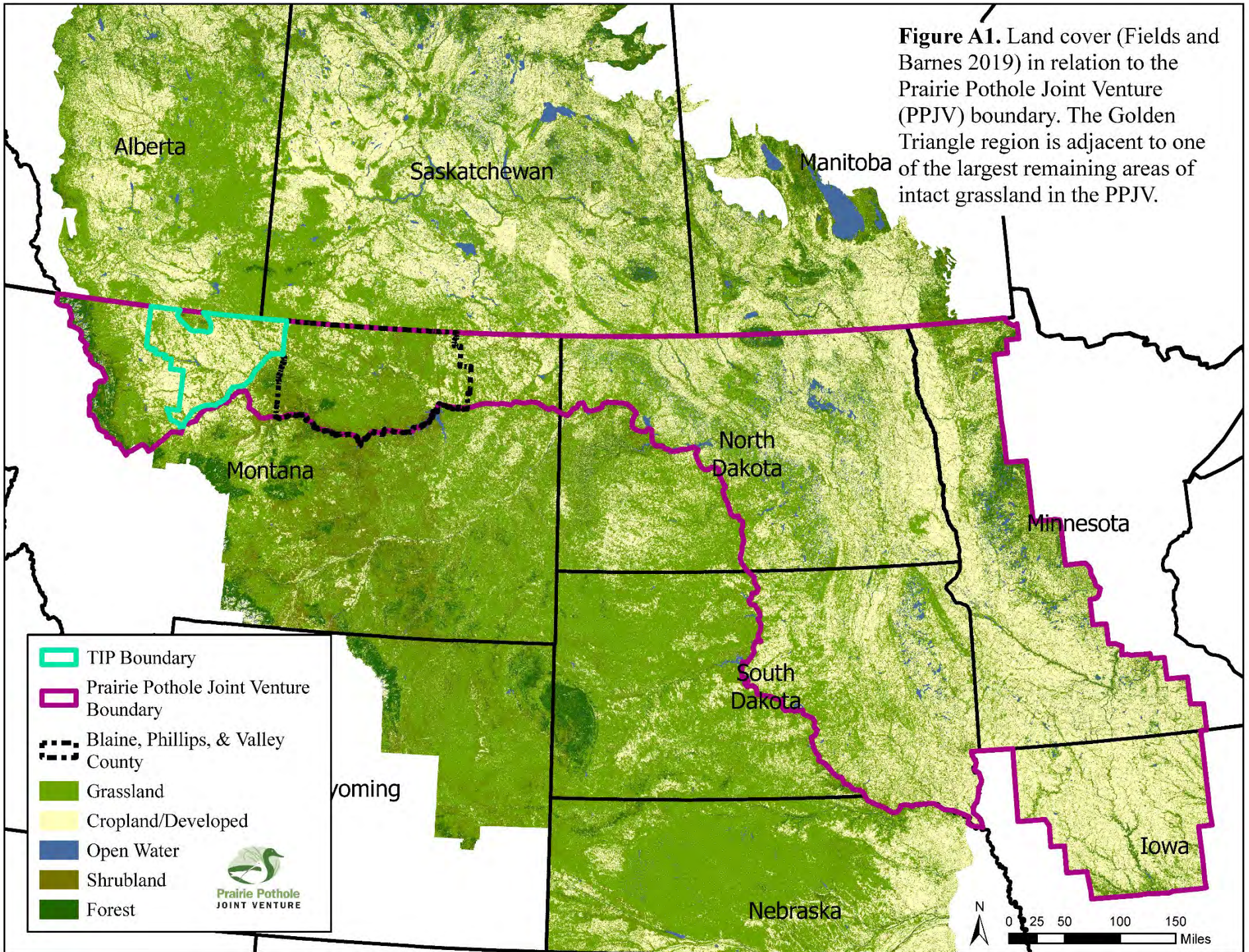


Figure A1. Land cover (Fields and Barnes 2019) in relation to the Prairie Pothole Joint Venture (PPJV) boundary. The Golden Triangle region is adjacent to one of the largest remaining areas of intact grassland in the PPJV.

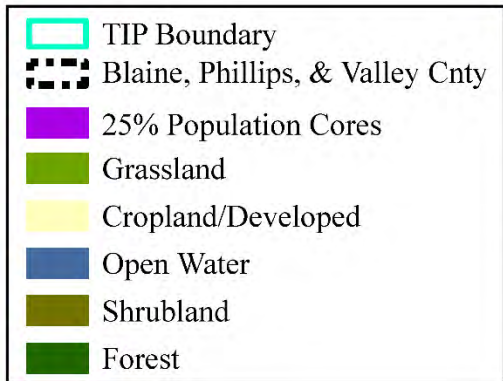
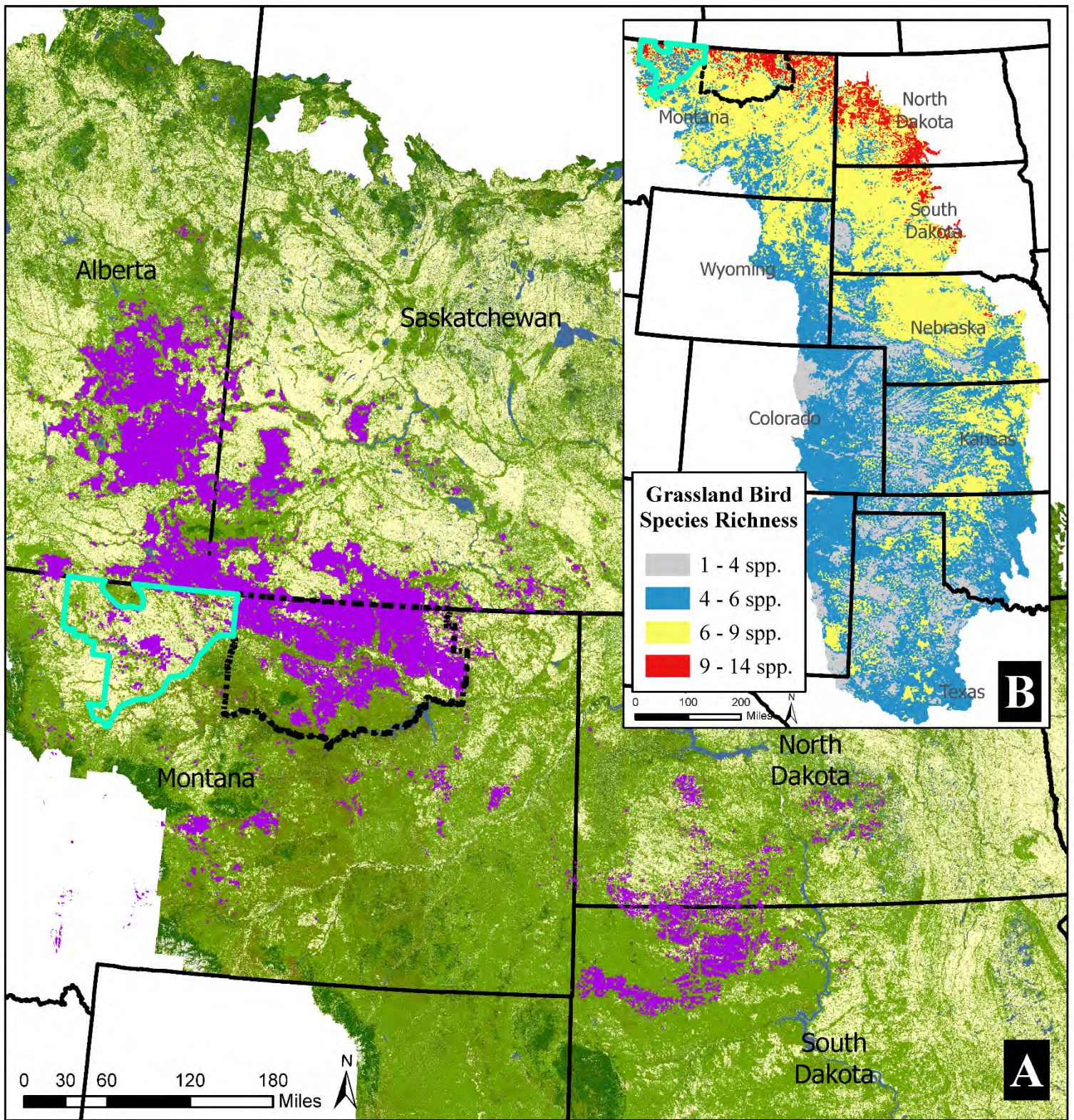


Figure A2. Land cover (Fields and Barnes 2019) in relation to the overlapped 25% population core areas (highest density) of Baird's Sparrow, Chestnut-Collared Longspur, Sprague's Pipit, and Thick-Billed Longspur (A: Barnes 2022) and grassland bird species richness in the U.S. Great Plains (B: Pavlacky et al. 2021). The majority (54-99%) of these core areas are in Alberta, Saskatchewan, and Blaine, Phillips, and Valley counties, Montana.

