Deferred Grazing Drought Recovery

Targeted Implementation Plan (TIP) FY2024–2025

Terry/Jordan/Circle Work Unit

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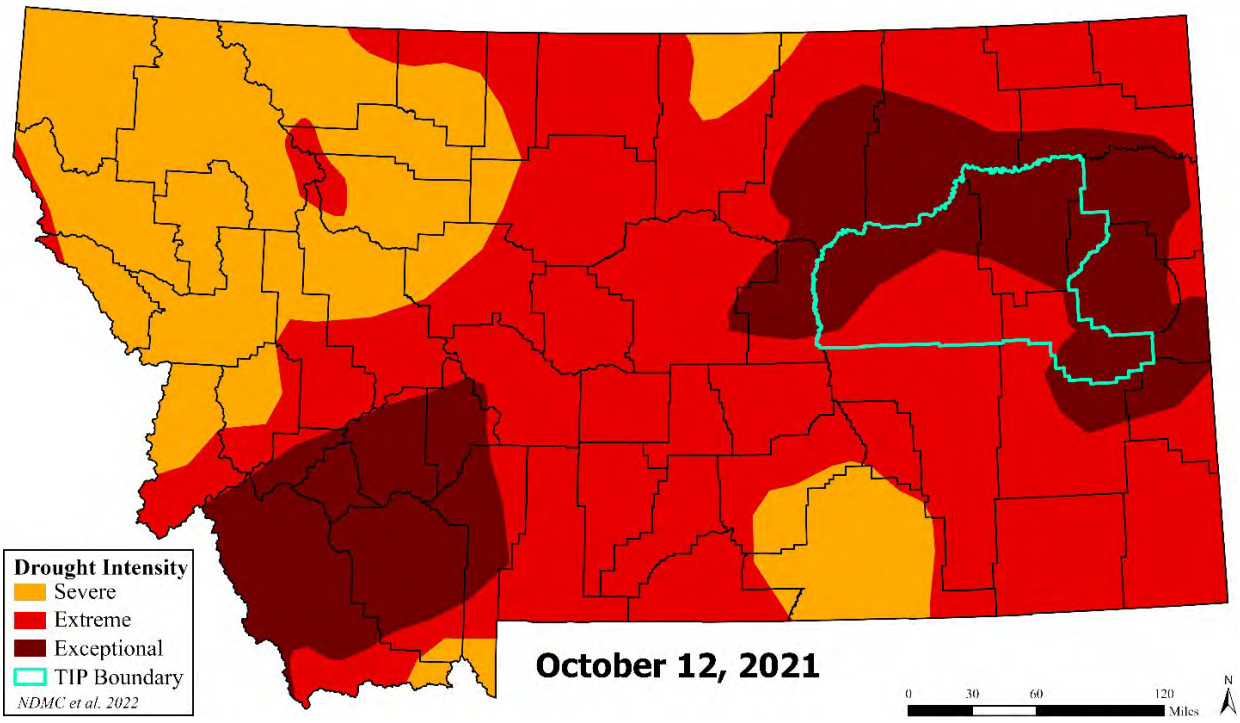

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TIP SUMMARY

Recently, drought, overstocking, and grasshoppers have stressed native rangeland in eastern Montana. Grazing drought-stressed rangeland can exacerbate plant stress, hinder plant recovery, and promote invasive species establishment. We expect to improve plant health and vigor on 60,000 acres of rangeland by incentivizing producers to defer grazing on those acres for up to two years. Operations are currently destocked to some extent. This is a good time to ensure plant recovery is adequate before ranches become fully re-stocked.

Primary Resource Concern: Plant Productivity and Health

Secondary Resource Concern(s): Terrestrial Habitat for Wildlife and Invertebrates

Estimated Budget & Timeline: $516,000 for 20 contracts, each lasting 1–2 years. Sign-ups will occur in FY2024 and FY2025.

Geographic Focus

Description: Native rangeland in Garfield, Prairie, McCone, and a small portion of western Dawson counties (**Fig. 1**). Total acres of Grassland/Shrubland within the geographic area is 4,862,201 acres. Of these 3,190,111 acres are private land.

Reason: This area was chosen because these counties are primarily grazing-based economies (~75% of private land is range/pasture) and were severely impacted by drought between 2020 and 2022. The area was also impacted by the 2017 drought. At that time, due to the shorter drought duration, most operations fed their way out of the drought and didn't decrease stock numbers. This hindered plant health and recovery.

The portion of Dawson County encompasses those lands west of the geographical divide between the Missouri River and the Yellowstone River. The project area is also important for priority grassland bird species (see the **Wildlife Conservation Values Appendix** for more information).

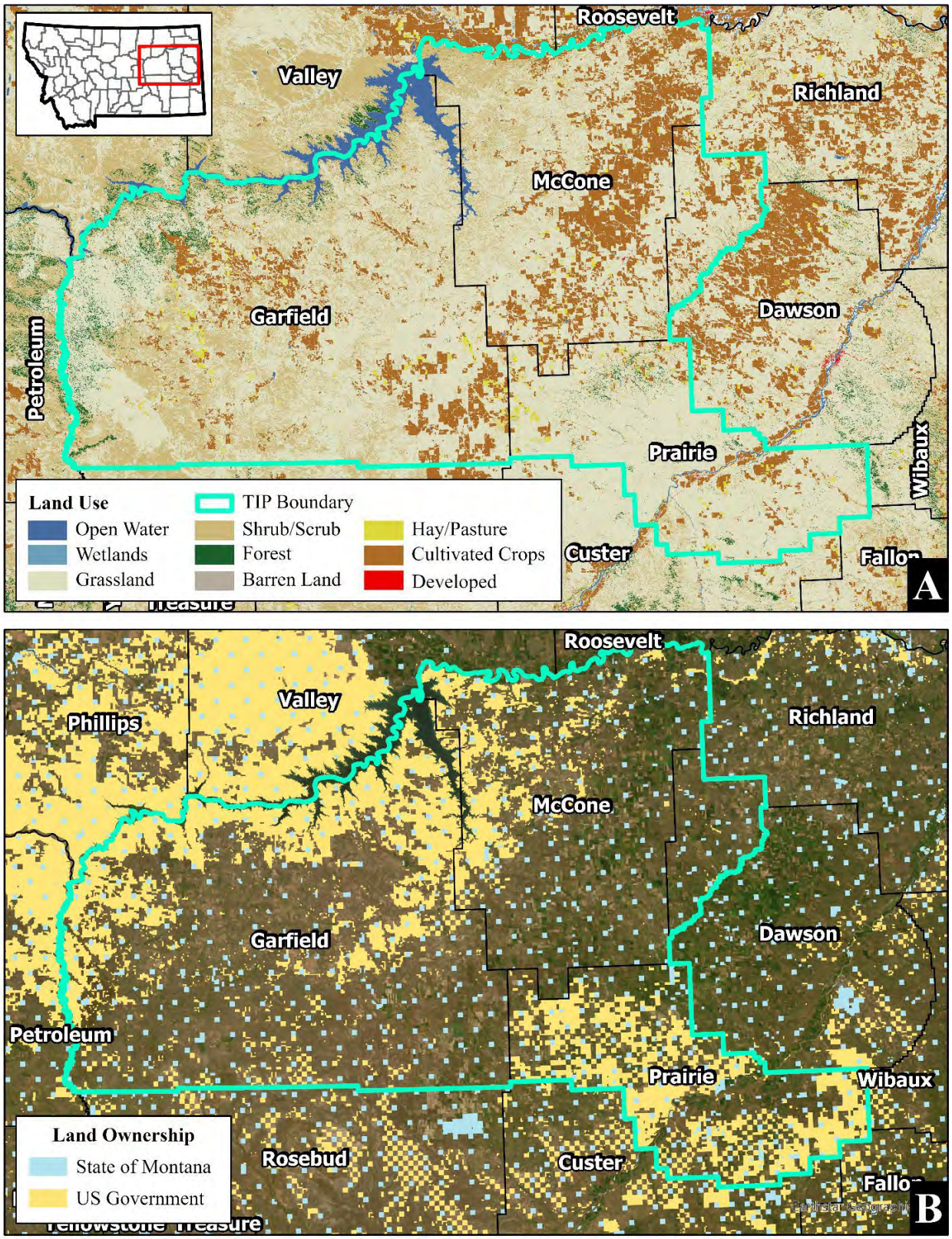

Figure 1. Project area land use (A; USGS 2021) and land ownership (B).

PROJECT OVERVIEW

Background Information

In Dawson, Garfield, McCone, and Prairie County drought conditions began in May of 2020 and have continued, nearly unabated, through the end of 2022. Since May 2020, this area experienced nearly a year and a half (77 weeks) of severe to exceptional drought (**Table 1**). In addition to the drought, warm winter temperatures have allowed grasshoppers to thrive over the past two years (USDA-APHIS 2021; Grasshopper Hazard Map). These factors caused drastic declines in rangeland condition across the state (**Fig. 2**). Ongoing drought conditions and insect pressure force livestock producers to repeatedly graze without adequate recovery. This repeated pressure weakens the root systems, lowering the ability to compete with invasive or non-native species across the landscape thus resulting in poor Plant Productivity and Health of desirable species. More bare ground, less growth and smaller root systems contribute to increased evaporation and higher soil temperatures. Although drought conditions lessened over the last few months of 2022, over half of rangeland and pasture in the state continues to be in poor or very poor condition. All these factors create a detrimental cycle of rangeland degradation. Once trapped in the cycle, producers have had to destock, with cattle inventory down 12% in the project area from January 2020 (-23,000; USDA-NASS 2022).

Table 1. Average time ≥ 33% of a project county was in each drought category from May 2020–Dec. 2022 (137 wks; NDMC et al. 2022).

Drought Category	% of Weeks
Abnormally Dry (≥ D0)	89%
Moderate (≥ D1)	64%
Severe (≥ D2)	55%
Extreme (≥ D3)	33%
Exceptional (D4)	11%

Figure 2. Change in range and pasture condition in Montana from Jan. 2020 to Nov. 2022 (USDA-NASS 2022).

Resource Concerns

Deferring the grazing of drought-stressed native rangeland addresses our primary resource concern of Plant Productivity and Health. Postponing grazing will lead to more productive plant populations, reduced soil erosion, reduced runoff, increased water infiltration, and greater amounts of quality feed for livestock and wildlife after the deferment period.

In order to make sure the resource concern is also met on the remainder of the operation, it will be essential to work with the producer to ensure feed and forage balance is met. This should give the producer an opportunity to re-stock over time benefitting both the primary and secondary resource concern of Terrestrial Habitat for Wildlife and Invertebrates (see the **Wildlife Conservation Values Appendix** for more information).

This TIP addresses priority resource concerns in all four counties in the project area:

- **Dawson:** rangeland health—proper grazing use and invasive weeds (2019 Long-Range Plan [LRP], pg. 36)
- **Garfield:** degraded plant conditions resulting from historic grazing practices (2019 LRP, pg. 39)
- **McCone:** inadequate livestock water and rangeland degradation (2020 LRP, pg. 41)
- **Prairie:** rangeland health—invasive species and proper grazing use (2019 LRP, pg. 40)

Photo Point from Garfield County showing effects of drought and grasshoppers in 2022.

Goals and Objectives

The primary goal of this TIP is to mitigate the impact of drought on native rangeland by promoting plant recovery. The objective for this TIP is to improve the plant health and productivity on 60,000 acres of drought- stressed native rangeland, which will be accomplished by deferring grazing for up to two years.

Proposed Alternatives

Alternative 1: Management and Infrastructure

This alternative would include the necessary grazing infrastructure (fences and livestock water) and complete grazing plans. This alternative would have the same or more benefits for plant health and productivity as alternative two. However, this alternative was not chosen because it increases the complexity, cost, and time needed to implement the projects which would limit the number of projects that can be completed.

Alternative 2: Management (selected)

Under this alternative NRCS will work with producers to defer grazing (starting March 15th) of drought-stressed pastures for one or two years depending on pasture condition. Postponing grazing will lead to more productive plant populations, reduced soil erosion, and improve wildlife habitat. Priority will be given to applicants that are within areas with greater densities of priority grassland bird species (see **Wildlife Conservation Values Appendix**). This alternative addresses the most immediate resource concerns identified by the Local Working Groups (see LRPs). This is the preferred alternative due to its simplicity.

Alternative 3: No Action

Without incentive to defer grazing, producers are more likely to restock sooner and overgraze drought-stressed rangeland. If plants are not given adequate time to recover, we expect to see reductions in plant health, productivity, and wildlife habitat and expansion of invasive species. This alternative does not support the goals of the Local Working Groups (see LRPs).

IMPLEMENTATION

Workload Management

At least 80% of the workload demands, including outreach, will be handled by the Jordan and Terry Field Offices with assistance from the Circle Field Office when necessary. Some assistance may be needed from range management specialists to complete rangeland inventories on considered acres.

Education and Outreach

With the assistance of the Garfield, McCone, and Prairie County Conservation Districts, targeted mailings will be sent to eligible producers. As of 1/3/2023, 4 producers in Garfield County have expressed interest in a TIP contract.

Proposed Budget and Timeline

This TIP will require approximately $516,000 to fund 20 EQIP contracts over two sign-up years (FY24-25; **Table 2**). The average sized EQIP contract for this TIP is estimated to require approximately $20,640 in EQIP funds. These contracts will last one to two years, depending on the length of grazing deferment.

Table 2. Requested NRCS EQIP funds for an estimated 20 EQIP contacts (60,000 acres). Cost based on FY23 EQIP Payment Schedule.

Code	Practice Name	Scenario	Units	Cost
528	Prescribed Grazing	Range, Deferment	45,000 ac, 1 year	$309,600
528	Prescribed Grazing	Range, Deferment	15,000 ac, 2 years	$206,400
FY24 (15 contracts)				$412,800
FY25 (5 contracts)				$103,200
Total				**$516,000**

Partnerships

- **Conservation Districts (CD)—**the CDs will support the NRCS field office in preparing targeted mailings and other outreach as needed.
- **Prairie Pothole Joint Venture (PPJV)—**PPJV provided technical assistance on this TIP proposal and will provide technical assistance for evaluating outcomes via their Science Integration Specialist. PPJV will support the NRCS field offices with communications.

Anticipated Outcomes

- **Improve Plant Health and Productivity on 60,000 acres of Drought-Stressed Rangeland:** Incentivizing producers to withhold grazing pastures and allow drought recovery will improve plant health.
- **Improve 60,000 acres of Wildlife Habitat**: Priority grassland birds and other wildlife populations are expected to benefit from improving rangeland health through deferment of grazing (see **Wildlife Conservation Values Appendix** for more information).
- **Support Grazing-based Economies and Economic Resiliency:** This TIP will result in 60,000 acres of banked grass which will improve resilience of grazing operations during drought.
- **Carbon Sequestration and Greenhouse Gas Emissions:** The TIP will reduce emissions by approximately 14,673 tonnes of CO_2 equivalent. (COMET-Planner Report, attachment A)

Evaluating Outcomes

Both NRCS field staff and the landowners will work to monitor plant condition through photo-point monitoring, clipped plots, and/or the Rangeland Analysis Platform (RAP) at the beginning and end of the contract. The PPJV Science Integration Specialist will assist with evaluating outcomes by using spatially explicit tools to estimate the impact of TIP projects on other unmeasured metrics (e.g., grassland bird populations, carbon sequestration) when possible.

Ranking Questions

1.	**Based on the grassland bird map (see appendix, Fig A3), what is the highest number of priority grassland bird species in the offered acres that will be impacted by 528, Prescribed Grazing? Select only one.**
	0 species
	1 species
	2 species
	3 species
	≥ 4 species
2.	**What is the longest grazing deferment of the offered acres? Select only one.**
	1 year
	2 years
3.	**What percentage of rangeland in the operation is going to be deferred from grazing? Select only one.**
	< 25%
	25–50%
	> 50%

LITERATURE CITED

[LRP] Long-Range Plans, Natural Resources Conservation Service.
Dawson County 2019: https://www.nrcs.usda.gov/sites/default/files/2022-09/DawsonCounty-Montana-LongRangePlan-2019_0.pdf
Garfield County 2019: https://www.nrcs.usda.gov/sites/default/files/2022-09/GarfieldCounty-Montana-LongRangePlan-2019.pdf
McCone County 2020: https://www.nrcs.usda.gov/sites/default/files/2022-09/McConeCounty-Montana-LongRangePlan-2020.pdf
Prairie County 2019: https://www.nrcs.usda.gov/sites/default/files/2022-09/PrairieCounty-Montana-LongRangePlan-2019.pdf

[NDMC] National Drought Mitigation Center, U.S. Department of Agriculture, and National Oceanic and Atmospheric Administration. 2022. Drought Monitor. Available at: droughtmonitor.unl.edu.

[NRCS] Natural Resource Conservation Service. 2021. A framework for conservation action in the Great Plains Grasslands Biome. Working Lands for Wildlife USDA-NRCS. Washington, D.C. Available at: https://wlfw.rangelands.app

[USDA-APHIS] US Department of Agriculture Animal and Plant Health Inspection Service. 2021. Pest and Disease Programs: Grasshoppers and Mormon Crickets. Available at: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases/grasshopper-mormon-cricket

[USDA-NASS] US Department of Agriculture National Agricultural Statistics Service. 2022. Cropland Data Layer (2021): published crop-specific data layer. USDA-NASS, Washington, DC., USA. Available at: https://nassgeodata.gmu.edu/CropScape/

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COMET-Planner Report: Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions

Attachment A

Project Name: Deferred Grazing TIP

State: Montana

County: Garfield

Date: 2023/1/23 9:24:57

NRCS C nservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO2 Equivalent
Grazing Management to Improve Rangeland or Non-Irrigated Pasture Condition	45000	1565	7239	0	8804
Totals	45000	1565	7239	0	8804

One year contracts.

Approximate Carbon Sequestration and Greenhouse Gas Emission Reductions*

(tonnes CO_2 equivalent per year)

NRCS Conservation Practices	Acreage	Carbon Dioxide	Nitrous Oxide	Methane	Total CO_2 Equivalent
Grazing Management to Improve Rangeland or Non-Irrigated Pasture Condition	30000 ac	1,043	4,826	0	5,869
Totals	30,000	1,043	4,826	0	5,869

Two year contracts, 2934.5 per year.

*Negative values indicate a loss of carbon or increased emissions of greenhouse gases

**Values were not estimated due to limited data on reductions of greenhouse gas emissions from this practice

For more information on how these estimates were generated, please visit www.comet-planner.com.

APPENDIX – Wildlife Conservation Values

The TIP project area (Garfield, McCone, Prairie, and Dawson County) is located at the center of the Northern Shortgrass Prairie ecoregion (Dinerstein et al. 2017), which contains nearly a third (32%) of the remaining intact grassland in North America (7% of the world; Scholtz and Twidwell 2022; **Fig. A1**). This large tract of grassland supports high densities of four priority grassland bird species experiencing steep population declines (Baird's Sparrow, Chestnut-Collared Longspur, Sprague's Pipit, Thick-Billed Longspur) and high grassland bird species richness (**Fig. A2**), making it one of the most important areas for grassland birds in North America. Consequently, improving and sustaining rangeland in the TIP project area directly supports landscape-scale conservation strategies for grasslands identified by Prairie Pothole Joint Venture (PPJV), Northern Great Plains Joint Venture (NGPJV), and NRCS Working Lands for Wildlife Great Plains Grassland Biome Framework (PPJV 2017, NRCS 2021, Wightman et al. 2022).

Deferring grazing on drought-stressed native rangeland is likely to improve habitat for priority grassland bird species by improving plant productivity and health (PPJV 2017). The TIP project area supports as much as 15–21% of the Montana 50% core population areas for Chestnut-collared Longspur, Lark Bunting, Grasshopper Sparrow, and Ring-Necked Pheasant; additionally, 5% and 4% of Thick-Billed Longspur and Baird's Sparrow Montana 50% core area, respectively (Barnes 2022; **Fig. A3**). Furthermore, the TIP area contains important wintering habitat for Elk, Mule Deer, and Pronghorn (16%, 40% and 45% of TIP area, respectively), as well as sagebrush and Greater Sage-Grouse core areas (12–13% of TIP area; USWFS 2013; **Fig. A4**).

Improving plant productivity and health on rangeland aligns with NGPJV Grassland Bird Conservation Objectives for 2016 to 2026, including the objective of at least 1 million acres of conservation by 2026 (protection, restoration, or enhancement; Wightman et al. 2022). 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.

Literature Cited

Barnes, K. W. 2022. Web App: Priority Grassland Bird Weighted Mean Occurrence (Baird's Sparrow, Sprague's Pipit, Chestnut-collared Longspur, Thick-billed Longspur); Draft. US Fish and Wildlife Service - Habitat and Population Evaluation Team, Bismarck, North Dakota, USA. Available at: https://kevinwbarnes.users.earthengine.app/view/priority-grassland-bird-weighted-mean-occurrence.

Dinerstein et al. 2017. An ecoregion-based approach to protecting half the terrestrial realm. BioScience 67:534–535.

Fields, S., and K. Barnes. 2019. Grassland assessment of North American Great Plains migratory bird joint ventures. U.S. Fish and Wildlife Service, Great Falls, Montana, USA.

[NRCS] Natural Resource Conservation Service. 2021. A framework for conservation action in the Great Plains Grasslands Biome. Working Lands for Wildlife USDA-NRCS. Washington, D.C. Available at: https://wlfw.rangelands.app.

Pavlacky, D. C., A. W. Green, T. L. George, R. Iovanna, A. M. Bartuszevige, M. D. Correll, A. O. Panjabi, and T. B. Ryder. 2021. Landscape-scale conservation mitigates the biodiversity loss of grassland birds. Ecological Applications 32:e2548.

[PPJV] Prairie Pothole Joint Venture. 2017. Prairie Pothole Joint Venture Implementation Plan. S. P. Fields, editor. US Fish and Wildlife Service, Denver, Colorado, USA.

Scholtz, R., and D. Twidwell. 2022. The last continuous grasslands on Earth: identification and conservation importance. Conservation Science and Practice 4:e626.

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Wightman, C., K. Ellison, S. Somershoe, J. Timmer, and C. White. 2022. Northern Great Plains Joint Venture Grassland Bird Conservation Objectives, 2016-2026. Northern Great Plains Joint Venture Committee, Clancy, MT. Available at: https://ngpjv.org/resources/

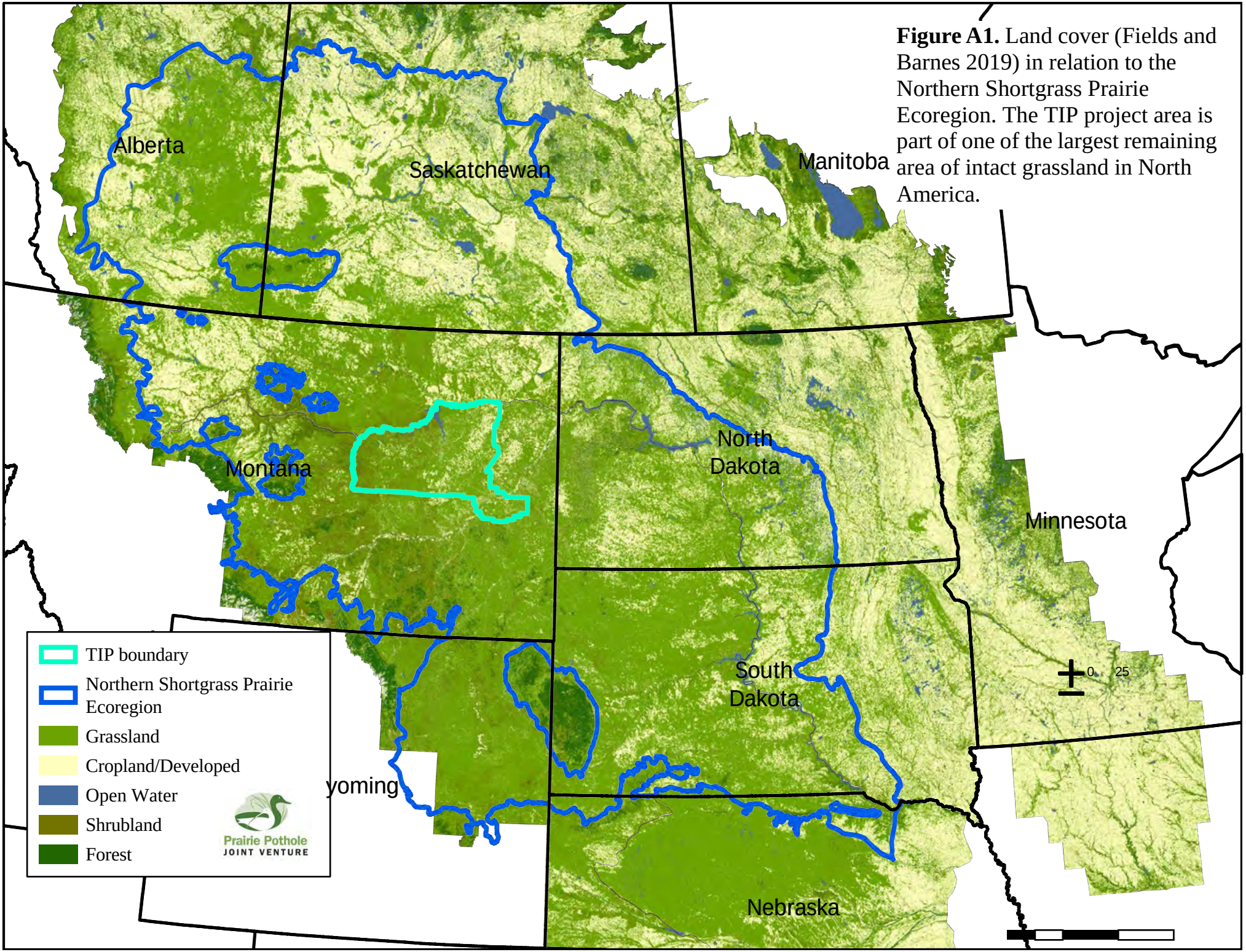

Figure A1. Land cover (Fields and Barnes 2019) in relation to the Northern Shortgrass Prairie Ecoregion. The TIP project area is part of one of the largest remaining area of intact grassland in North America.


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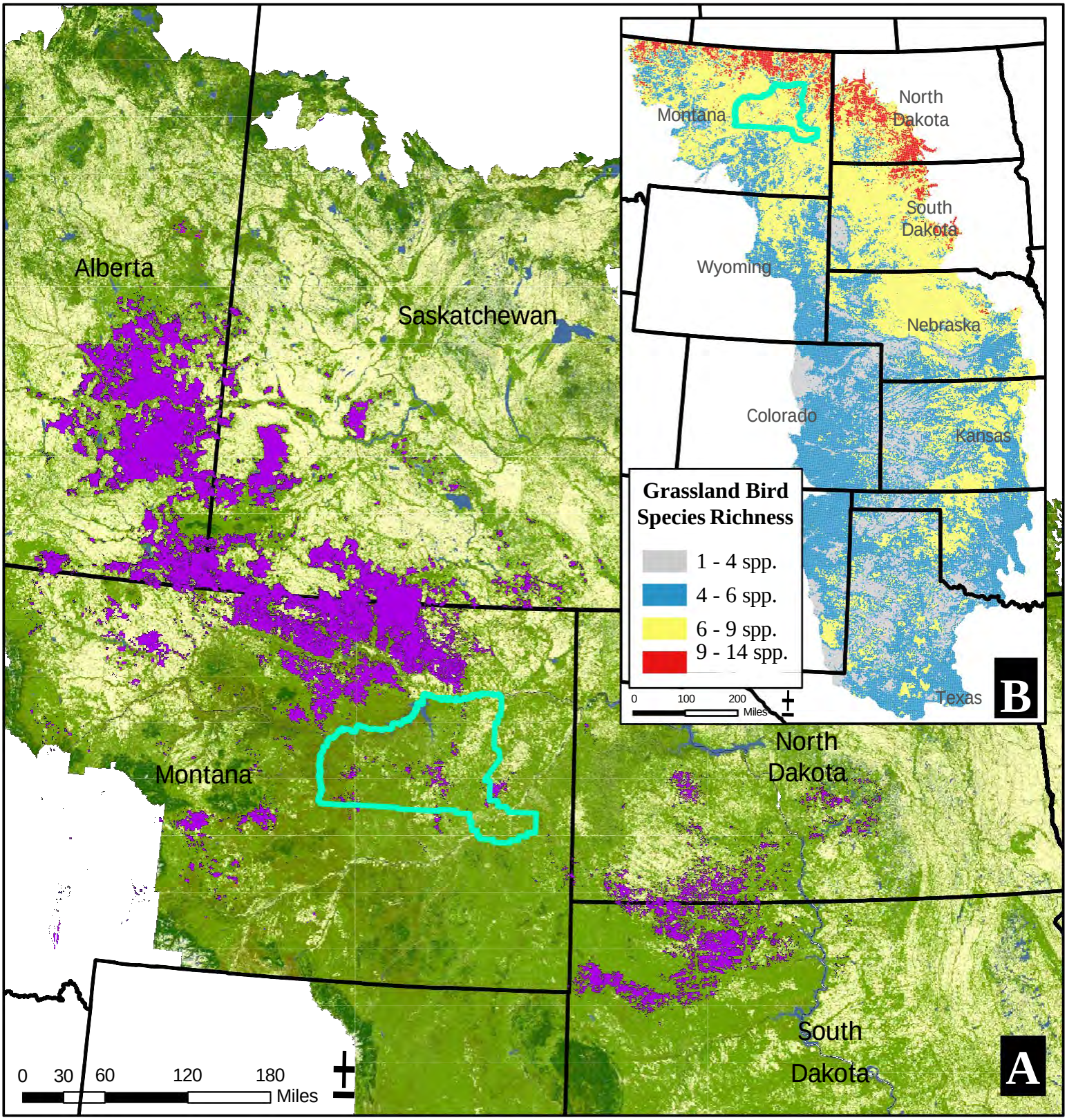

Figure A2. Land cover (Fields and Barnes 2019) in relation to the overlapped 25% population core areas (highest density) of Baird's Sparrow, Chestnut-Collared Longspur, Sprague's Pipit, and Thick-Billed Longspur (A: Barnes 2022) and grassland bird species richness in the U.S. Great Plains (B: Pavlacky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

Prairie Pothole JOINT VENTURE

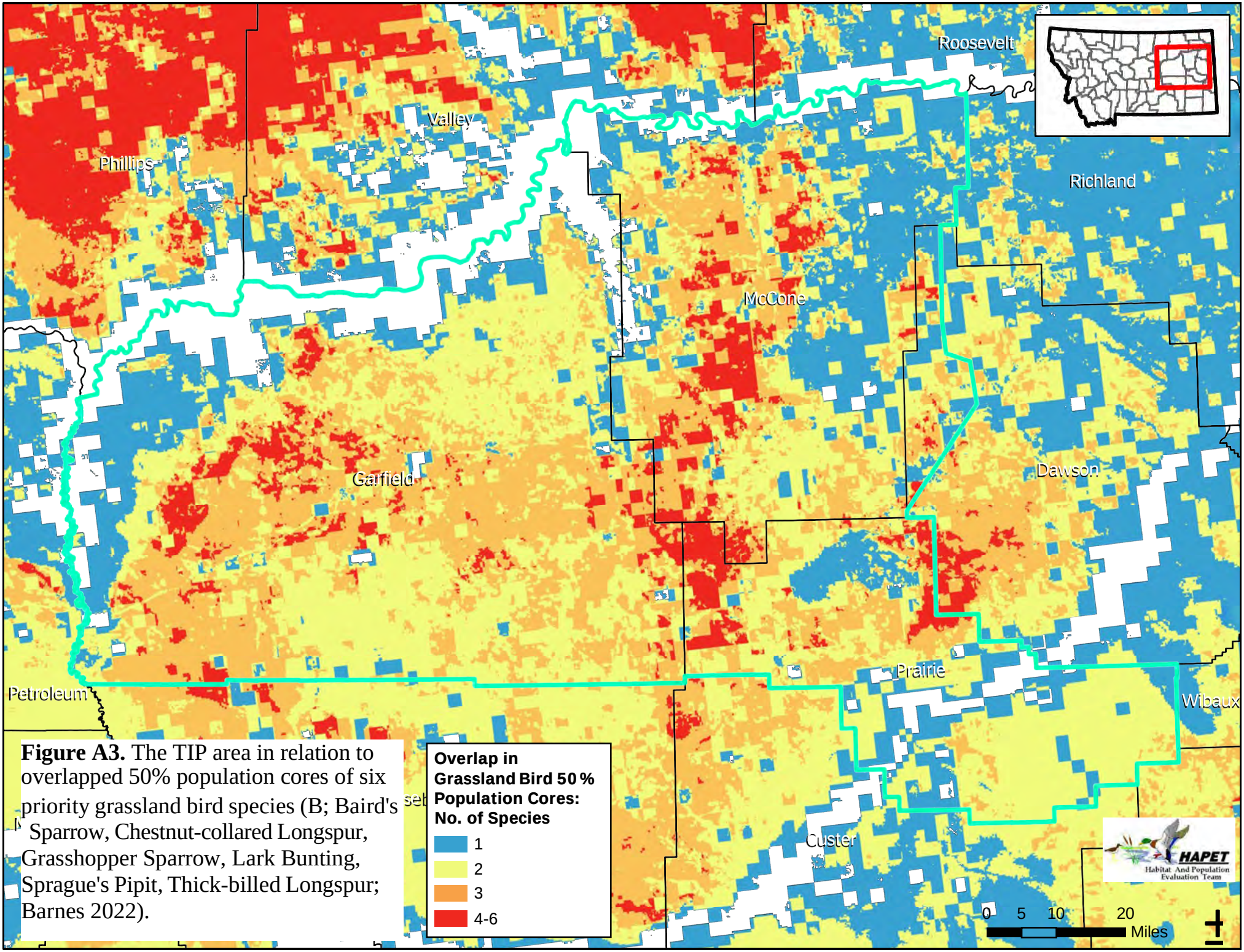

Figure A3. The TIP area in relation to overlapped 50% population cores of six priority grassland bird species (B; Baird's Sparrow, Chestnut-collared Longspur, Grasshopper Sparrow, Lark Bunting, Sprague's Pipit, Thick-billed Longspur; Barnes 2022).

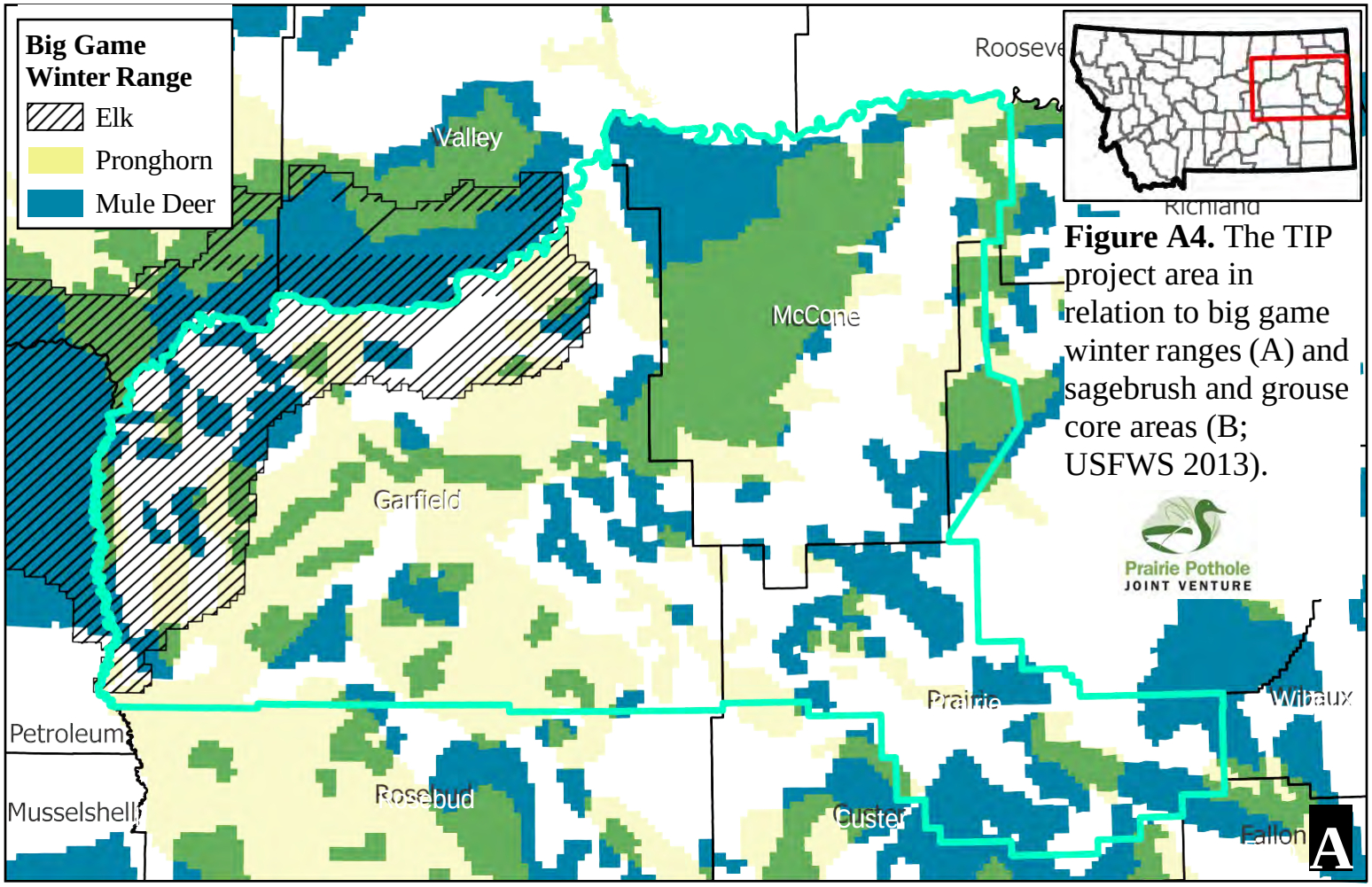

Figure A4. The TIP project area in relation to big game winter ranges (A) and sagebrush and grouse core areas (B; USFWS 2013).