

Setting population and habitat objectives for grassland birds in the Prairie Habitat Joint Venture

Grasslands Roadmap Forum ~ Biological Objectives & Tools for Birds
Barry Robinson, Landbird Biologist, Canadian Wildlife Service



Photos: C. Artuso and G. Court

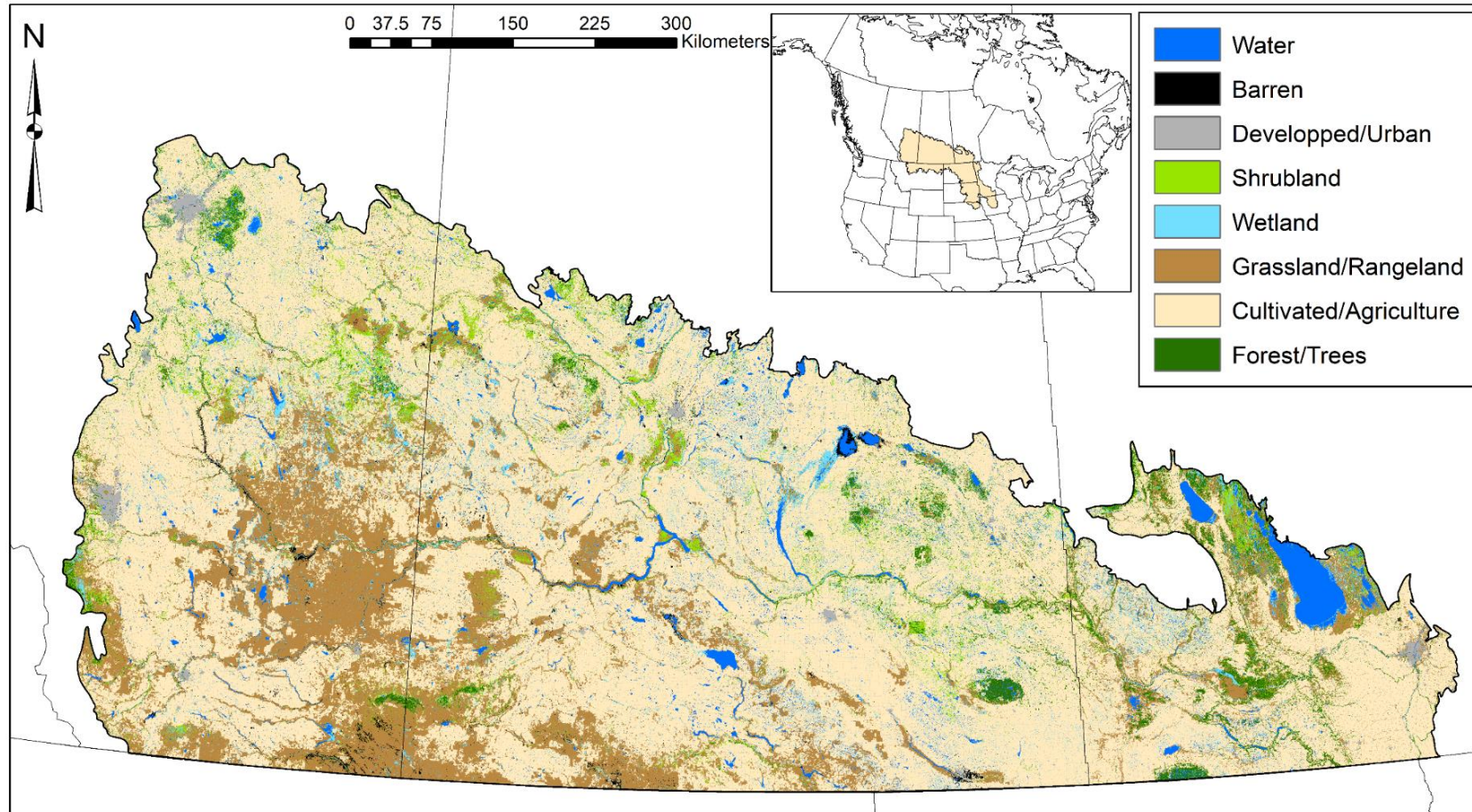


Background

Prairie Habitat
Joint Venture



Background



Objective

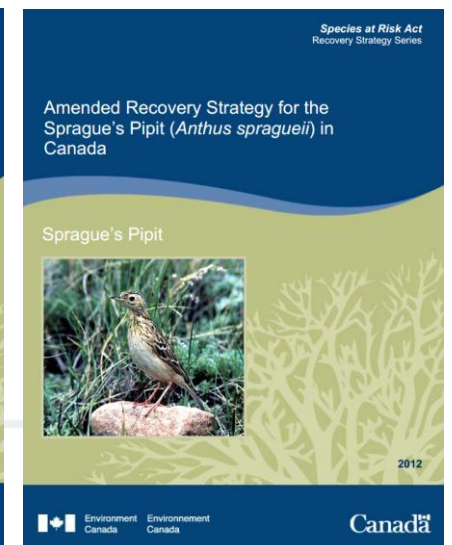
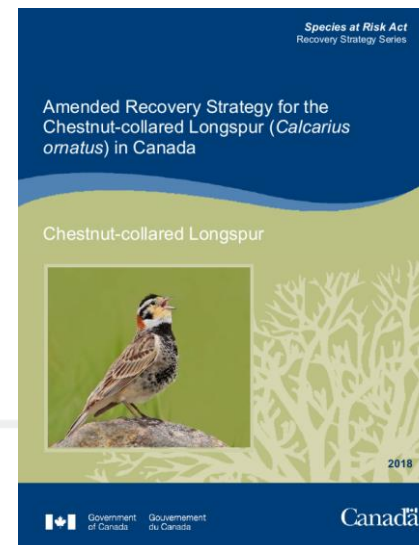
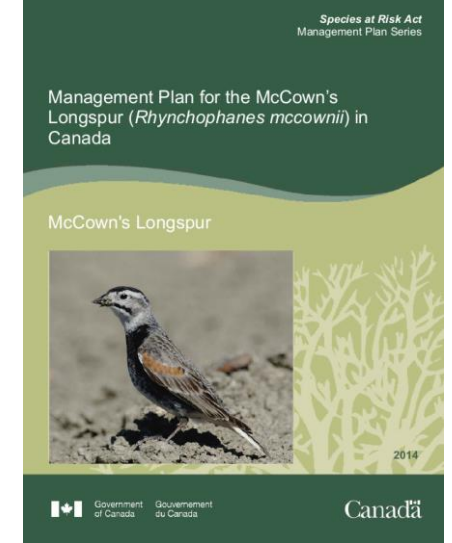
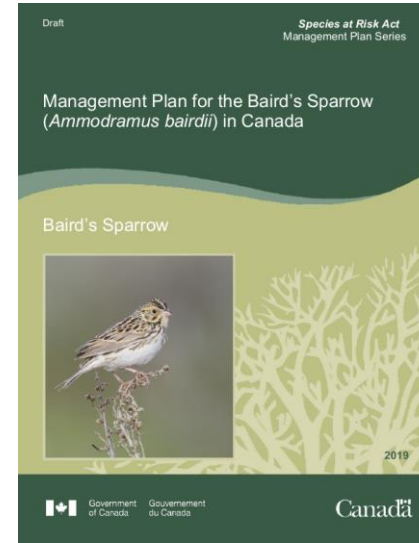
Set spatially explicit conservation targets for upland habitat to meet population objectives



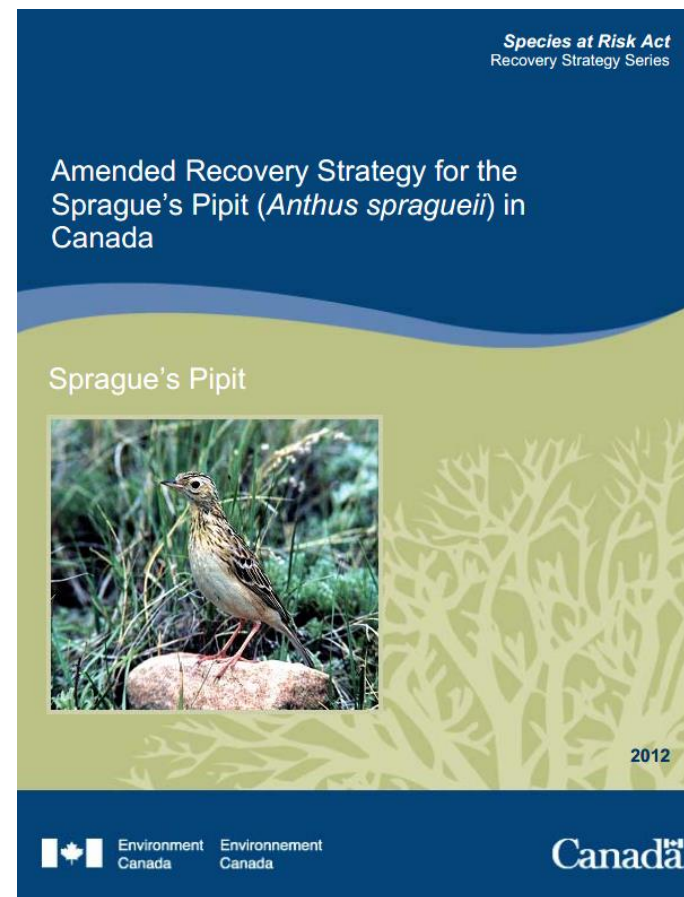
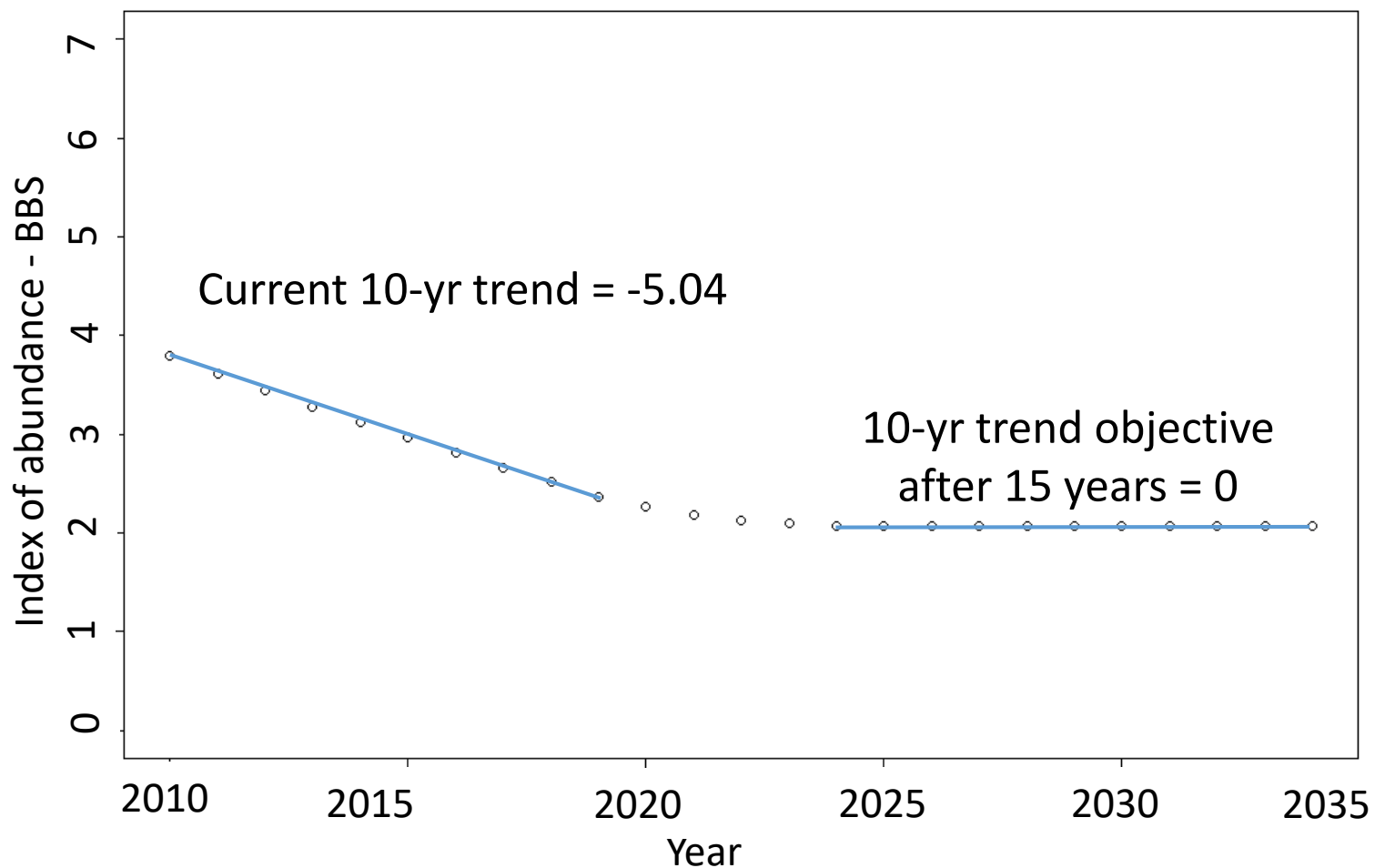
Photos: C. Artuso and G. Court

Population objectives

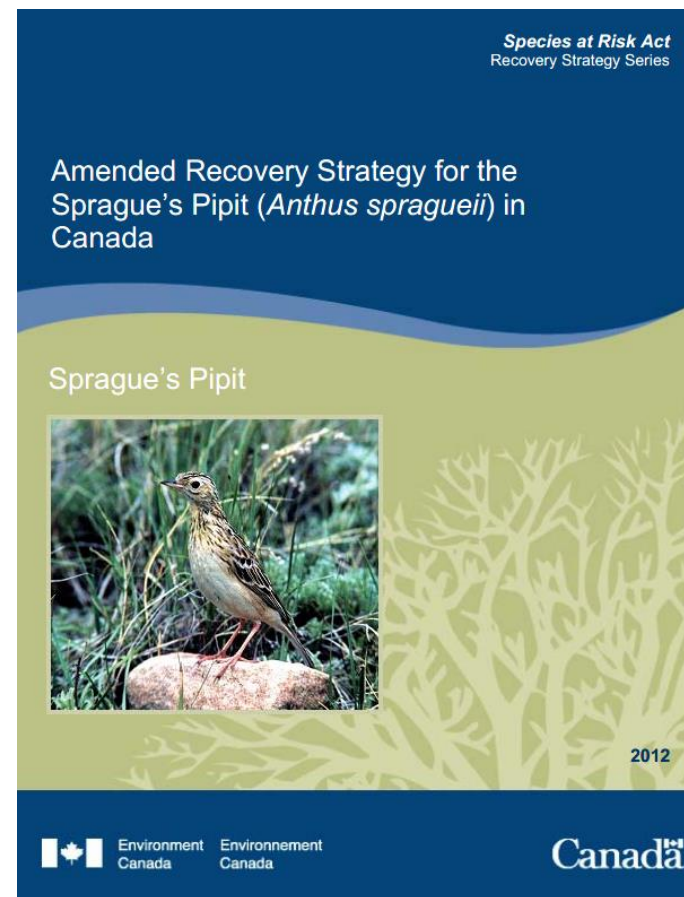
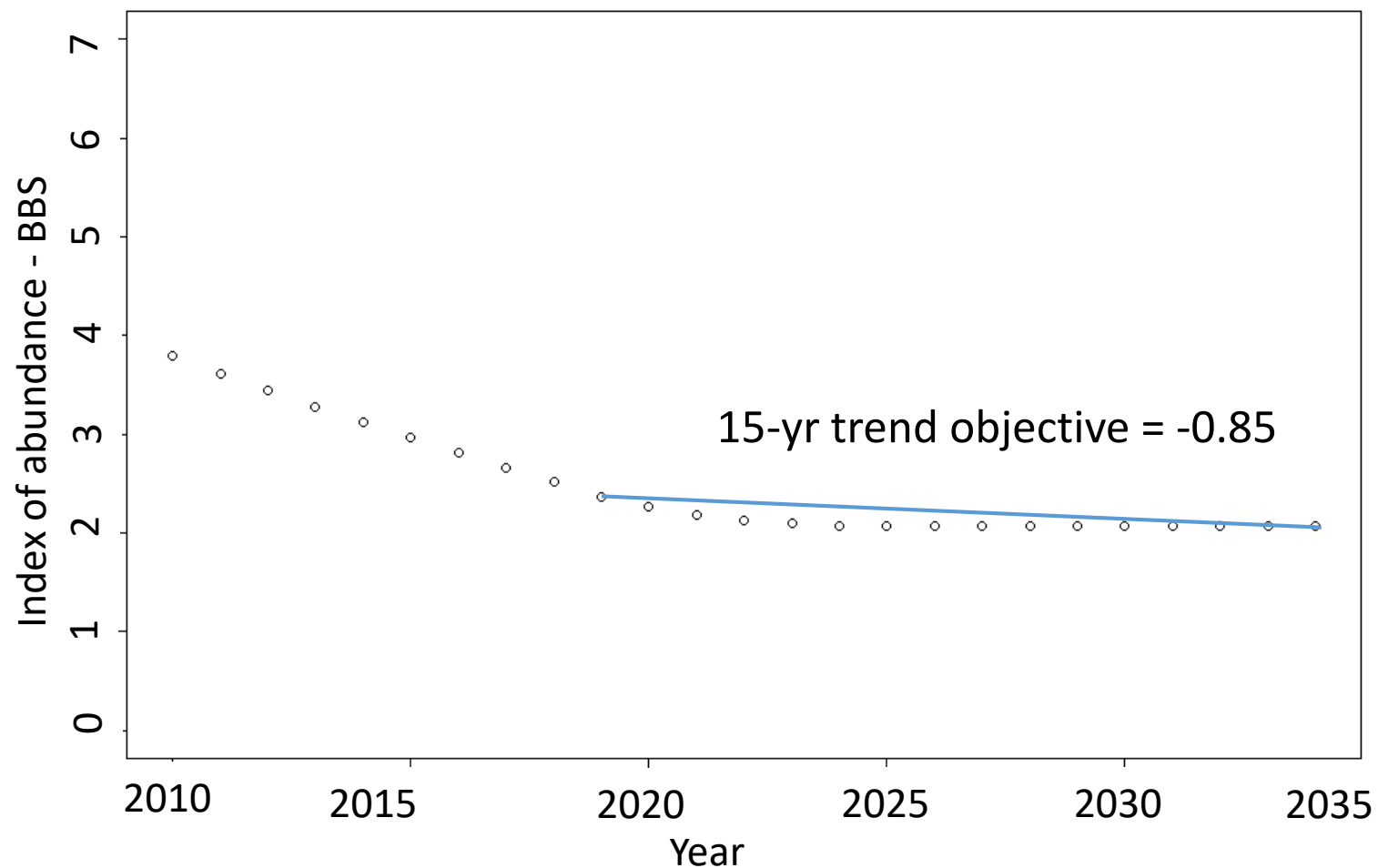
- Recovery strategies/management plans
- 15-year objective: slow population decline to 0
- 30-year objective: increase population to benchmark



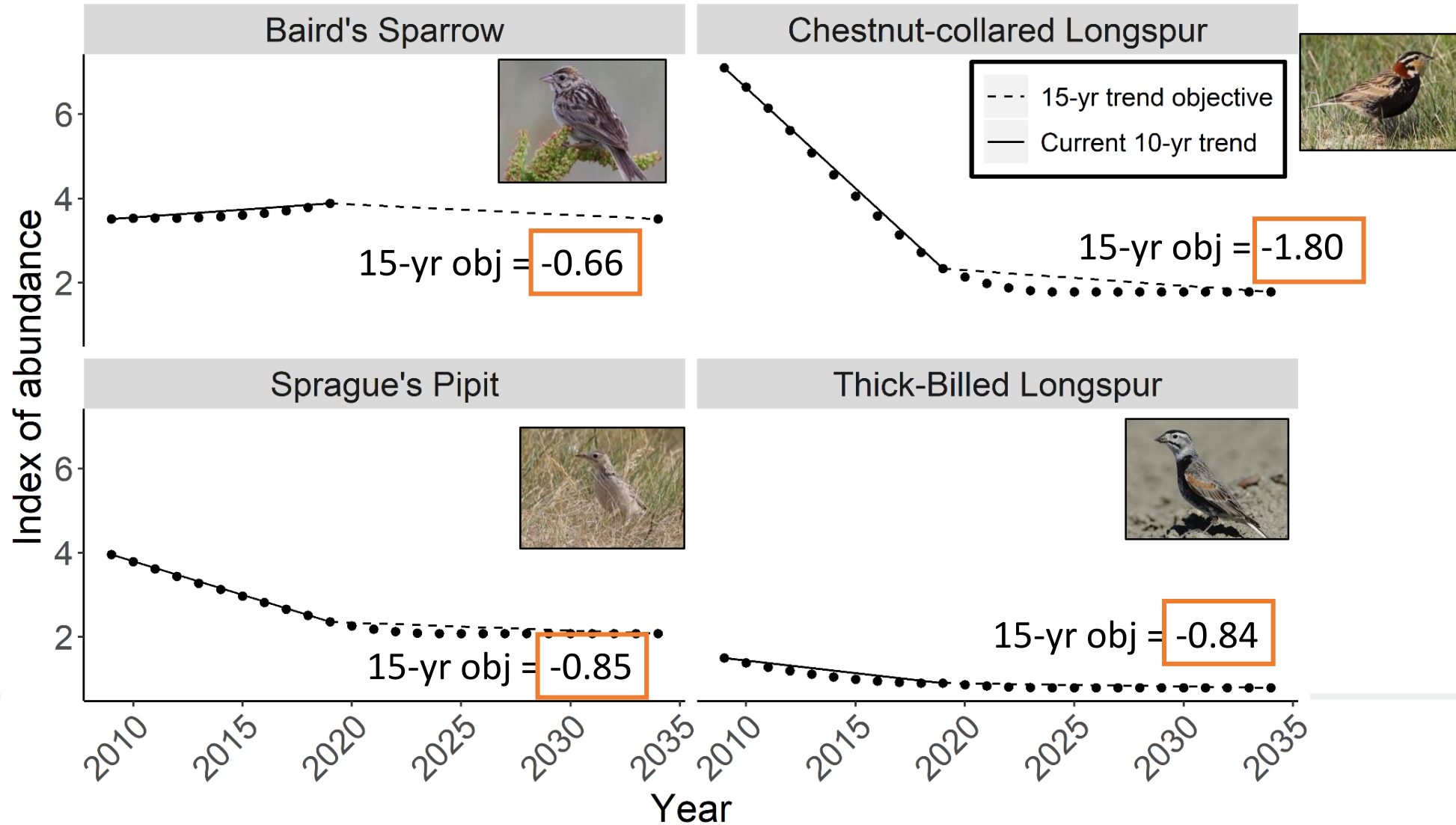
Population objectives



Population objectives

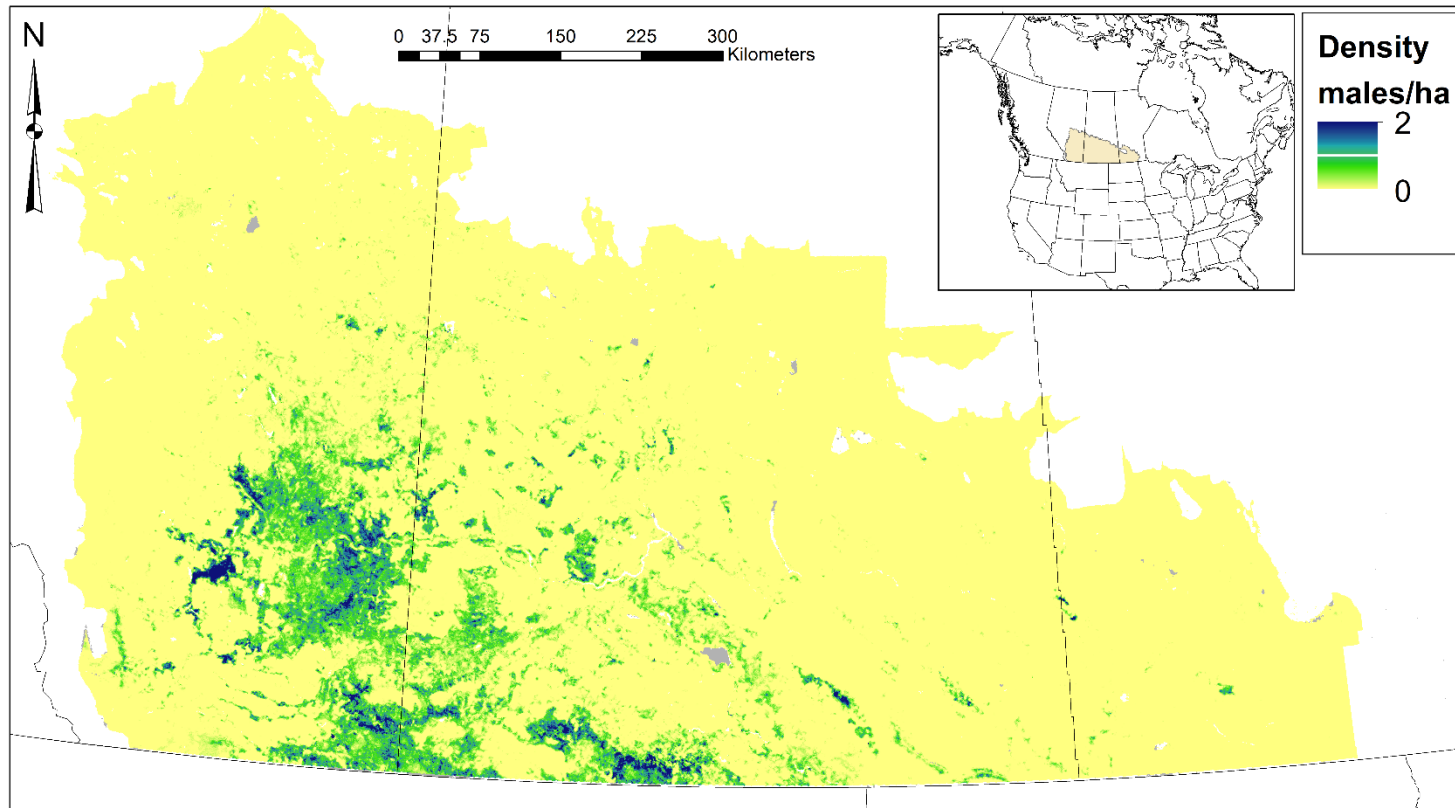


Population objectives



Estimate amount of habitat to conserve

- Species density models – estimate population size

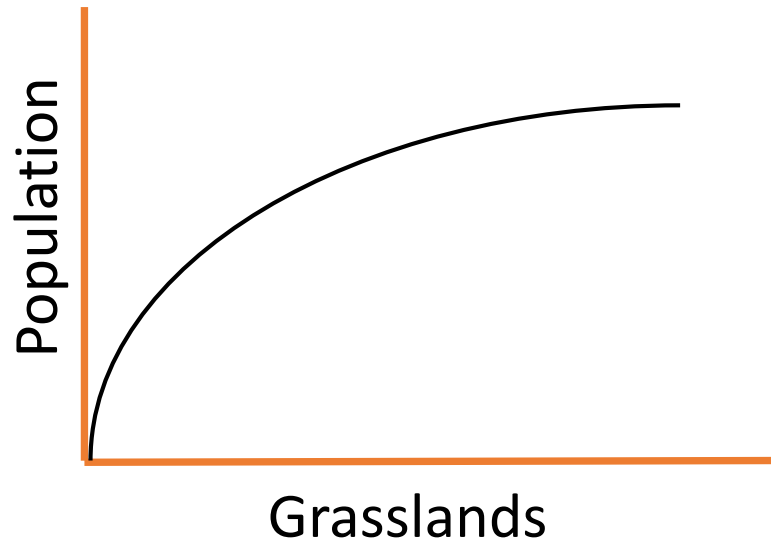


Solymos et al. 2013. *Methods in Ecology and Evolution*

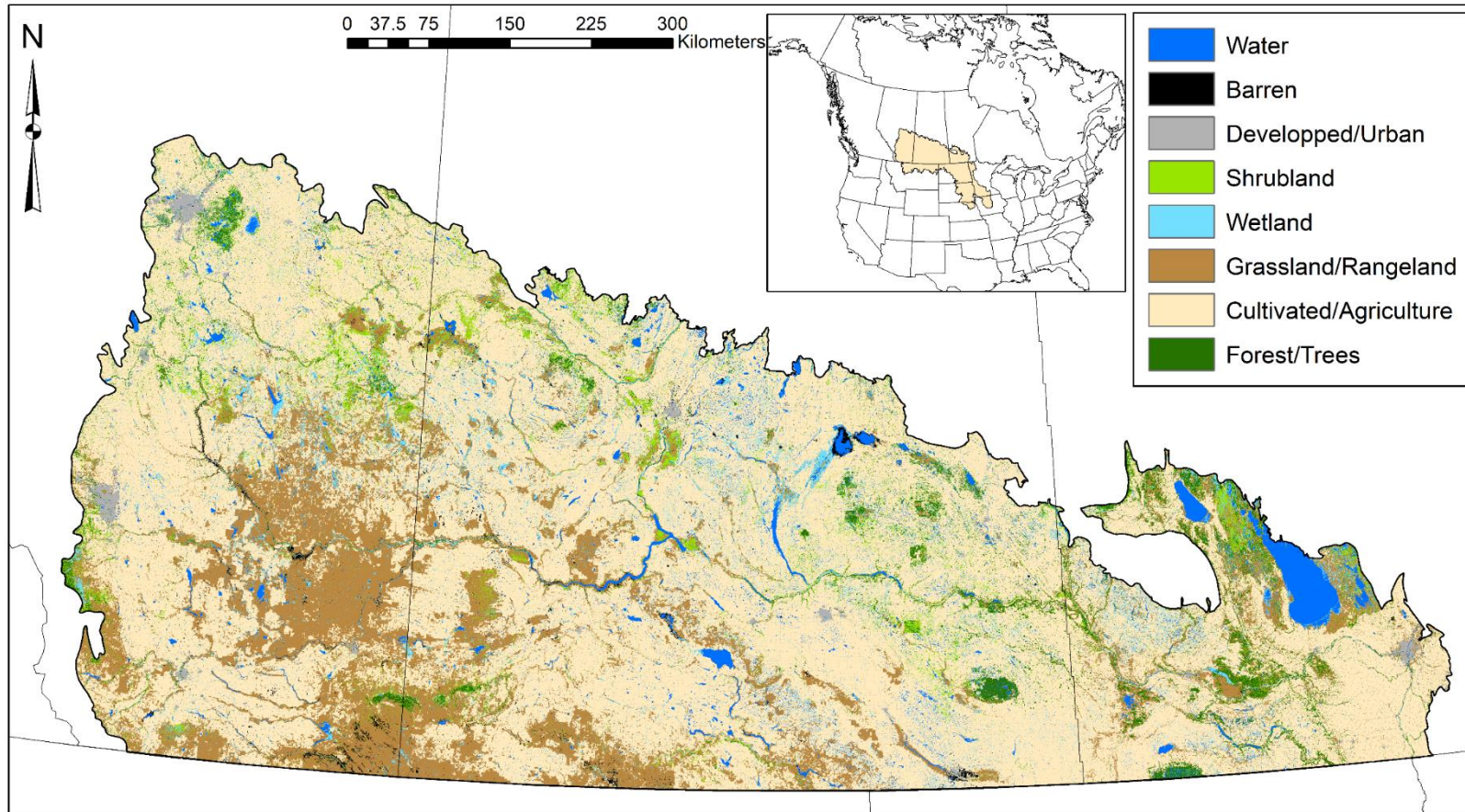
Elith et al. 2008. *J. of Animal Ecology*

Estimate amount of habitat to conserve

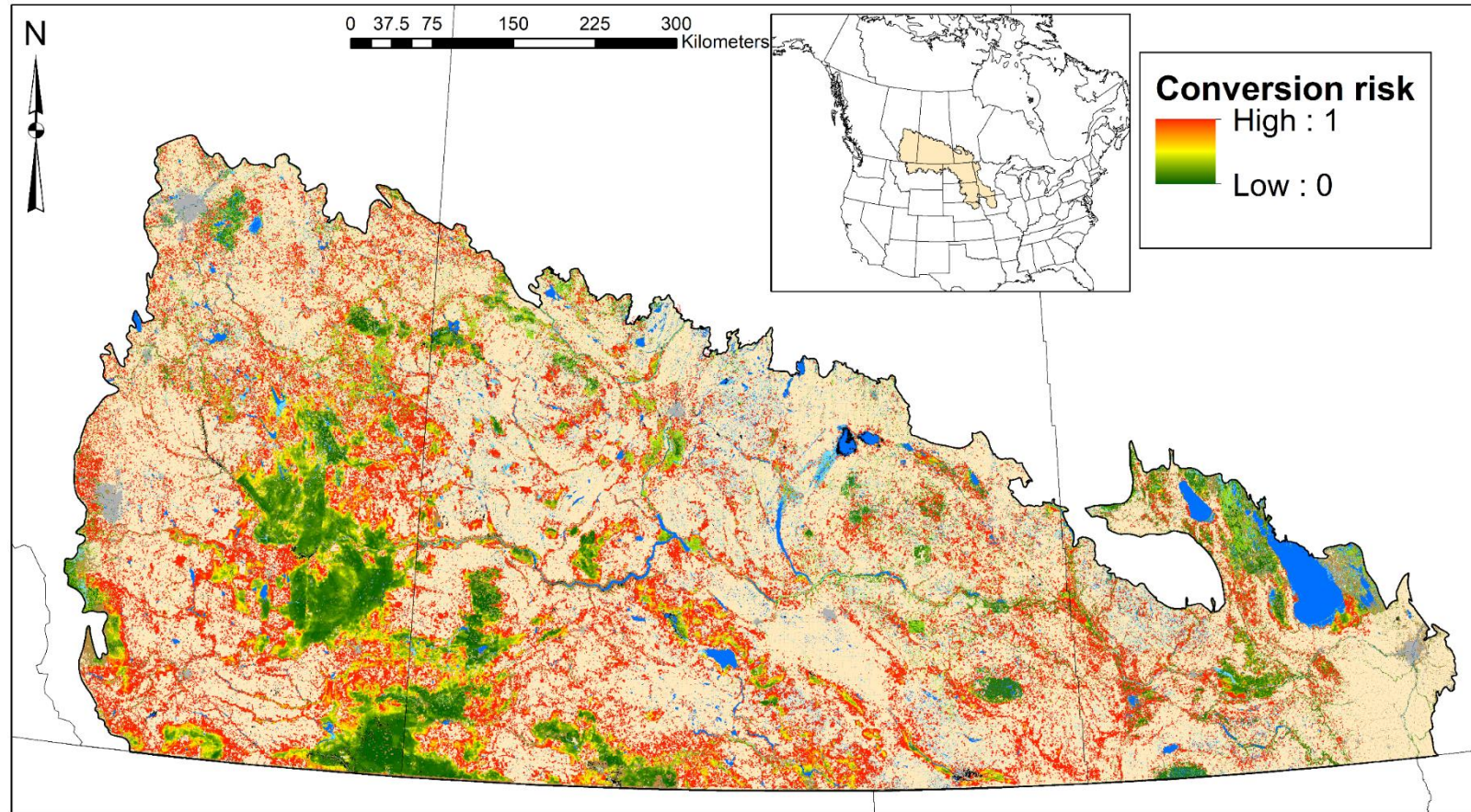
- Species density models – estimate population size
- Link between habitat and population



Simulate grassland loss



Simulate grassland loss – conversion risk



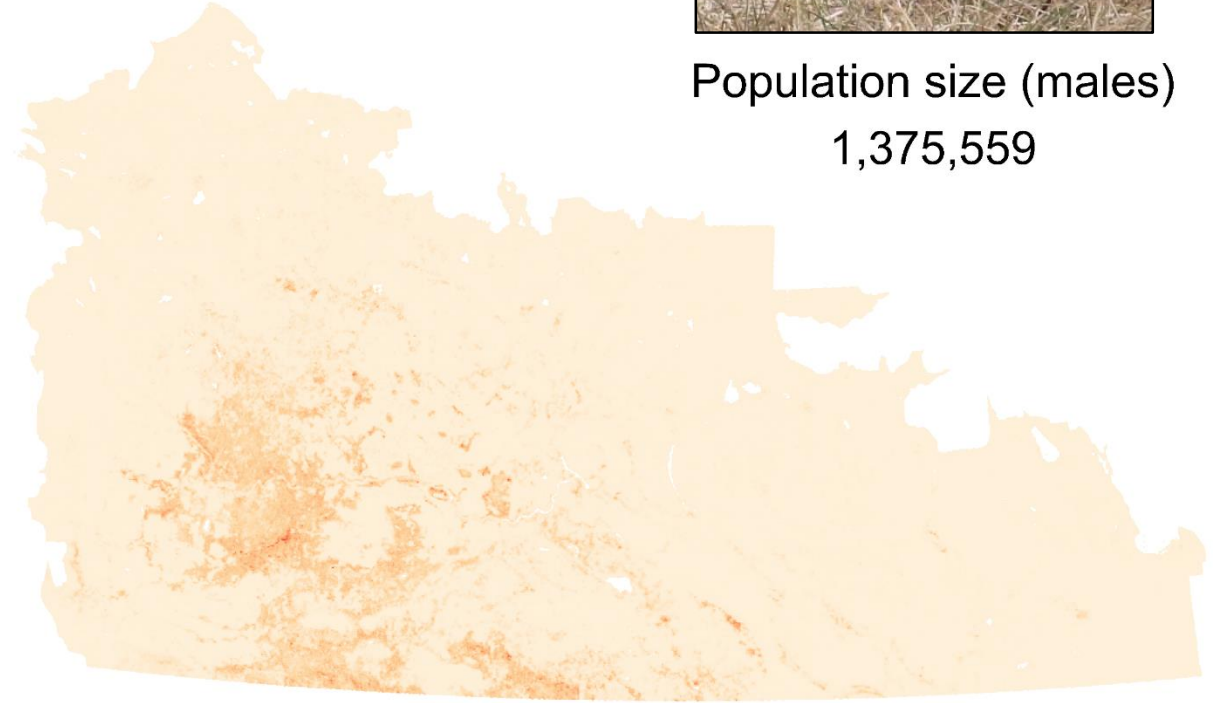
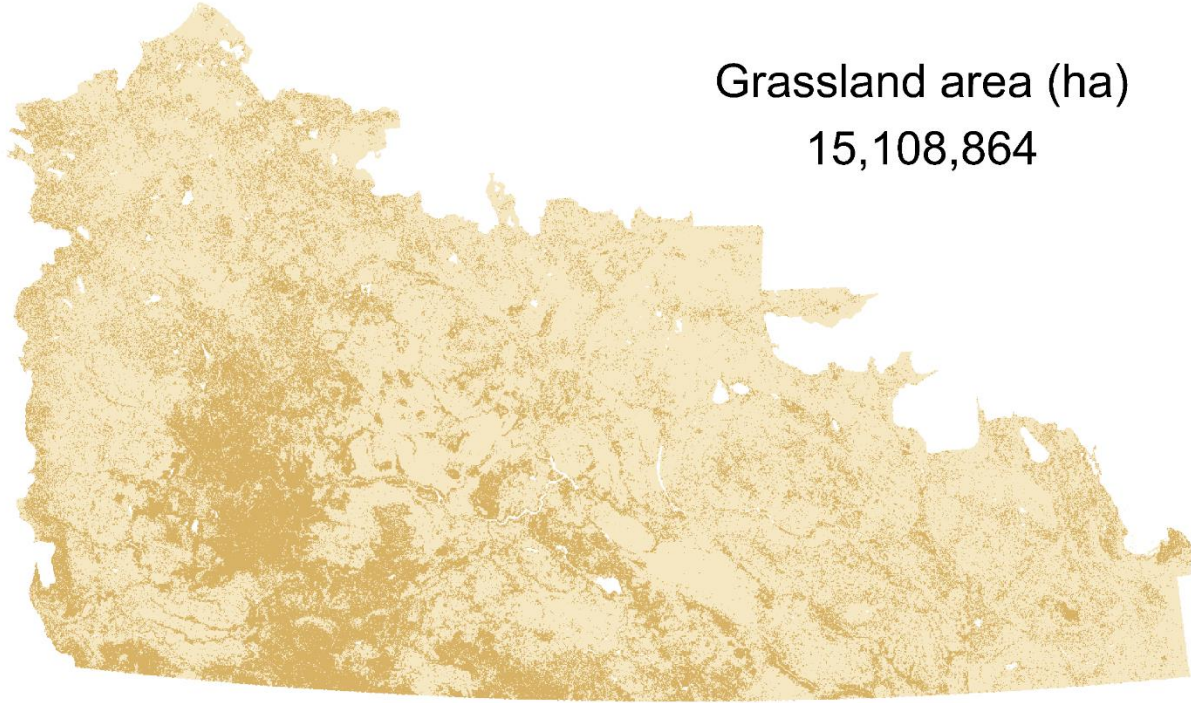
Olimb and Robinson. 2019. Ecological Indicators

Simulate grassland loss



Grassland area (ha)
15,108,864

Population size (males)
1,375,559



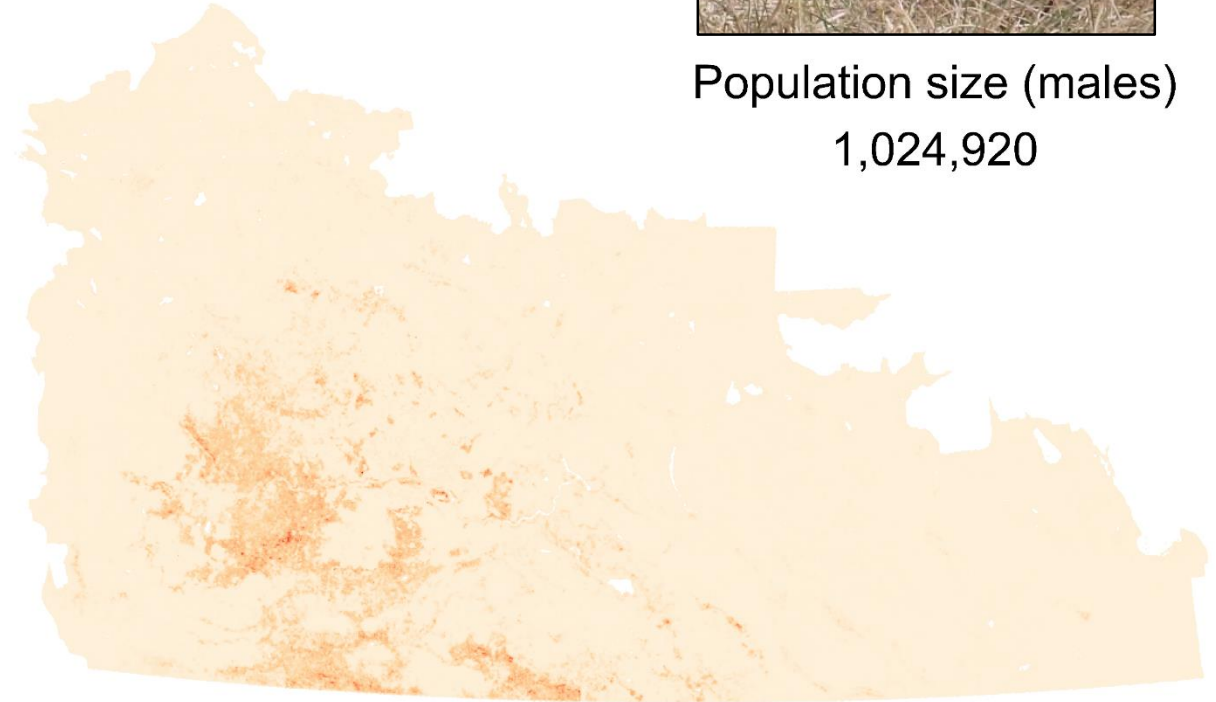
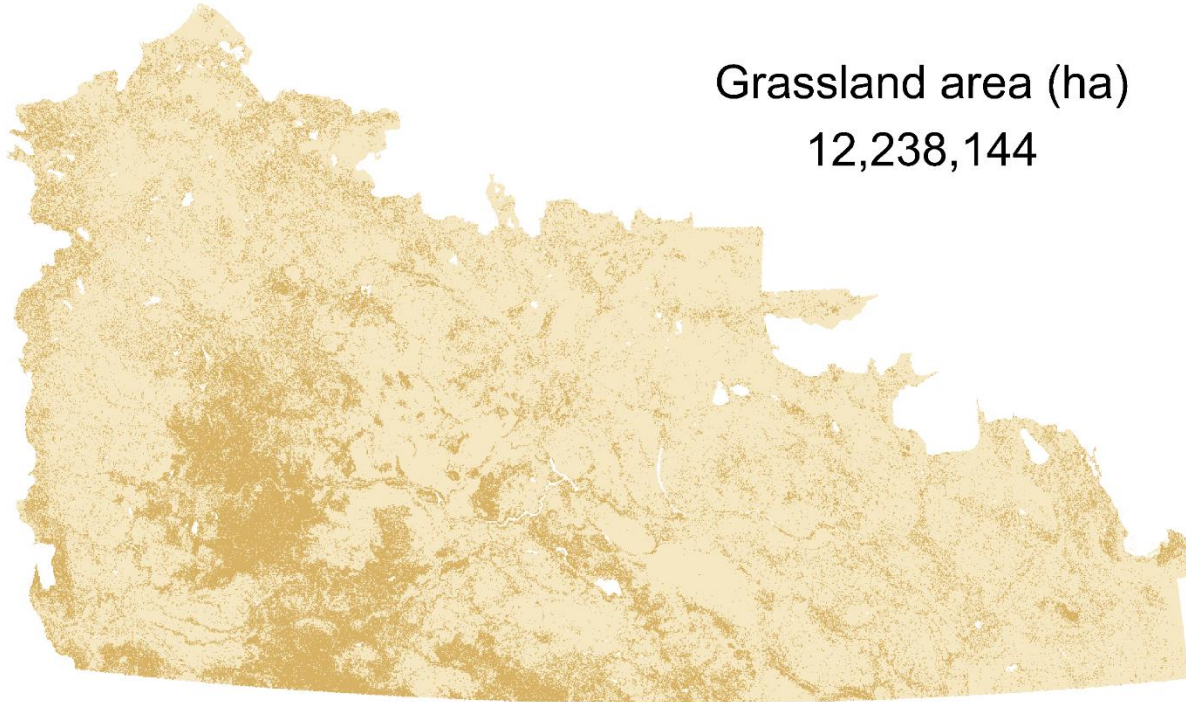
Year 0

Simulate grassland loss



Grassland area (ha)
12,238,144

Population size (males)
1,024,920



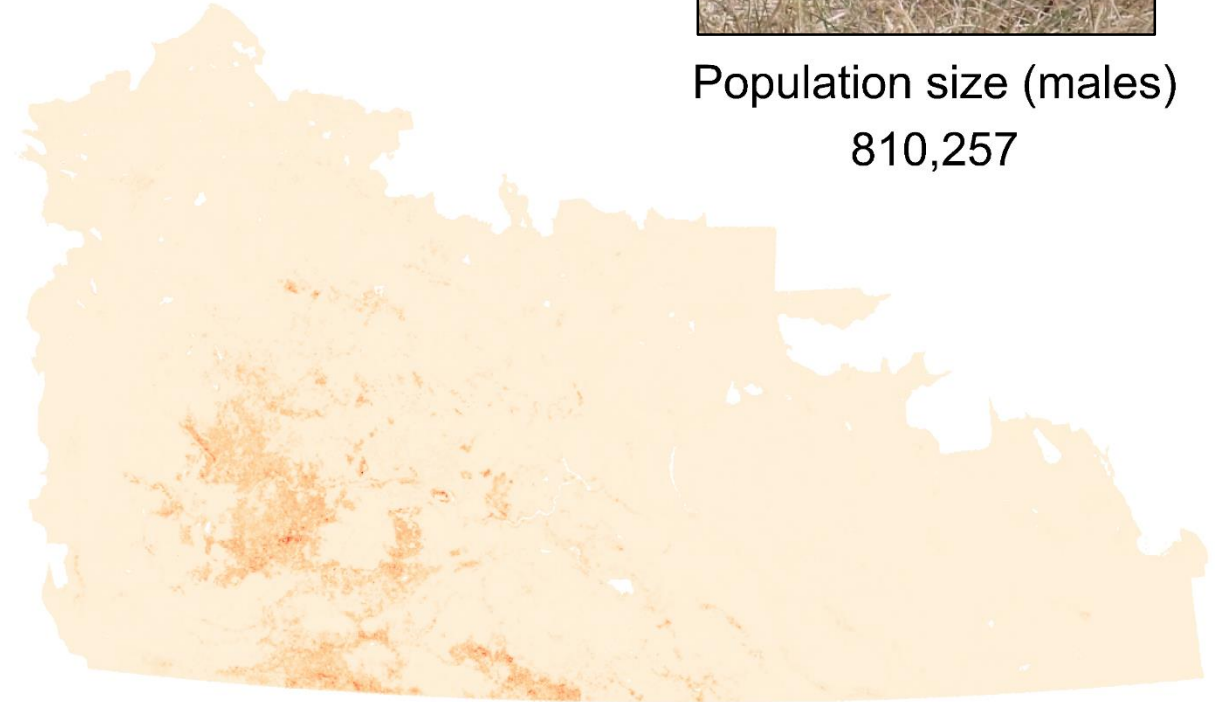
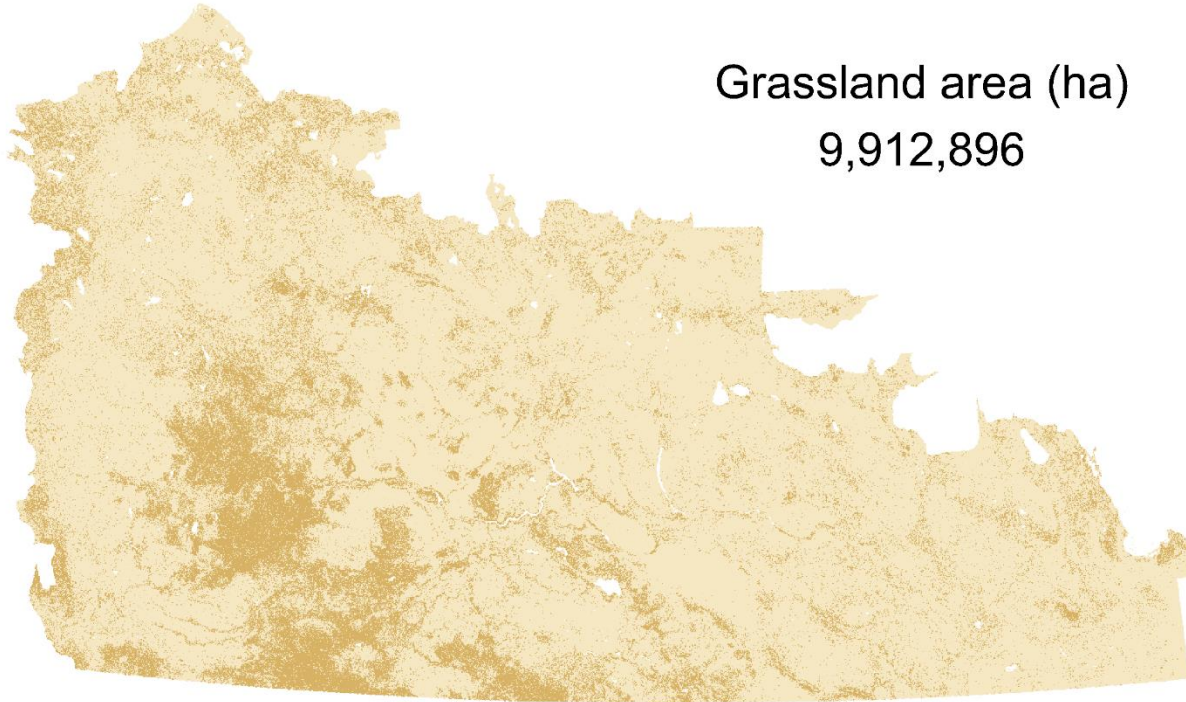
Year 2

Simulate grassland loss



Grassland area (ha)
9,912,896

Population size (males)
810,257



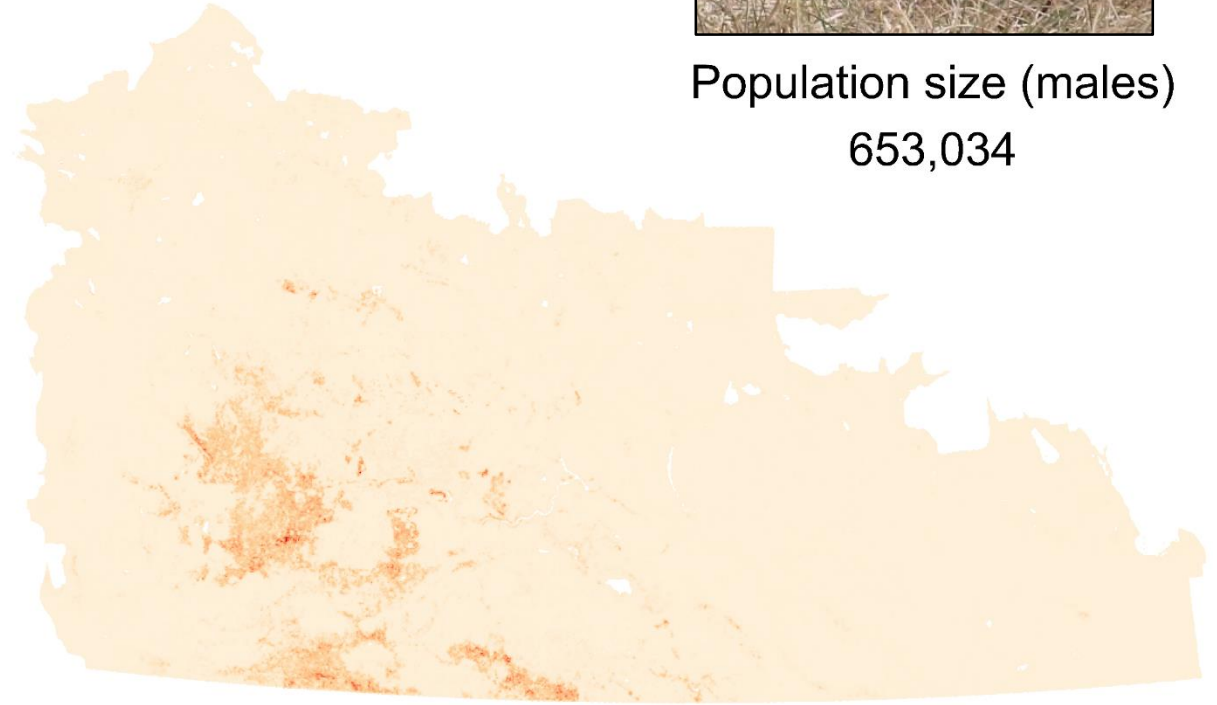
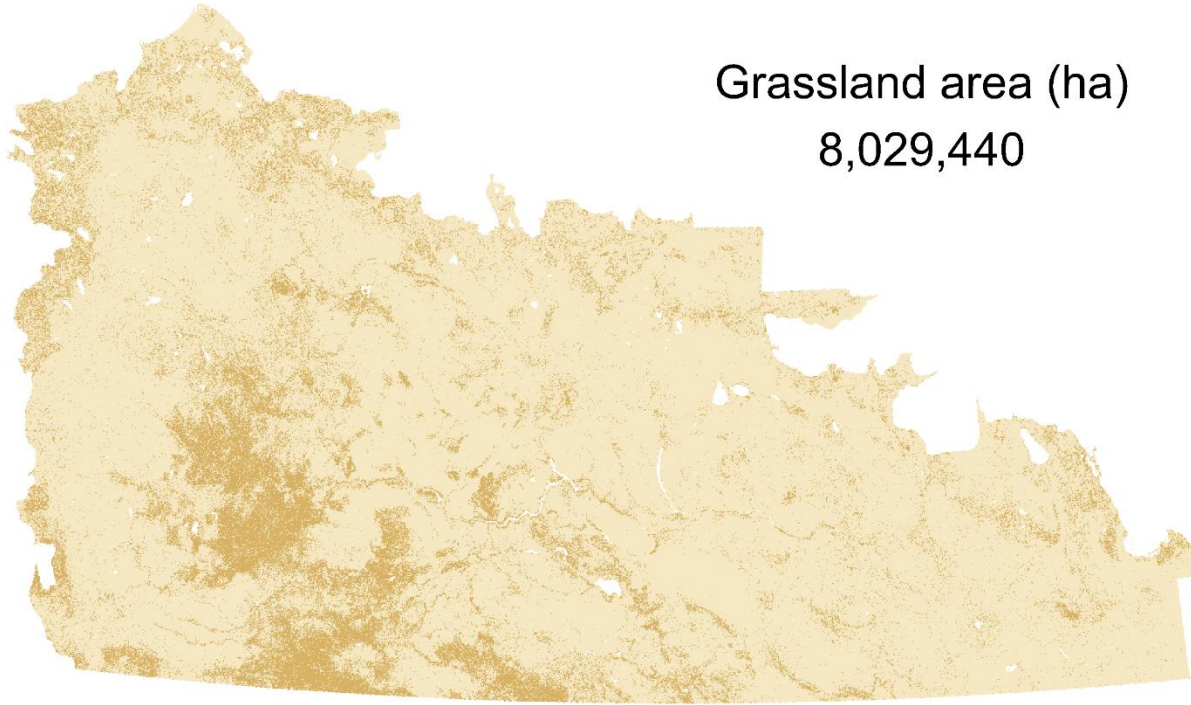
Year 4

Simulate grassland loss



Grassland area (ha)
8,029,440

Population size (males)
653,034



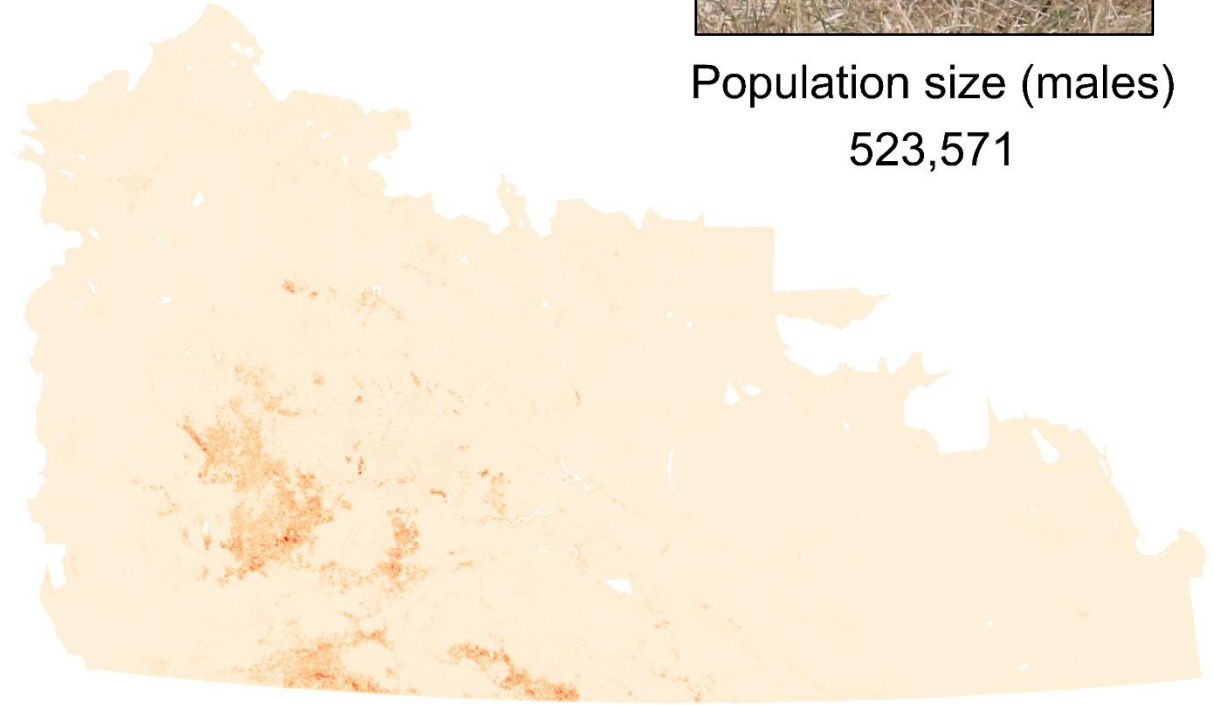
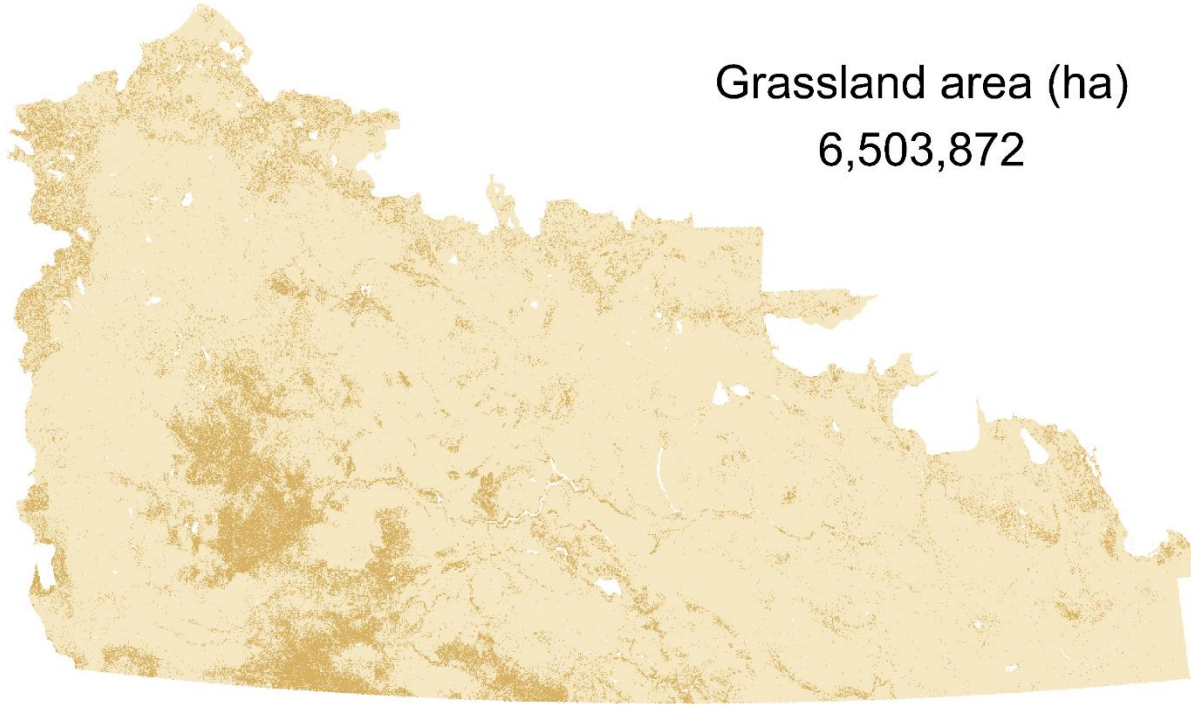
Year 6

Simulate grassland loss



Grassland area (ha)
6,503,872

Population size (males)
523,571



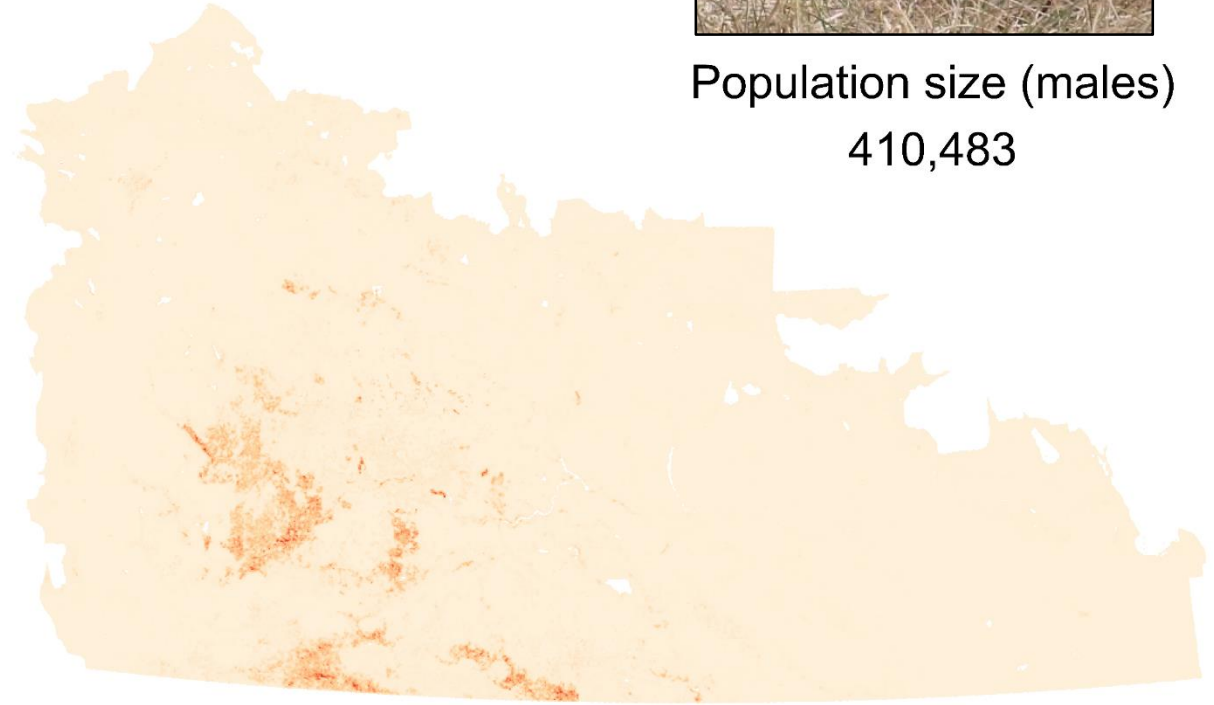
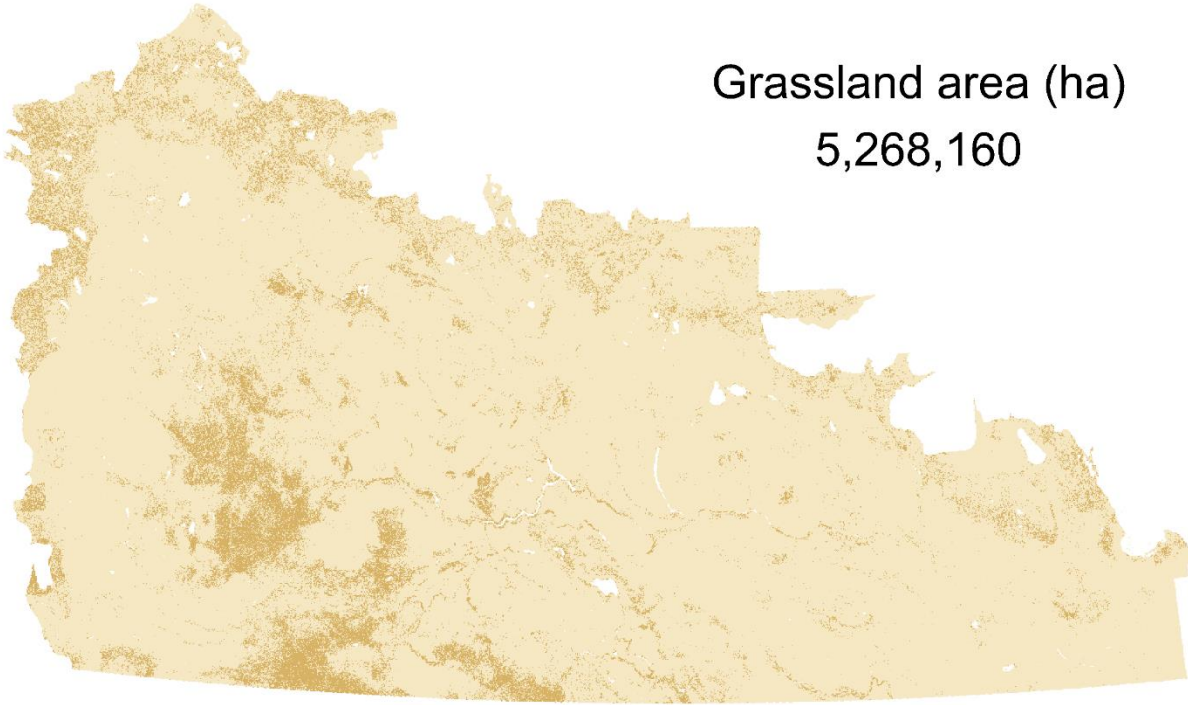
Year 8

Simulate grassland loss



Grassland area (ha)
5,268,160

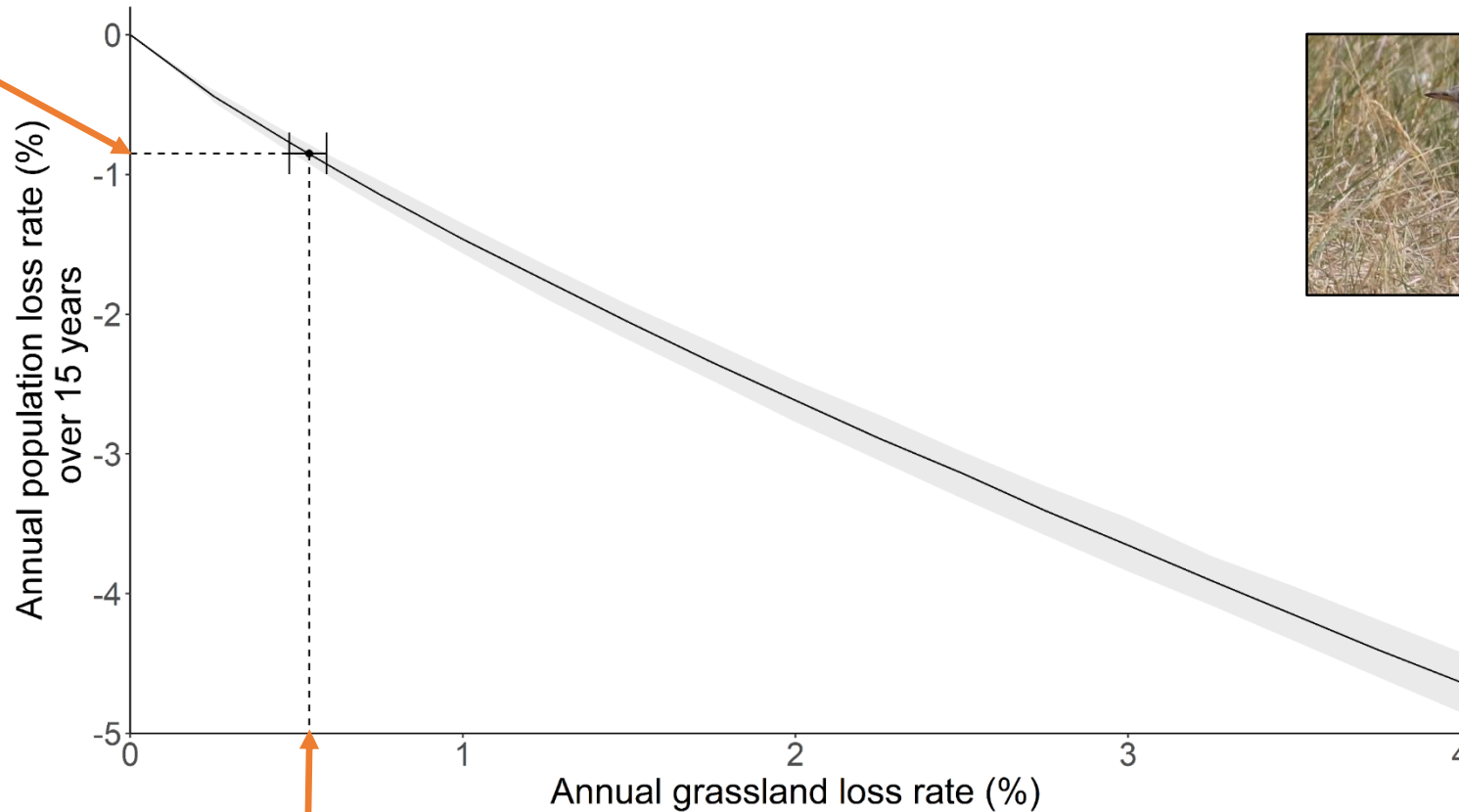
Population size (males)
410,483



Year 10

Grassland loss and population size

Population obj. =
-0.85%



Maximum
grassland loss
rate = 0.54%

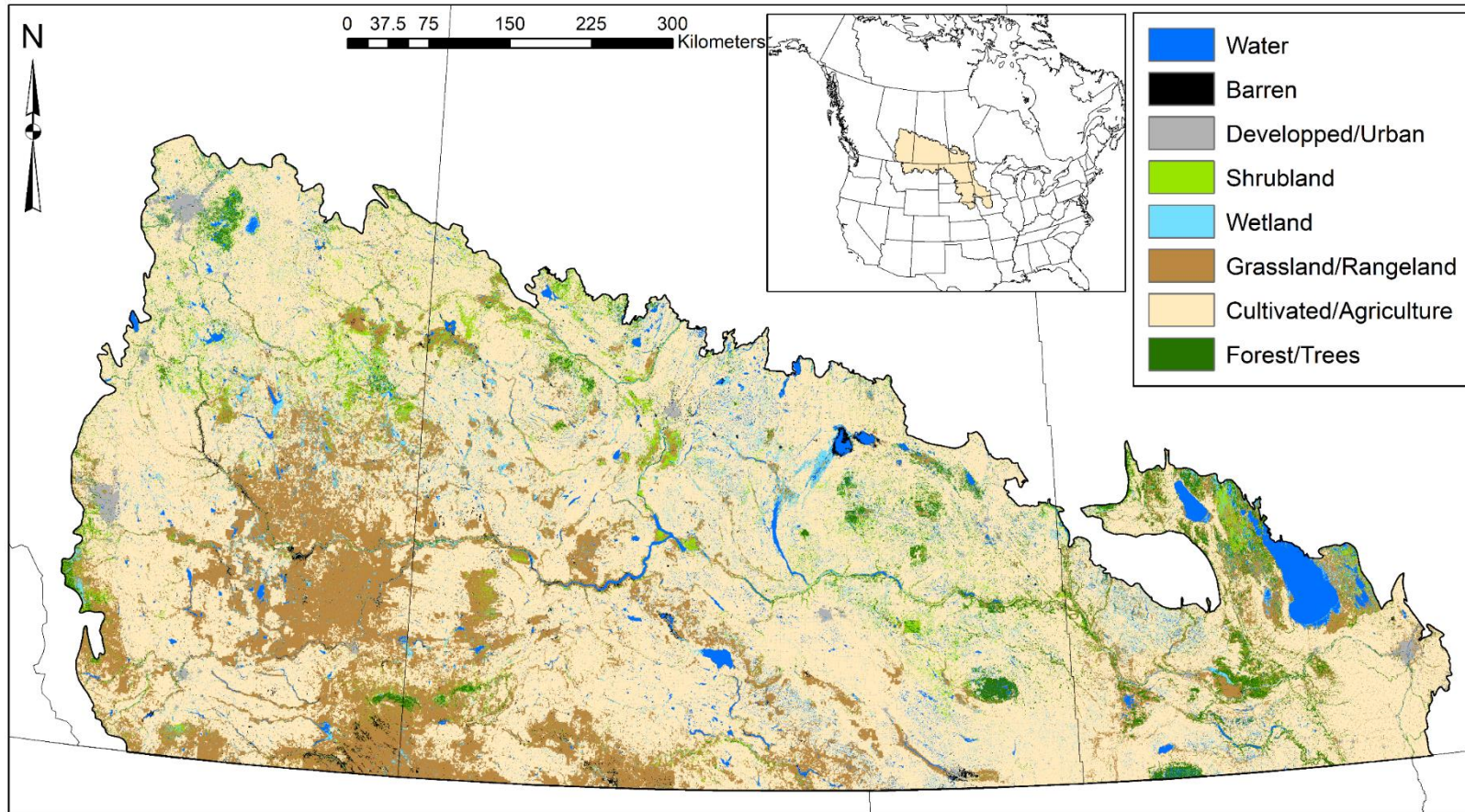
Setting habitat objectives

Species	Allowable loss rate (%)	Actual loss rate 2011-16 (%)	Protection rate needed (%)	Annual grassland objective	
				km ²	acres
BAIS	0.52	1.32	0.80	1,250	309,700
CCLO	1.93	1.32	0.00	0	0
TBLO	0.89	1.32	0.43	674	166,500
SPPI	0.54	1.32	0.78	1,220	302,000

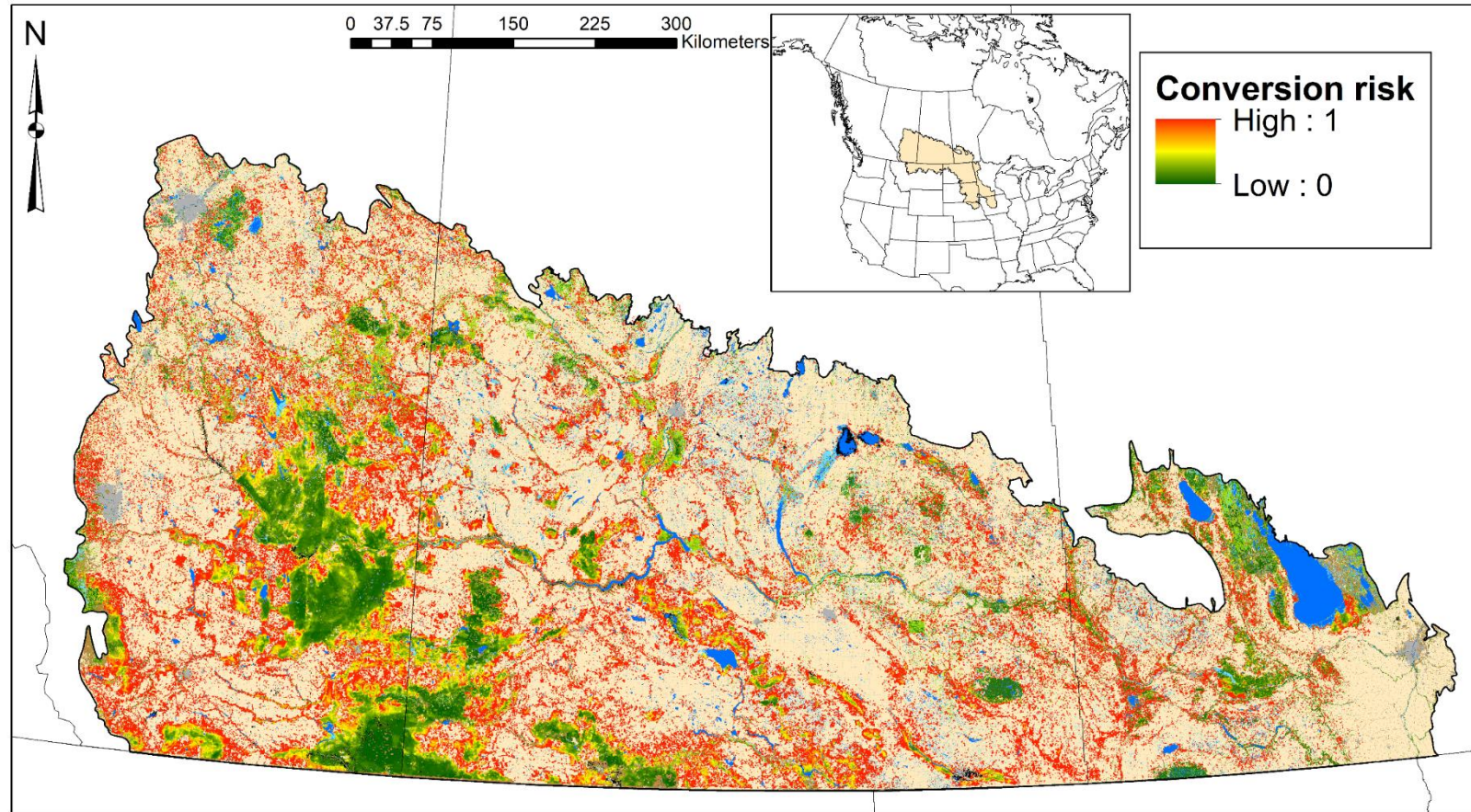
Setting habitat objectives

Species	Allowable loss rate (%)	Actual loss rate 2011-16 (%)	Protection rate needed (%)	Annual grassland objective	
				km ²	acres
BAIS	0.52	1.32	0.80	1,250	309,700
		After 15 years	11.38	17,800	4,407,000

Spatially Explicit Habitat Objectives

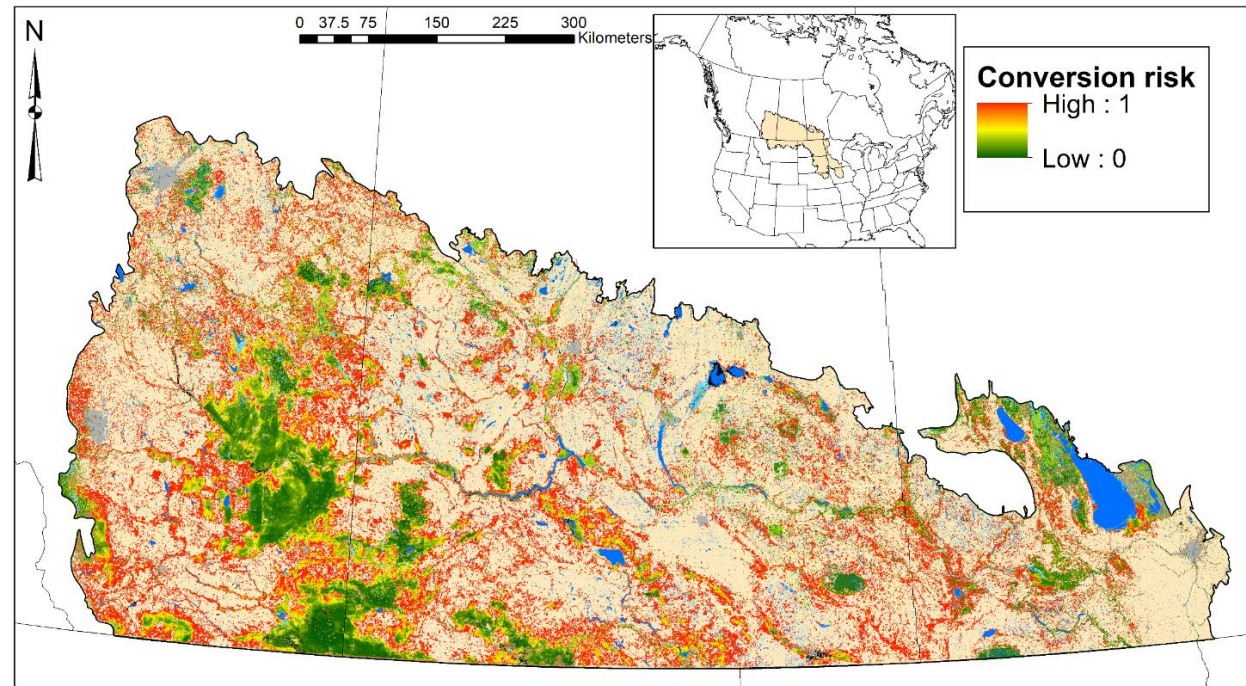


Spatially Explicit Habitat Objectives

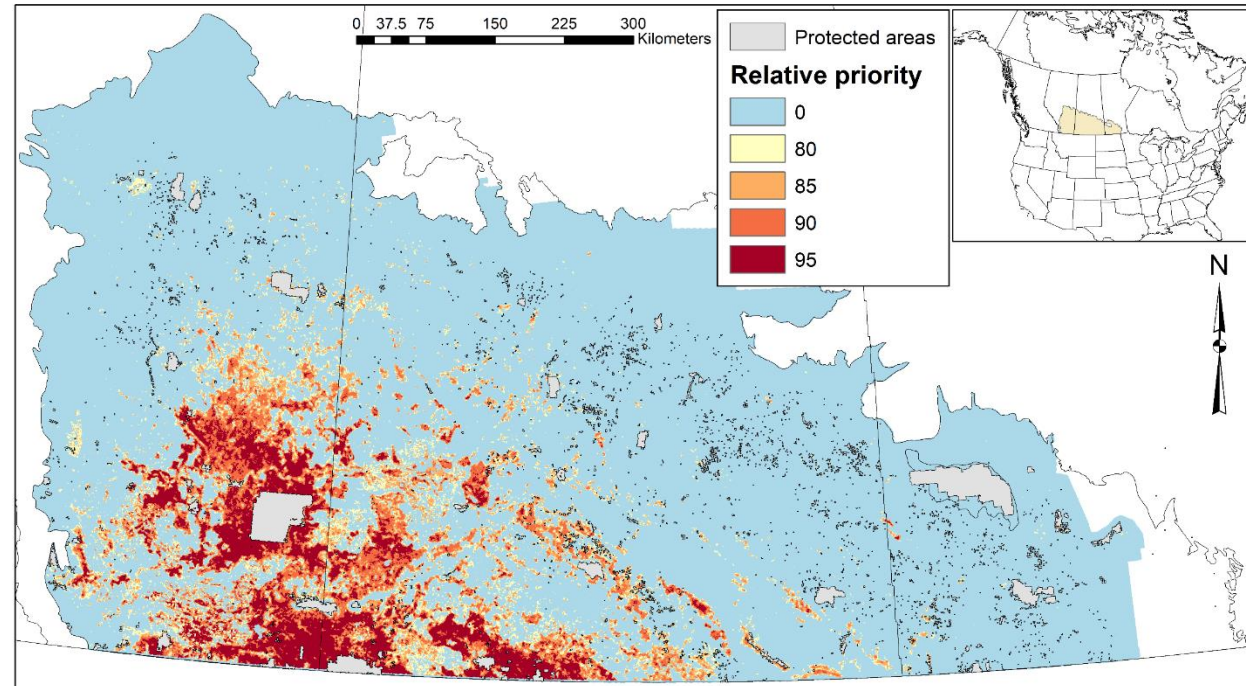


Olimb and Robinson. 2019. Ecological Indicators

Spatially Explicit Habitat Objectives



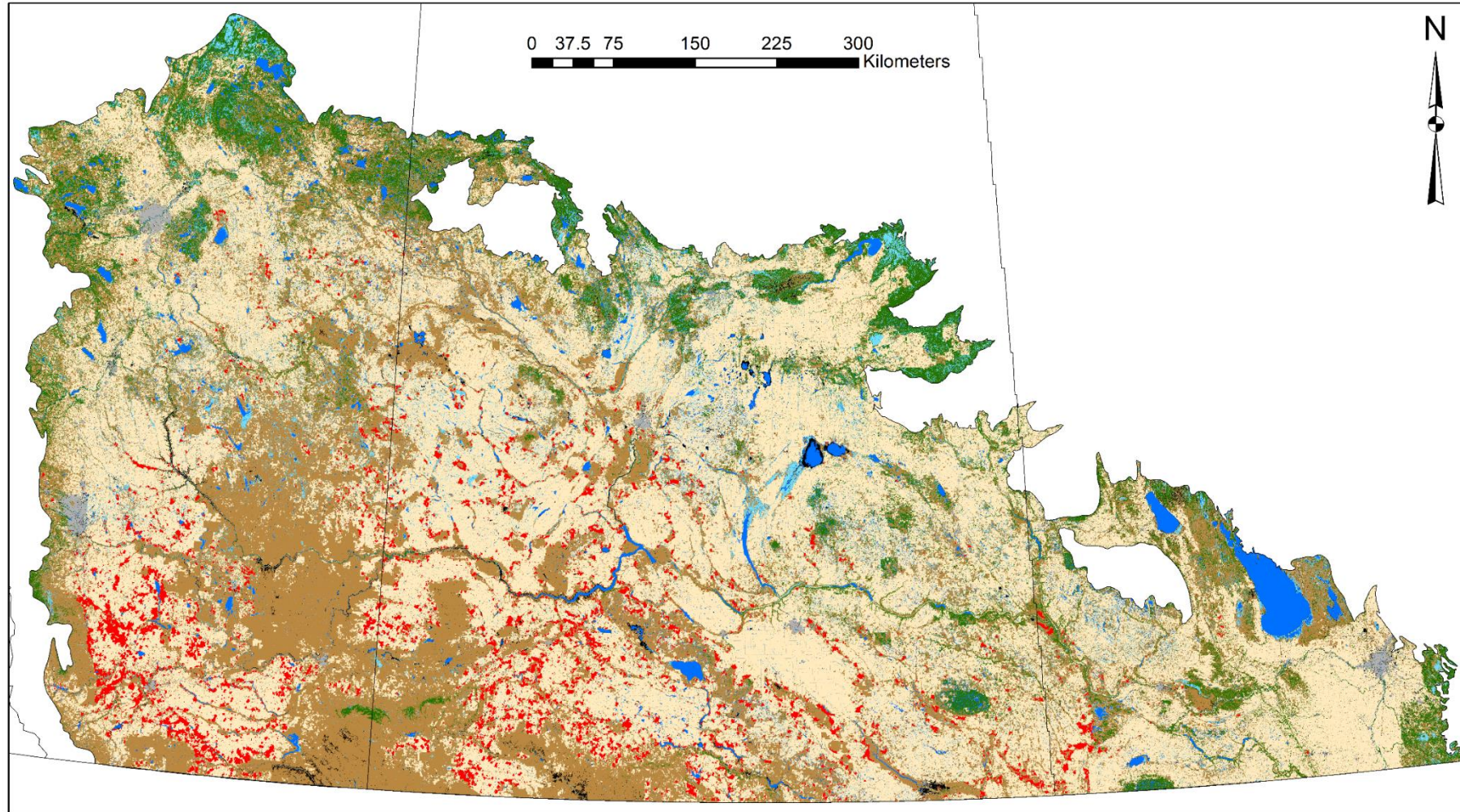
High risk



High priority



Spatially Explicit Habitat Objectives

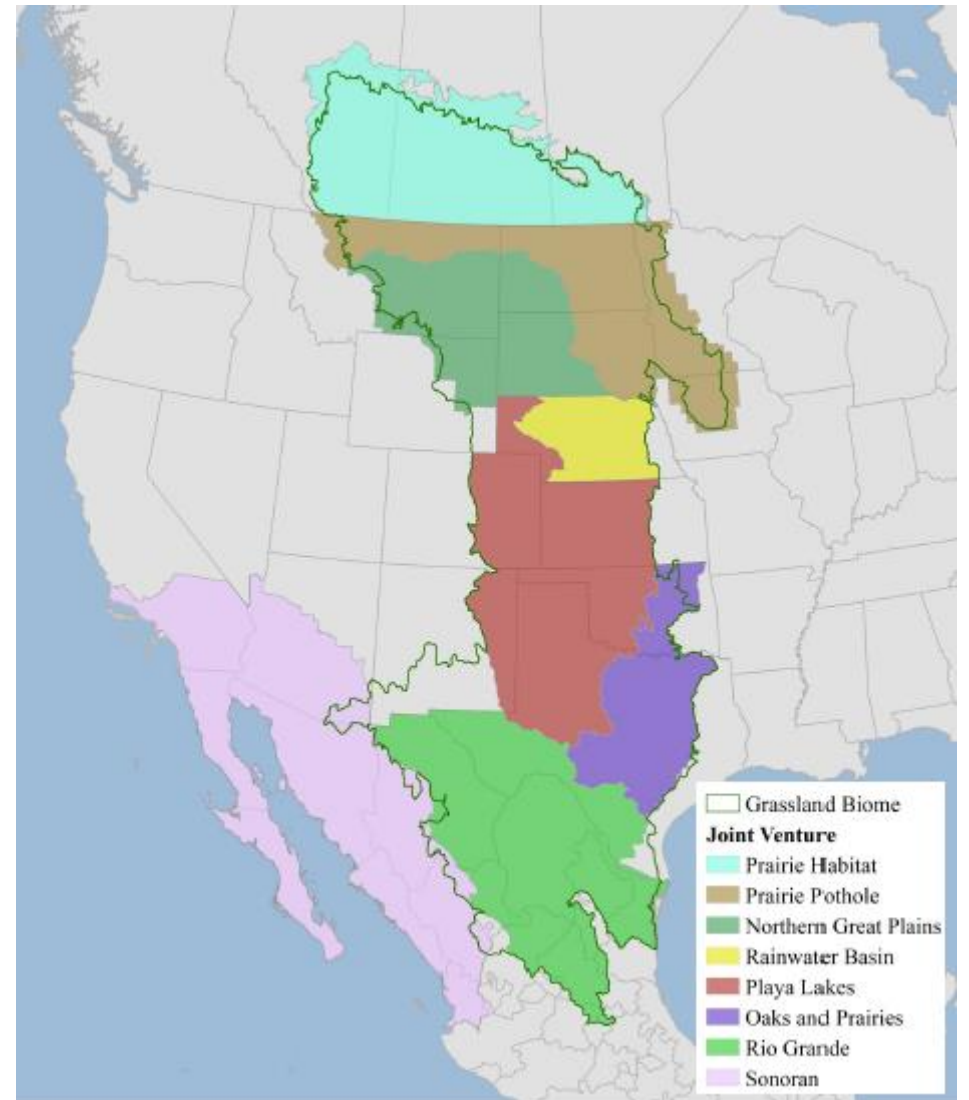


Risk ≥ 0.73
Priority ≥ 0.73

11% of grasslands (4.4 million acres)

Next steps

- Expand analysis into other areas of the Great Plains



Next steps

- Set 30-year habitat objectives

