Climate Change & Resilience in the Northern Great Plains

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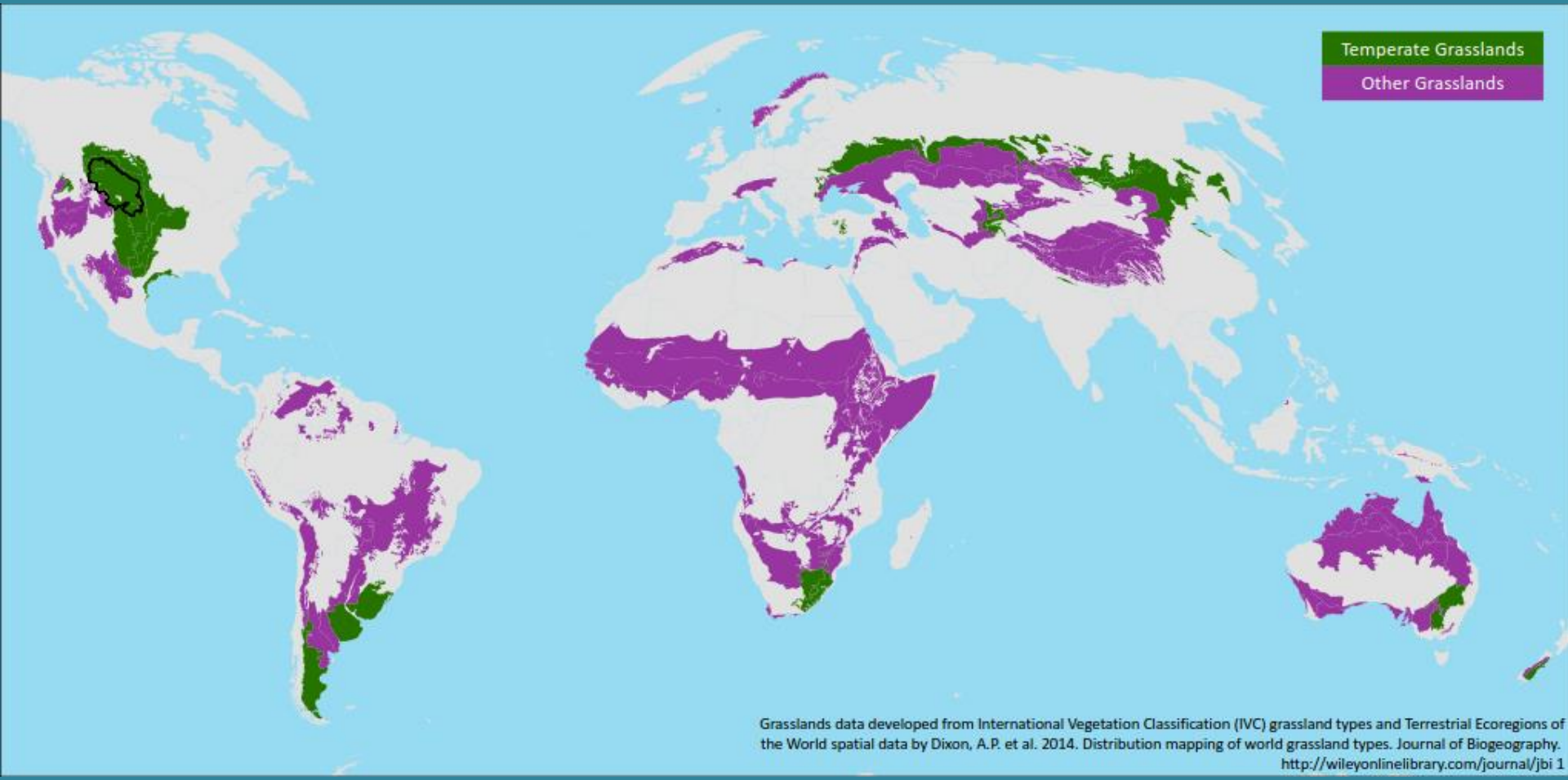
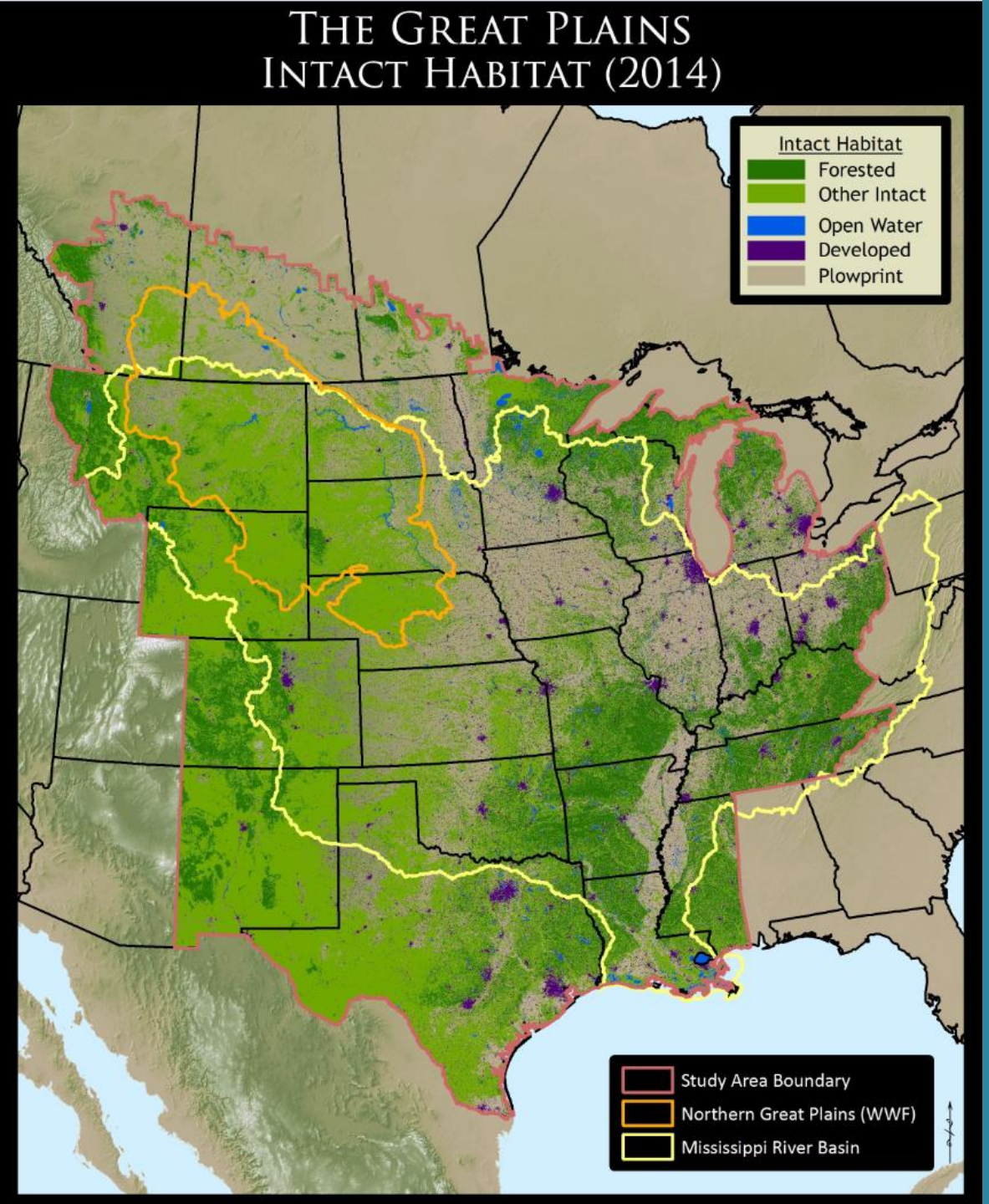
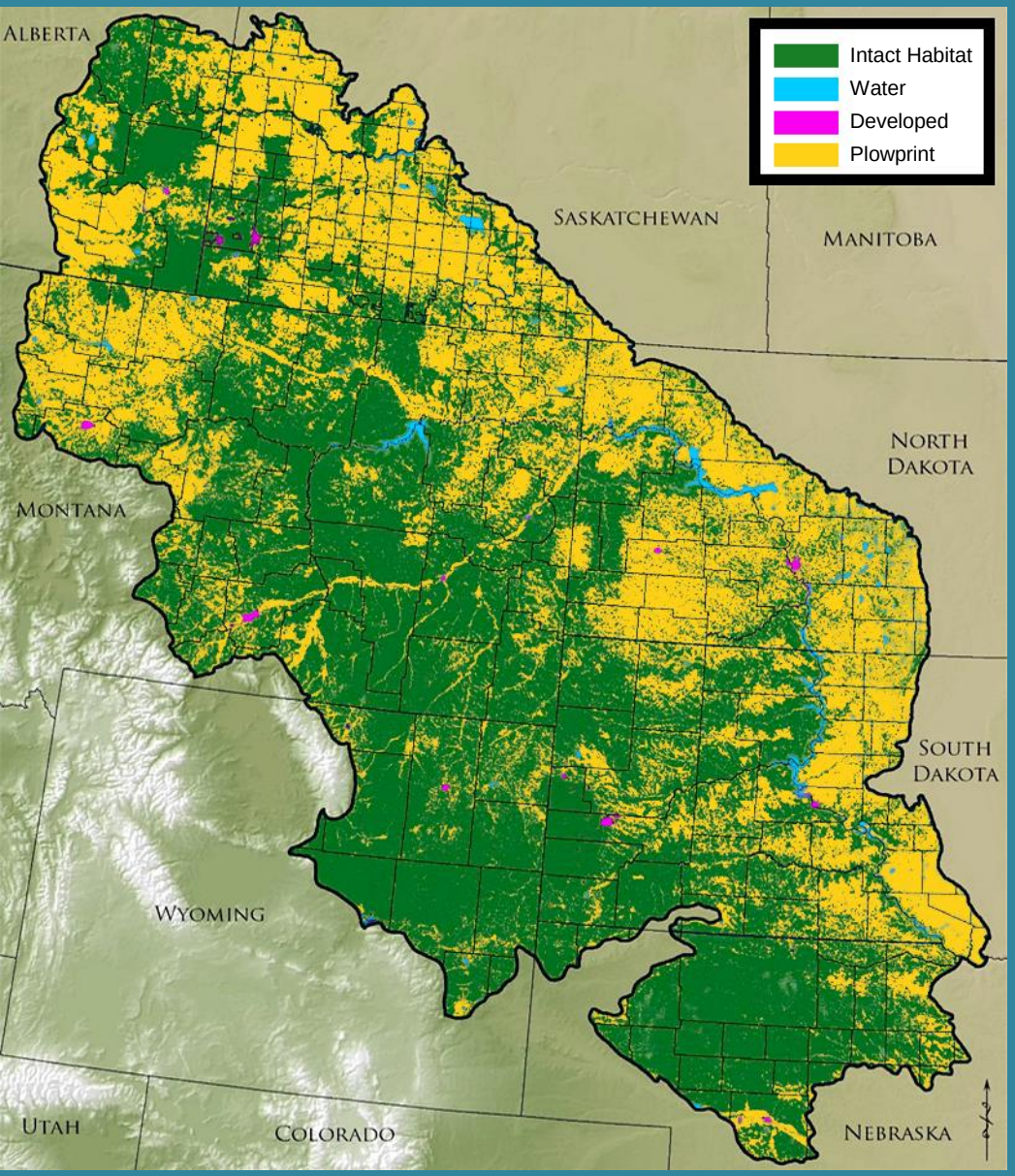
November 11, 2015

Global Grasslands





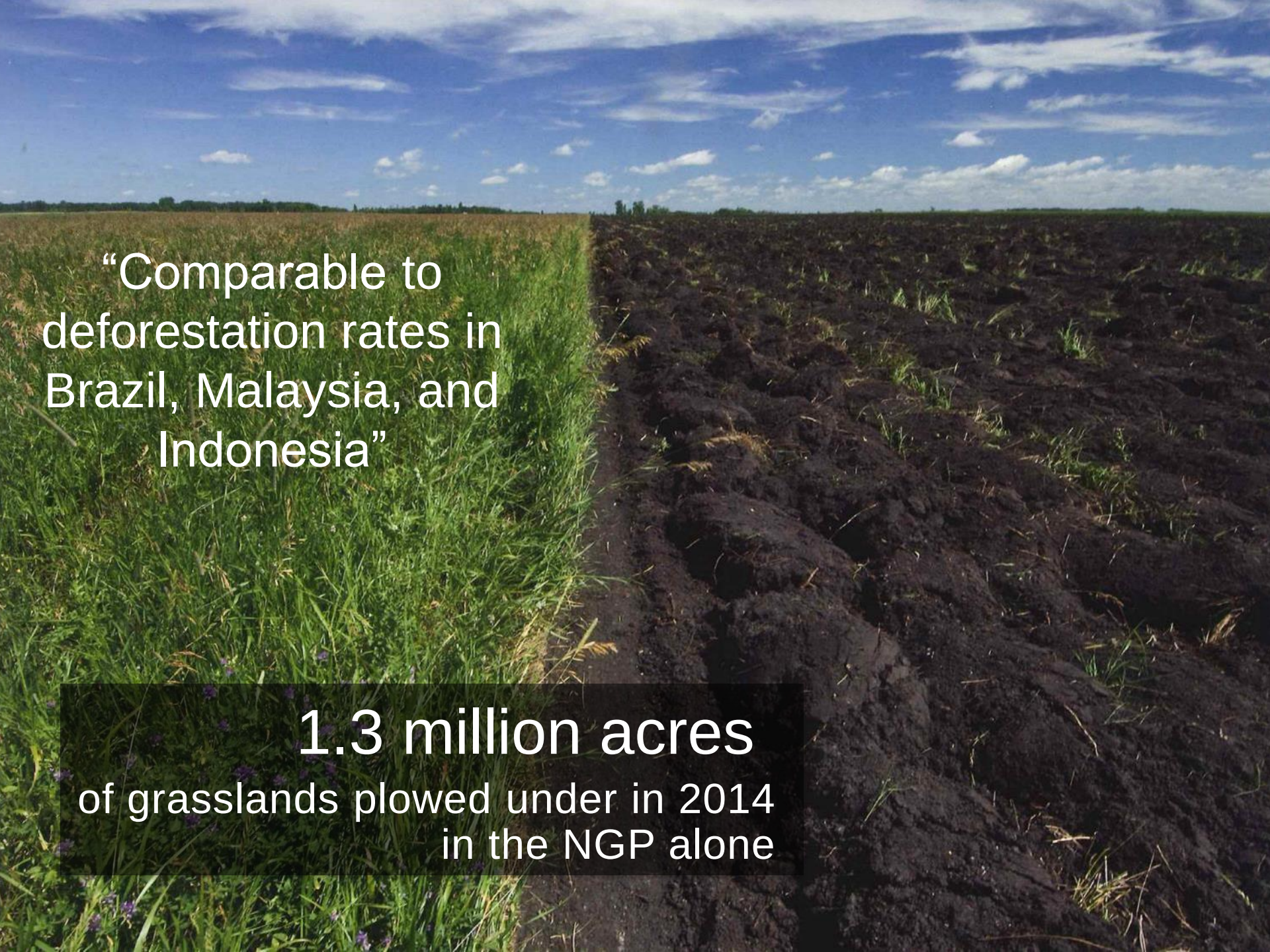
Intact habitat in Mississippi river basin



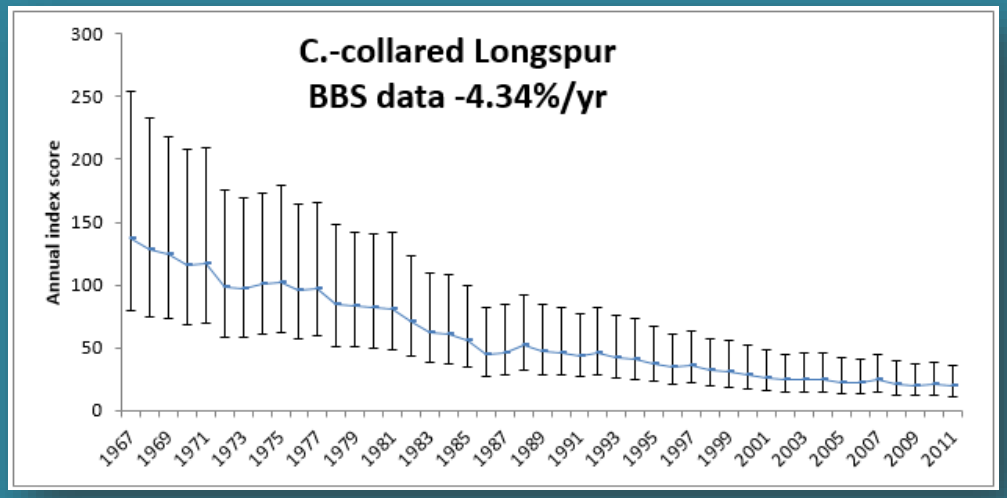
Northern Great Plains

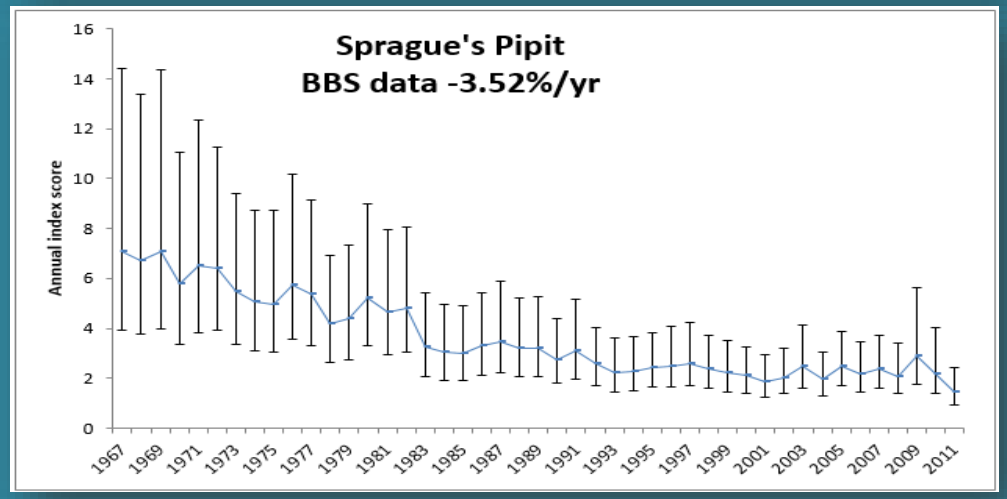
Remaining intact grassland and prairie habitat under threat

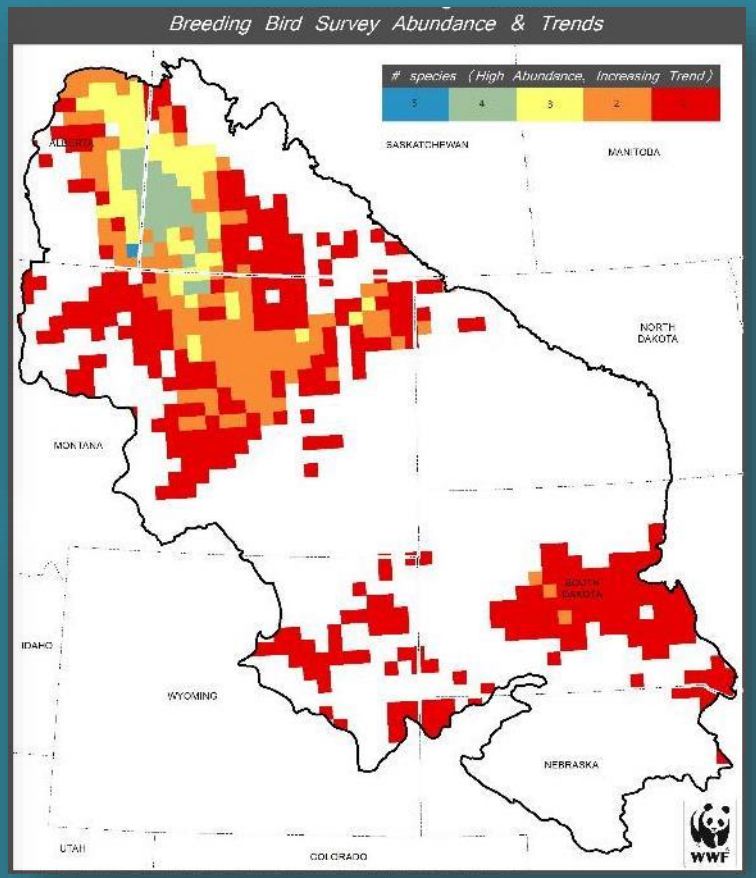
Source: Plowprint layer was developed using 2008-2013 CDL data in the US and 2009-2013 AAFC data in Canada. Pixels in agriculture status each year were aggregated to one data layer that shows the maximum footprint of agriculture over that time period. Composition based on land cover in the 2013 CDL.


“Comparable to deforestation rates in Brazil, Malaysia, and Indonesia”
1.3 million acres
of grasslands plowed under in 2014 in the NGP alone

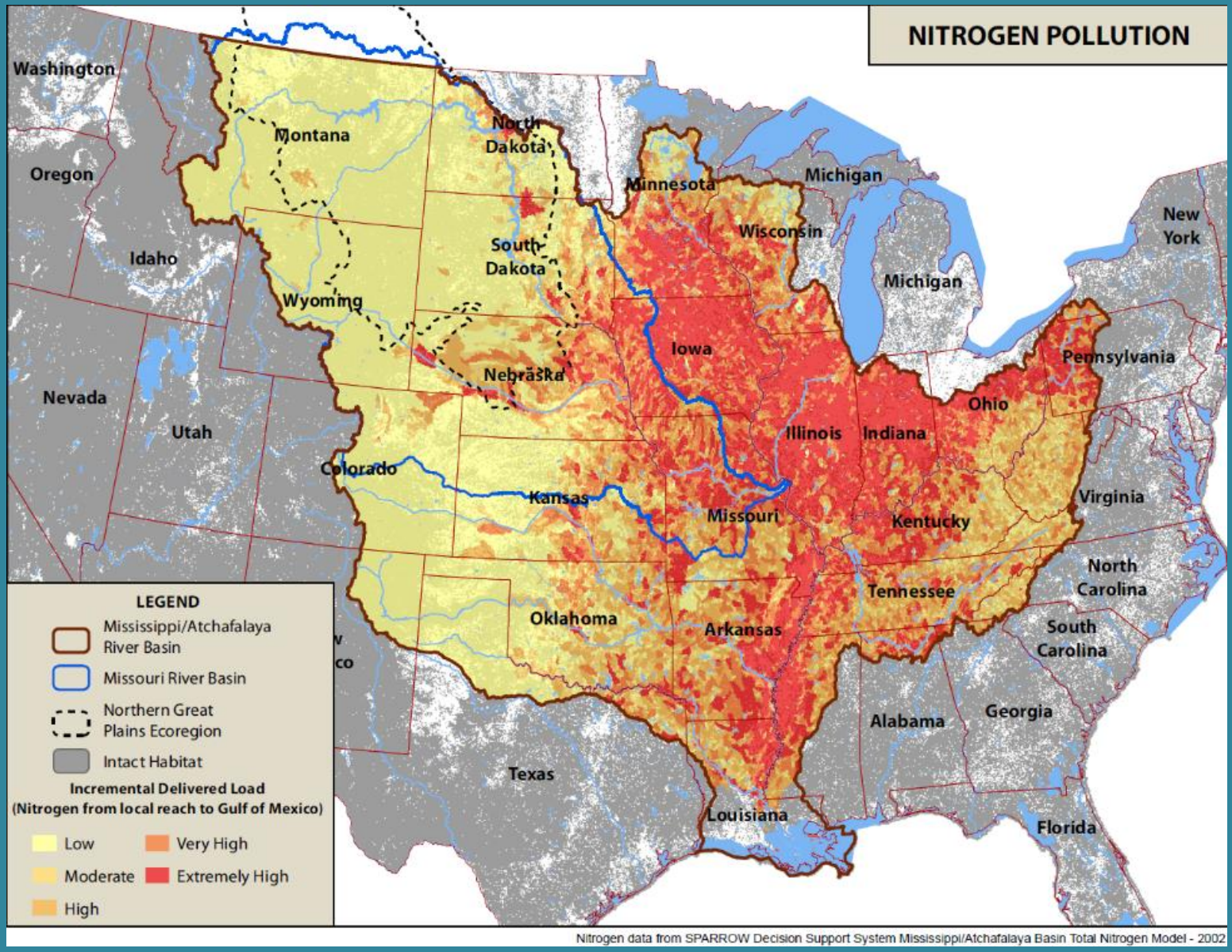
Bird Population Declines







FRESHWATER

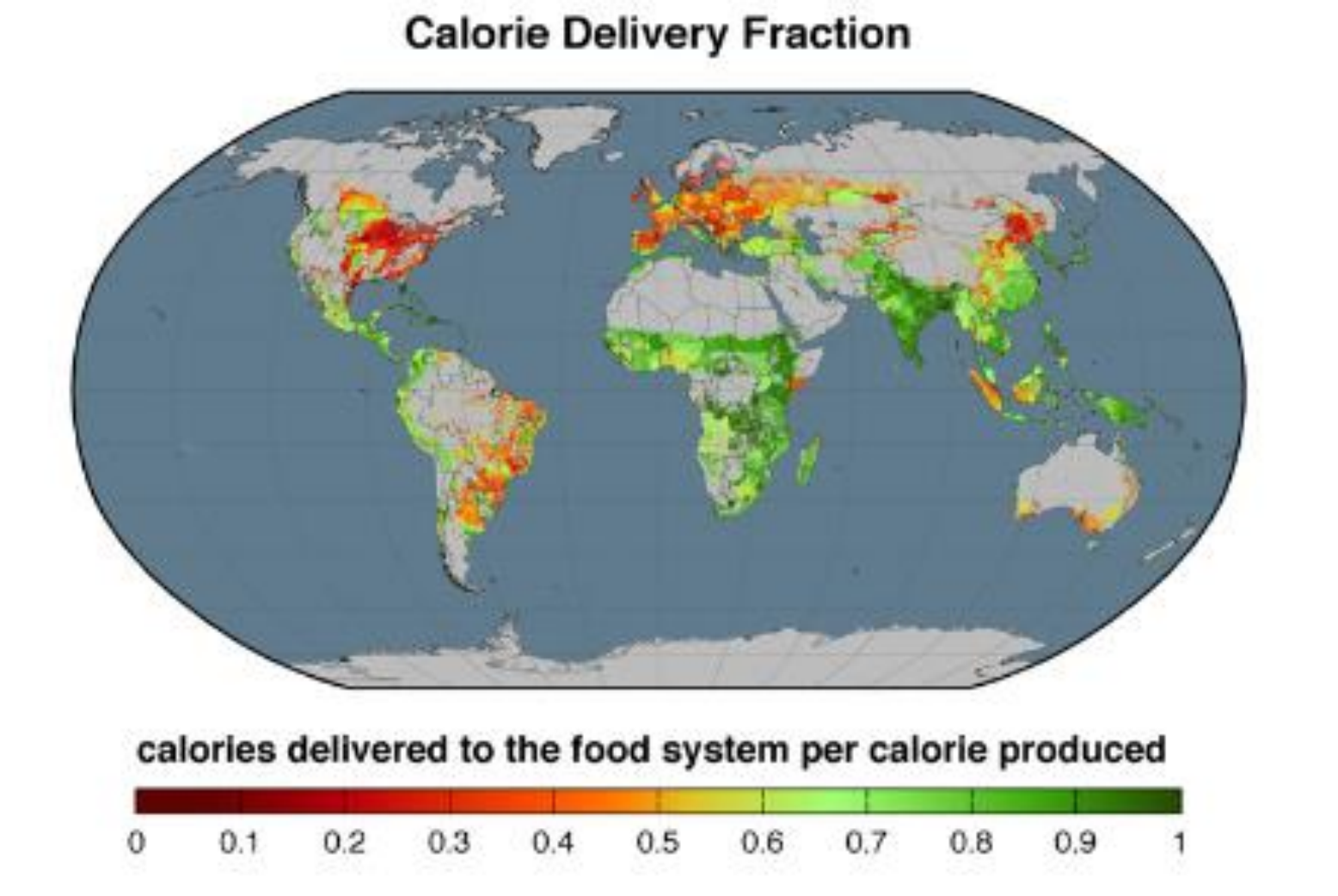

NITROGEN POLLUTION
Washington
Oregon
Idaho
Nevada
Utah
Colorado
Wyoming
Montana
North Dakota
South Dakota
Nebraska
Kansas
Oklahoma
Texas
Minnesota
Iowa
Missouri
Arkansas
Louisiana
Wisconsin
Michigan
Illinois
Indiana
Ohio
Kentucky
Tennessee
Mississippi
Alabama
Georgia
Florida
South Carolina
North Carolina
Virginia
Pennsylvania
New York
LEGEND
Mississippi/Atchafalaya River Basin
Missouri River Basin
Northern Great Plains Ecoregion
Intact Habitat
Incremental Delivered Load
(Nitrogen from local reach to Gulf of Mexico)
Low
Moderate
High
Very High
Extremely High
Nitrogen data from SPARROW Decision Support System Mississippi/Atchafalaya Basin Total Nitrogen Model - 2002

Feeding a growing population
US v. global productivity

US Corn

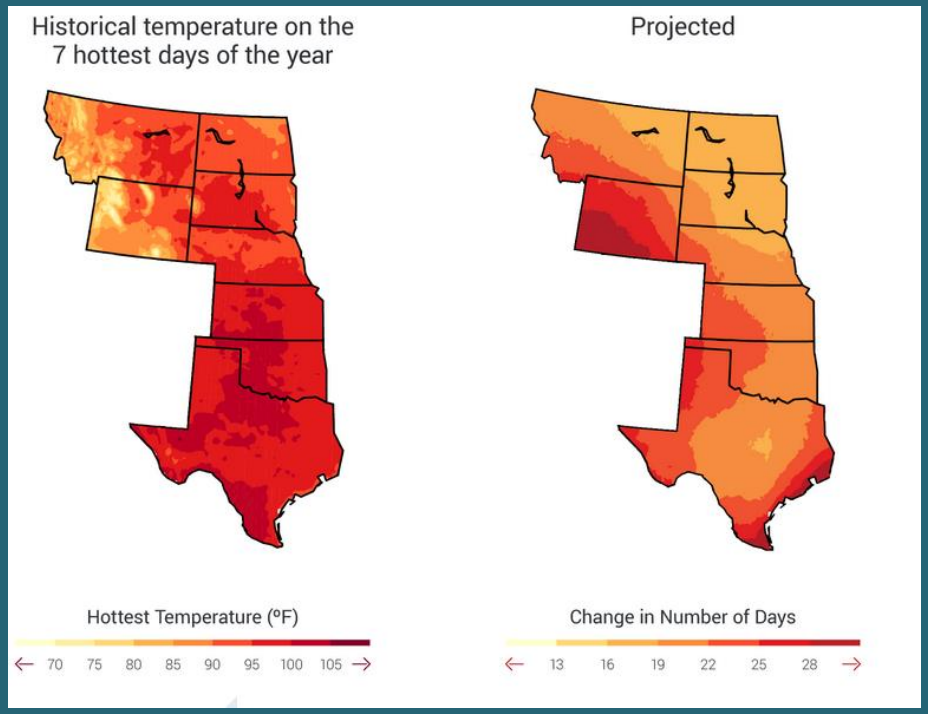
40% for ethanol

35% for livestock

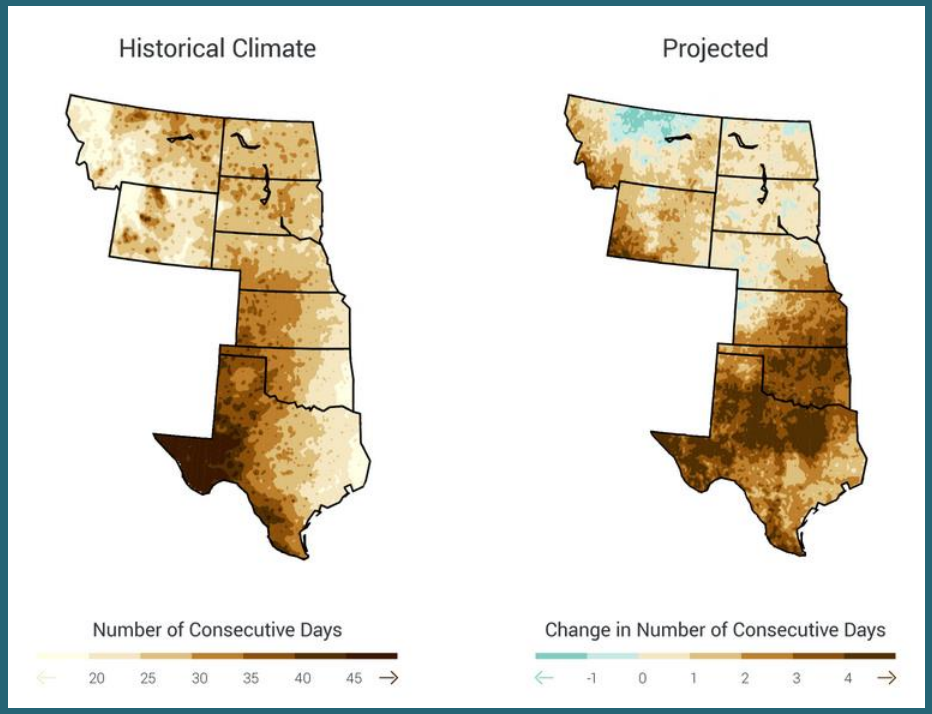


Emily S Cassidy *et al* 2013 *Environ. Res. Lett.* **8** 034015

Projected Change



Lower emissions: 13-19 days
Higher emissions: 19-28+ days



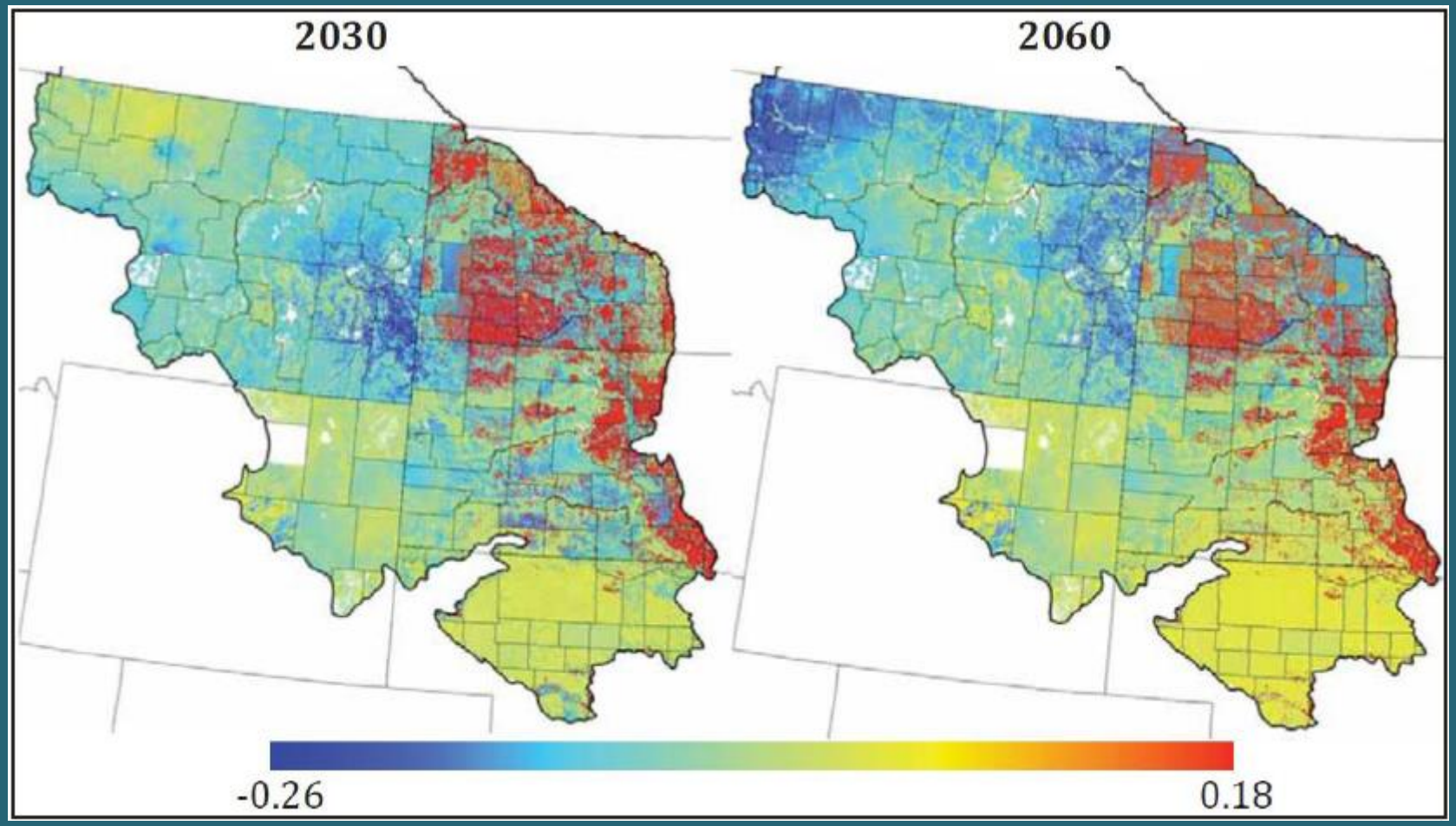
Lower emissions: 13-19 days
Higher emissions: 19-28+ days

- Extreme Events -

Winter Storm Atlas, October 4, 2013
takes devastating toll on cattle ranchers

70-80 F days, then rain, wind, heavy snow
$1.7 billion in damage, tens of thousands of livestock lost

Change in Probability of Conversion



Impacts to Forage

- Rangelands=30-40% global land area
- Potential increases in forage production
- Quality of forage may be lower, requiring more land/animal
- Invasive species may also decrease forage quality and may be toxic to livestock

We have a resilient system

that produces food

stores water and carbon

and supports biodiversity.

Let’s keep it.

- Improve sustainability of ranching/ livestock production
- Address perverse incentives that result in plow-up of marginal lands
- Restore perennial cover to marginal lands
- Improve soil health/resilience


Questions?


WWF