



2016

PLOWPRINT

REPORT

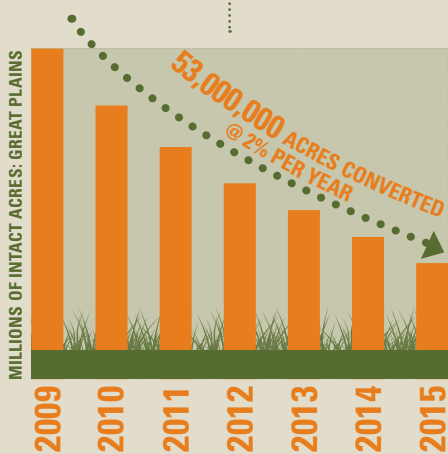


BIG PICTURE

53,000,000:

Number of acres of grasslands converted across the Great Plains since 2009.

2% ANNUAL RATE OF LOSS BETWEEN 2009-2015



THIS EQUALS:

13% OF 419 MILLION INTACT ACRES LOST

THAT'S THE SIZE OF KANSAS!

Temperate grassland ecosystems are the least protected lands on the planet¹. Worldwide, these important habitats are being lost at an alarming rate due to a number of factors that include the production of food and fuel for a growing human population. Their decline is having a significant impact on the important services they provide such as water storage and clean air. In the U.S. and Canada, many of the species that live within these oceans of grass are found nowhere else on Earth. These include species such as the Chestnut-collared Longspur—a songbird once common across the Great Plains—which has declined over 80% since the 1960s. If the remainder of its nesting and foraging grounds in the grasslands are converted to crop fields, its chances of survival are bleak.

The Mississippi River Basin and Great Plains encompass the majority of the historic extent of temperate grasslands in North America. Over the past few centuries the majority of the tallgrass prairie in the eastern portion of the region has vanished to make room for annually planted crops such as wheat, corn, and soy beans. The central and western portions of the region—the Great Plains and the focus of this document—have seen less loss overall, but still only half of their grasslands remains intact. **Since 2009, 53 million acres of grassland—an area the size of Kansas—have been converted to cropland across the Great Plains alone. That represents almost 13% of the 419 million acres that remained intact in 2009.**

The purpose of the Plowprint² Report is to track annual grassland conversion to cropland across the region, and to provide a way to measure the loss of this important habitat type³. World Wildlife Fund is dedicated to achieving no net loss of grasslands to ensure a vibrant future for the communities and species across the region, and for those who depend on the Great Plains each day without even realizing it.

¹ Hoekstra, J.M., et al. 2005. Confronting a biome crisis: global disparities of habitat loss and protection *Ecology Letters* 8:23-29. ² Gage, A.M., Olimb, S.K., Nelson, J. *In press*. Plowprint: tracking cumulative cropland expansion to target grassland conservation. *Great Plains Research*. ³ The focus of this report is on changes in grassland conversion from 2014-2015, based on data from the USDA National Agricultural Statistics Service Cropland Data Layer and the Agriculture and Agri-Food Canada Annual Crop Inventory. For this analysis, cropland equals any annually planted agricultural commodity (e.g., corn or soybeans.) or fallow agricultural land.



Grassland Songbirds have declined 80% since the 1960s.

Habitat loss has played a major role in their decline.



90% of the GREAT PLAINS IS PRIVATELY OWNED

84% of the intact habitat in the Great Plains is privately owned (309 million acres). Ensuring that privately owned lands remain intact not only conserves biodiversity, but also keeps streams clean, stores water, reduces flooding, supports plant pollinators, and leaves carbon in the soil.

IN 2014, THE GREAT PLAINS LOST MORE ACRES TO CONVERSION THAN THE BRAZILIAN AMAZON

WWF'S GOAL IS TO REACH NO NET LOSS OF GRASSLANDS THROUGH RESTORATION & DECREASED PLOW-UP.

3.2 BILLION METRIC TONS OF CARBON DIOXIDE EMISSIONS

were released into the atmosphere due to plow-up of the grasslands from 2009-2015.



THIS IS THE EQUIVALENT OF 670 MILLION EXTRA CARS ON THE ROAD!



Each Unplowed Acre Can Store Thousands of Gallons of Water.

TRILLIONS OF GALLONS OF WATER ARE FILTERED THROUGH THE PLAINS.



THIS WATER BECOMES DRINKING WATER FOR MILLIONS OF PEOPLE & SUPPORTS HEALTHY FISHERIES IN THE GULF OF MEXICO.

POLLINATORS IN PERIL

Habitat loss has likely played a significant role in the decline of many North American bumble bees. In fact, some estimates suggest that **ONE out of FOUR species of North American Bumble Bee**—from a total of 47—is at risk of extinction. The range of the Rusty-patched Bumble Bee (pictured), which once extended from the Dakotas and Nebraska, east across the Midwest and south to the Carolinas, has declined 87% in the past 15 years. Other species that were once common in the Great Plains such as the Western Bumble Bee and the American Bumble Bee are also facing serious decline. Approximately 3,600 species of bees are native to the United States and Canada. Without healthy habitat that includes a mix of native plant species, many more of these irreplaceable native pollinators may soon lose ground.



American Bumble Bee

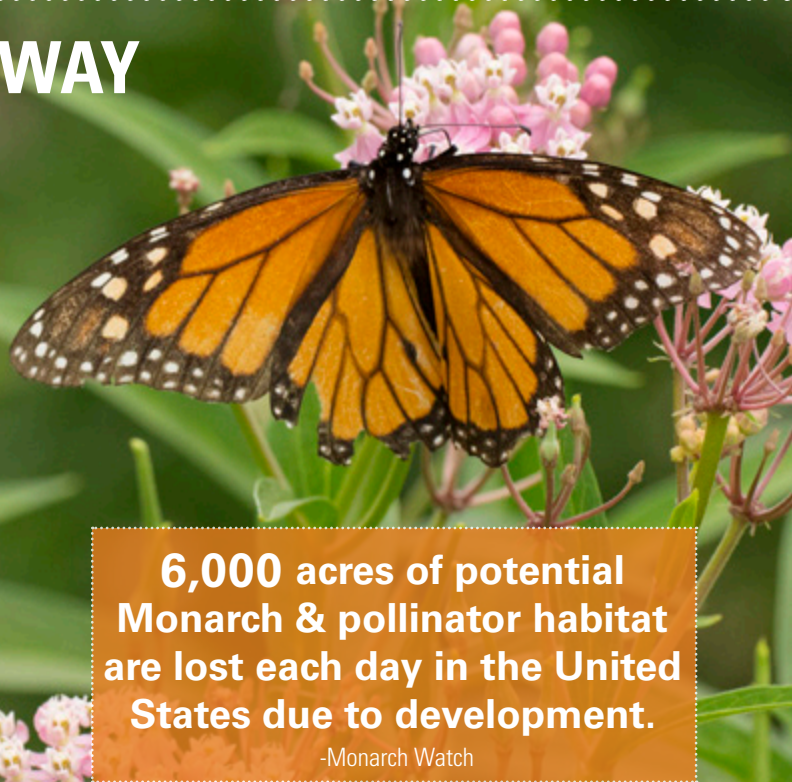


Western Bumble Bee

1 out of every 3 Bites of Food is produced with help from pollinators.

PROTECTING THE FLYWAY

The Monarch Butterfly—arguably one of the most recognizable insects in the world—is celebrated for its incredible migration over thousands of miles from its summer breeding grounds in the United States and Canada, to its primary overwintering habitat in isolated pockets of forest in central Mexico. It takes three adult generations of Monarchs to complete the arduous journey and in order for this to occur, the species requires milkweed along its migratory route for reproduction. Across the region, plow-up of native prairie for crops such as wheat, corn, and soy has undoubtedly contributed to its dwindling numbers. If more grasslands aren't kept intact, this iconic butterfly may no longer float gracefully across the Great Plains.



6,000 acres of potential Monarch & pollinator habitat are lost each day in the United States due to development.
-Monarch Watch

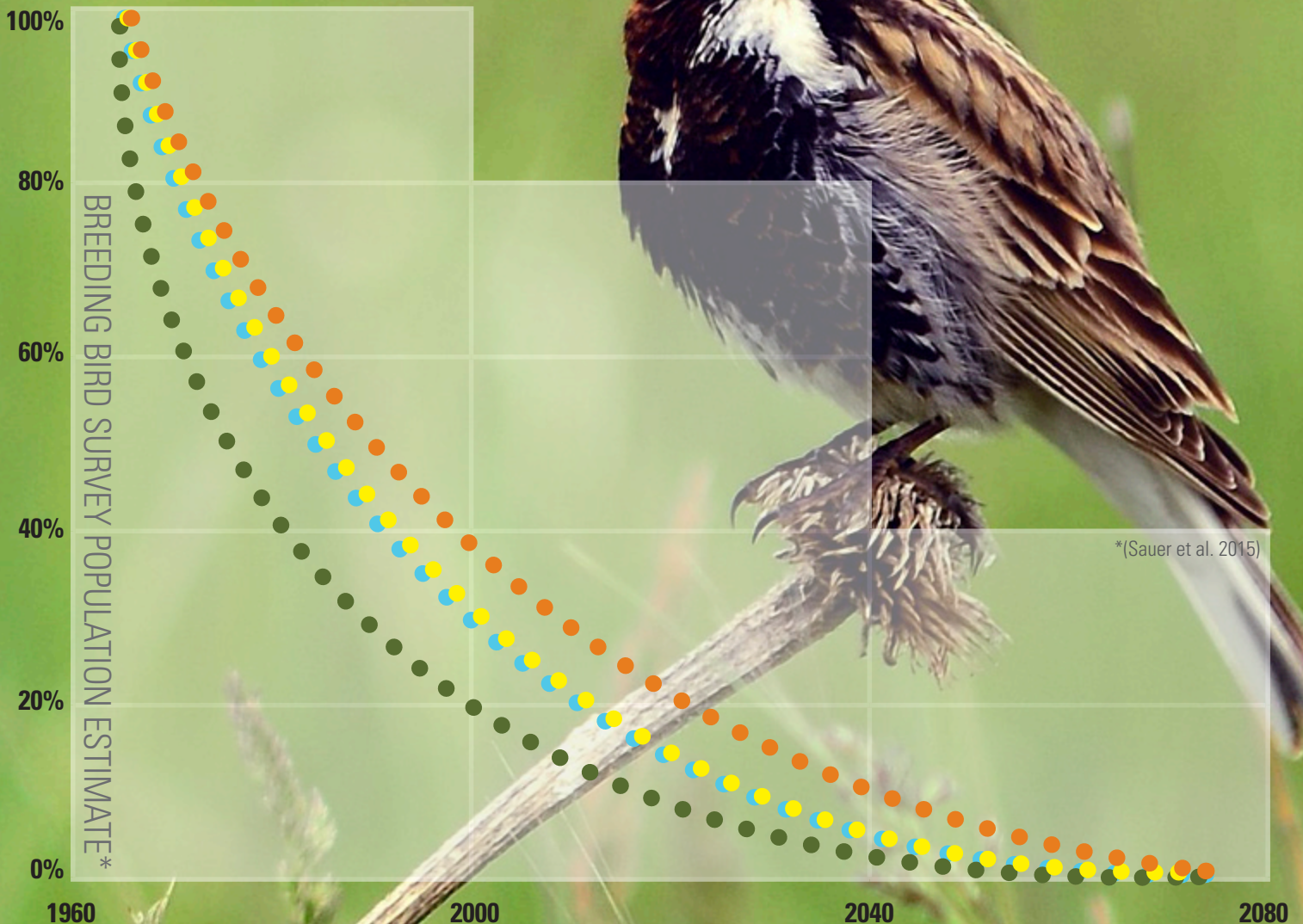
GRASSLAND BIRDS IN DECLINE

Birds are highly sensitive to landscape changes which makes them excellent indicators of overall ecosystem health. **Grassland birds, as a group, have experienced the steepest decline of all North American birds.** Six of these species exist nowhere else in the world and depend on grasslands in the Great Plains for nesting and foraging. All grassland bird species nest on the ground, making them vulnerable to predation and only 30-50% of nests are successful. As a result, these birds rely on a sea of grass to hide their young. Since the 1960s, populations of four key species have

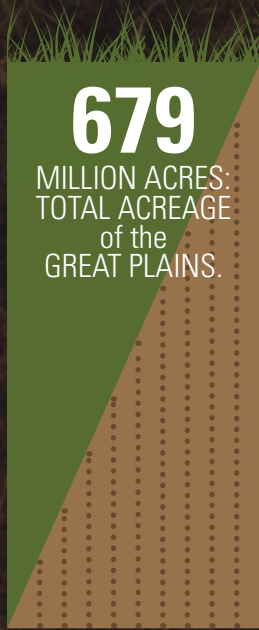
declined as much as 80% (see graph below). The loss of intact grasslands throughout the region has played a major role in their decline, so working in partnership with private landowners, such as ranchers, who are also striving to keep the grass healthy is a natural fit for conservation. Throughout the Great Plains, people appreciate birds for many different reasons and look to them as signals for seasonal changes, as game species, agents of insect control, and for their beautiful songs, coloration, and behavior.

Most Affected Species:

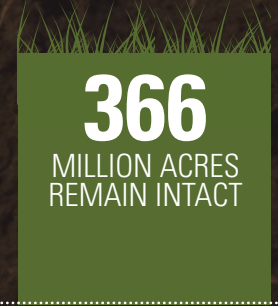
- **McCown's Longspur, -6.2% per year**
- **Chestnut-collared Longspur, -4.4% per year**
- **Lark Bunting, -4.1% per year**
- **Sprague's Pipit, -3.5% per year**



GRASSLANDS LOSS BY THE NUMBERS:



Grassland conversion to cropland is occurring at an alarming rate in the Great Plains. In 2015, 3.7 million acres were converted to cropland.



MOST COMMON CROPS PLANTED IN 2015, ON ACRES PLOWED BETWEEN 2009-2015*:

The primary threat to intact grasslands in the Great Plains is plow-up—also known as conversion—for annual crops such as wheat, corn, and soy. Much of the best cropland within this ecoregion was plowed-up years ago, with a high-percentage of today's conversion occurring on soils that aren't as productive for farming.

Faced with the needs of a growing population, the best scenario is to explore policy and market drivers along with innovative methods for producing higher crop-yields from the lands that are currently in production, rather than breaking new ground.

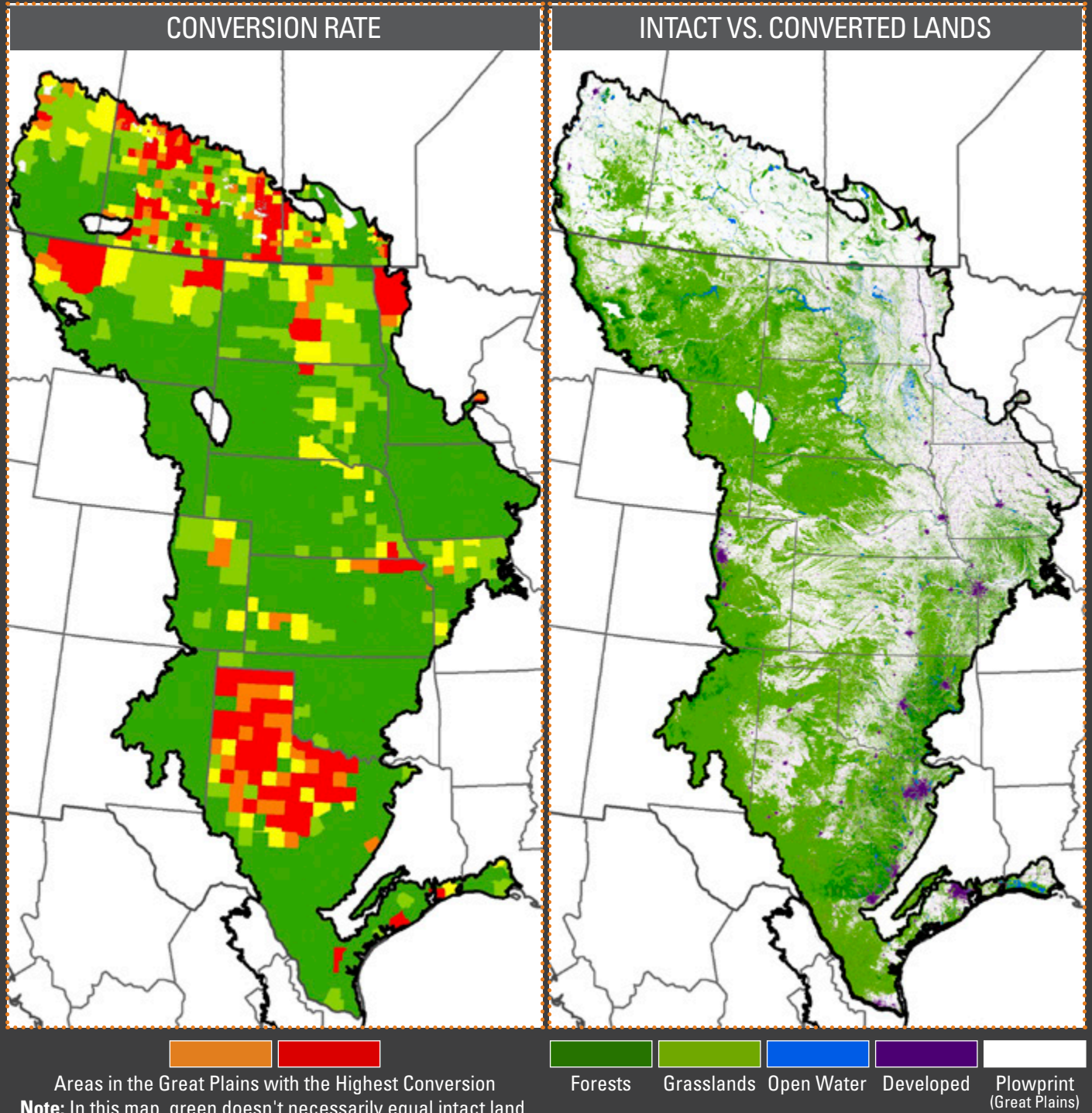


A single acre of corn requires more than 137,000 gallons of water.
-USDA Northern Plains Region

* This represents the current (as of 2015) most popular crop plantings on any acre converted from 2009-2015.

AREAS OF GREATEST GRASSLANDS LOSS:

Compared to the average grassland conversion rate to cropland across the Great Plains from 2014-2015, counties in red (map on left) experienced the highest rates of conversion from intact grasslands, while counties in dark green experienced the lowest rates. As a comparison, refer to the map on the right for the breakdown of areas that remain intact in contrast to areas that have been plowed-up or converted for other types of development.



From 2014-2015, the Great Plains lost:
3.7 MILLION ACRES TO CONVERSION!



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