



Since 2016, World Wildlife Fund (WWF) has released our annual Plowprint Report, which tracks grassland loss across the Great Plains. This year, due to multiple updates to the underlying data and improvements in methodology, we have decided to delay the report until 2020 to carefully reanalyze previous data. Also, the 2020 report will include the grasslands of Mexico and an interactive, online version of the Plowprint map will become publicly available. The web map will allow users to select an area of interest and quickly identify the acres of intact habitat, cumulative and new conversion to row-crop agriculture, and cropland composition, as well as other metrics provided by the Plowprint analysis, which can then be downloaded as a report or as the data.

The previous three Plowprint Reports (2016-2018), including all analysis, were based on methodology described in Gage et al. 2016, *Tracking Cumulative Cropland Expansion to Target Grassland Conservation* (available from [Plowprint.com](http://Plowprint.com)) with a few exceptions. Changes to the Plowprint analysis moving forward will include:

### Updates to Spatial Data:

- 1) The USDA Cropland Data Layer (CDL) was recently rereleased at a spatial resolution of 30m instead of 56m. All prior years of the Plowprint were rerun to accommodate the prior improved spatial resolution.
- 2) Open Water and Developed Areas in the U.S. were updated based on newly released National Land Cover Database (NLCD) data.
- 3) WWF created a “roads mask” based on TIGER 2019 and Canada Road Network 2018 data. Line features for primary, secondary, and local roads were buffered to 30m to create a raster mask. The new water, developed, and roads masks were applied to all years of the Plowprint spatial data for consistency.
- 4) A 2-year crop rule was implemented for cropland to enter the Plowprint. A pixel must now be identified by the CDL or

Canadian Annual Crop Inventory (ACI) as cropland for two sequential years in order to be counted as Plowprint. This check was established to improve error rates by excluding “one-off” misidentifications. This means that there will now be a year-long lag in the appearance of newly converted cropland. For example, land that was first converted in 2017 now has to be identified as crop in both the 2017 and 2018 CDL/ACI datasets before it is included as part of the Plowprint. As before, once pixels are included in the Plowprint, they remain part of the dataset in perpetuity. Therefore, the 2020 Plowprint report will identify plow-up through 2018.

### Reanalyzing Past Findings:

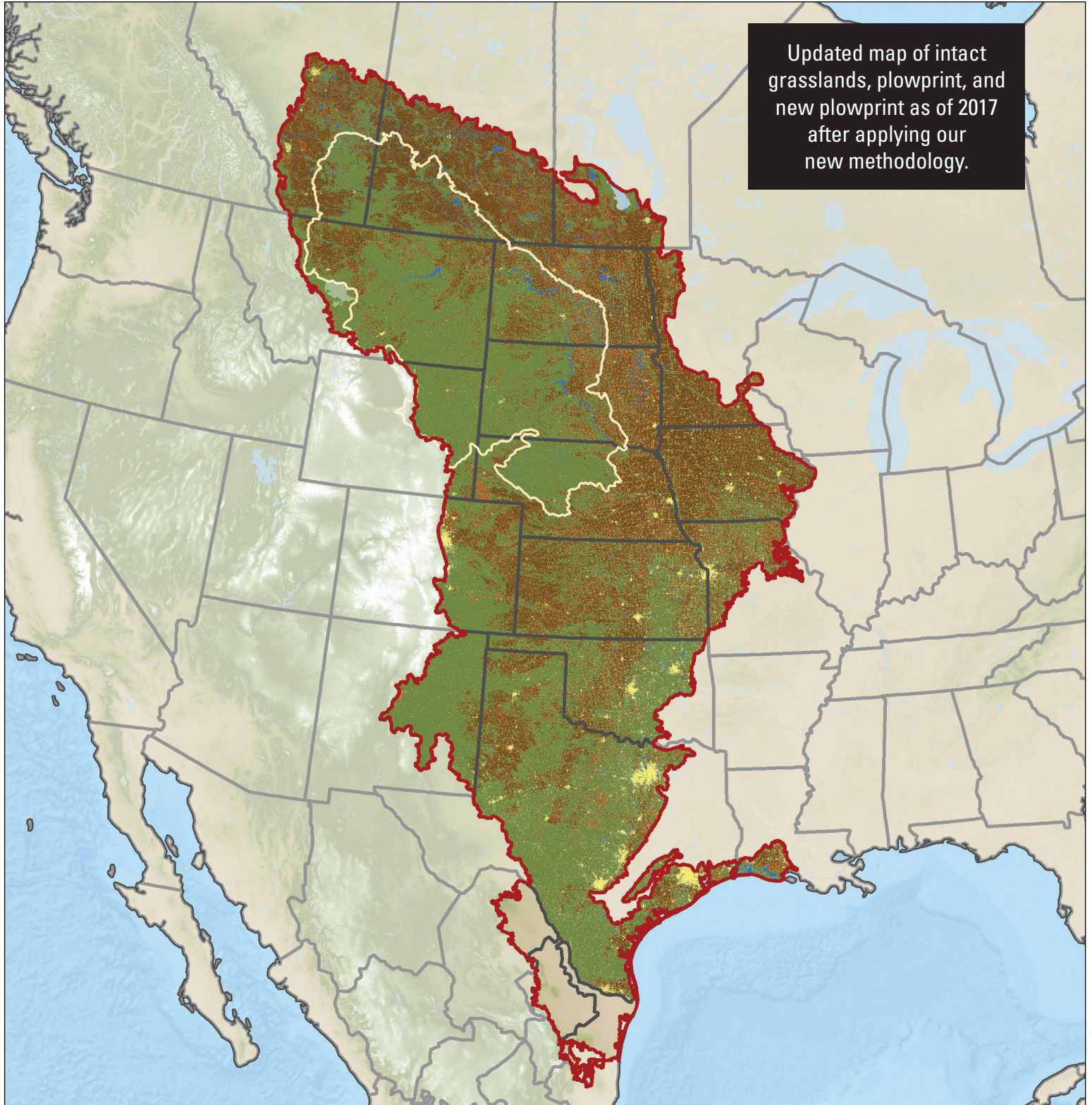
The map that follows on page two of this document is an example of the implications of these updates. As a result of improved spatial data and our efforts to reduce error, we observed more intact habitat than previously estimated—4% and 7% in the Northern Great Plains and Great Plains, respectively, and larger reductions in cumulative conversion and perennial habitat than intact habitat.

The newly developed road mask also allowed us to uncover an error in last year’s findings for South Dakota (SD) where the CDL data misclassified small county roads as crops. In the 2018 Plowprint report, we described conversion in SD to be 363,000 acres and the only state in the NGP ecoregion to increase in plow-up from the previous year, by 58,000 acres in 2017. However, in applying our new methodology, we now estimate conversion in SD to be 184,000, resulting in a decrease in conversion of 24,000 acres compared to 2016. This means that all NGP states experienced a decreased rate of conversion from 2016-2017. This appears to be a one year anomaly in the underlying SD data that is now accounted for by our road mask.

**Please direct any questions regarding the Plowprint spatial data to:** Sarah Olib, WWF-NGP GIS Specialist, [sarah.olimb@wwfus.org](mailto:sarah.olimb@wwfus.org)



# Plowprint Report 2019 UPDATE (of 2017 Data)



Map of intact grasslands, Plowprint (lands that have been planted to crops beginning in 2009) and the new addition to the Plowprint in 2018 (lands that were plowed in 2017 and verified in 2018) in the Great Plains. Because the Plowprint has a spatial resolution of 30 meters, the new Plowprint pixels are challenging to see at the scale of the Great Plains. Thus, WWF aggregated the smaller pixels to 300 meters, maintaining "new Plowprint" status if any pixel within the grouping held that designation. This allowed the pixels to be more visible at the Great Plains scale and reflect the hotspots of new conversion.