

PLOWPRINT



PARADOX IN THE PRAIRIE: Rising appreciation for grasslands fails to halt Great Plains' swift decline

The United States is one of the world's largest and most productive growers of food, which at times puts the nation at odds with its own ambitious goals to conserve nature and halt the loss of biodiversity. Most of the grasslands with soils best suited for farming were plowed up decades ago, and in many cases, the intact grasslands that remain are not as productive for row crop farming. WWF's most recent Plowprint analysis reveals both concerning trends and reasons for optimism for the future of the Great Plains ecosystem.



The Plowprint's scope now includes data from the full contiguous United States and Canadian grasslands dating back to 2012.

This year's report marks a significant increase in geographic scope, now covering the full contiguous United States and the grasslands region of Canada, with data dating back to 2012. While the focus of the Plowprint Report remains on the grasslands of the Great Plains, the increased extent allows for information on other geographies and enables countrywide or regional comparisons to other methods of grassland analysis.

Additionally, this year's report is the first to include dynamic urban expansion tracking. This new capability allows for tracking of cropland that is eliminated for development, including that which has been absorbed by urban and exurban expansion (areas located outside of a city's suburbs, but still has a connection to the city in terms of jobs and services) and energy development. As former croplands are removed from production, these activities can drive new conversion of grasslands to row crops in other areas.

Finally, please note that the Plowprint Report analysis does not reflect on-farm conservation efforts. We understand that many farmers are increasingly adopting agricultural practices that are more sustainable and better for the land and the species which inhabit it. These practices, such as no-till farming, more diverse crop rotations, and the use of cover crops, can significantly reduce soil erosion, improve soil health, and provide habitat for wildlife.

PLOWPRINT: BY THE NUMBERS

- In 2022—the year that this report examines—approximately 1.9 million acres of grasslands were converted to croplands across the US and Canadian portions of the Great Plains region. This figure, while significant, represents a slight improvement from the previous 10-year average of 2.6 million acres per year.
- Of the Great Plains Plowprint extent—91% was in row crops and 9% was in perennial cover (not part of an annual crop rotation at the time).
- 220,000 acres of cropland were eliminated for development across the Great Plains in 2022. This was more than the 10-year average of ~175,000 acres/year.
- This year's Plowprint analysis shows that 55% of land in the Great Plains remains intact as defined in the glossary below.
- Native Nations have an outsized impact on conservation, with 80% of Tribal lands remaining as intact grasslands.

- In the Northern Great Plains region, which represents one of the world's four largest intact temperate grasslands, 480,000 acres—an area 2x the size of New York City—were converted in 2022. This is lower than the 10-year average of about 630,000 acres per year, but, as with across the Great Plains, is not an acceptable level of loss.
- Of the NGP Plowprint extent, 88% was in row crops and 12% was in perennial cover.
- From the 220,000 acres of development converted from cropland across the Great Plains, ~40,000 acres occurred in the NGP.
- Encouragingly, 70% of the land in this region remains intact and serves as an important stronghold for grassland dependent wildlife across the Great Plains.

RELATIVE GREAT PLAINS LAND USE COVER



PLOWPRINT TERMINOLOGY

Plowprint: Cumulative footprint of cropland since 2012 defined as annually planted agricultural commodity (e.g. corn, soybean, wheat, etc.) or fallow agricultural land.

New Plowprint: Area that is defined as row-crop agriculture for the first time within the temporal boundaries of the analysis (2010-present year). A 2-year verification rule requires two subsequent years of cropland cover before verification as Plowprint to avoid over-estimating from misclassifications of satellite imagery.

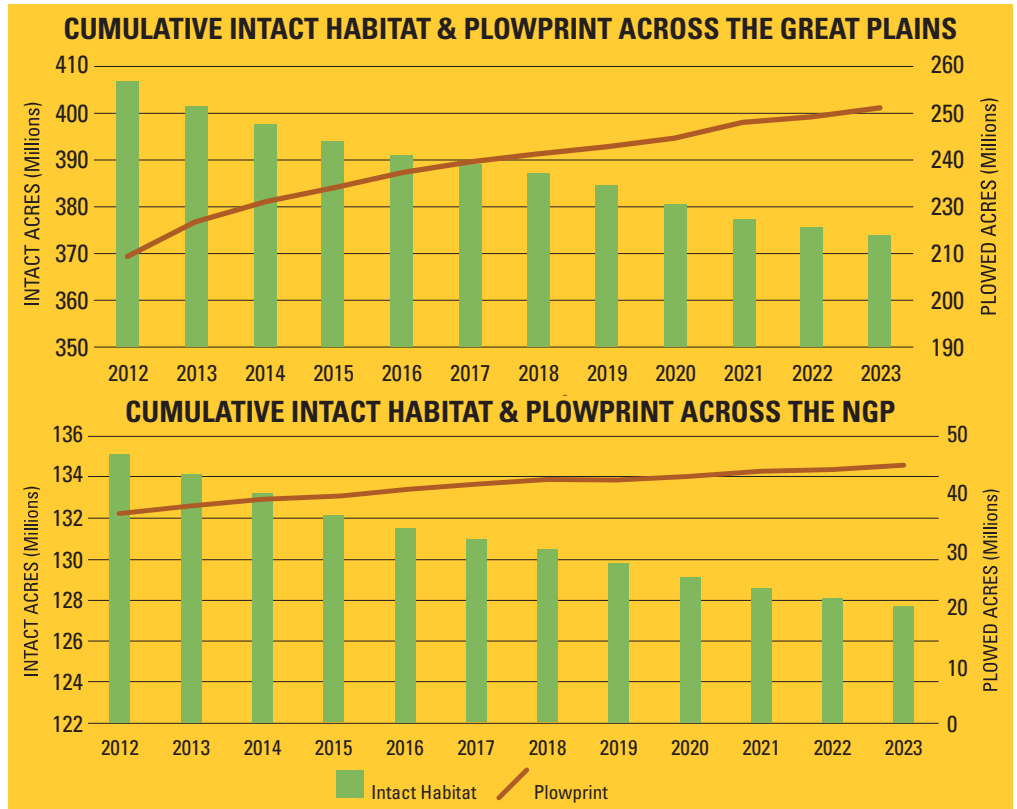
Breakout crop: The first crop that is planted on the newly converted lands (New Plowprint), and what is reported in the crop breakdown.

Intact: Remaining habitat (including grasslands, shrublands, wetlands, and forest) after masking cropland, development, and open water. Intact does not necessarily equate to native vegetation or state of ecological function.

Perennial: Area defined as Plowprint (previously cultivated) that has been actively restored or reverted to a semi-natural state (grassland, wetland, shrubland), or is no longer in part of an annual crop rotation (alfalfa, switchgrass, hay).

Development: Land cover classification that includes urban and exurban, industry (e.g., energy development), and roads.

Masked: Land cover types that are excluded from the Intact, Plowprint, and the Developed data and includes open water (e.g. lakes and rivers) and primary, secondary, and local roads.



INTACT GRASSLANDS, PLOWPRINT, & NEW PLOWPRINT

The Plowprint represents the cumulative footprint of row crop agricultural conversion using satellite-derived data from the USDA Cropland Data Layer (2008-present) and the Agriculture and Agri-food Canada Annual Crop Inventory (2009-present). New Plowprint, the area converted in the most recent year of analysis, is shown here at 10x aggregation for improved visualization.



TOP FOUR BREAKOUT CROPS ACROSS ACRES CONVERTED IN 2022



GREAT PLAINS

Wheat 37%; Corn 11%;
Canola 11%; Soy 9%.



NORTHERN GREAT PLAINS

Wheat 45%; Corn 13%;
Canola 5%; Soy 4%.



PROTECTING GRASSLANDS THROUGH POLICY & COLLABORATION

Transforming food and agricultural systems to be more regenerative and resilient is critical to our sustainable future, now more than ever. In the United States and in many places around the world, how we produce food, fiber, and fuel from our agricultural lands is having an outsized impact on biodiversity and ecosystem resilience. At the same time, food and agriculture offer one of the most significant opportunities to meet climate goals, reverse biodiversity loss, and address threats to water security, all while ensuring we meet nutritional needs. Critical to seizing this opportunity is leveraging policy to support sustainable and highly productive agriculture that conserves nature and halts the loss of biodiversity. This requires addressing conversion of critical habitats, such as our nation's grasslands.

The causes of grassland conversion are complex and intertwined. Therefore, addressing grassland loss requires that we advance a connected set of policies that more effectively address both the immediate drivers of grassland conversion, such as subsidized crop insurance and biofuels policy, as well as a related suite of solutions, such as improving and supporting critical Farm Bill conservation programs, advancing equity in USDA programming, curbing food waste, and more.

The Farm Bill is among the most significant pieces of legislation for sustaining grassland ecosystems, providing the largest source of federal funding for private lands conservation and governing influential food and agriculture

programs. It is also an important opportunity to improve equitable access to federal nutrition, agriculture, and conservation funding and policies for Native nations. The next Farm Bill is a critical opportunity for Congress to strengthen and fund key programs that support healthy grasslands. We recommend that Congress leverage the Farm Bill to:

Protect and Build Upon the Historic Investment in Farm Bill Conservation Programs Included in the Inflation Reduction Act (IRA): We urgently need a strong, farmer and conservation focused Farm Bill. The next Farm Bill provides a unique opportunity to carry forward billions in funding for effective and oversubscribed Farm Bill Conservation programs included in the IRA. Congress must protect this funding in the already much-delayed Farm Bill to meet producer demand for activities that conserve and bolster the land, soil, and water resources that are foundational to the viability of rural economies.

Expand and Strengthen Provisions to Keep Grasslands Intact and Support Sustainable Grazing: To better protect intact grasslands, Congress should strengthen and expand Sodsaver. This provision is designed to reduce incentives to convert native sod to cropland. It should be improved by making newly cultivated native sod acreage ineligible for any crop insurance premium subsidies for 10 years, and by expanding Sodsaver's native grassland protections nationwide. Congress should invest more in tracking conversion to enable analysis of the effects of Sodsaver and other policies on native grasslands and identification of what further action may be needed. Alongside a stronger Sodsaver, Congress should bolster **Grasslands CRP**, a component of the **Conservation Reserve Program (CRP)** which pays farmers to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Grassland CRP helps landowners and operators protect grasslands (including rangeland and pastureland) and certain other lands, while maintaining the areas as grazing lands. Congress should strengthen and expand Grassland CRP to optimize outcomes for grasslands, ranchers, the climate, and biodiversity by providing an option for longer contracts with managed grazing

requirements, targeting core and vulnerable areas, and boosting support for sustainable grazing under CRP in general and Grassland CRP in particular. Finally, Congress should enhance these outcomes by scaling climate and wildlife benefits on grazing lands. Congress should also expand funding under the **Environmental Quality Incentives Program (EQIP)** and the **Conservation Stewardship Program (CSP)** for priority species and prioritize sustainable grazing under the 50 percent of EQIP funding set aside for livestock operations. EQIP provides financial and technical assistance to farmers and ranchers to address natural resource concerns and provide environmental benefits, including benefits to water and air quality, soil conservation, carbon sequestration, biodiversity, and water conservation. CSP helps producers maintain and improve conservation systems and adopt additional conservation activities to address priority resource concerns. Across GCRP, EQIP, and CSP, USDA must ensure that program guidelines and training for sustainable grazing and related infrastructure elevate and address the needs of bison in parity with those of cattle.



PROTECTING GRASSLANDS THROUGH POLICY & COLLABORATION (CONT.)

Strengthen Conservation Technical Assistance (CTA):

CTA is critical to providing producers with the knowledge and tools they need to conserve, maintain, and restore the lands they manage. CTA also helps ranchers improve the health of their grass-based operations and supports effective management and long-term health of highly productive farmlands. Congress should expand technical assistance capacity via NRCS and via partnership agreements.

Support Sustainable Management of Productive Farmland and Protect it from Development:

Increasing adoption of sustainable practices on cropland is critical for protecting soil health, water quality and quantity, biodiversity, and more. This includes no-till or conservation tillage, cover crops, more diverse crop rotations, water conservation, and measures to protect pollinators and biodiversity such as integrated pest management and use of non-treated seeds. Congress should increase funding for EQIP and CSP to support adoption of climate and nature smart practices and offer longer contracts for higher levels of management. Loss of prime farmland to nonagricultural uses exacerbates the pressure to find lands for production elsewhere, including by converting marginal and sensitive lands like grasslands. This makes it crucial to invest in programs such as the Agricultural Conservation Easement Program (ACEP) to keep prime farmland in farming—an important part of the solution to conserving and protecting grasslands.

Increase Equity and Access for Native Nations: Native Nations play a critical role in grassland conservation and management, so ensuring equitable access to USDA programs will enhance outcomes for grasslands. Congress should enhance equity and inclusion by ensuring USDA

consults with, empowers, and improves program access for Native Nations, which have faced historical and systematic marginalization and discrimination. USDA should increase funding for the Indigenous Animals Meat Processing Grant, which was essential for balancing overstock of bison for long term grasslands management and conservation. Finally, the Land and Water Conservation Fund (LWCF) is an important funding source for conservation projects nationally, investing billions in parks, trails, and more. But LWCF limits access by Native Nations by requiring them to work through state governments to access LWCF resources instead of enabling them to go straight to the federal agencies distributing the funds. The one-to-one match requirement for LWCF funding is also a significant financial hurdle for Native Nations to access these federal funds. Tribal governments should be fully eligible entities under LWCF and the match requirement should be waived or reduced.

Reduce food loss and waste: The US produces and imports an abundance of food each year, but approximately 38 percent of it goes unsold or uneaten. Reducing loss and waste represents an important opportunity to mitigate pressures to convert grasslands by reducing how much food needs to be produced overall. The Farm Bill can support food loss and waste reduction programs by states, localities, Native Nations, and schools; improve food date labeling; improve federal coordination of food waste reduction efforts; and advance research and opportunities for food waste prevention, upcycling, and recycling.

Previous Page: A short-eared owl (*Asio flammeus*) surveys the prairie. **This Page:** A native Soapweed Yucca (*Yucca glauca*) graces the prairie with its beautiful blossoms.



ADDITIONAL KEY POLICY OPPORTUNITIES TO PROTECT GRASSLANDS

Pass the North American Grasslands Conservation Act:

Originally introduced in July 2022, the North American Grassland Conservation Act would provide much needed resources for voluntary, incentive-based conservation of grasslands and establish a strategy for the protection, restoration, and management of grassland ecosystems across North America. Modeled after the successful North American Wetlands Conservation Act, the Grasslands Act would provide voluntary technical and financial assistance to conserve our remaining grasslands, while contributing to climate resilience, rural livelihoods, and wildlife abundance. Visit www.actforgrasslands.org to learn more.

Improve Biofuels Policies to Address Conversion and Ensure Adoption of Climate Smart Practices:

Given the impacts of biofuels policies such as the Renewable Fuel Standard on land use and conversion to date, the US Environmental Protection Agency (EPA) should require validation that lands were in cultivation prior to 2007 to qualify for the program. EPA should adjust renewable volume obligations downward, to reflect the amount that can be produced from land in compliance with the no-conversion requirement. In addition, as the Administration advances sustainable biofuels tax credits under the IRA, it should ensure the measures incorporate strong provisions to prevent feedstocks from recently converted lands from qualifying and incentivize feedstocks produced with practices that deliver documentable climate and nature benefits.

This Page: The black-footed ferret (*Mustela nigripes*) is one of North America's most endangered mammals. **Next Page:** Hundreds of species of native bees, like this metallic green sweat bee (*Agapostemon sp.*), inhabit the Great Plains.

FURTHER INITIATIVES OF NOTE:

Land Use Change Initiative (LUCI): A key objective of the Plowprint is to bring greater understanding and awareness about the rate of grassland loss in the United States and options to address this loss. Important context for this effort is the reality that there is a challenging lack of alignment on how to measure land use change, in significant part due to different terminologies and definitions for critical words. The fact that different entities use different data sources and methods of calculation results in a considerable range of LUCI estimates, which creates challenges in trying to advance effective decisions and policy for grassland conservation. LUCI was established in 2023 to build capacity, alignment, awareness, and collaboration to land use change data, terminology, methodology, and solutions. The cross-sector relationships developed through LUCI will drive the mutual understanding and collaboration necessary to solve complex land use challenges at scale.

Central Grasslands Roadmap: The Central Grasslands Roadmap Initiative is a collaborative guide to increase conservation of North America's Central Grasslands, which span 700 million acres across Indigenous Lands, Canada, the United States and Mexico. By bringing together diverse nations and seven sectors, the Roadmap identifies a shared vision, common principles, and collaborative priorities for the many people and organizations living and working on the Central Grasslands.



PROTECTING GRASSLANDS ENSURES A FUTURE FOR POLLINATORS

Insects and other terrestrial arthropods comprise the world's most diverse group of animals. With an estimated 5.5 million species, they are critically important to most of the world's environments. Among these, nearly 200,000 species are considered pollinators, which play a vital role in our food systems and natural ecosystems globally. In the US and Canada alone, there are nearly 4,000 known species of native bees—the continent's most efficient pollinators. Unfortunately, many bees and insect populations began plummeting in the early 1990s after the introduction of neonicotinoids (neonics), a new class of neurotoxic, systemic insecticide.

The primary method for dispersing neonics is via treated seeds. Neonics are used in high concentrations in the coatings of seeds of many commodity row-crops including corn, canola, sunflowers, soy, and other vegetables. For many products like corn, it can be very difficult for farmers to buy seeds that are not treated. In fact, it is estimated that nearly 100% of non-organic corn and over 60% of non-organic soy in the US are treated with neonics. Typically, when a seed has been treated with a dusting of neonics, a mere 2-5% of the pesticide is absorbed into the target plant, while the rest leaches into the surrounding environment and is carried long distances by water or wind.

To put it plainly, across the Great Plains, when grasslands are plowed up to make way for row crops, bees and other insects not only lose nesting and foraging resources, but due to the high-prevalence of neonics in fields where commodity crops are grown, insects that forage on the margins of these croplands are harmed through contact with these pesticides in the soil and adjacent vegetation.

Independent scientists as well as government experts have found that neonicotinoid seed treatments' positive impact on agricultural productivity is marginal at best. In other words, these seed treatments do not provide a consistent return on investment. By disrupting biological systems, they can even result in lower yields than crops grown without neonicotinoids by killing off beneficial insects like predatory ground beetles that naturally keep corn rootworm and other pest species at bay. Unfortunately, even when there is interest in non-treated seeds, over 60% of the global patented seed market is owned by the largest producers of neonics, making it difficult for farmers to source seeds not dusted with these pesticides. Furthermore, crop-insurance policies penalize producers if they choose not to grow treated (certified) seeds, increasing the pressure on farmers to continue with the status quo.

As opposed to today's ubiquitous, prophylactic usage of neonic coated seeds, moving to a true integrated pest management (IPM) approach where thoughtful, agronomically guided pesticide usage is the norm, would provide a great benefit to pollinators and increased opportunities for healthy insect habitat to be re-integrated into agricultural systems. However, the best scenario continues to be avoiding future plow-up and destruction of grasslands.

