

*How Crop Subsidies Contribute  
to Massive Habitat Losses*

# Plowed UNDER

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EWG is a nonprofit research and advocacy organization with offices in Washington, DC; Oakland, Calif.; and Ames, Iowa. EWG uses the power of information to educate the public and decision-makers about a wide range of environmental issues, especially those affecting public health.

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# Plowed Under

## How Crop Subsidies Contribute to Massive Habitat Losses

By Scott Faber, Soren Rundquist and Tim Male\*

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High crop prices and unlimited crop insurance subsidies contributed to the loss of more than 23 million acres of grassland, shrub land and wetlands between 2008 and 2011, wiping out habitat that sustains many species of birds and other animals and threatening the diversity of North America's wildlife, new research by Environmental Working Group and Defenders of Wildlife shows.

Of the 23.7 million acres, more than 8.4 million were converted to plant corn, more than 5.6 million to raise soybeans and nearly 5.2 million to grow winter wheat.

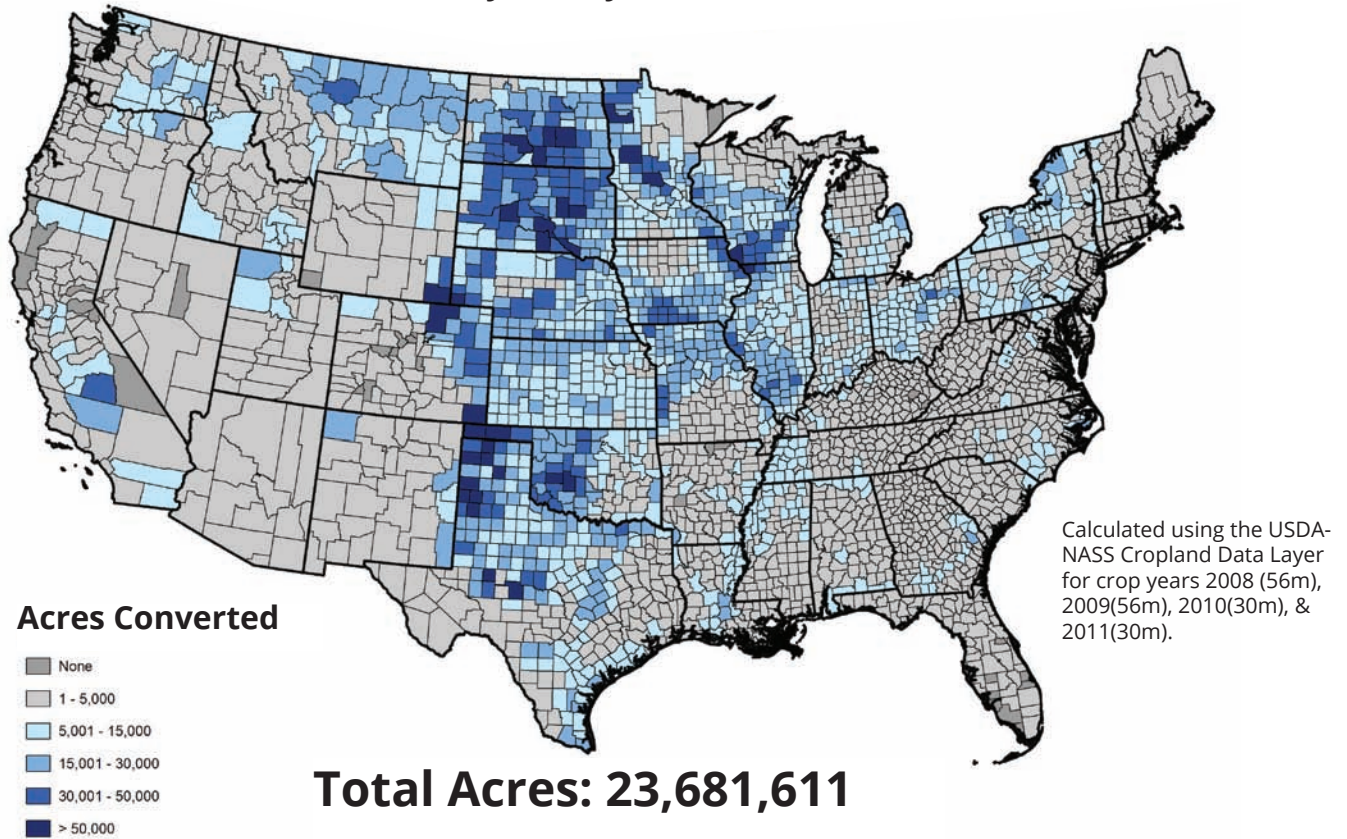
### Acres Converted by Crop and Year

Crop	2008-2009	2009-2010	2010-2011	Grand Total
Corn	2,664,626	3,165,922	2,603,655	8,434,203
Cotton	865,325	391,450	433,605	1,690,379
Double Crop-Winter Wheat/Soybeans	185,060	169,583	119,540	474,184
Sorghum	290,023	165,508	274,471	730,002
Soybeans	1,775,578	2,093,665	1,748,959	5,618,202
Spring Wheat	661,721	478,595	417,676	1,557,649
Winter Wheat	1,995,883	1,451,815	1,728,951	5,176,649
Grand Total	8,438,217	7,916,537	7,326,857	23,681,661

Over the three-year period, 11 states had habitat losses of at least 1 million acres each, and a total of 147 counties lost at least 30,000 acres each. Notably, the losses were greatest in counties that received the largest amounts of federal crop insurance subsidies.



## Acres of Grassland/Wetlands/Shrub Land Converted to All Crops By county, 2008-2011

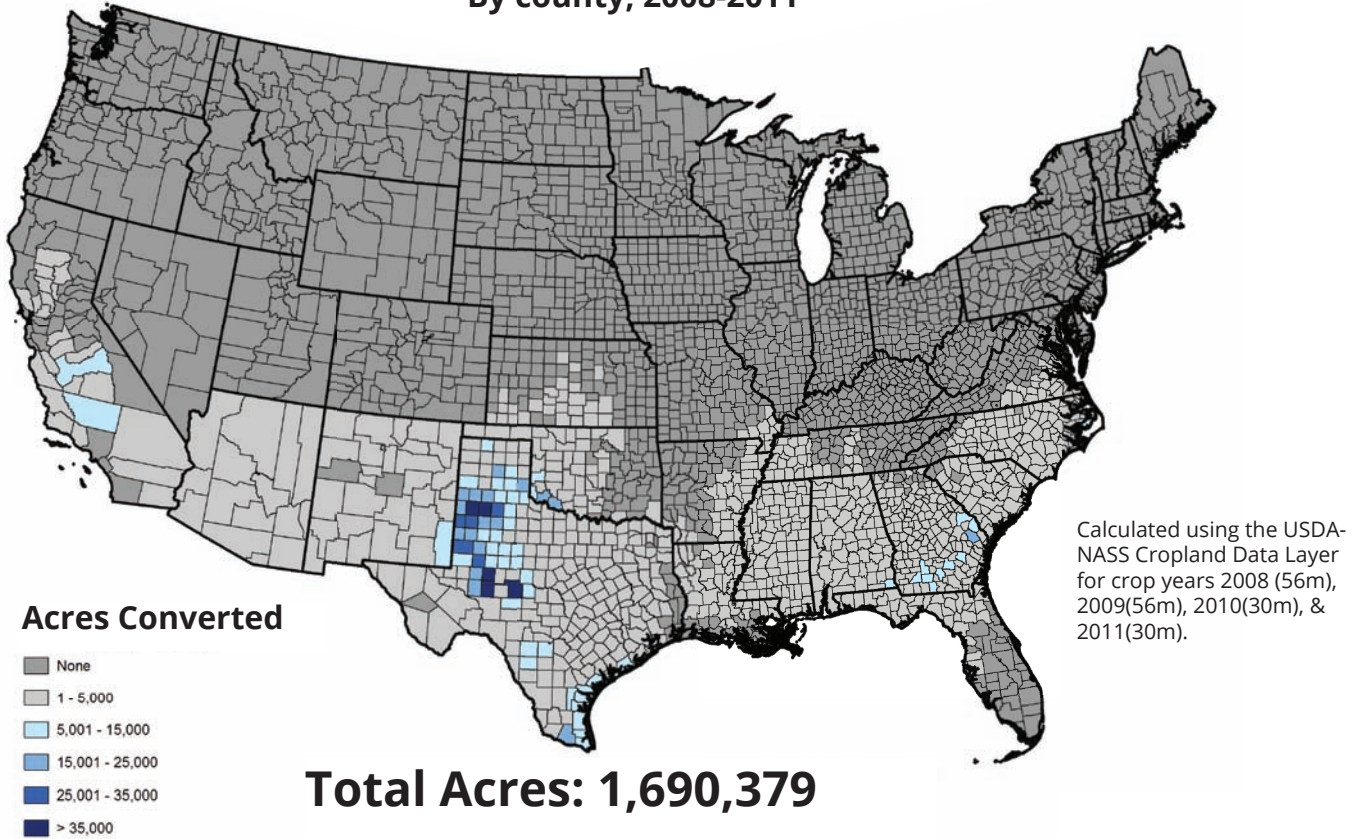


Wildlife habitat was destroyed across the country, but the greatest losses took place in states of the Upper Midwest and Great Plains.

The study also showed that some of the highest rates of converting habitat to grow crops were in drought-plagued portions of West Texas and Oklahoma. In each of 10 west Texas counties, growers plowed up more than 50,000 acres of habitat to plant cotton, corn and wheat, for a total loss of more than 655,000 acres of wildlife habitat.

EWG researchers arrived at these estimates by analyzing the U.S. Department of Agriculture's annually updated Cropland Data Layer, satellite data that is used to track and classify agricultural ground cover such as corn or soybeans. By counting raw pixel values on successive satellite images over time, EWG arrived at its estimates of acreage converted from habitat to crops. Counting pixels in this fashion may generalize small crop features and thus over-estimate the acreage somewhat, but EWG believes it is the most accurate measure of groundcover change based on available data.

## Acres of Grassland/Wetlands/Shrub Land Converted to Cotton By county, 2008-2011



## Crop Insurance Distorts Planting Decisions

Because it reduces the financial risk of planting on marginally productive land, heavily subsidized crop insurance encourages farmers to plow up environmentally sensitive wetlands and grasslands. This results in environmental damage that would not otherwise occur.

Many of the wetlands and grasslands being destroyed to grow crops serve as habitat for important wildlife species. According to the U.S. Department of Agriculture, widespread destruction of grassland is threatening the survival of the swift fox as well as putting at risk other species including sage grouse, the lesser prairie chicken, whooping cranes and mountain plover. Many of these species are in decline but not protected under the Endangered Species Act, and the rapid pace of habitat conversion could accelerate the need to bring them under federal protection.



### Mountain Plover Habitat on Converted Acres

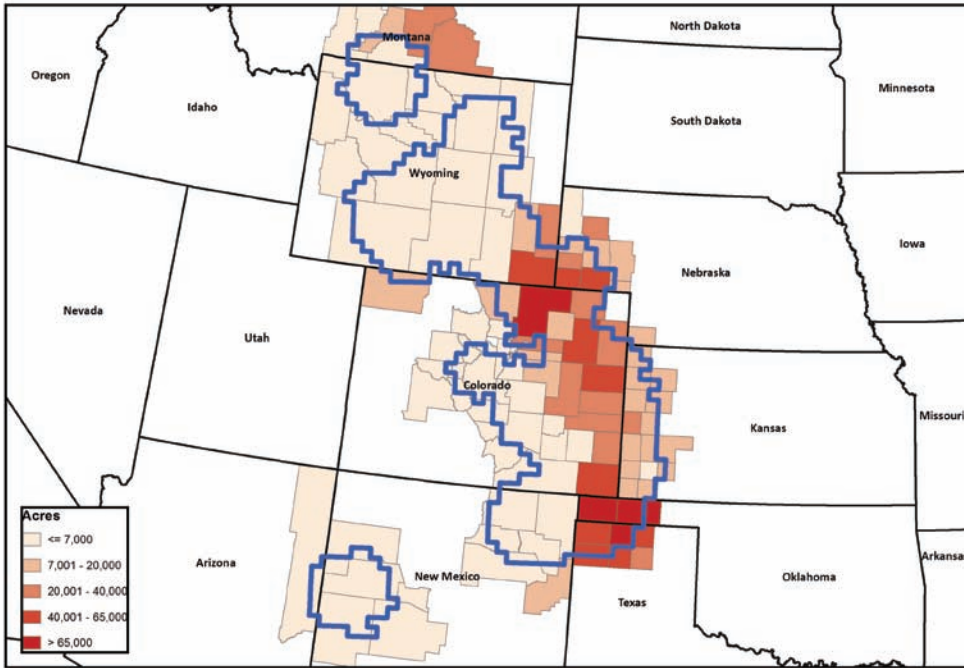


photo credit: Oklahoma State University

### Lesser Prairie Chicken Habitat on Converted Acres

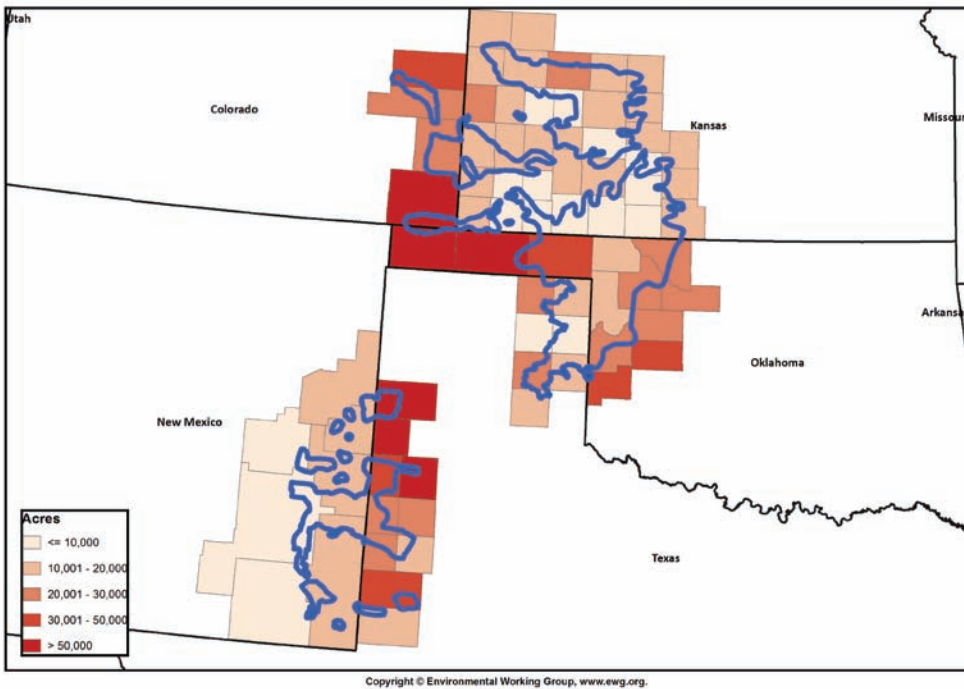


photo credit: Larry Lamasa

### Sage Grouse Habitat on Converted Acres

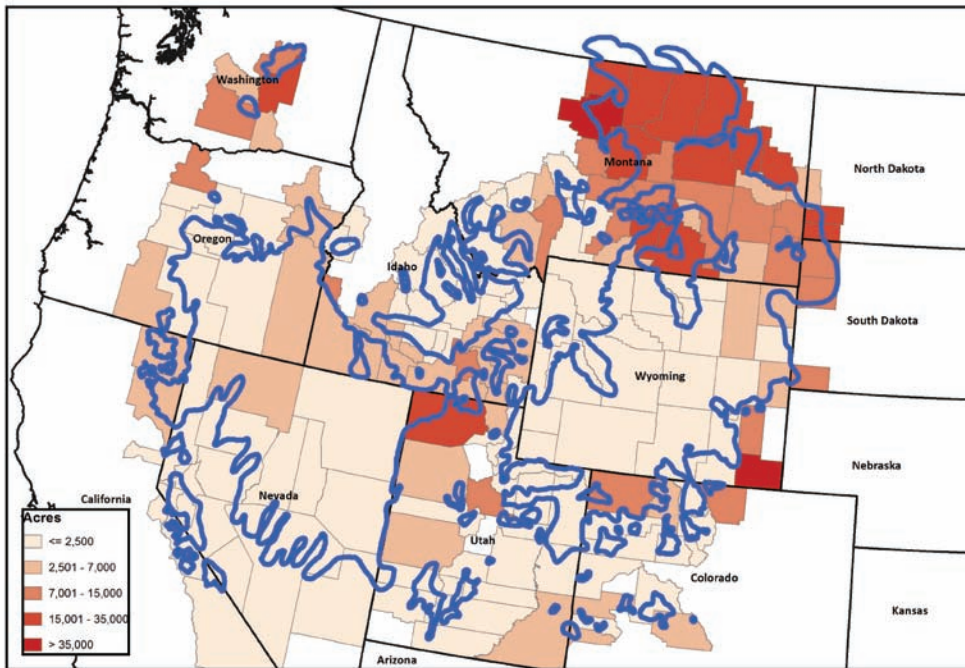


photo credit: U.S. Fish and Wildlife Service

### Swift Fox Habitat on Converted Acres

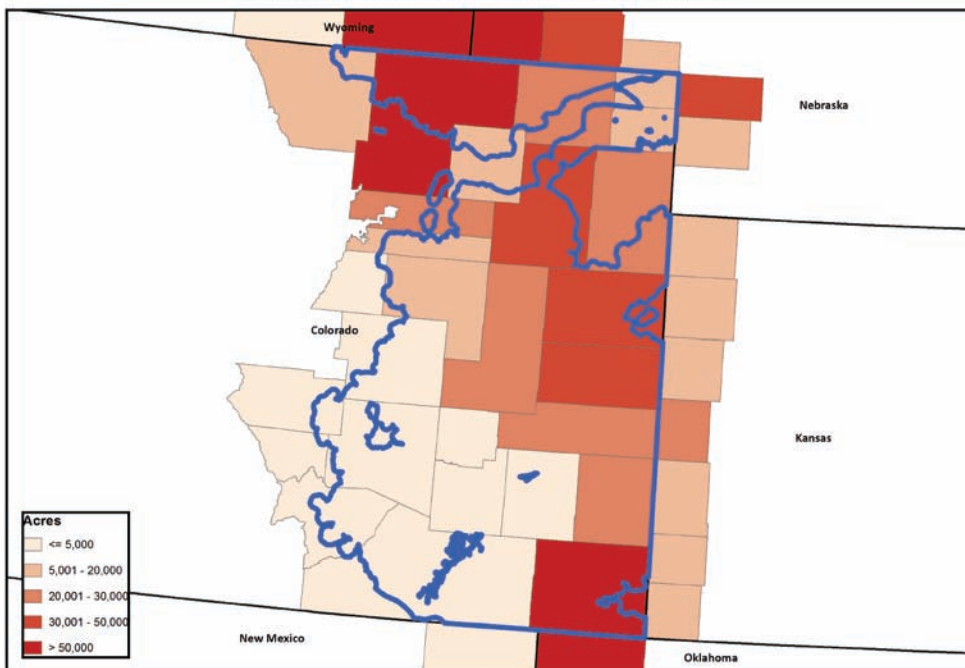
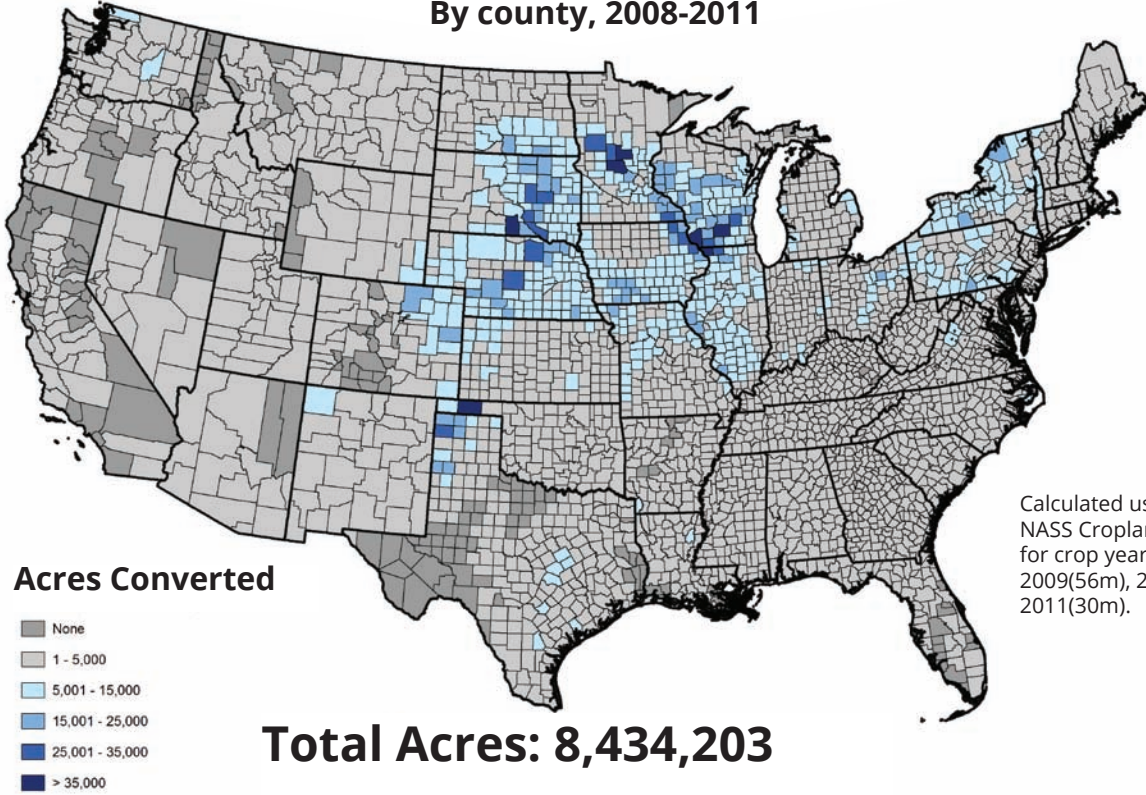


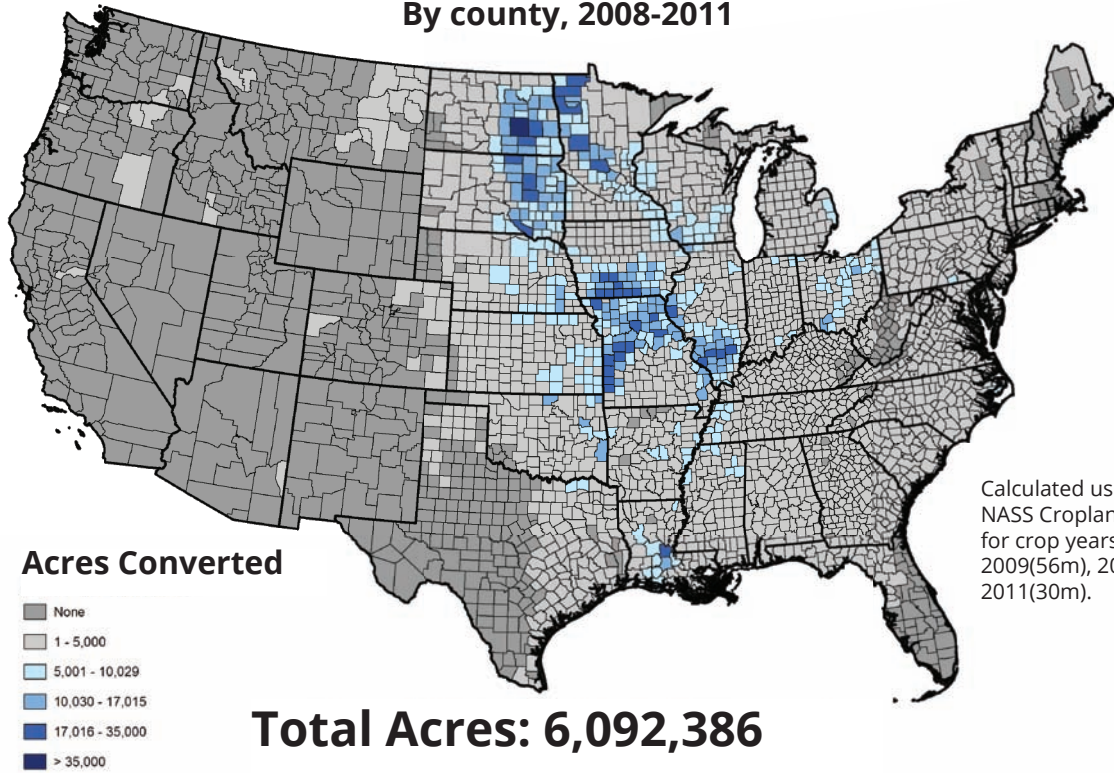
photo credit: Larry Lamasa



**Acres of Grassland/Wetlands/Shrub Land Converted to Corn  
By county, 2008-2011**

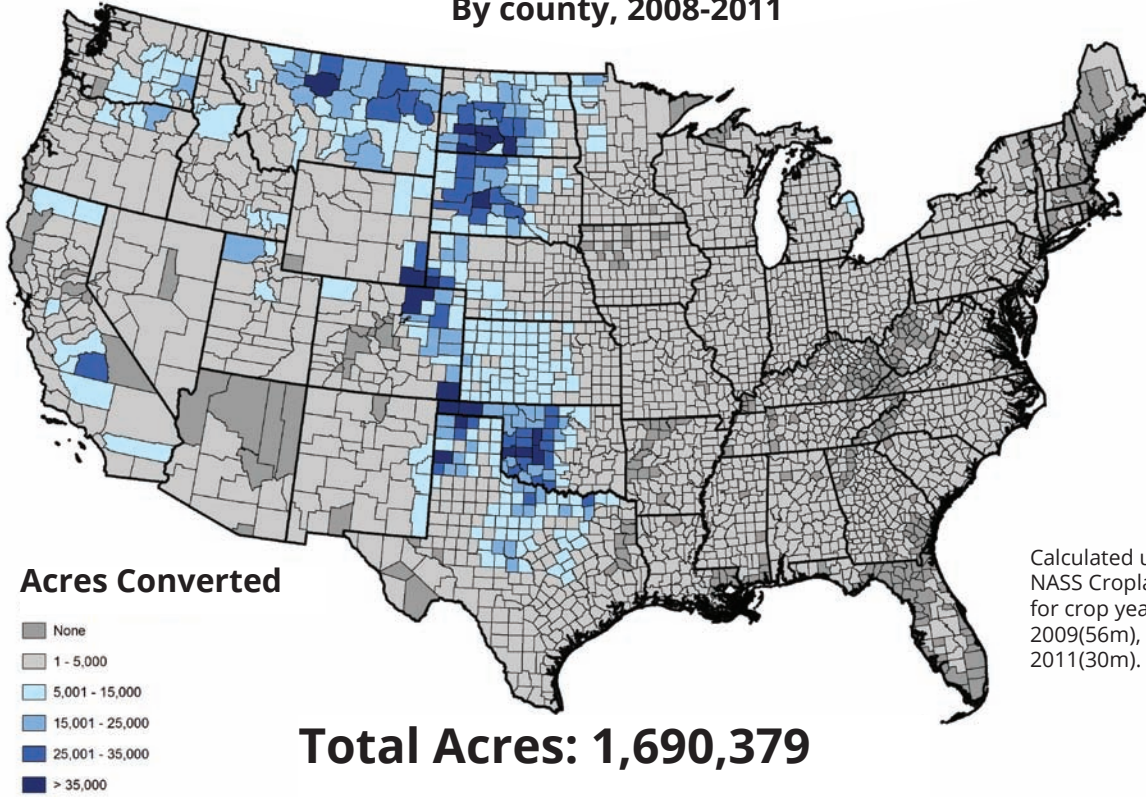


**Acres of Grassland/Wetlands/Shrub Land Converted to Soybeans  
By county, 2008-2011**



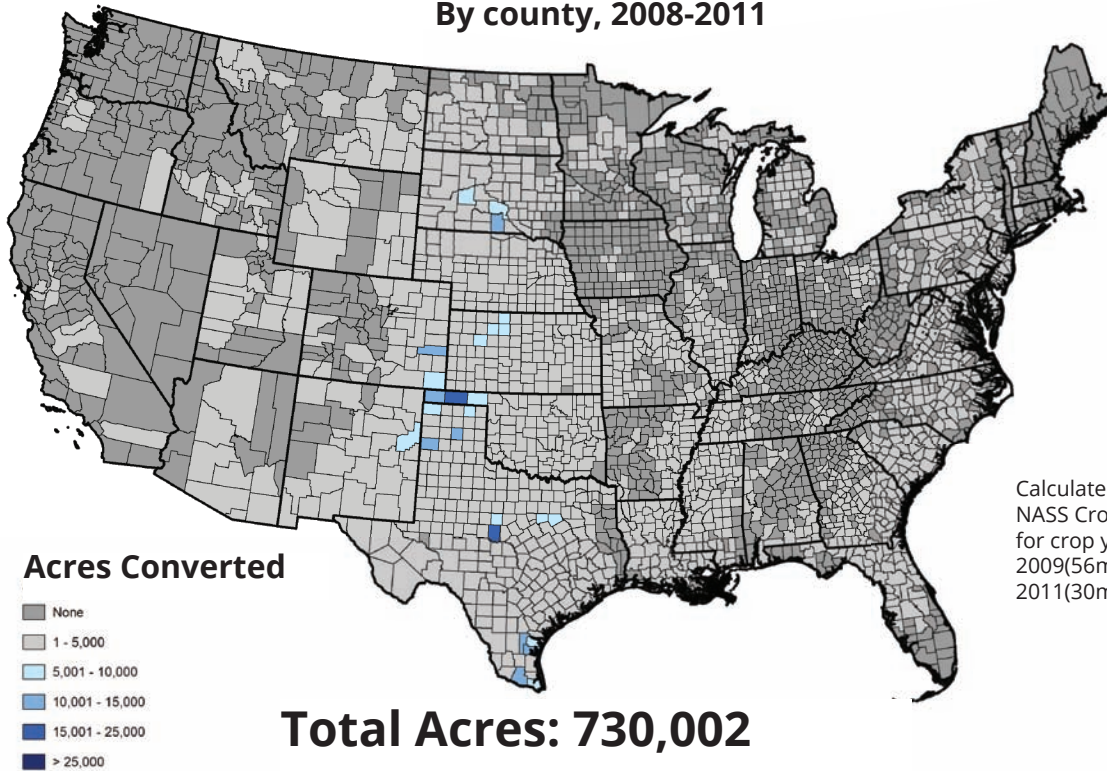


**Acres of Grassland/Wetlands/Shrub Land Converted to Wheat  
By county, 2008-2011**



Calculated using the USDA-NASS Cropland Data Layer for crop years 2008 (56m), 2009(56m), 2010(30m), & 2011(30m).

**Acres of Grassland/Wetlands/Shrub Land Converted to Sorghum  
By county, 2008-2011**



Calculated using the USDA-NASS Cropland Data Layer for crop years 2008 (56m), 2009(56m), 2010(30m), & 2011(30m).

Many wetlands and grasslands are also critical habitat for migratory birds. In the Dakotas, more than 3.2 million acres of habitat were destroyed between 2008 and 2011. Experts also estimate that 1.4 million small wetlands in the eastern Dakotas, which are especially important for breeding ducks, are at high risk of being drained. If they were to dry up, the number of breeding ducks could decline by 37 percent, according to the predictions.

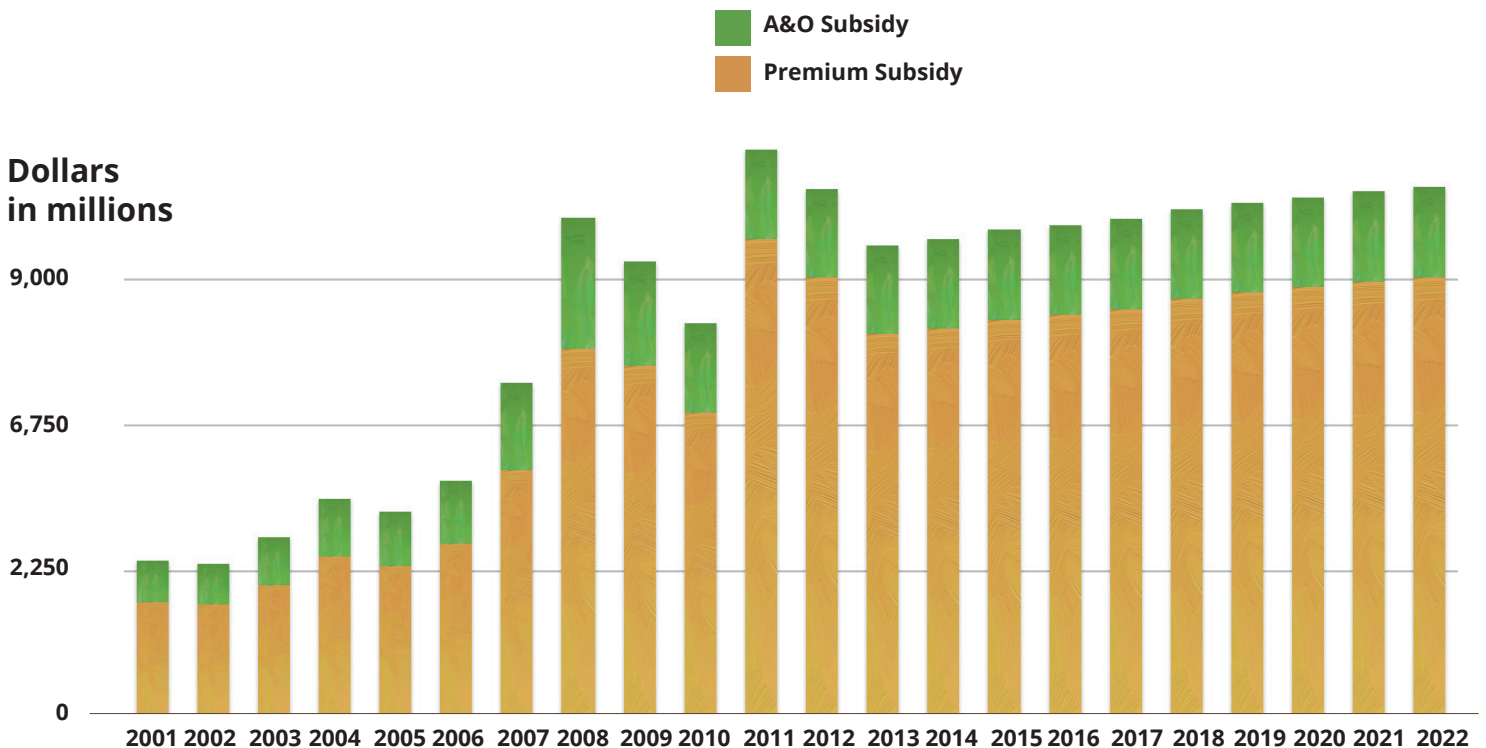
Replacing wetlands and grassland with crops such as corn and cotton also has secondary effects, polluting nearby rivers and lakes by eliminating buffers that filter farm runoff and by increasing the use of fertilizers and chemicals. From 1965 to 2010, use of nitrogen fertilizer on U.S. corn crops nearly doubled to 140 pounds per acre, according to USDA. Without wetlands or grasses to filter runoff, much more of those nutrients washes into streams, ultimately polluting waterways, destroying fisheries and increasing the cost of purifying drinking water.

## Taxpayers Pay the Price

Extravagant crop insurance subsidies are not only a threat to wildlife and the environment; they also take a heavy toll on American taxpayers.

A decade ago, USDA paid 30 percent, on average, of the cost of crop insurance premiums. In order to

**Rising Cost of Insurance Subsidies**





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encourage more farmers to buy the insurance, Congress in 2000 dramatically increased the subsidies for farmers, from less than \$2 billion in 2001 to \$7.4 billion in 2011. Today, USDA pays, on average, 62 percent of farmers' premium subsidies and lavishes \$1.3 billion a year on insurance companies and agents who sell the policies. At current rates, taxpayers can expect to send another \$90 billion to farmers and insurance companies over the next decade.

Unlike traditional farm subsidies such as the now-discredited direct payments, crop insurance subsidies are not subject to payment limits, means testing or conservation requirements. USDA also does not disclose the names of growers who collect crop insurance subsidies or the amounts they receive – in contrast to direct payments. An EWG analysis recently showed that 26 unidentified policyholders received more than \$1 million each in premium subsidies. More than 10,000 growers received more than \$100,000 each in premium subsidies.

## The Farm Bill Must Include Basic Environmental Protections

The new analysis underscores the need for Congress to require growers to implement basic environmental protections as a condition of receiving federal crop insurance subsidies under the federal farm bill and to reject cuts in voluntary conservation programs. Recent polls have shown that farmers largely support the need for these conservation requirements.

The outcome of current efforts in Congress to reauthorize the farm bill remains in doubt, leaving uncertain the fate of the massive legislation that sets the direction of federal agricultural and nutritional policy every five years. The full Senate and the House Agriculture Committee have each approved competing versions, and both would expand bloated crop insurance subsidies while cutting voluntary conservation programs by more than \$6 billion over 10 years.

The Senate version, however, includes an important "conservation compliance" provision to require growers who accept crop insurance subsidies to take steps to protect wetlands, grasslands and soil health on their land.

As Congress struggles to complete work on the 2012 farm bill, legislators should make conservation compliance a condition of receiving crop insurance subsidies, place limits on who can receive subsidies and how much they can receive, and reject cuts to voluntary conservation programs. Simple reform to crop insurance subsidies could generate enough savings to avoid cuts to federal nutrition assistance and conservation programs.

\* \* \*

Note: USDA's Cropland Data Layer satellite data serve as an independent estimator of agricultural landscapes across the U.S. The annual data set is used to track and classify changes in agricultural cover such as corn and soybeans (<http://nassgeodata.gmu.edu/CropScape/>). It is not intended for use in setting farm programs or policy but for scientific research.

In this study, the satellite data was used to estimate the magnitude and direction of groundcover changes by counting raw pixel values in successive satellite images. Based on available data, EWG feels this analysis represents the most accurate picture of current change. It should be noted that counting pixels may tend to generalize small crop features and thus overestimate acreages. However, this is particularly relevant in areas where agriculture is not the dominant landscape, which tend to be those areas of the country that are undergoing relatively small changes compared to agriculture-heavy regions.

EWG researchers compiled and mosaiced the Cropland Data Layer from 2008 to 2011. Using this enormous dataset, spatial analysts reclassified the data to show yearly grassland, wetland and shrub land cover types for 48 states. Over weeks of analysis using the GIS program GRASS 6.4, technicians

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tracked and recorded annual conversions of grasslands, wetlands, and shrub lands into cropland. Conversions were time-stamped and taken out of the grassland/wetland/shrub land universe. To account for edge effects during the 56-meter to 30-meter pixel transition of 2010, cuts in the 2008-09 year were filtered to show only areas greater than 0.75 hectares. The conversions, or pixels, were then designated by the 2011 Cropland Data Layer to extract the desired crop types (corn, soybeans, wheat, cotton and sorghum). These primary crops were chosen based on the CDL's high accuracy rate for classifying dominant crops ([http://www.nass.usda.gov/research/Cropland/sarsfaq2.html#\\_How\\_statistically\\_accurate](http://www.nass.usda.gov/research/Cropland/sarsfaq2.html#_How_statistically_accurate)). After the pixels were assigned to a crop type, they were converted to acres and summarized by county to provide a geographic estimate of converted grassland/wetland/shrub land.

Pixel counting does not represent an exact number, but it does shed light on the massive increase in converting grassland/wetland/shrub land into major crops.

The grassland/wetland/shrub land universe comprised the following categories (for non-agricultural land cover types the USDA defers to the USGS 2006 National Land Cover Dataset):

- 37: Other Hay/Non Alfalfa
- 62: Pasture/Grass
- 87: Wetlands
- 171: Grassland Herbaceous
- 181: Pasture/Hay
- 190: Woody Wetlands
- 195: Herbaceous Wetlands
- 152: Shrubland