



WETLANDS

- **Predominance of hydric soils**
- **Support hydric vegetation**
- **Usually have ponded water at least 1 to 2 weeks during the growing season**

NRCS Definition of Wetlands

- Inundated for 7 days or saturated for 14 days during the growing season at least once every 2 years.
- Inundation means standing water on the surface.
- Saturated means wet surface by capillary action.

The 1985 Act defined a wetland as land that:

- has a predominance of hydric soils;
- is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions; and
- under normal circumstances does support a prevalence of such vegetation.

Criteria for Wetland Hydrology

National Food Security Act Manual:

- Area is inundated for at least 7 consecutive days during the growing season in most years, or
- Saturated at or near the surface for at least 14 consecutive days during the growing season in most years. Soils may be considered saturated if the water table is within:
 - 0.5 ft of the surface for sands
 - 1.0 ft of the surface for all other soils

Sources of Hydrologic Data

- Corps District offices
- U.S. Geological Survey
- National Oceanic and Atmospheric Administration
- Natural Resources Conservation Service
- State, county, and local agencies
- Developers and consultants

Saturation

- Saturation
 - Water content definition – when all pores are filled with water, except those that contain entrapped air
 - Measured indirectly by tensiometers or on a weight basis
 - Field observation not reliable nor scientific
 - Is the basis of the word “saturation” in the COE 87 Manual
 - The only way the capillary fringe could ever be “saturated”
 - Water pressure definition – when its water has a pressure that is equal to or greater than atmospheric pressure
 - Field observation of the water table

Primary Indicators – Soil Saturation

COE Manual -

Condition in which all easily drained pores between soil particles are temporarily or permanently filled with water.



Benefits of Wetlands

- A unique wildlife habitat
- Support water based recreational activities
- Natural downstream flood control
- Natural treatment and filtering system for polluted water
- Potential source of ground water recharge

How Wetlands Affect Water Quality

- Filter out sediment and suspended solids
- Adsorb Chemicals on Organic Matter
- Absorb Nutrients into Living Plant Tissue
- Anaerobic Conditions Promote Denitrification
- Increased Residence Time for Degradation of Pesticides

Factors Affecting Wetland Water Quality Treatment

- Hydroperiod: The number of days per year that surface water is present.
- Water Regime: the Frequency, Duration, and Depth of Flooding
- Soil-Root-Water Interfaces
- Vegetation Types

Wetland Vegetation

- Different Species Prefer Different Environments
 - < Hydrologic
 - < Nutrient
 - < Substrate Conditions



Small Wetlands Attract Higher Densities of Breeding Pairs than do Large Wetlands

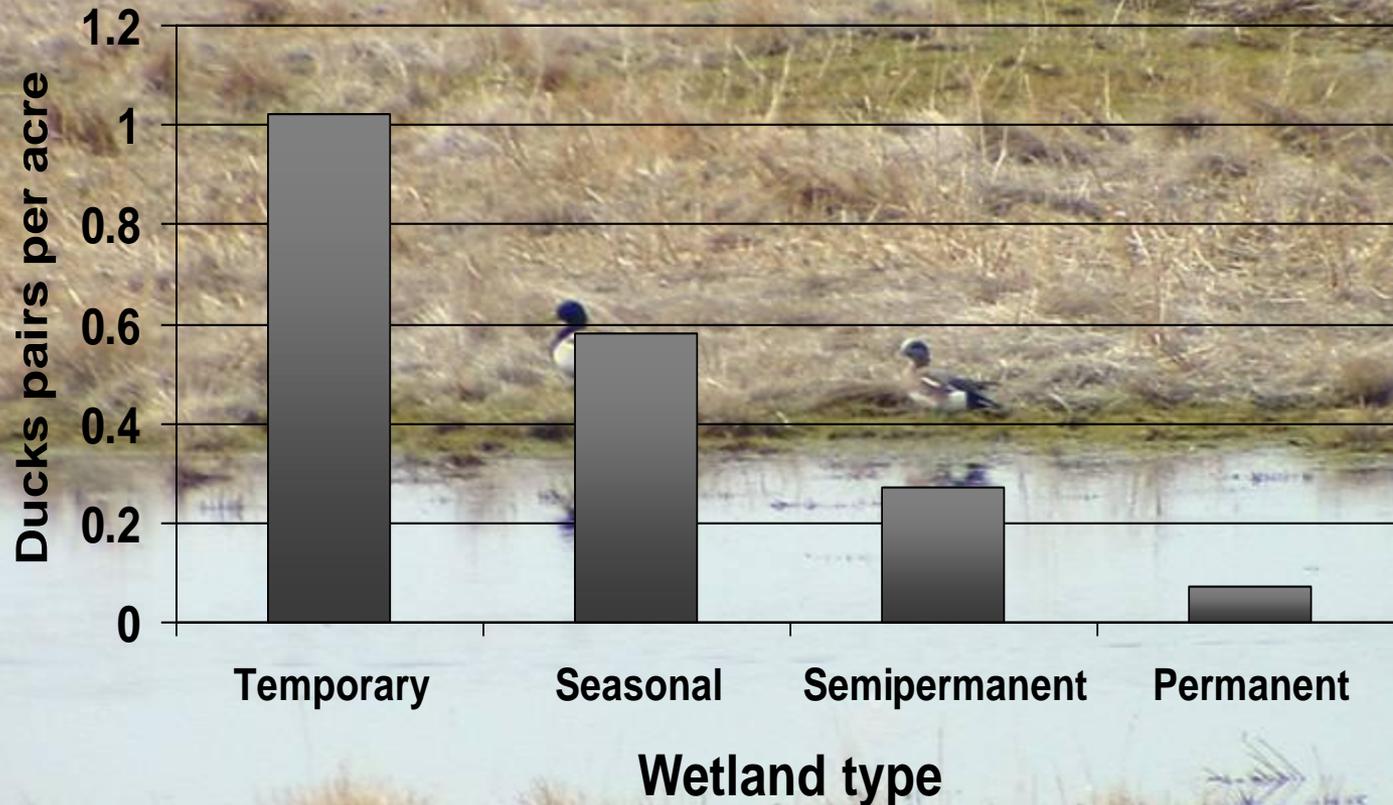


Figure 6. Predicted number of breeding duck pairs per acre based on wetland type.

Ten 1 acre wetlands = 20 Pairs
One 10 acre wetland = 7 pairs







Present Size and Distribution of the Breeding Duck Population

4.2 million Duck Pairs

(Mallard, Northern Pintail, Gadwall, Blue-winged Teal, Northern Shoveler)

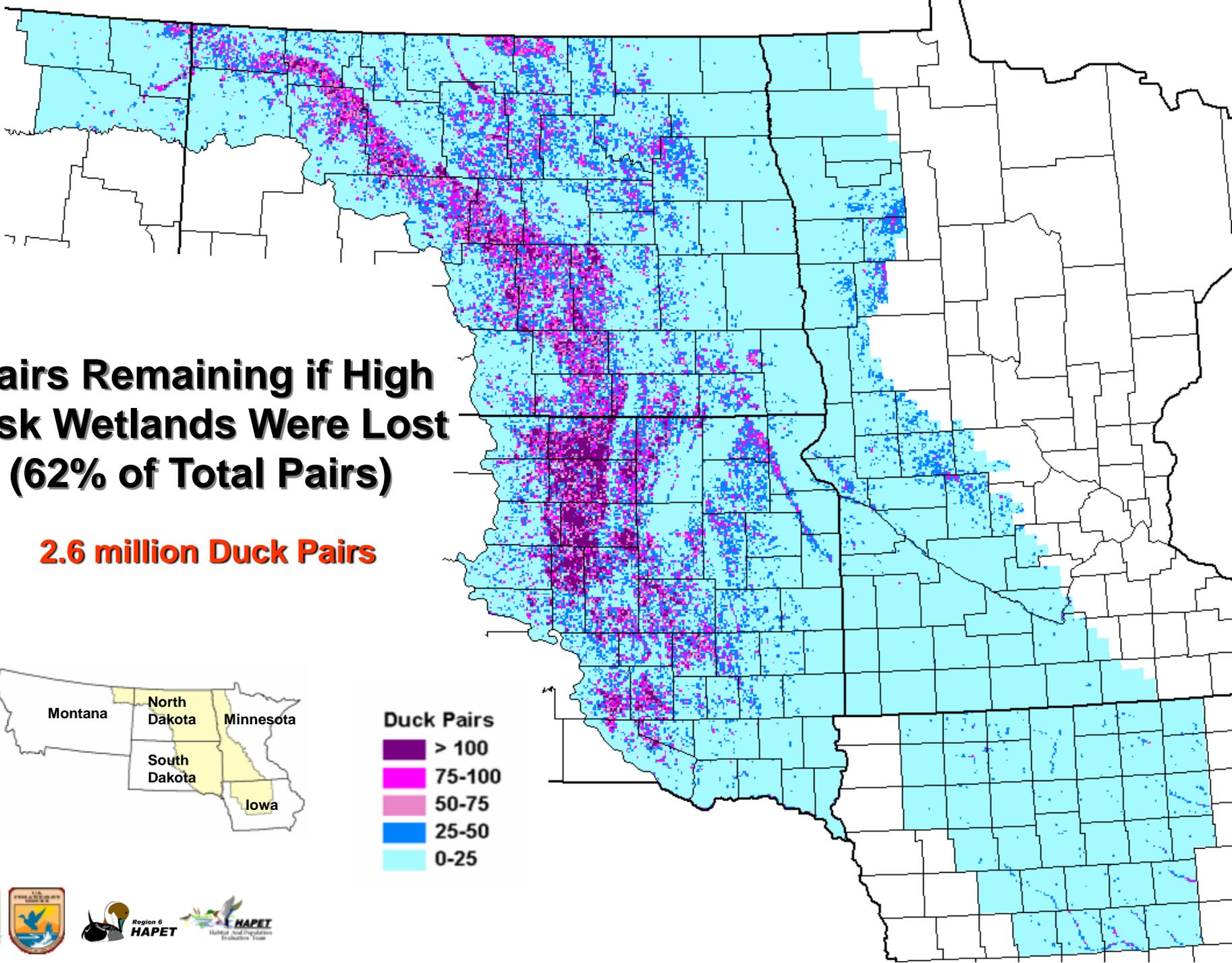


Duck Pairs







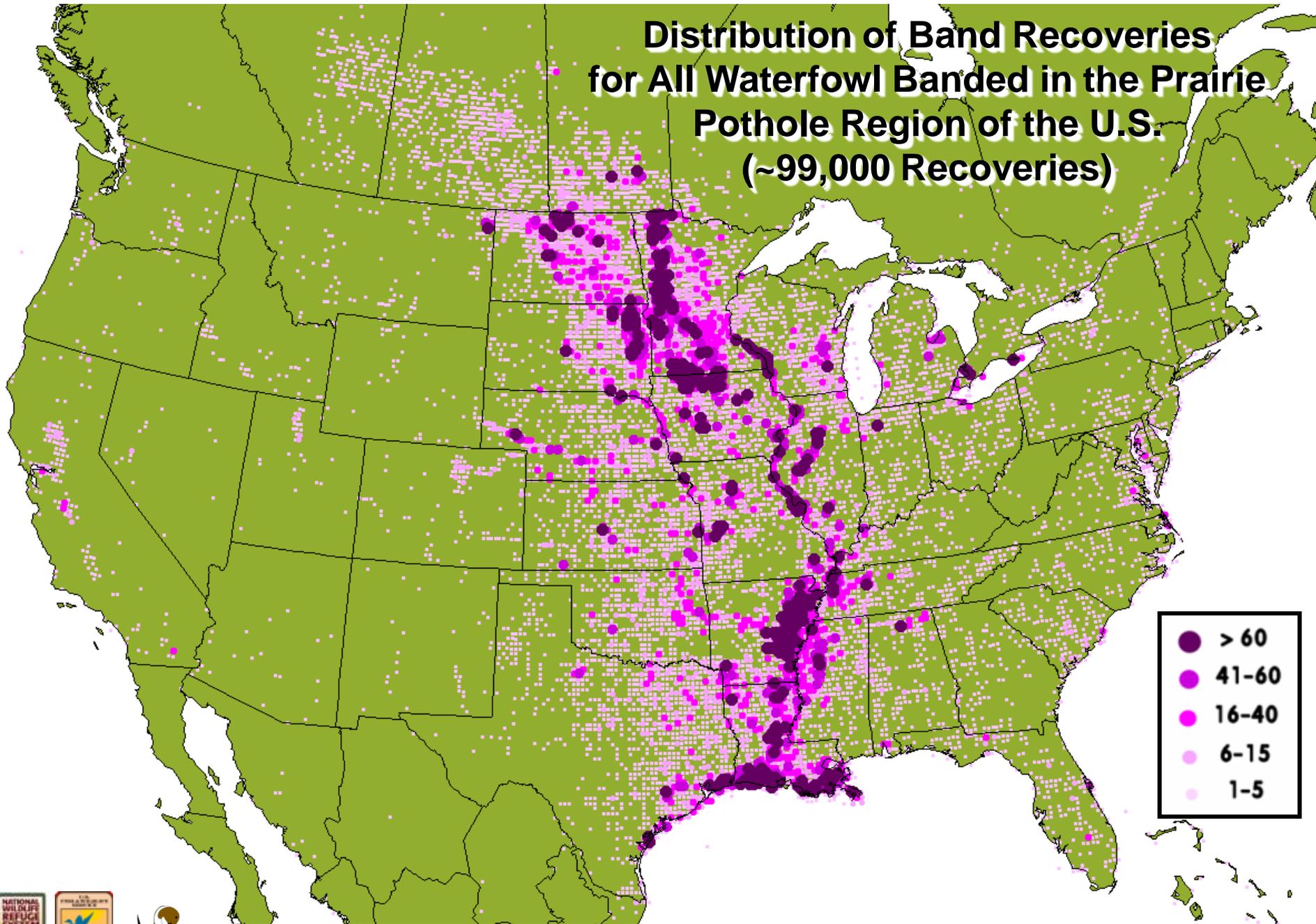


Pairs Remaining if High Risk Wetlands Were Lost (62% of Total Pairs)

2.6 million Duck Pairs



Distribution of Band Recoveries for All Waterfowl Banded in the Prairie Pothole Region of the U.S. (~99,000 Recoveries)









Wetland, Cropland or Both?





Local Issues....



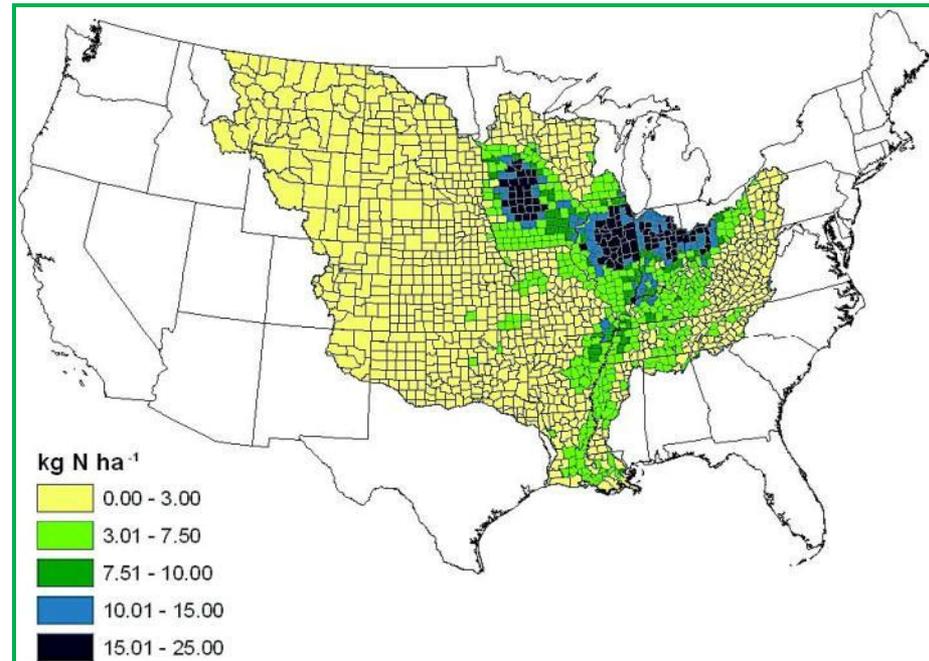
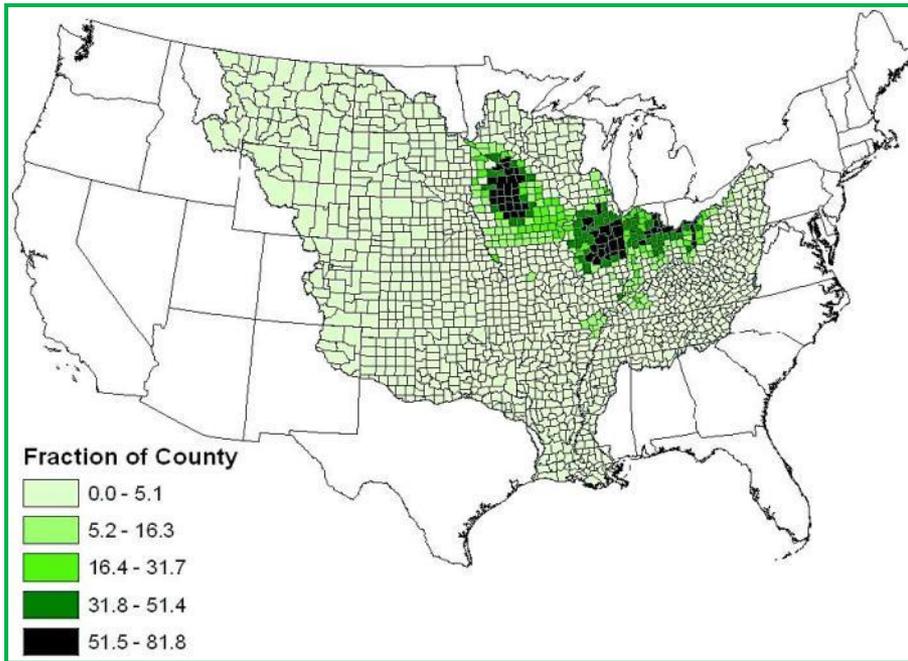
“The average nitrate concentration in the Raccoon, a main source of drinking water, has doubled in the 27 years the Des Moines Water Works has kept detailed records, said L.D. MCMullen, waterworks general manager and national expert on water regulations...He and other water quality officials put much of the blame on the increasing number of drainage tiles used in Iowa.”

Des Moines Register, May 17, 2002.

National Issues....

“Our analysis at the large sub-basin and county scales shows the overwhelming importance of fertilized crops on tile-drained landscape leading to the greatest riverine nitrate N yields, with localized effects of sewage effluent.”

David et al. 2010. JEQ.



“Compared to land in natural forest or perennial grassland, conversion and drainage of land for agriculture usually increases peak runoff rates, sediment, and pollutant loads to surface-water resources.” From Blann et al. 2009



Downstream Landowners?

“Before the tile was installed, the flow was intermittent and would dry up after a rain, but now it is ever-flowing even in the winter.....Even if the law says you can legally drain water on your neighbor for their own personal gain, does that make it morally right?”



























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The End

