# Wetland Protection & Conservation

# Threats to Wetlands

- Wetland loss
- Wetland degradation
  - Fragmentation; loss of connectivity; watershed alteration
- Hydrologic modification (dehydration; inundation)
- Pollution
  - Nutrient/Contaminant loading
  - Salinization
  - Organic loading / reduce DO
  - Thermal alteration
- Vegetation removal
- Non-indigenous invasive species
- Mosquito control

# Wetland Loss

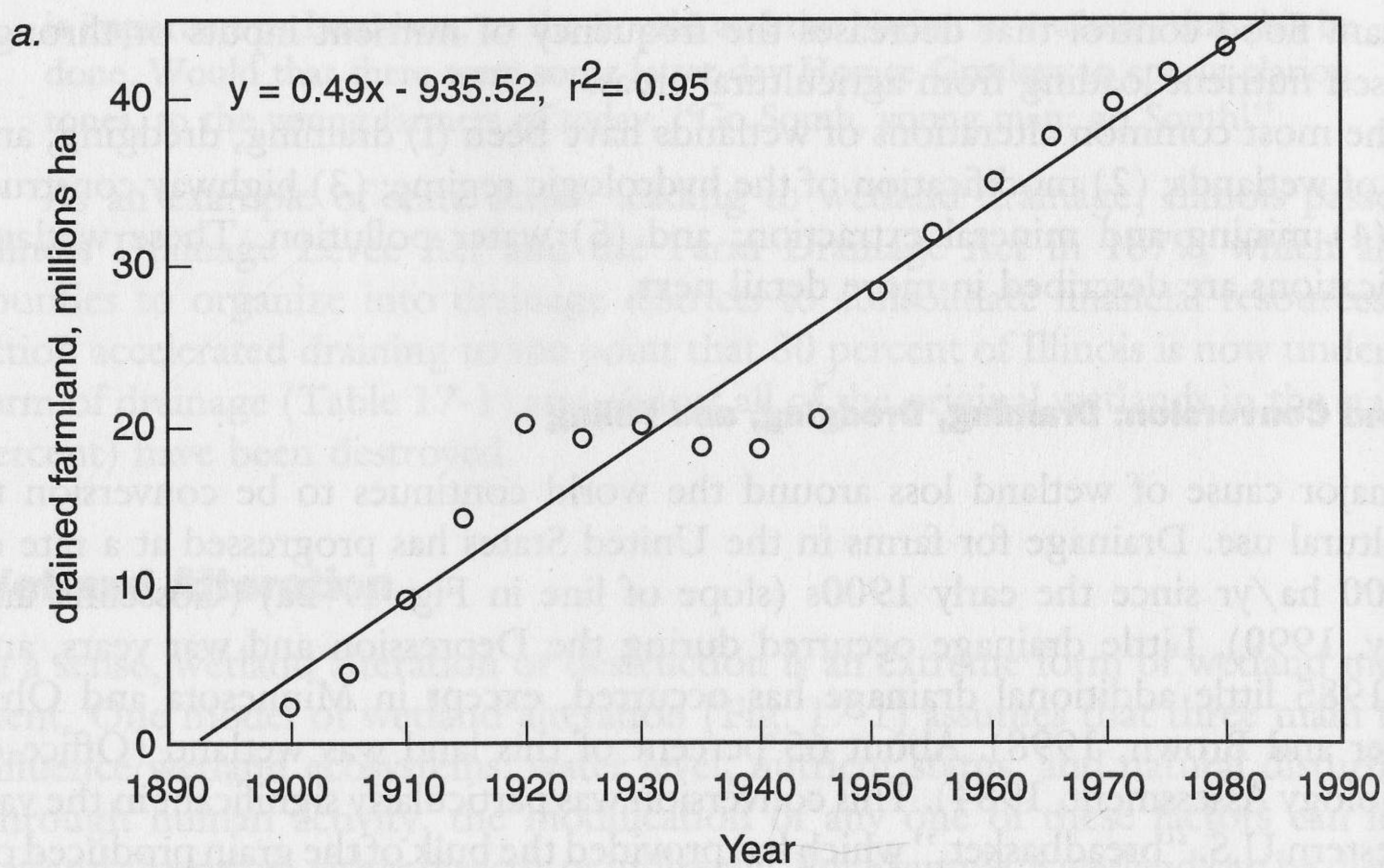
**Table 17-1 Drainage statistics of selected states in the upper reaches of the Mississippi River basin**

| State | Total Area Drained (× 1,000 ha) | Percentage of All Land That Is Drained | Percentage of Cropland That Is Drained |
|---|---|---|---|
| Illinois | 3,965 | 30 | 35 |
| Indiana | 3,273 | 30 | 50 |
| Iowa | 3,154 | 20 | 25 |
| Ohio | 3,000 | 20 | 50 |
| Minnesota | 2,580 | 15 | 20 |
| Missouri | 1,720 | 10 | 25 |
| Wisconsin | 910 | 6 | 10 |
| Total | 18,602 | | |

*Source:* USDA (1987), as cited in Zucker and Brown (1998).

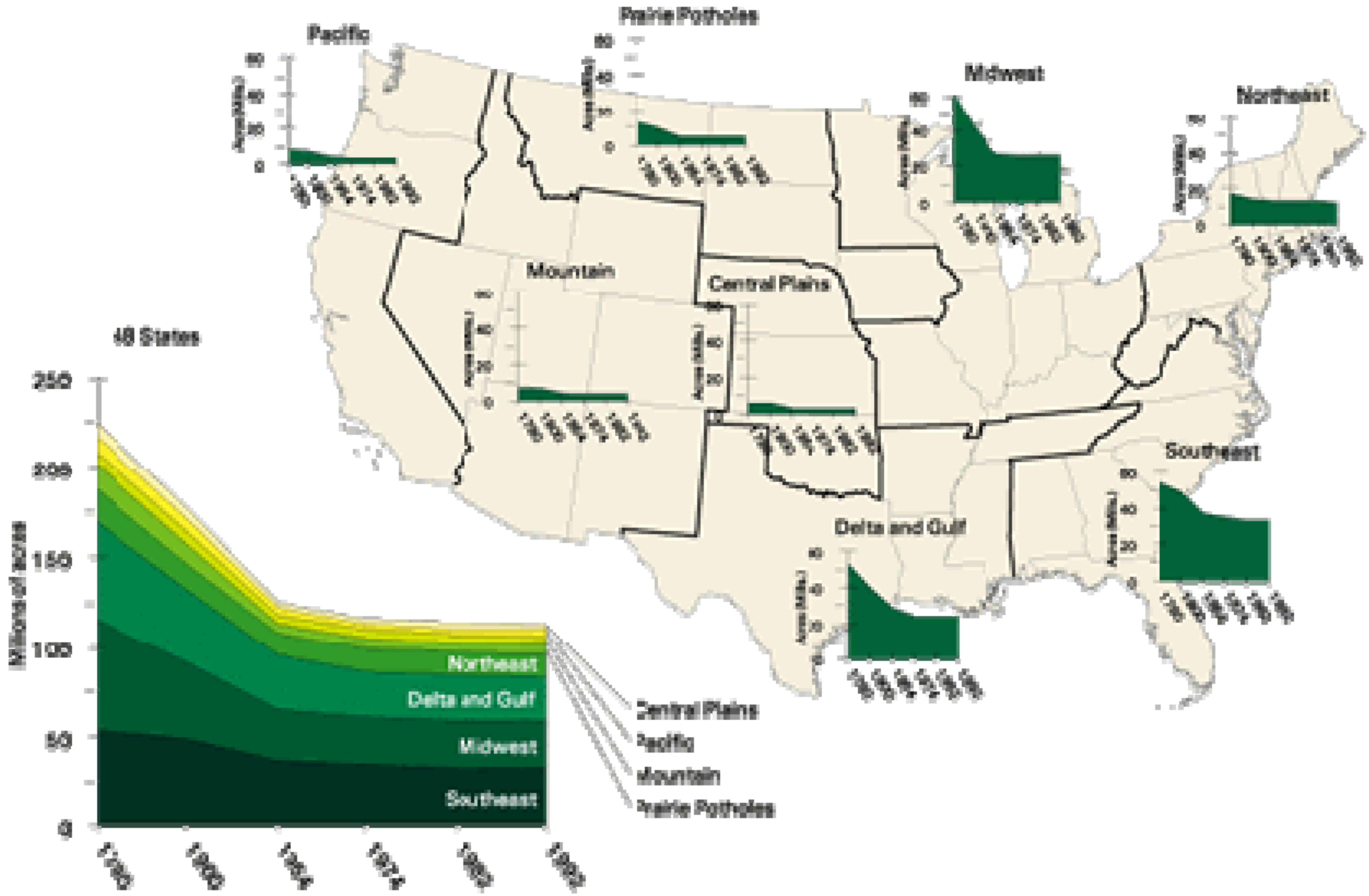
Mitsch & Gosselink 2004

# Wetland Loss




Mitsch & Gosselink 2004

## Wetlands remaining, by year and wetland region, 1780 - 1992




Source: USDA, ERS, based on FWS Status and Trends data and 1992 Natural Resource Inventory data.


Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

Table 2. Summary of study findings. Change in wetland area for selected wetland and deepwater categories, 2004 to 2009. The coefficient of variation (CV) for each entry (expressed as a percentage) is given in parentheses.

| *Wetland/Deepwater Category* | *Area, In Thousands of Acres* | | | |
|---|---|---|---|---|
| | *Estimated Area, 2004* | *Estimated Area, 2009* | *Change, 2004–2009* | *Change, (In Percent)* |
| Marine Intertidal | 219.2 (15.2) | 227.8 (14.8) | 8.5 (48.4) | 3.9% |
| Estuarine Intertidal Non-Vegetated | 999.4 (13.5) | 1,017.7 (13.3) | 18.3 (48.2) | 1.8% |
| Estuarine Intertidal Vegetated [1] | 4,650.7 (4.4) | 4,539.7 (4.4) | -110.9 (16.6) | -2.4% |
| All Intertidal Wetlands | 5,869.3 (4.6) | 5,785.2 (4.6) | -84.1 (20.2) | -1.4% |
| Freshwater Ponds | 6,502.1 (4.6) | 6,709.3 (4.5) | 207.2 (29.6) | 3.2% |
| Freshwater Vegetated [2] | 97,750.6 (2.9) | 97,565.3 (2.9) | -185.3 (*) | -0.2% |
| Freshwater Emergent | 27,162.7 (7.7) | 27,430.5 (7.6) | 267.8 (85.8) | 1.0% |
| Freshwater Shrub | 18,331.4 (4.2) | 18,511.5 (4.2) | 180.1 (*) | 1.0% |
| Freshwater Forested | 52,256.5 (2.7) | 51,623.3 (2.7) | -633.1 (30.7) | -1.2% |
| All Freshwater Wetlands | 104,252.7 (2.8) | 104,274.6 (2.8) | 21.9 (*) | 0.0% |
| All Wetlands | 110,122.1 (2.7) | 110,059.8 (2.7) | -62.3 (*) | -0.1% |
| Lacustrine [3] | 16,786.0 (10.1) | 16,859.6 (10.1) | 73.6 (60.0) | 0.4% |
| Riverine | 7,517.9 (8.7) | 7,510.5 (8.7) | -7.4 (*) | -0.1% |
| Estuarine Subtidal | 18,695.4 (2.5) | 18,776.5 (2.5) | 81.1 (25.4) | 0.4% |
| All Deepwater Habitats | 42,999.4 (4.3) | 43,146.6 (4.3) | 147.2 (33.8) | 0.3% |
| All Wetlands and Deepwater Habitats | 153,121.4 (2.4) | 153,206.4 (2.4) | 85.0 (*) | 0.1% |

** Statistically unreliable.*

*[1]Includes the categories: Estuarine Intertidal Emergent and Estuarine Intertidal Forested/Shrub.*

*[2]Includes the categories: Palustrine Emergent, Palustrine Shrub, and Palustrine Forested.*

*[3]Does not include the open-water area of the Great Lakes.*

*Percent coefficient of variation was expressed as (standard deviation/mean) × 100.*

No statistically significant loss from 2004 to 2009.

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

# Wetland Loss Trends

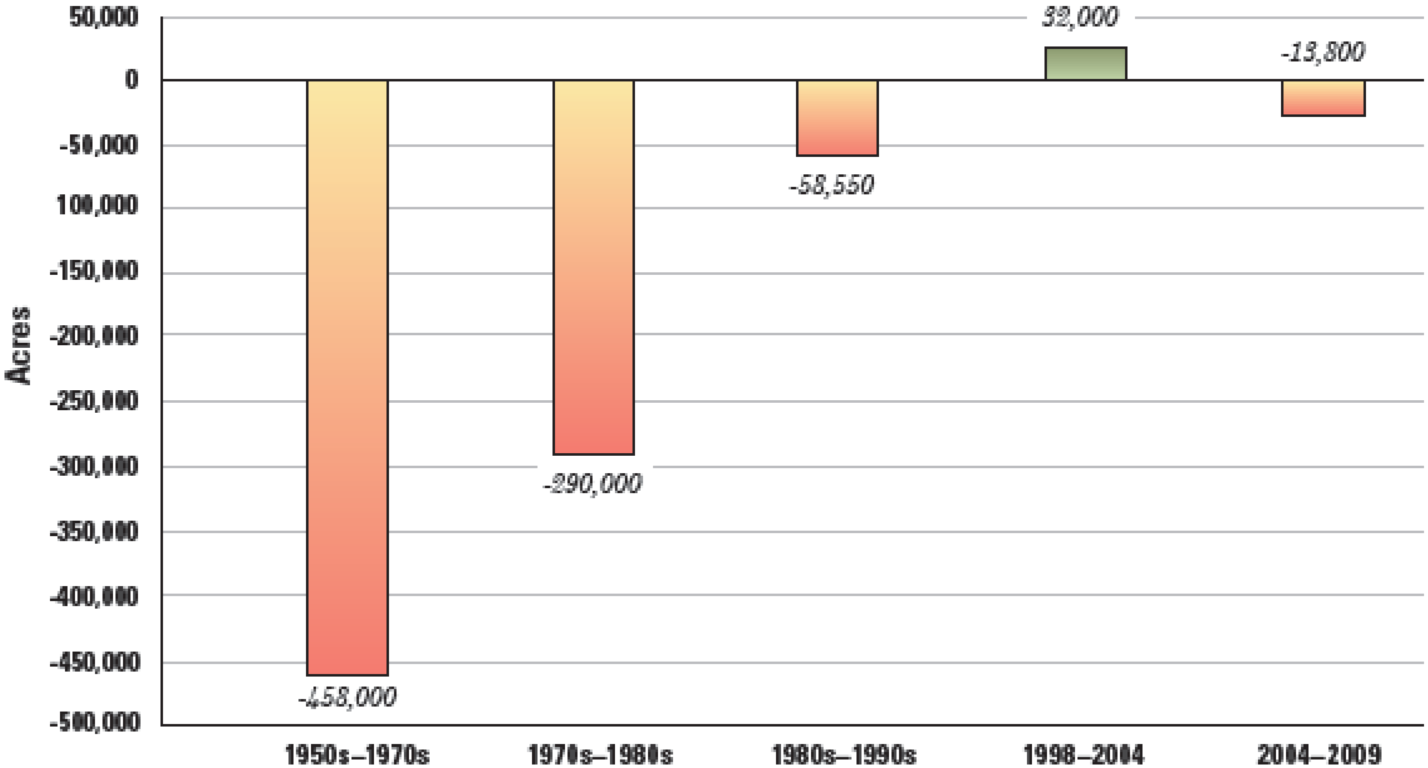



*Figure 19. Average annual net loss and gain estimates for the conterminous United States, 1954 to 2009. Estimates of error are not graphically represented. Sources: Frayer et al. 1983; Dahl and Johnson 1991; Dahl 2000; 2006; and this study.*

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

# Marine & estuarine wetland losses

**Table 3. Status and changes to intertidal marine and estuarine wetlands, 2004 to 2009. The coefficient of variation (CV) for each entry (expressed as a percentage) is given in parentheses.**

| *Wetland/Deepwater Category* | *Area, In Thousands of Acres* | | | | *Area (as percent) of all Intertidal Wetlands, 2009* |
|---|---|---|---|---|---|
| | *Estimated Area, 2004* | *Estimated Area, 2009* | *Change, 2004–2009* | *Change, (In Percent)* | |
| Marine Intertidal | 219.2 (15.2) | 227.8 (14.8) | 8.5 (48.4) | 3.9% | |
| Estuarine Intertidal Non-Vegetated | 999.4 (13.5) | 1,017.7 (13.3) | 18.3 (48.2) | 1.8% | |
| Marine and Estuarine Intertidal Non-Vegetated | 1,218.6 (11.5) | 1,245.5 (11.2) | 26.8 (35.3) | 2.2% | |
| Estuarine Emergent | 3,971.4 (4.6) | 3,859.8 (4.7) | -111.5 (16.6) | -2.8% | |
| Estuarine Forested/Shrub | 679.3 (12.4) | 679.9 (12.4) | 0.6 (*) | 0.1% | |
| Estuarine Intertidal Vegetated [1] | 4,607.7 (4.4) | 4,539.7 (4.4) | -110.9 (16.6) | -2.4% | |
| *Changes in Coastal Deepwater area, 2004–2009* | | | | | |
| All Estuarine and Marine Intertidal | 5,869.3 (4.6) | 5,785.2 (4.6) | -84.1 (20.2) | -1.4% | |

** Statistically unreliable.*

*[1] Includes the categories: Estuarine Intertidal Emergent and Estuarine Intertidal Forested/Shrub. Percent coefficient of variation was expressed as (standard deviation/mean) × 100.*

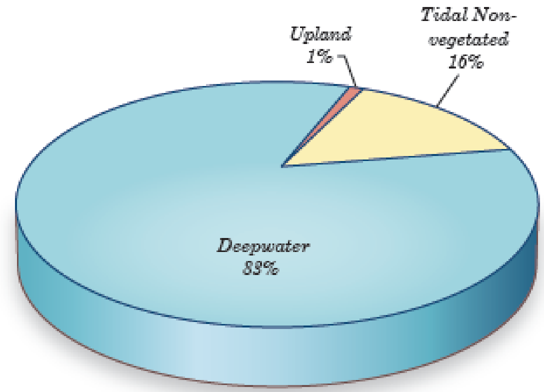



*Figure 27. The attribution of estuarine emergent (salt marsh) losses between 2004 and 2009. An estimated 99 percent of these losses were attributed to deepwater and tidal non-vegetated areas and were the result of coastal storms or ocean derived processes.*

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

# Freshwater wetland losses

**Table 4. Status and changes in freshwater wetland types between 2004 to 2009. The coefficient of variation (CV) for each entry (expressed as a percentage) is given in parentheses.**

| *Wetland Category* | *Area, In Thousands of Acres* | | | | *Area (as Percent of all Freshwater Wetlands, 2009* |
|---|---|---|---|---|---|
| | *Estimated Area, 2004* | *Estimated Area, 2009* | *Change, 2004–2009* | *Change, (In Percent)* | |
| Freshwater Emergent | 27,162.7 (7.7) | 27,430.5 (7.6) | 267.8 (85.8) | 1.0% | 26.3% |
| Freshwater Shrub | 18,331.4 (4.2) | 18,511.5 (4.2) | 180.1 (*) | 1.0% | 17.8% |
| Freshwater Forested | 52,256.5 (2.7 | 51,623.3 (2.7) | -633.1 (30.7) | -1.2% | 49.5% |
| Freshwater Vegetated Wetlands | 97,750.6 (2.9) | 97,565.3 (2.9) | -185.3 (*) | -0.2% | 93.6% |
| Aquaculture Ponds | 380.7 (27.6) | 266.2 (33.4) | -114.6 (32.4) | -30.1% | 0.3% |
| Agriculture Ponds | 2,828.5 (4.1) | 2,980.8 (3.9) | 152.4 (25.3) | 5.4% | 2.9% |
| Industrial Ponds | 373.4 (17.5) | 410.5 (16.4) | 37.1 (29.7) | 9.9% | 0.4% |
| Natural Ponds | 2,103.5 (11.3) | 2,088.8 (11.4) | -14.7 (*) | -0.7% | 2.0% |
| Urban Ponds | 816.1 (6.3) | 963.0 (6.2) | 147.0 (12.9) | 18.0% | 0.9% |
| Freshwater Ponds | 6,502.1 (4.6) | 6,709.3 (4.5) | 207.2 (29.6) | 3.2% | 6.4% |
| All Freshwater Wetlands | 104,252.7 (2.8) | 104,274.6 (2.8) | 21.9 (*) | 0.0% | – |

* *Statistically unreliable.*

*Percent coefficient of variation was expressed as (standard deviation/mean) × 100.*

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

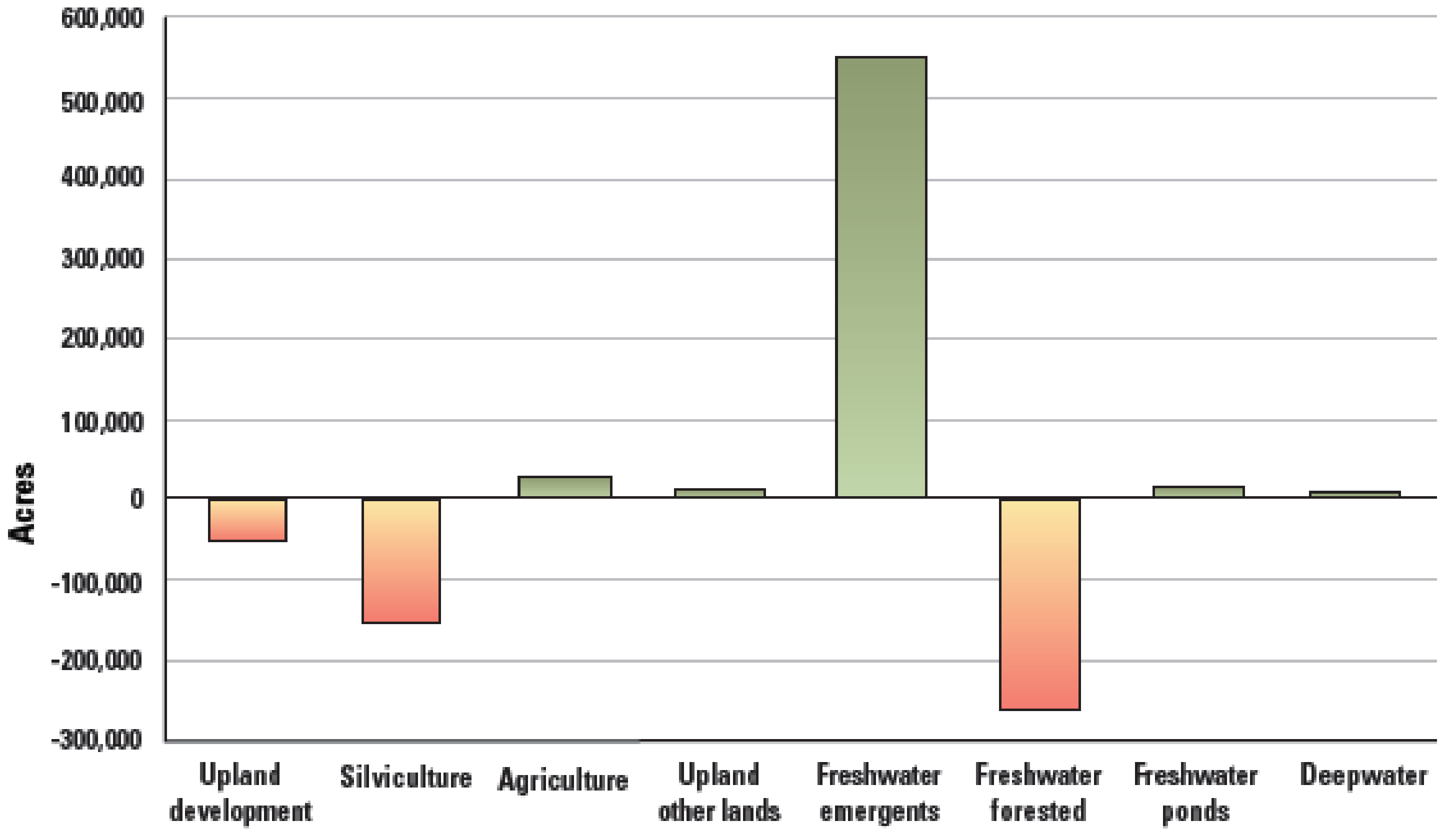



*Figure 42. Gains and losses of selected wetland, upland, and deepwater categories that influenced a net gain of freshwater shrub wetland 2004 to 2009.*

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

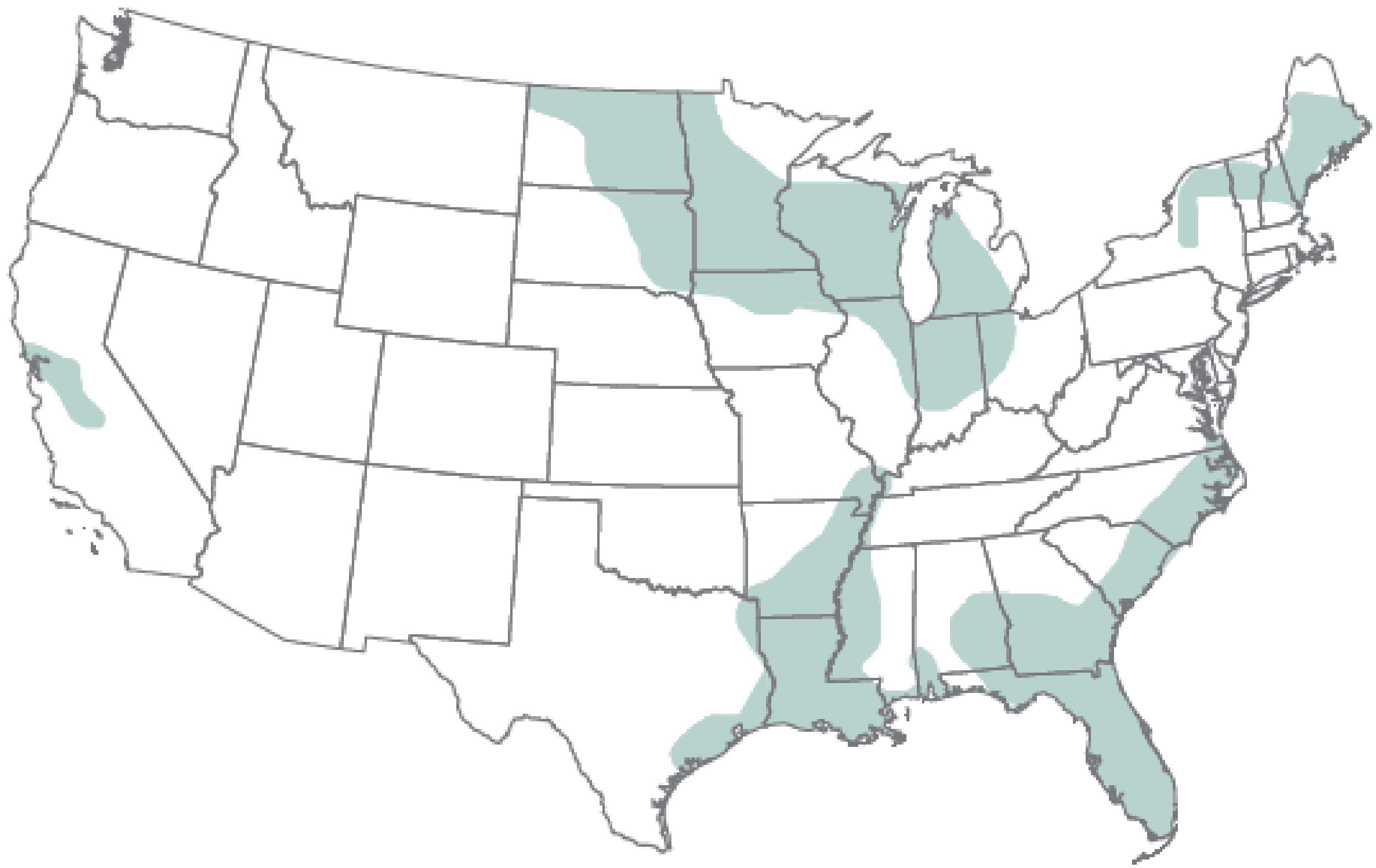


*Figure 49. This study found particular regions of the conterminous United States experienced different rates of wetland loss depending on many factors. The regions illustrated on the map experienced the highest rate of freshwater wetland loss to upland between 2004 and 2009. (This examination was based on geospatial analysis of data from this study. There may be no statistical relevance attached to any region(s) depicted.) NOTE: This information was intended to illustrate the observed incidence of higher wetland loss rates by generalized region. It should not minimize the importance of other wetland loss or gain actions that occurred elsewhere.*

Dahl, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

# Wetland Losses

- Despite conservation programs wetland losses continue and wetlands continue to be degraded.
- Wetlands designed to replace them (created, enhanced, restored) do not function similarly to natural wetlands (Kentula 1996; Street 1998).
- Losses do not just mean filling and draining.
  - Conversion to non-jurisdictional status & excluded by state and fed regulation.
  - Conversion from one type to another.

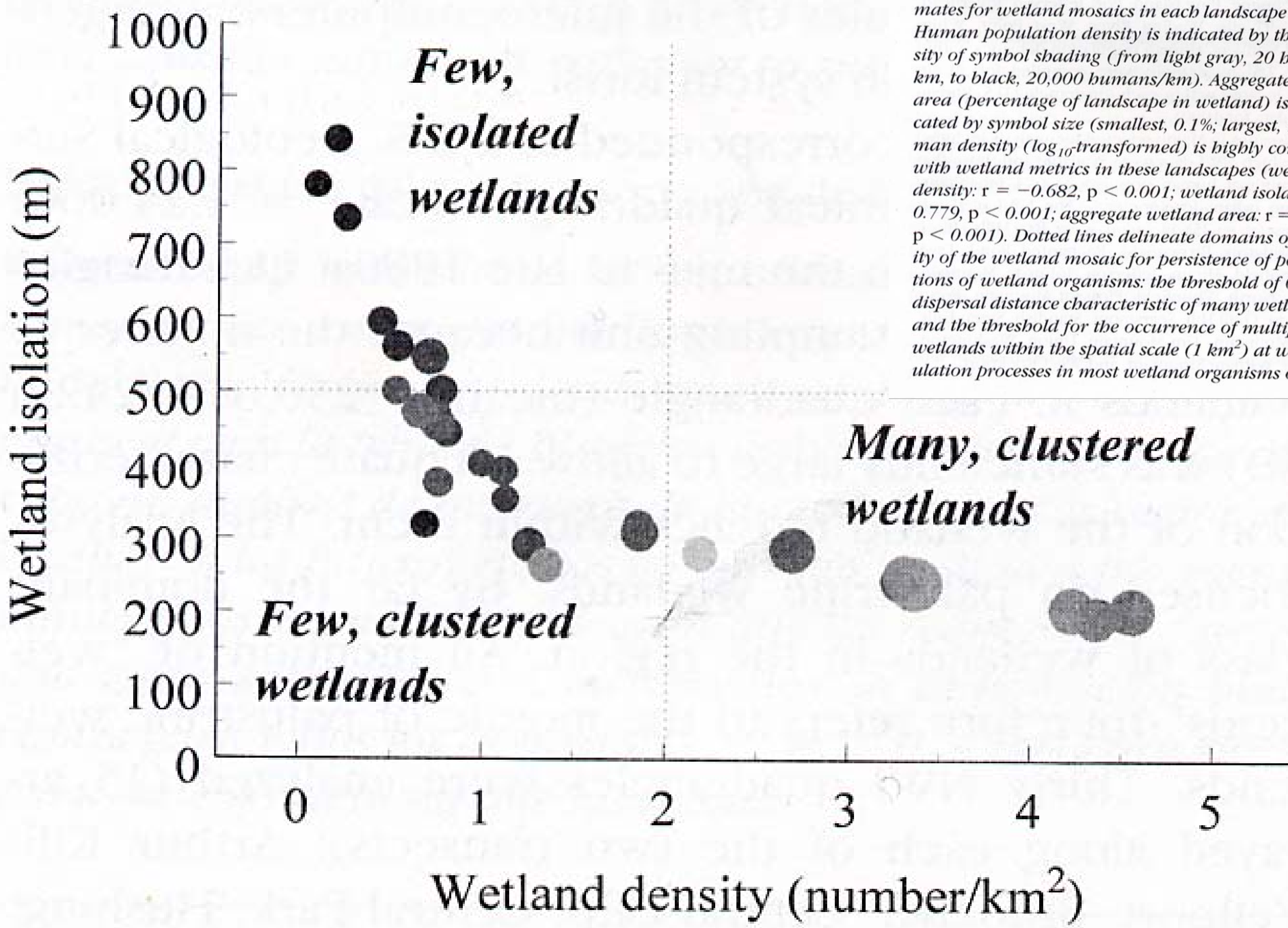



*Figure 1. Wetland density and isolation in 30 landscapes distributed along an urban-to-rural gradient in the New York City region. Data points represent estimates for wetland mosaics in each landscape sampled. Human population density is indicated by the intensity of symbol shading (from light gray, 20 humans/km, to black, 20,000 humans/km). Aggregate wetland area (percentage of landscape in wetland) is indicated by symbol size (smallest, 0.1%; largest, 10%). Human density ($\log_{10}$-transformed) is highly correlated with wetland metrics in these landscapes (wetland density: $r = -0.682$, $p < 0.001$; wetland isolation: $r = 0.779$, $p < 0.001$; aggregate wetland area: $r = -0.685$, $p < 0.001$). Dotted lines delineate domains of suitability of the wetland mosaic for persistence of populations of wetland organisms: the threshold of 0.5 km dispersal distance characteristic of many wetland taxa and the threshold for the occurrence of multiple (>2) wetlands within the spatial scale (1 km$^2$) at which population processes in most wetland organisms operate.*

From Gibbs, 2000. Conservation Biology 14.

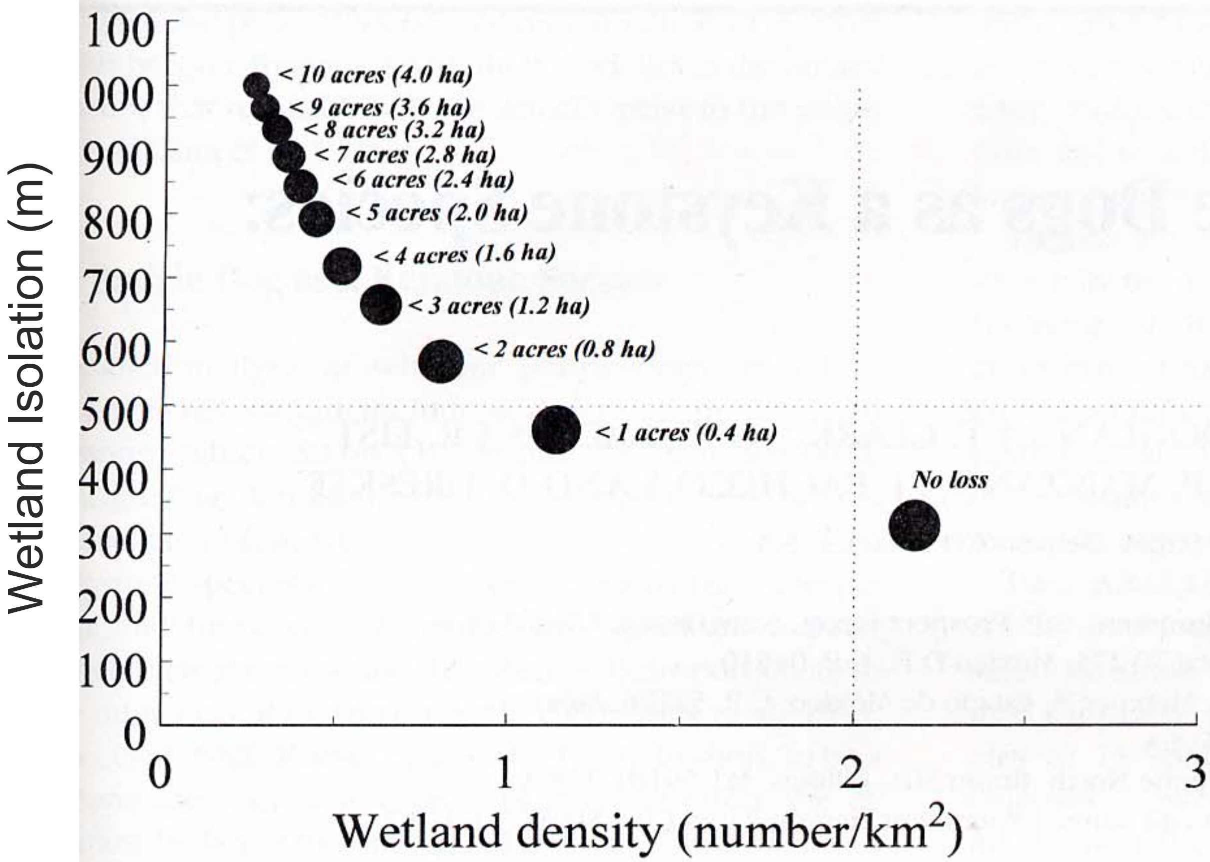



*Figure 2. Changes in wetland density and isolation in relation to simulated, size-structured loss of wetlands in undisturbed landscapes in Maine. Points represent the metrics of wetland mosaics averaged across all landscapes sampled (n = 25), with sequentially larger size classes of wetlands removed (≤1, ≤2, ≤3, . . . ≤10 acres). Aggregate wetland area (percentage of landscape in wetland) is indicated by symbol size (smallest, 6%; largest, 7.5%).*

From Gibbs, 2000. Conservation Biology.

# Implications: Wetland Density

- Dispersal of wetland animals
  - Average dispersal distance for amphibians, salamanders, small mammals <0.3 km; reptiles <0.5 km.
  - All but the least populated areas support wetlands that are too sparse to sustain metapopulations.
  - Also has implications for energetics for large-bodied animals, e.g., waterfowl.

# Implications: Wetland Size

- **Landscape context is just as important as the processes and structures within the wetland for defining wetland functions.**

# NATIONAL WETLAND CONDITION ASSESSMENT 2011

A Collaborative Survey of the Nation's Wetlands

# Wetland condition

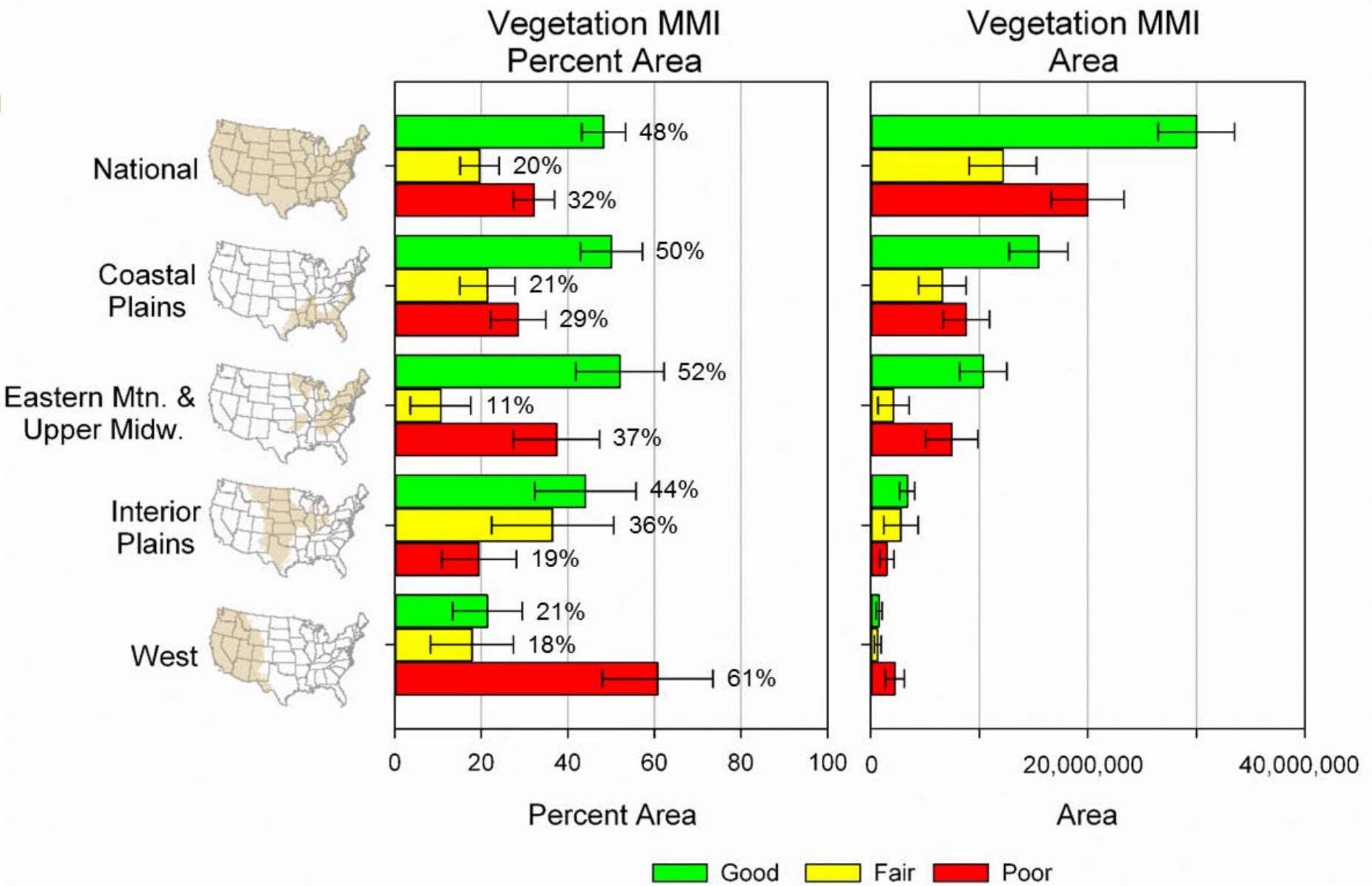



**Figure 3-1. Estimated extent of wetland biological condition by condition classes (good, fair, poor) based on the VMMI.** Results are reported for the nation and by NWCA Aggregated Ecoregion.

NATIONAL WETLAND CONDITION ASSESSMENT 2011: A Collaborative Survey of the Nation's Wetlands EPA-843-R-15-005 May 2016

# Wetland condition

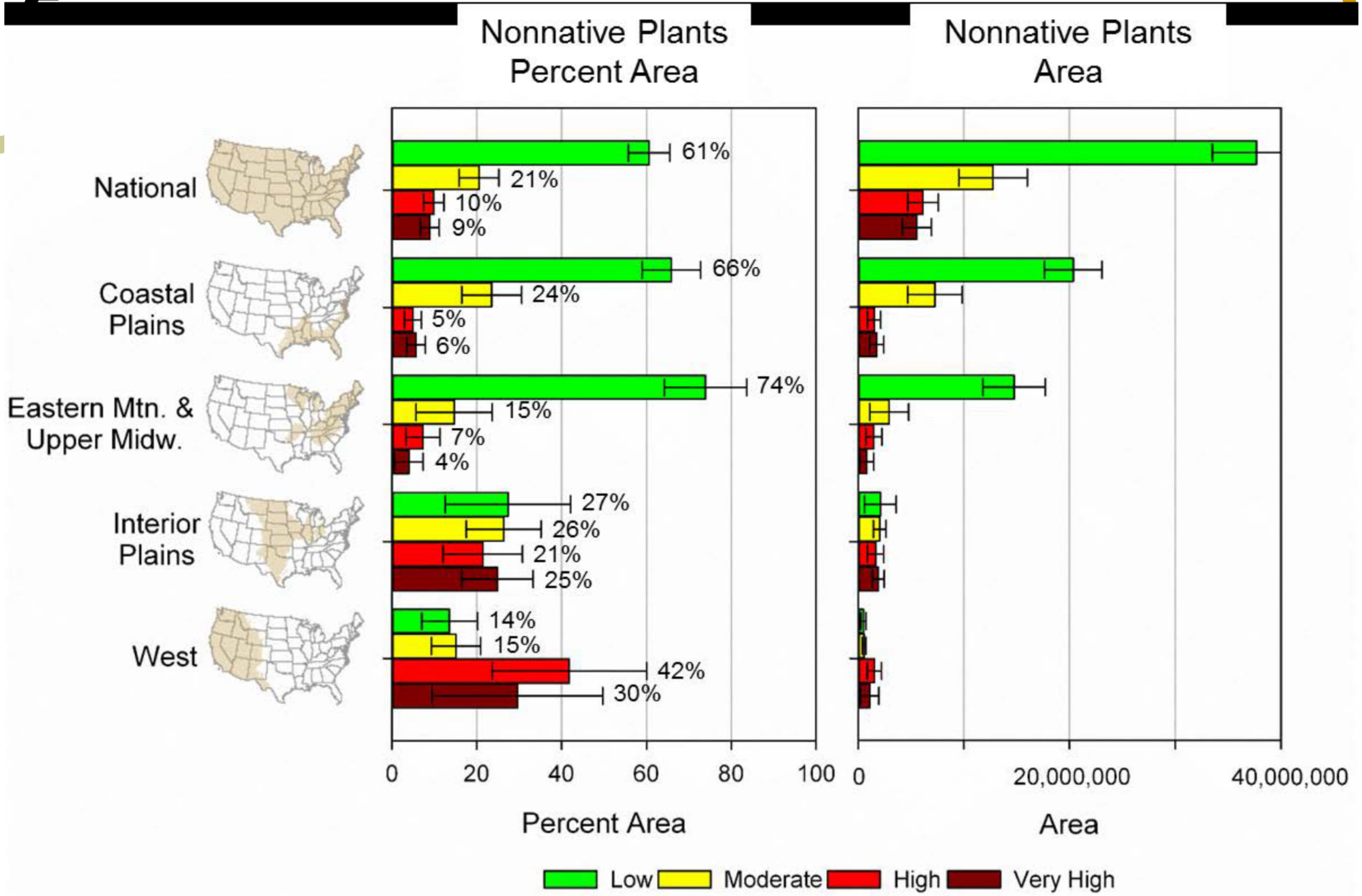



**Figure 3-5. Estimated extent of biological stress in wetlands by stressor levels as indicated by the Nonnative Plant Stressor Indicator.** Results are presented nationally and by NWCA Aggregated Ecoregion.

NATIONAL WETLAND CONDITION ASSESSMENT 2011: A Collaborative Survey of the Nation's Wetlands EPA-843-R-15-005 May 2016

# Wetland condition

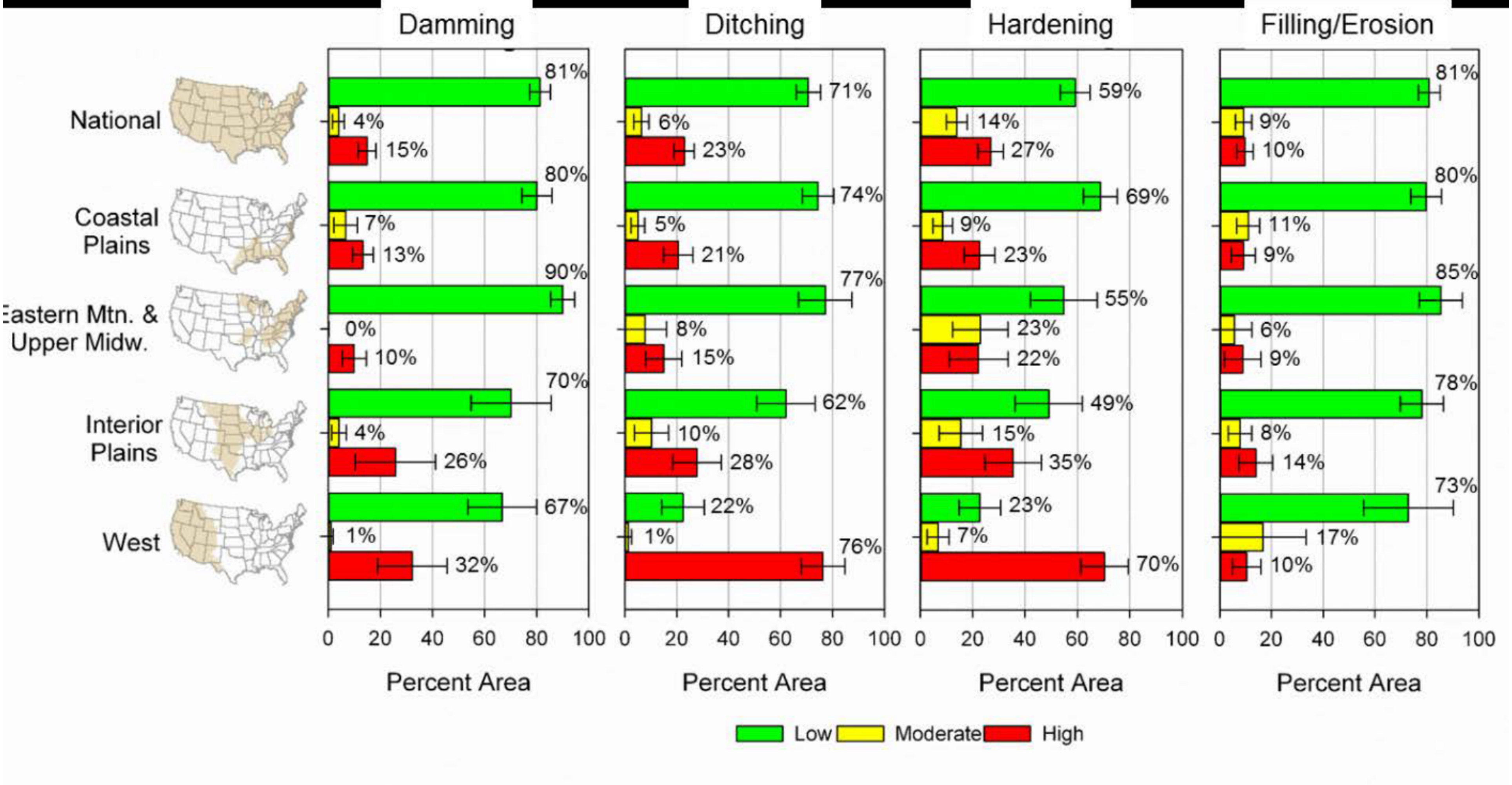



**Figure 3-3. Estimated extent of hydrologic alteration in wetlands by stressor levels as indicated by damming, ditching, hardening, and filling/erosion.** Results are presented nationally and by NWCA Aggregated Ecoregion.

NATIONAL WETLAND CONDITION ASSESSMENT 2011: A Collaborative Survey of the Nation’s Wetlands EPA-843-R-15-005 May 2016

# Wetland condition

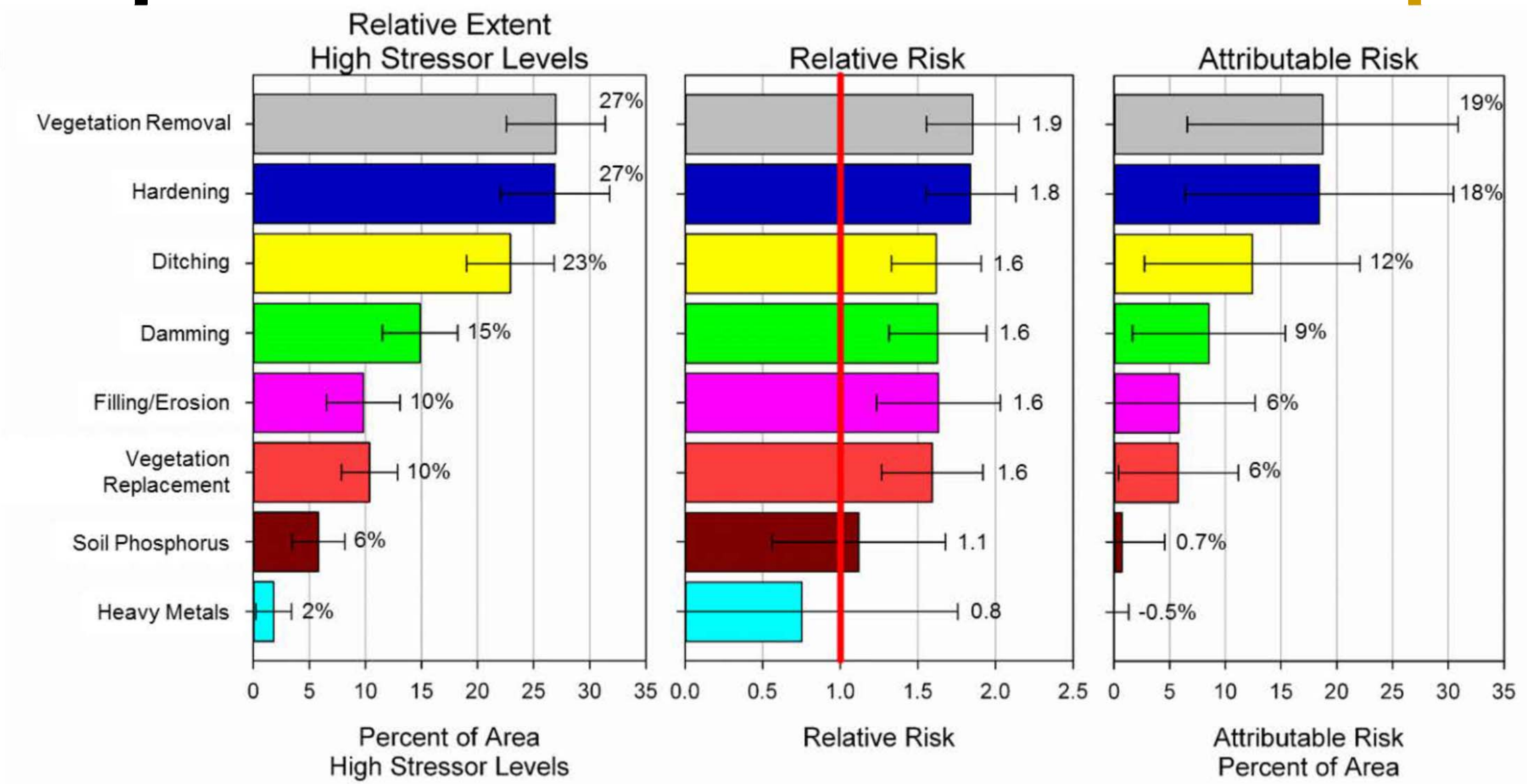



Figure 3-6. National level estimates for relative extent of stressor indicators when stressor level is high, relative risk associated with each stressor indicator, and attributable risk for each stressor indicator relative to wetland biological condition.

NATIONAL WETLAND CONDITION ASSESSMENT 2011: A Collaborative Survey of the Nation's Wetlands EPA-843-R-15-005 May 2016

# Wetland Regulation and Policy

- Wetland protection programs in the US:
  - **Section 404, Clean Water Act (1972)**
  - Swampbuster (1985)
  - No net loss (1988, 1990)
  - Conservation Reserve Program
  - Wetland Reserve Program
  - And others

# Clean Water Act (1972)

- Originally the Federal Water Polluation Control Act
- Purpose: to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.
- Applies only to the “navigable waters”, which are defined as “waters of the US”
  - Ability to navigate a water by boat has nothing to do with the need for it to be kept clean.

# Navigable Waters = Wetlands??

- Language is a carryover from much older legislation (1899) and was until recently interpreted to mean basically any waters of the US
- Rivers and Harbors act of 1899 said that you can't pollute or obstruct a navigable water or its tribs
- Why "navigable"? Triggers Commerce Clause to get around states' rights

# Section 404

- Says you need a permit from the Army Corps of Engineers (US ACE) to dredge or fill any navigable water of the US
- Gives EPA veto power over USACE on this.

# So 404 protects wetlands?

- Since 1975 USACE has defined 404 as protecting:
  - Wetlands adjacent to navigable waters
  - Isolated wetlands & lakes, intermittent streams, prairie potholes, and other waters not part of a tributary system … or to navigable waters…, the degradation or destruction of which could affect interstate commerce.
    - And migratory birds are part of interstate commerce

# Significant court challenges

- US vs. Riverside Bayview Homes (1985)
- SWANCC (2001)
- Rapanos vs. USACE (2006)

# US vs. Riverside Bayview

- Involved wetlands adj to navigable trib of Lake St. Clair
- Ruling: wetlands adjacent to navigable waters are covered under the navigable waters clause and therefore are protected.

# SWANCC (2001)

- Solid waste agency wanted to build new landfill among isolated ponds used by migratory birds.
- Split decision, court said they didn't need a permit to fill these isolated pond/wetlands (not close proximity to a navigable water, so not like the Riverside case).
- Also said migratory bird rule not supported by Clean Water Act

## Rapanos v. United States

- Three sites involving wetlands adjacent to both navigable and non-navigable tributaries of Lake Huron

# Rapanos (2006)

- Court defined “waters” to mean: relatively permanent, standing or flowing waters.
  - Unclear under this definition if wetlands could ever be “waters of the US”
  - But concede that wetlands adjacent to navigable waters are covered by CWA
- Now USACE must decide in every case if something is navigable or not

# What can we learn from Rapanos?

- Congress should avoid using words (like navigable) that it doesn't mean
- The Court needs a primer on water law
  - As the Court itself has often noted, the phrase "navigable waters" is inherently ambiguous and means different things in different contexts
  - "Navigability" is similarly ambiguous
- A bit of history might better inform the Court's decisions
  - Inconceivable that Congress would have intended a narrower scope for CWA than it intended for 1899 RHA, or 1948 FWPCA
- Webster's dictionary is a precarious source for legal authority

# So what now?
## 2008 guidance memo (Bush admin)

- CWA covers:
  - Truly navigable
  - Wetlands adjacent to navigable
  - Permanent & semi-permanent (> 3 mo) tribs to navigable and their connected wetlands
- CWA does not cover:
  - Ditches (except permanent flow)
  - Swales and gullies
- Significant nexus required:
  - Tribs flowing < 3 mo and their adjacent wetlands
  - Wetlands not directly connected to a permanent but non-navigable water

# Significant Nexus??

- Assess the flow & functions of trib and its wetlands to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters
- Consider hydrology and ecology

# 2010: Clean Water Restoration Act - Failed

- Tried to get a renewal of the Clean Water Act that basically just removed the word “navigable” from the protection language.
- Thus, would have covered all waters of the US
- Could not get the bill out of committee

# Updates:

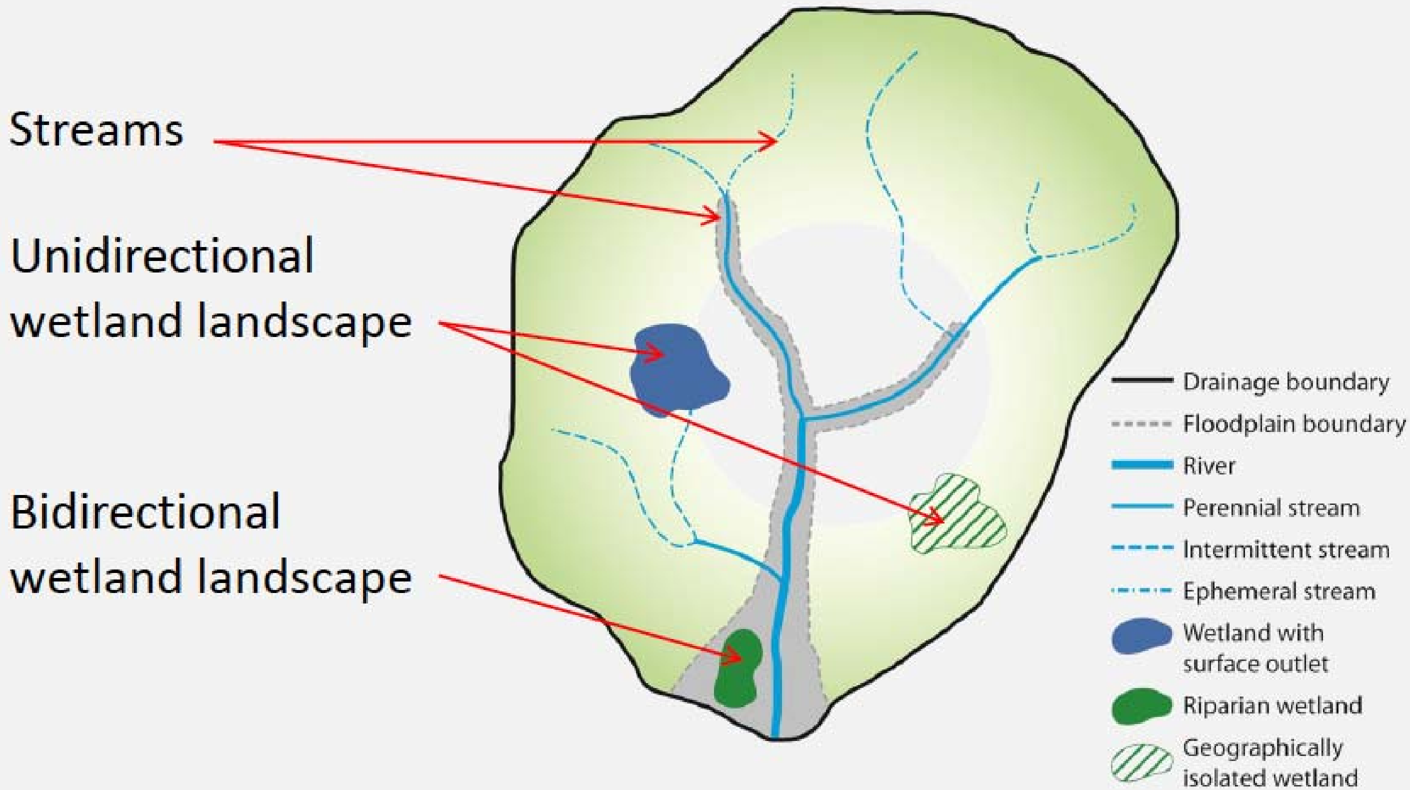
- 2011-2015: various skirmishes between Obama administration and republicans in the legislature as administration tried to strengthen the CWA through rule-making that EPA would enforce.
- Connectivity report by EPA detailing hydrologic dependence of stream networks on headwater streams, non surface-connected wetlands, etc. (2013). Peer-review (fall 2014) says it report doesn’t go far enough in emphasizing connectivity and dependence (pub 1-2015).
- Clean Water Rule by EPA in 2015 – immediately fought by republicans

# Updates: Clean Water Rule EPA)

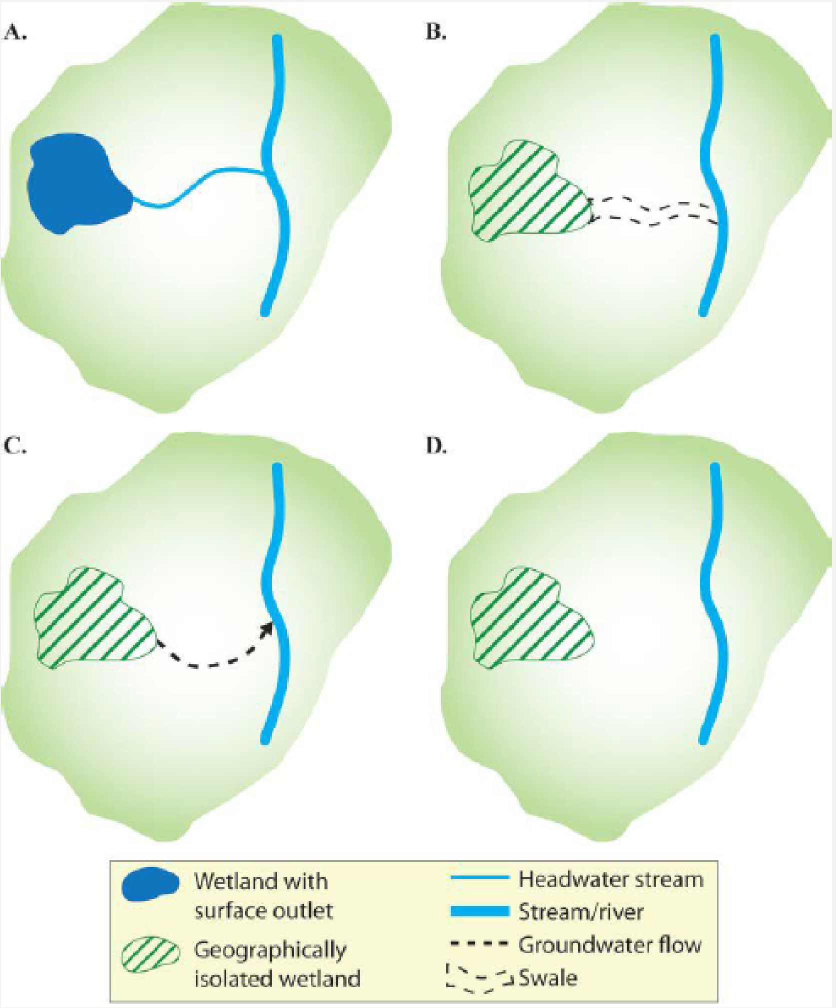
- Protects tributaries showing features of flowing water. Includes headwaters that have these features & that science shows have a significant connection to downstream waters.
- Protects waters that are next to rivers and lakes and their tributaries. Includes prairie potholes, vernal pools, other isolated wetland types.
- Being vigorously opposed by farmers, developers, industry.
- Stuck in federal court for the past 2 yrs (never implemented), but now EPA administrator Pruitt is recalling it.
- Supreme Court now hearing ***National Association of Manufacturers v. Department of Defense*** to decide which court will hear cases that define the term *Waters of the United States*. Ruling expected in 2018

# Conceptual Framework

- Conceptual framework presented for understanding the hydrologic components of a watershed and the types of linkages among them.



# Types of hydrologic connectivity between unidirectional wetlands and downstream waters




(A) Flow through a headwater stream channel.

(B) Surface flow through a nonchannelized swale.

(C) Groundwater flow (flowpath may be local, intermediate, or regional).

(D) A wetland that is hydrologically isolated from a river.

Note that in A–C, flows connecting the wetland and river may be perennial, intermittent, or ephemeral.

# Other ways to protect wetlands: Swamp-buster and No Net Loss Policy

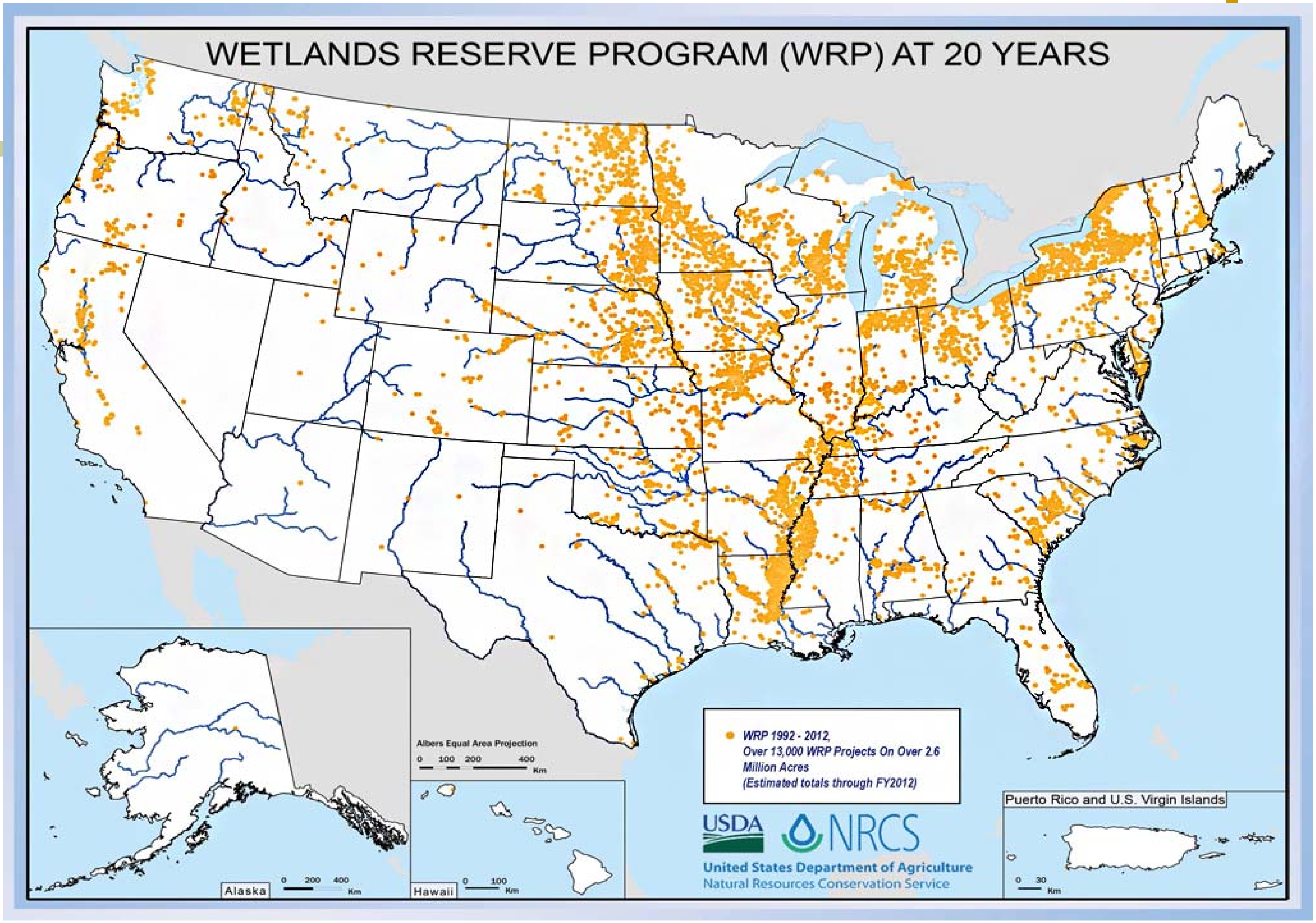
- Swampbuster (1985):
  - Farmers get a lot less money if they convert a wetland to cropland.
- No Net Loss: Implemented by President Bush in 1989
  - Short-term goal: no overall net loss of wetlands,
  - longer term goal: achieving a net gain of the nation's wetlands.
- No-net-loss expanded on by President Bill Clinton.
  - Clean Water Action Plan goal: net gain of wetlands of 100,000 acres per year by 2005.
- The consensus among wetland professionals is that net losses of wetlands have declined significantly over the past 30 years.

# Current Conservation Programs

- Swampbuster (1985, 1990 Farm Bills)
- Agricultural Conservation Easement Program (ACEP) [was Wetland Reserve Program]
  - 2002 Farm Bill. Supposed to protect 250K acres / yr.
- Partners for Fish and Wildlife
- Coastal Wetlands Restoration Program
- National Wildlife Refuge System
- EPA's 5 Star Restoration Program
- North American Wetlands Conservation Act
- State/Tribal/local/Non-governmental programs

# Wetland Protection: Reserve Systems

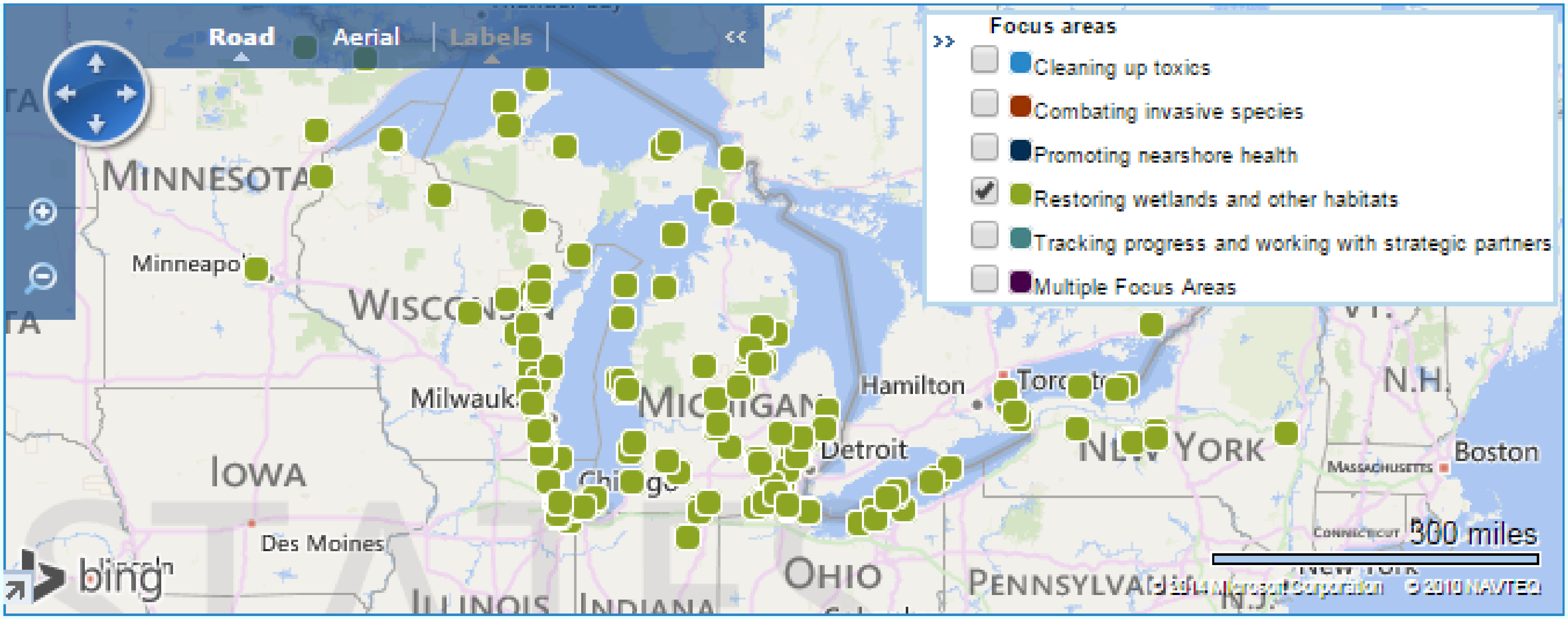
- Protect representative systems & maintain ecological functions
- Key Steps (according to Noss 1995) are:
  - Identify core areas and buffer zones
  - Design a network or reserves to ensure that the protected areas represent the entire landscape


WETLANDS RESERVE PROGRAM (WRP) AT 20 YEARS
WRP 1992 - 2012,
Over 13,000 WRP Projects On Over 2.6
Million Acres
(Estimated totals through FY2012)
Albers Equal Area Projection
0 100 200 400 Km
Alaska
0 200 400 Km
Hawaii
0 100 Km
Puerto Rico and U.S. Virgin Islands
0 30 Km
USDA
NRCS
United States Department of Agriculture
Natural Resources Conservation Service

# Great Lakes Restoration Initiative (GLRI)

- Supposed to provide $450M/yr for 5 yrs to restore Great Lakes
- Never fully funded, but typically funded at about $300 M/yr
- Quite a bit of Great Lakes coastal wetland restoration occurring (> 200 projects funded)

# GLRI wetland projects



# Core Protected Areas

- Should be large enough to retain diversity of wetland types and the full array of species present.
  - Remember the species-area curve?
  - Large areas support more species, and larger, mobile species.
  - Greater possibility of support natural processes intact*.
- Must be surrounded by a buffer zone
- Must be interconnected to permit dispersal from one reserve to the next to support metapopulations.
- Choices based on “naturalness”, significance, rare species, ecological functions, value for research.

Table 12.1. *Some important factors for selecting and prioritizing wetlands for conservation*

| Factor | Comments |
|---|---|
| Area | All important ecological values and functions increase with area. |
| Naturalness | Minimal alteration to natural patterns and processes. |
| Representation | Serves as an example of one or more important ecosystem types. |
| Significance | Relative global importance: existing area of this habitat, rates of loss, percent of habitat type protected, better examples protected elsewhere? |
| Rare species | Globally and regionally significant species present. |
| Richness | Supports many species. |
| Productivity | Good production of commercial species (but high production may reduce rare species and diversity). |
| Hydrological functions | Flood reduction, ground water recharge. |
| Social functions | Education, tourism, recreation. |
| Carrier functions | Contribution to global life support system: oxygen production, nitrogen fixation, carbon storage. |
| Food production | Harvesting of species for human consumption. |
| Special functions | Spawning or nesting area, migratory stopover. |
| Potential | Potential for restoration to recover lost values and functions. |
| Prospects | Probability of long-term survival: future threats, buffer zones, possibilities for expansion, patrons, supporting organizations. |
| Corridors | Existing connections to other protected areas or site itself is a corridor. |
| Science function | Published work on site, existing use by scientists, existing research station, potential for future research. |

*Notes:*
These are listed in approximate order of their importance.

Keddy 2000

# Reserves… continued

- Other considerations…
  - Habitat type should be important/significant at the local, regional, or global scale.
  - Are similar wetland types already being protected?
  - Are there more important types that are not yet protected?
  - Reserve planning defines the smallest number of sites needed to achieve goals.

# Summary

- US has lost 30-50% of wetlands
- Wetland protections significantly weakened by Rapanos decision
  - Attempts to re-strengthen protections have failed or been blocked
- No evaluation yet on whether wetland losses have increased due to this decision

# Rule: What is NOT a Water of the US?

- Waste treatment systems (including treatment ponds and lagoons).
- Prior converted cropland.
- Ditches that are excavated wholly in uplands, drain only uplands, and have less than perennial flow.
- Ditches that are not tributaries.
- Artificially irrigated areas that would revert to upland if irrigation stops .
- Artificial lakes or ponds created by excavating and/or diking dry land and used for purposes such purposes as rice growing, stock watering or irrigation.
- Artificial reflecting pools or swimming pools created on dry land.
- Small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons.
- Water-filled depressions created as a result of construction activity.
- Groundwater, including groundwater drained through subsurface drainage systems
- Gullies and rills and non-wetland swales.