

Wetland Policy and its Evolution into Markets

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Overview and Objectives



- Introduction and background
 - Aquatic resource (wetland and stream) mitigation markets
- Case studies
 - A Changing Market: Chicago, IL
 - A 'Masked' Market: North Carolina
- Implications for ecology and planning

Objectives

- Environmental commodification
- Understand legal issues and tensions
- Understand elements of ecosystem service markets (ESM)
 - Why they can work, why they don't

An Important Distinction in New 'Environmental' Markets



- Pollution credit trading
 - Cap and trade
 - Water Quality – N,P
 - Sulfur Oxides, Nitrogen Oxides
 - Carbon
 - Tax
 - Carbon
- Ecosystem Service Markets
 - Offset system ('mitigation')
 - Wetlands ←
 - Streams ←
 - Habitat Conservation ←

What is traded in the marketplace?



- A Simple Question: What is a wetland?
- A not-so-simple answer
 - Scientific definition of wetland debated
 - Area defined by soil, vegetation, and hydrology
 - Periodic inundation with water (length/frequency)
 - Historic land uses
 - Surficial/groundwater connections
 - Legal definition of wetland(s)
 - 1987 Army Corps of Engineers Wetland Delineation Manual
 - Continuing...
 - Isolated vs. non-isolated

SO, WHAT'S A WETLAND, REALLY?

before 1989

Environmental Protection Agency
Fish and Wildlife Service
Soil Conservation Service
Army Corps of Engineers

Each agency
has its own
definition.

in 1989

“Federal Manual for Identifying and Delineating
Jurisdictional Wetlands”

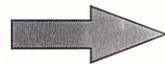
vegetation OR soils OR hydrology



“at least seven days, saturated
within 18 inches of surface.”



Bush Revision



vegetation AND soils AND hydrology



“21 days of saturation, or 15
days of inundation, at surface”

Now

Nat'l Academy of Sciences: 15 days for most
areas, 7 days for others, inundation at surface.



Why protect wetlands and streams?



- Extensive loss of U.S. wetlands over 200 years
 - Over 53% in 48-states
 - Nearly 90% in IL, ~75% in Chicago region
 - Over 49% of wetlands destroyed in NC – 5.4 million acres
 - State was originally 17% wetlands
- Streams: Large scale stream channelization and dam construction
 - How many dams in US?
 - 75,000 Dams in U.S.
 - How many in NC?
 - 5,000 dams in N.C.

Degraded urban wetland



Not a 'real' wetland

Wetland Loss



- 1600s: 220 million acres of wetlands in lower 48
- 1997: 105 million acres
- 1998: 58,000 acres of wetlands lost annually
 - represents 80% decline in loss compared to prior decade due to 1993 federal policy
- Sources of loss (FWS 2002)
 - 30% urban development
 - 21% rural development
 - 26% agriculture
 - 23% forestry

Wetlands as ‘collective’ goods



- Failure of markets and governments to efficiently allocate value to wetlands (OECD, 1992)
- Wetlands produce “positive, undepletable externalities”
 - Analogous to a front yard flower garden
 - No income stream for owners of wetlands
 - Incentive for development

Governmental Response and Market Emergence



- Federal command-and-control regulation
 - Clean Water Act of 1972 (1977 Amendments)
 - “Waters of the United States” = ‘navigable waterways’
 - Judicial interpretation eventually includes wetlands (continuing)
- Policy chaos
 - 1984 FWS Status and Trends Report: No change, continued losses

U.S. Clean Water Act of 1972



- Section 404 specifies federal review of wetland development
- Key federal agencies
 - US Army Corps of Engineers
 - EPA
- Initiated National Wetlands Inventory (NWI) based on science-based classification criteria (hydrology, soils, vegetation)
- Legal definitions of wetlands (and use of NWI) was the responsibility of individual state and federal agencies

1985 Federal Food Security Act: Swampbuster provision



- Denies federal subsidies (loans, payments) to farmers who drain wetlands after 1983
- Provided **first federal definition** of wetland written into law
 - Basic criteria:
 - >50% chance of inundation for at least 15 consecutive days during growing season; or
 - 10% of the growing season
 - Note: criteria can vary by type of wetland

1993 Federal Policy Improvements



- Disallowed ditching and drainage loophole
 - Prior rule stipulated that ditching could occur so long as none of the material was placed back on wetland
- Provided more mitigation options
 - Mitigation banks, faster permitting, appeal process
- Reasonable bird rule
 - Migratory waterfowl count as interstate commerce, thus federal review required

Recent Legal Decisions



- *Solid Waste Agency of Northern Cook County (SWANCC) v. Army Corps of Engineers* (531 U.S. 159, 2001)
 - Ended use of migratory bird rule to claim federal jurisdiction
 - Chaos ensues
- *Rapanos v. United States* (S. Ct. No. 04-1034), *Carabell v. Army Corps of Engineers* (S. Ct. No. 04-1384)
 - Suspected wetlands are subject to two ‘tests’ to determine if they are **regulated** wetlands
 - Surface connectivity and ‘significant hydrological nexus’
 - Chaos continues

Governmental Response and Market Emergence

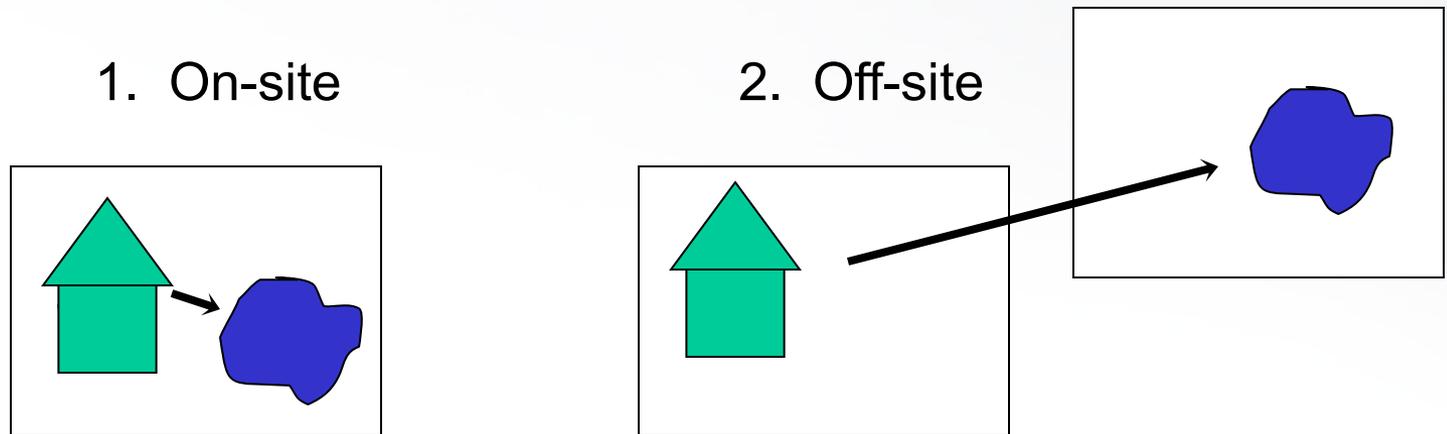


- “No Net Loss” Policy – 1988 Wetlands Policy Forum
 - Prevent a net loss of Nation’s wetland acreage or function
- EPA/Corps 1990 *guidance* on ‘mitigation’
 - Allow continued wetland conversion (takings)
 - Sequencing guidelines:
 - 1. Avoid
 - 2. Minimize
 - 3. Compensate
- EPA/Corps 1995 *guidance* on ‘mitigation banking’; 2000 *guidance* on ‘in-lieu fee programs’
- 2008 Mitigation **Rule**
 - Not a guidance!

How does policy compensate for loss?



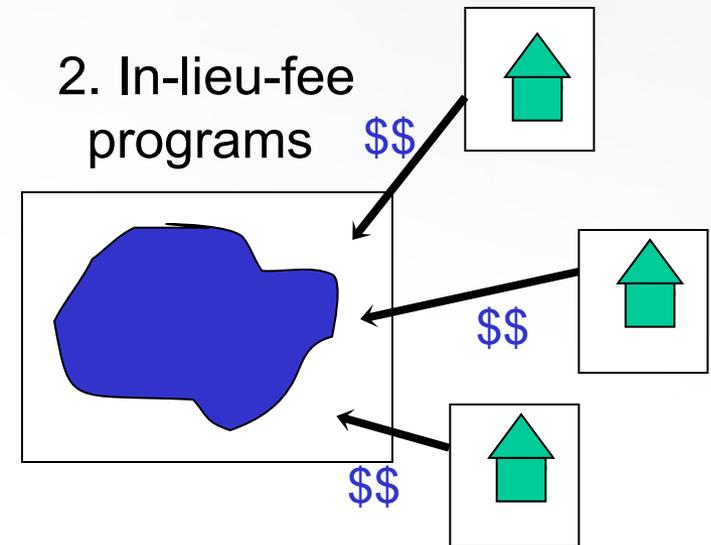
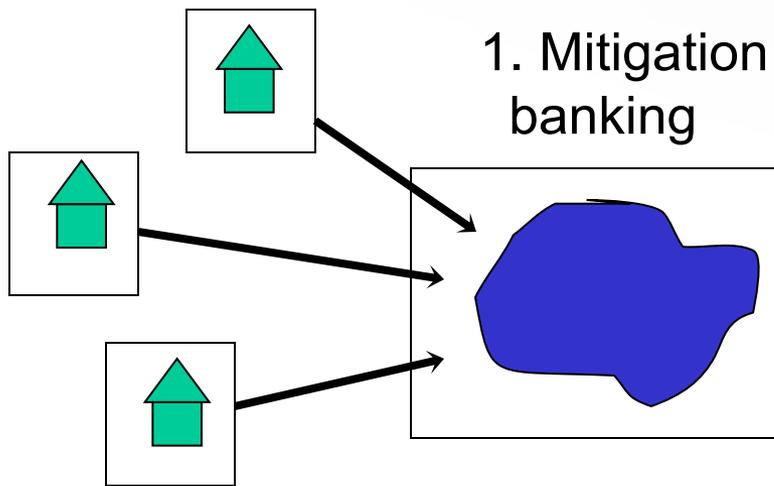
- Compensation of wetland (and now stream) damage through restoration/creation/preservation of alternate wetlands by each developer
 - “Permittee Responsible Mitigation” (Single Project)



How does policy compensate for loss?



- Compensation of wetland damage by paying other people to restore/create/preserve alternate wetlands
 - “Third Party Mitigation” (Multiple projects)



Criticisms of Mitigation



- Ecological issues
 - Strong evidence that mitigated wetlands are not accurate replacements of destroyed (“impacted”) wetlands.
 - Lack of “in-kind” replacement and monitoring
- Social and economic issues
 - Rapid ecological degradation of non-protected urban wetlands
 - Runoff, pollution, invasive species
 - Rural is better!...but maybe not for people.

Consequences of Mitigation

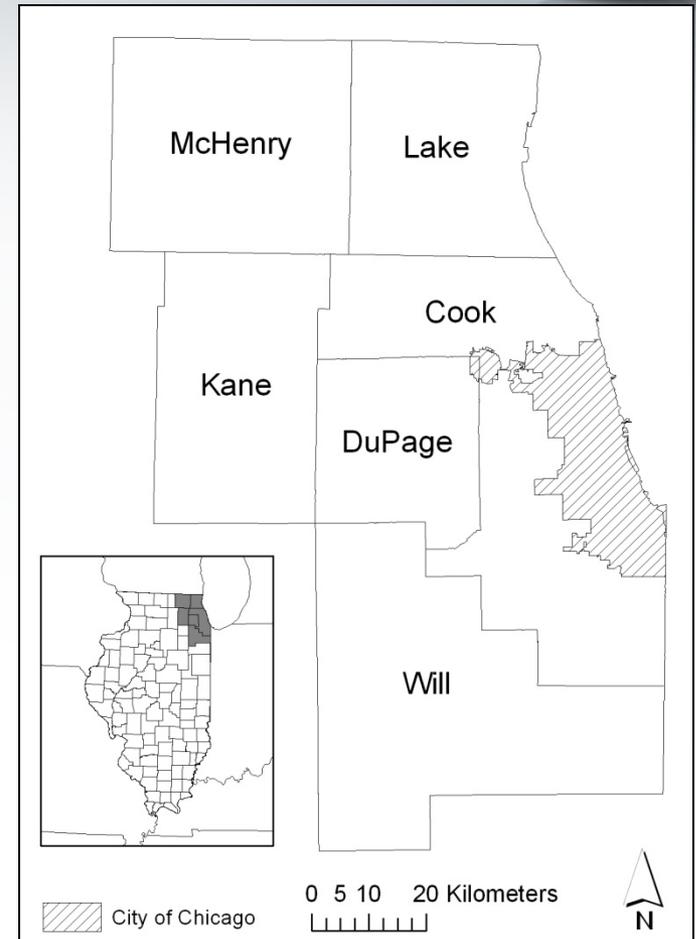


- Affects on local urban amenities
 - Open space, recreation, urban flooding, access to nature
 - Shuts off ecological services and values in one place/time and starts services/values in another
- Spatial effects
 - Evidence that mitigation shifts the location of wetlands and their services
 - Wetland *relocation*
- Social Effects
 - Potentially *redistributes* wetlands between distinct population groups
 - Possible economic equity considerations
- Ecological differences
 - Place-specific ecological processes
 - Barrier wetlands, headwaters vs. downstream wetlands
 - Isolated, fragmented wetlands vs. large, contiguous (SLOSS debate)

A Changing Market: Chicago, IL



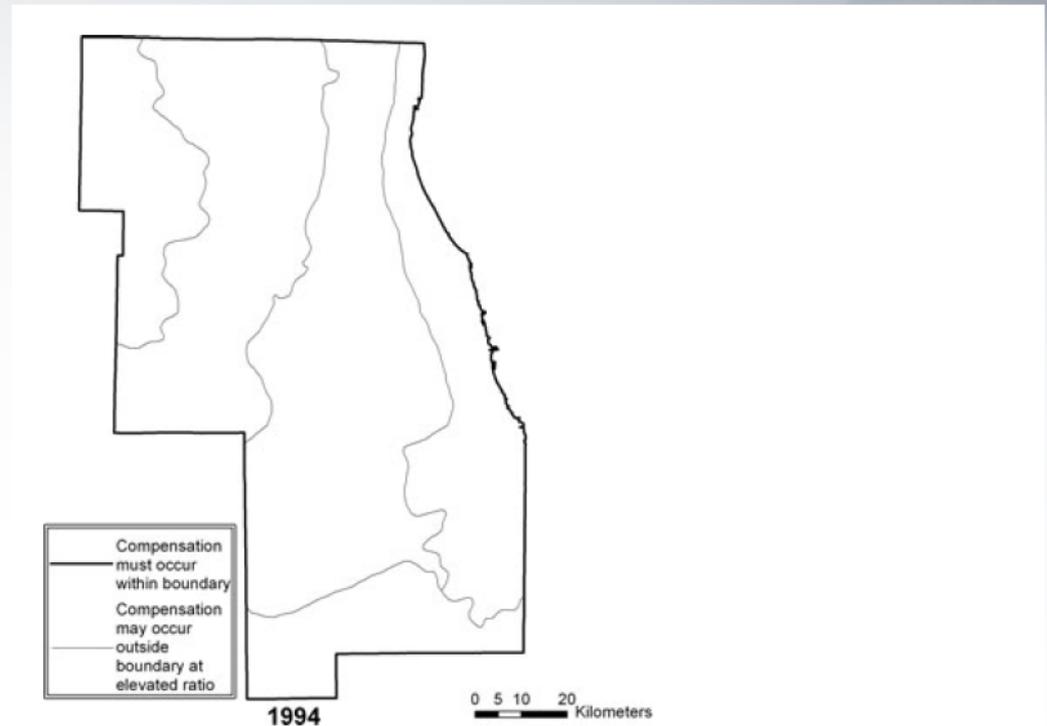
- Six county Chicago District of the Army Corps of Engineers (ACOE)
- 1986-1987 Floods in Fox, Des Plaines, and North Branch of the Chicago Rivers
 - Awareness of flooding problems and wetland destruction
 - Counties to enact storm water ordinances
 - DuPage (1992, 1994), Kane (2001), Lake (2002)
- Home to active mitigation banks and ILF programs (County and Corlands)



Spatial Markets and Fragmentation through Changing Law



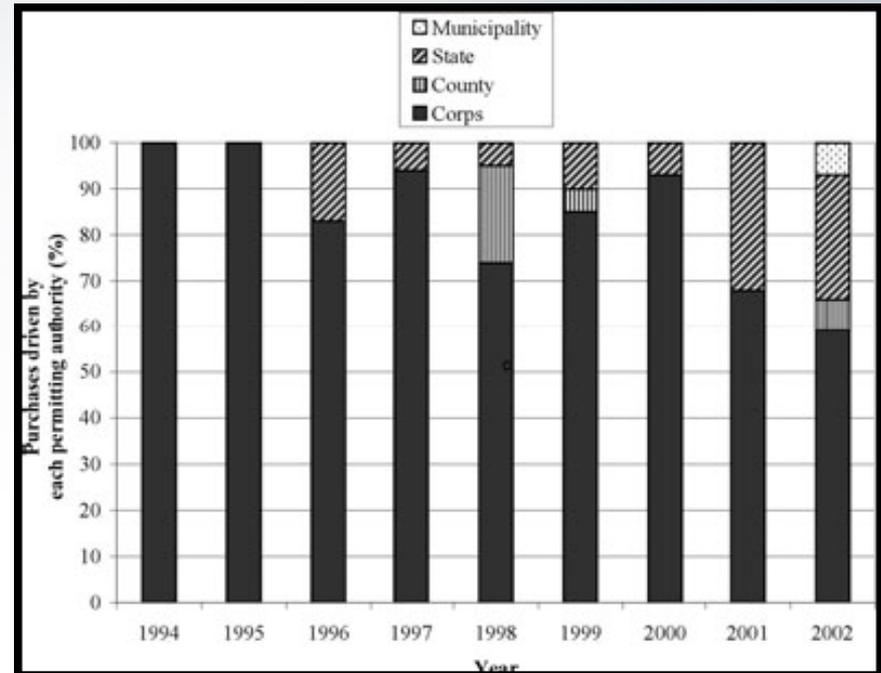
- Until 2001, permitting largely responsibility of Corps
- **SWANCC case** – created need for county-level permitting
 - Counties require mitigation within their boundaries
 - Fragments spatial markets



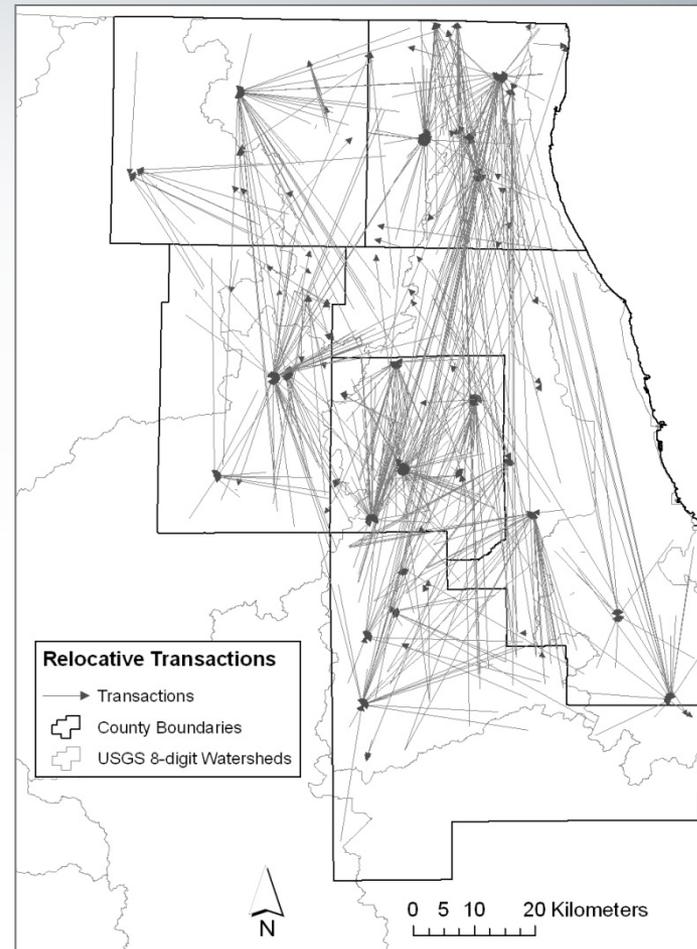
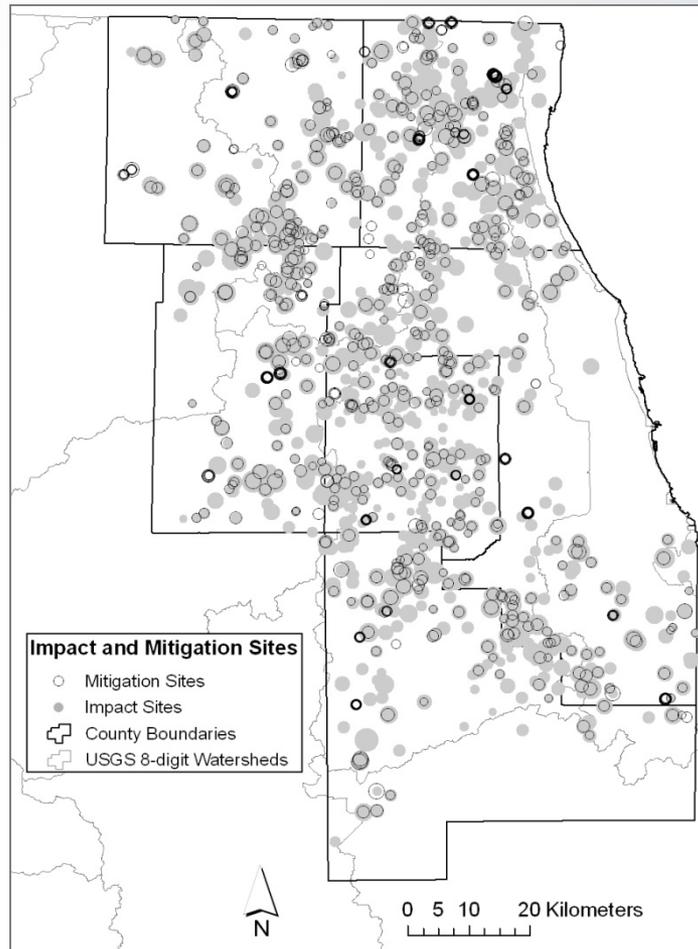
Changing Law affects Market



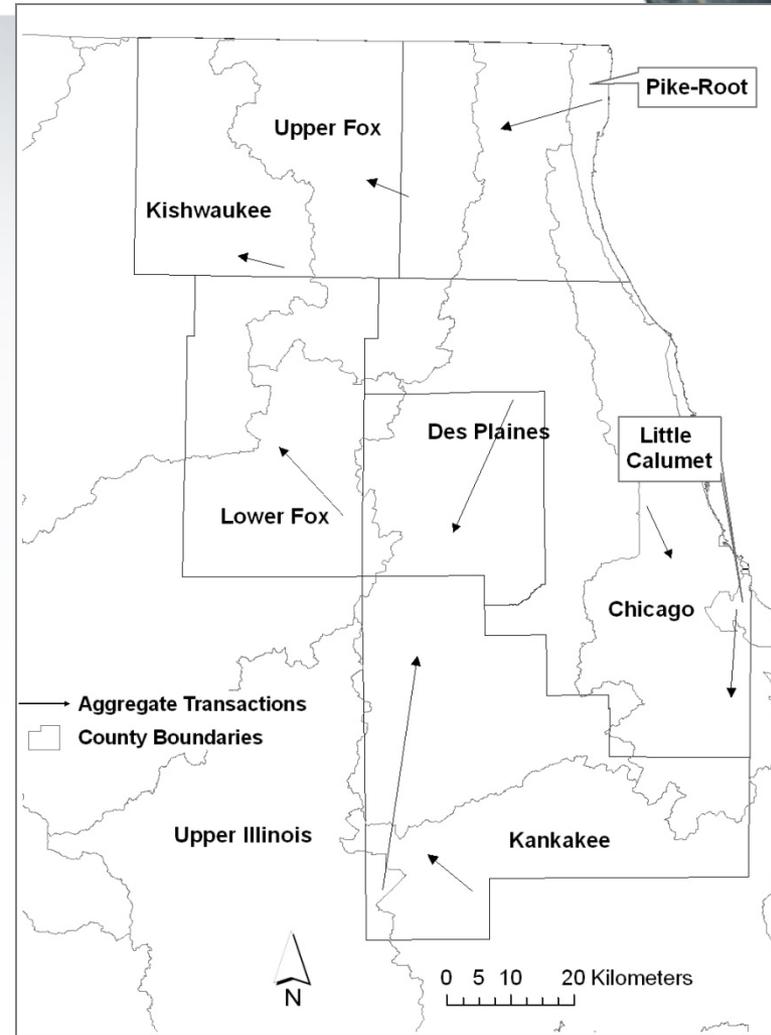
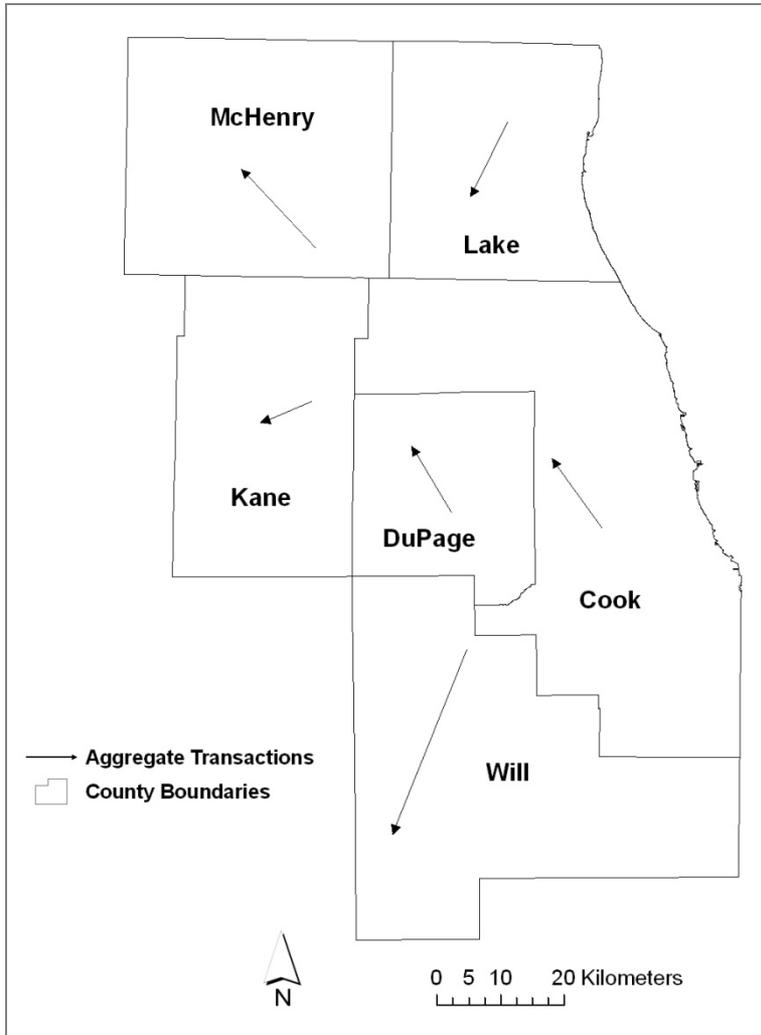
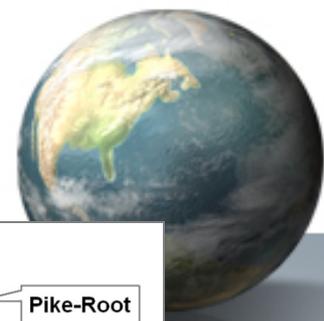
- Market fragmentation hurts bankers



Spatial Effects of Chicago Market



Aggregate Transactions

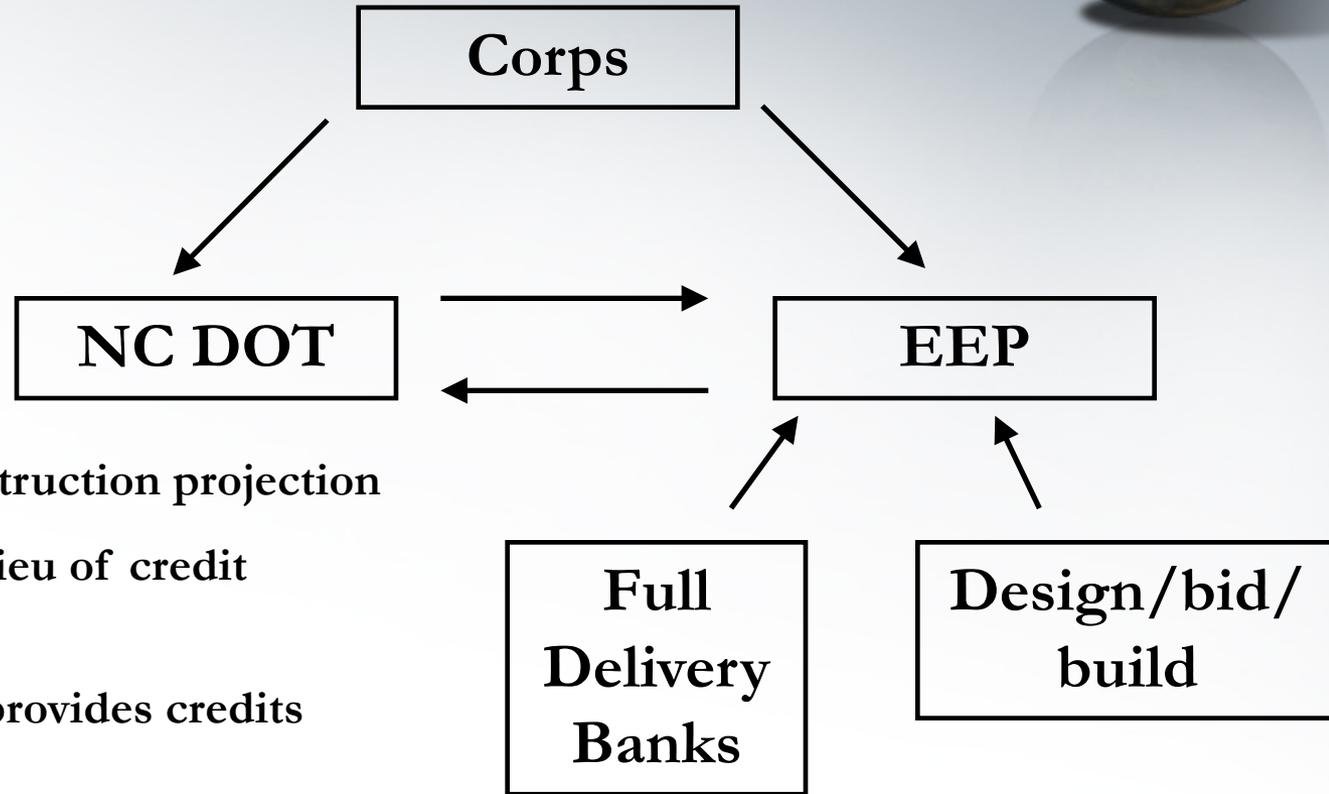


A 'Masked Market: North Carolina



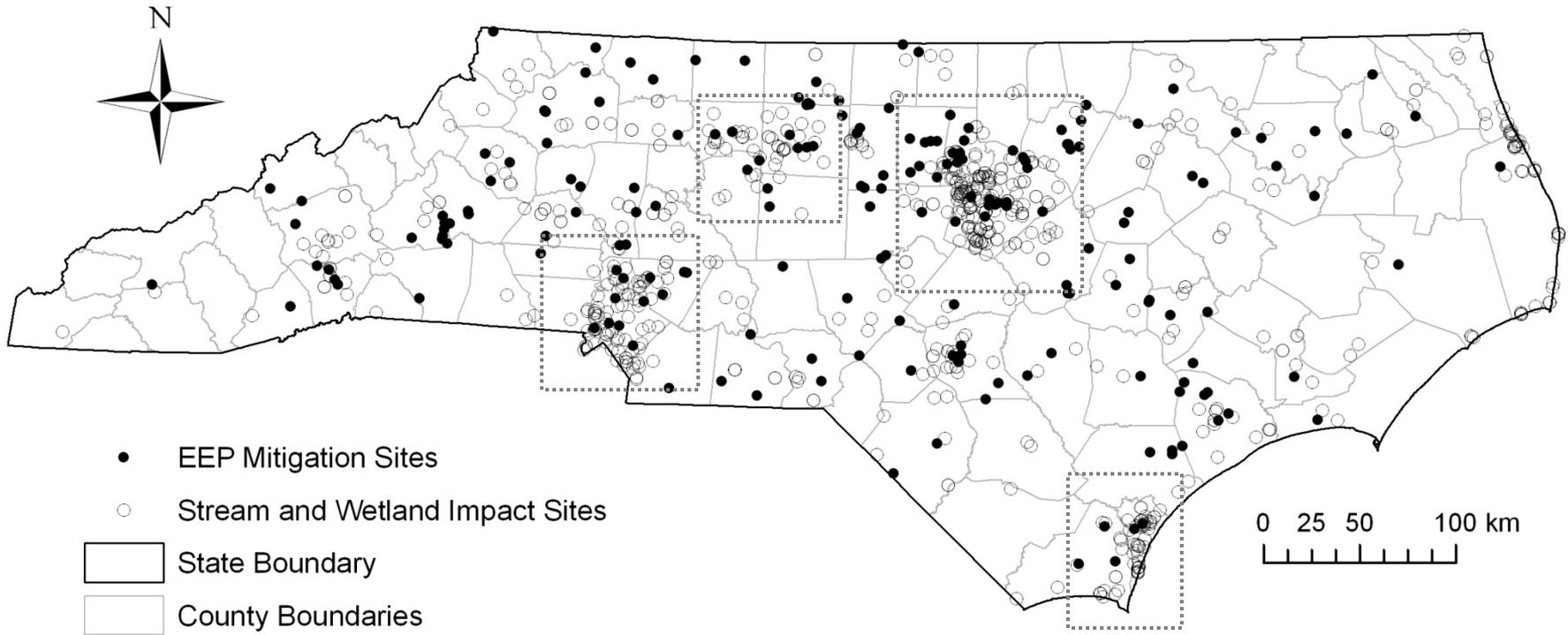
- 1989 – NC General Assembly passes Highway Trust Fund Act
 - Increases Section 401 and Section 404 permit needs
 - Fin du Monde: **delayed road construction**
- NC DWQ – Responsible for CWA Section 401 Water Quality Certification Program
- DOT performed own restoration until 1996
- Wetland Restoration Program (WRP) in 1996
- Established Ecosystem Enhancement Program (EEP) in 2003

Organizational Design

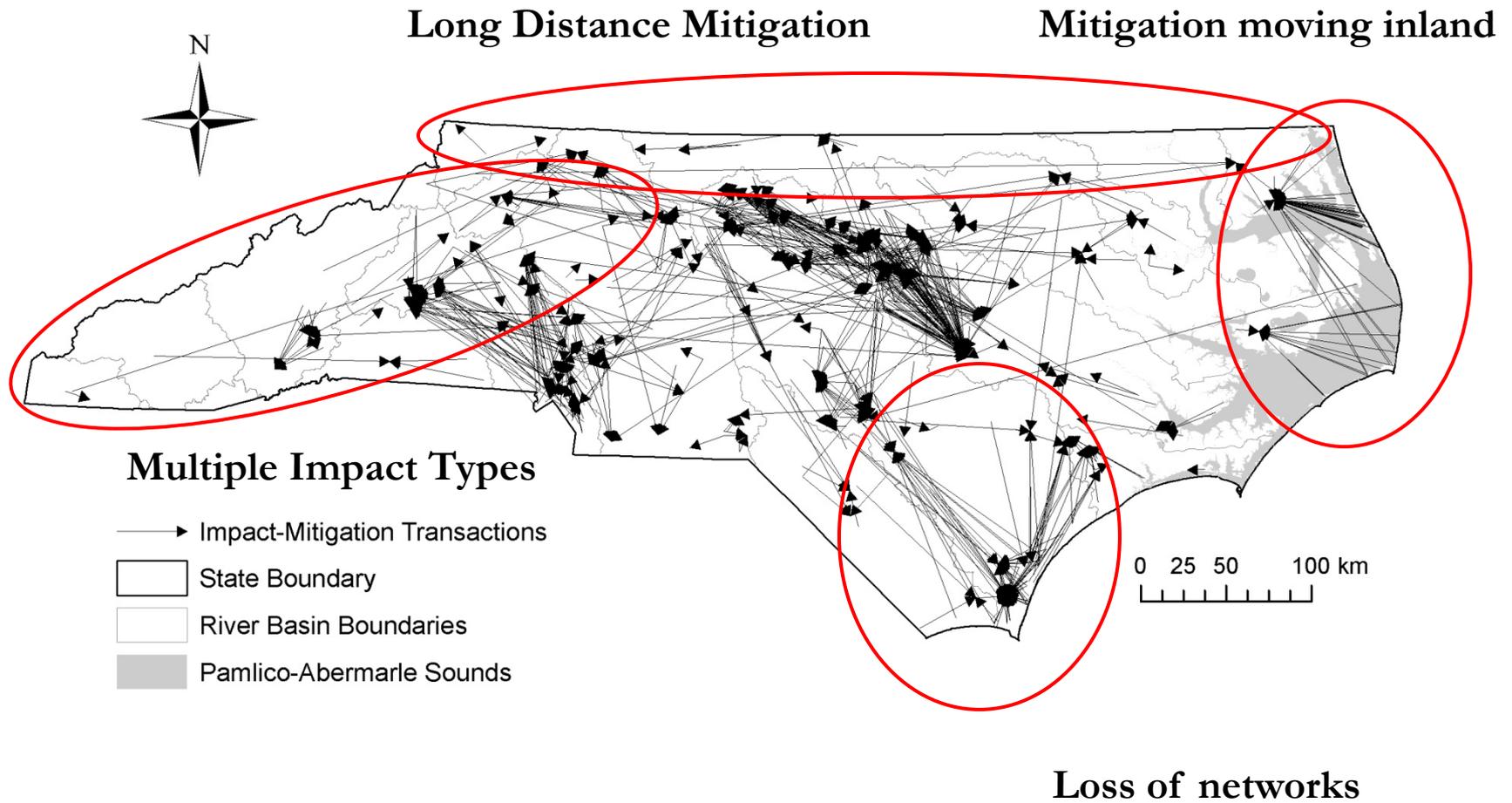


- **NC DOT** provides construction projection
- **NC DOT** pays a fee in lieu of credit production
- **EEP** accepts fees and provides credits (liability hand off)
- Originally just for DOT, but now used widely by private developers

EEP Impact and Mitigation Sites



EEP Mitigation Transactions



Ecological Criticism of EEP



- EEP Restoration sites have not been effective (Penrose 2006)
- No project has met basic ecological success criteria to date

Economic Criticism of the EEP

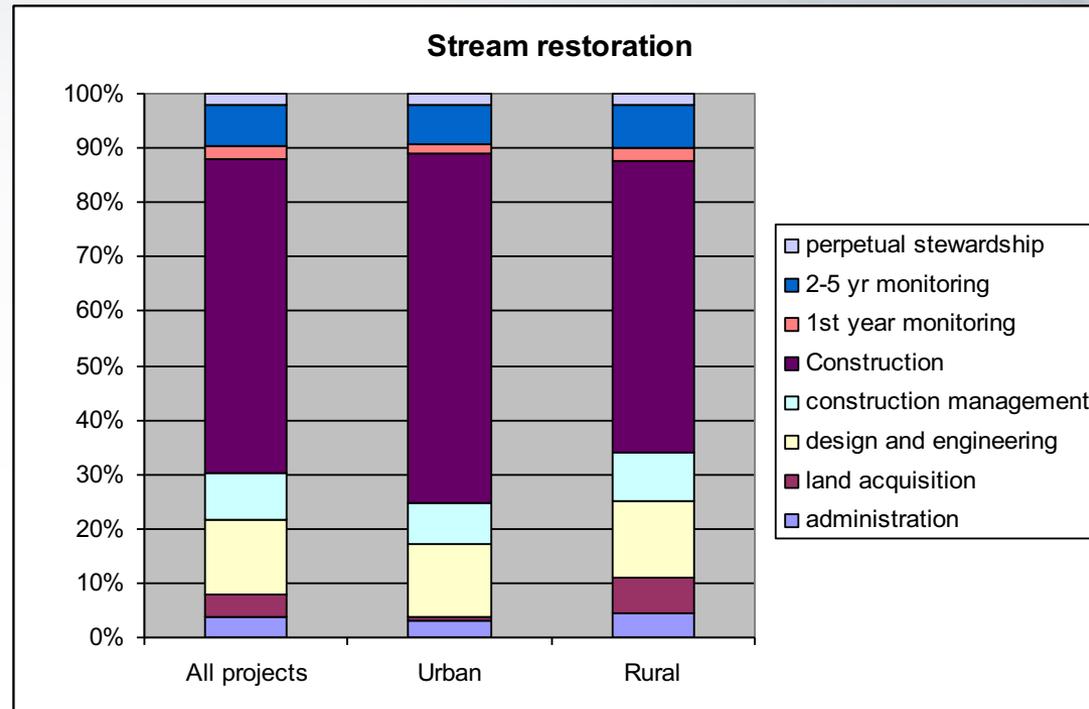


- Approximately \$48 million spent on design-bid-build stream restoration by EEP
 - 191,374 total linear feet restored (128,997 ft in 25 rural projects and 62,377 in 19 urban projects)
- EEP has ‘bought high, and sold low’ (Templeton 2006)
 - Costs \$287/linear ft, sold at \$232/linear ft
- Because EEP is undercharging for credit production, private banks have difficulty competing
- Because EEP has misjudged credit creation in many areas
 - Undershot in many urban areas, overshot in rural areas (Dye 2007)
- Urban-rural migration issues

Public Lands Issue



- EEP preferentially works with municipalities and others that donate land (e.g., UNC)
- Bankers primarily work with private landowners (imagine asking for land to make profit)
- Inequality of land acquisition costs
 - EEP undercutting private bank system?



Summary: Wetlands/Streams and the Mitigation Paradigm



- “Mitigation paradigm”
 - Restoration and market for restoration credits are panacea for environmental damage
- We see problems
 - Markets are spatial: space matters
 - Commodification is different – many types of wetlands
 - Restoration takes time – discounting is important
 - How do we enforce regulations and promote efficiency in the mitigation system?
- How and when can environmental restoration be promoted in an economically efficient manner, as well as ecologically *and* socially responsible manner?
 - Who wins? Who loses?
- What role does planning play in all of this?