

DUCKS
UNLIMITED



Terrestrial Carbon Sequestration

Wetlands Restoration and the Emerging Carbon Market

USDA Forest Service Spring Seminar

May 10, 2006

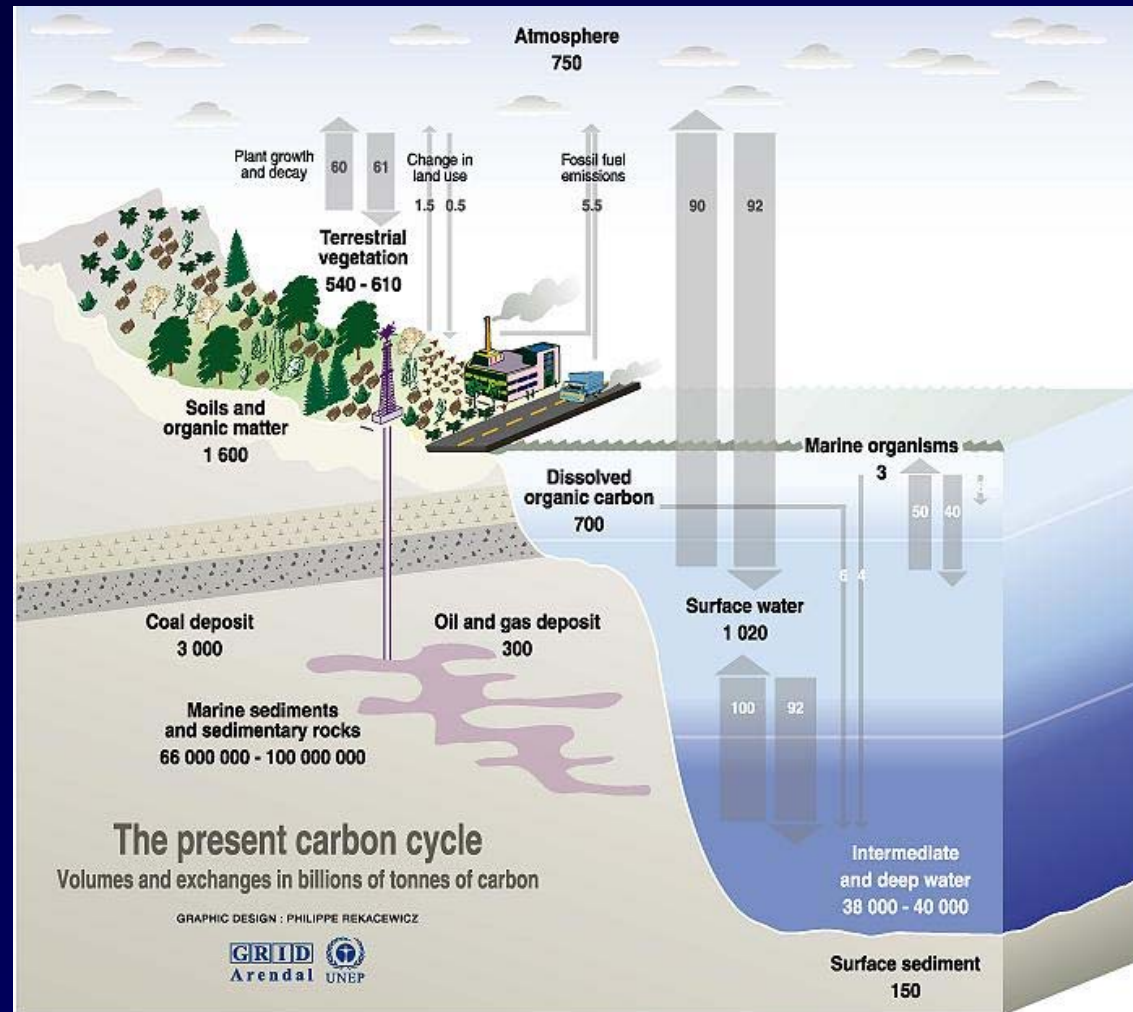
Washington, DC



Dick Kempka
Director of Energy & Technology Partnerships
Ducks Unlimited, Inc
National Headquarters
Memphis, TN

OUTLINE

- DU Background
- Carbon Sequestration
- Policy/Markets
- Projects



Sources: Center for climatic research, Institute for environmental studies, university of Wisconsin at Madison; Okanagan university college in Canada, Department of geography; World Watch, November-December 1996; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge press university, 1996.

Ducks Unlimited's Mission



Conserve, restore and manage wetlands and associated habitats that benefit North America's waterfowl, other wildlife species, and people.



BIG GRASS MARSH DUCK FACTORY No. 1
RESTORED AND MANAGED BY DUCKS UNLIMITED

- More than one million supporters
- 700,000 adult members
- 75,000 youth members
- 50,000 volunteers
- Staff of 1,000 in U.S., Canada, & Mexico
- Annual Operating Budget of \$200 million (over \$1.5 billion raised)

Focusing Our Efforts

**Scientific Data on
Habitat and Population
Trends**

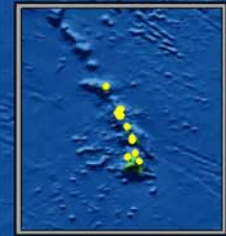
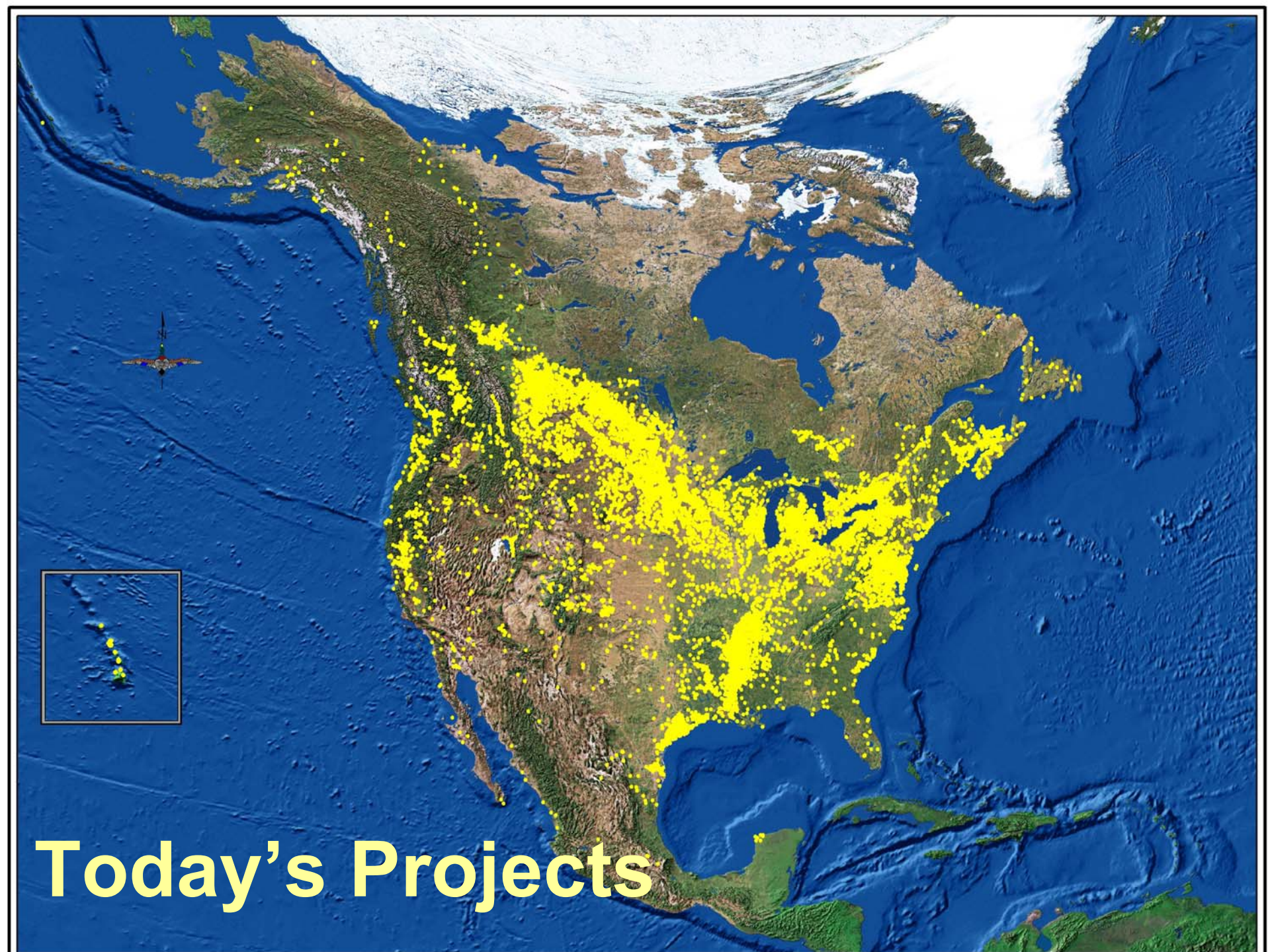
**Scientific Data
on Waterfowl Ecology**

**International Conservation Plan
(Strategic Plan)**

Initiatives

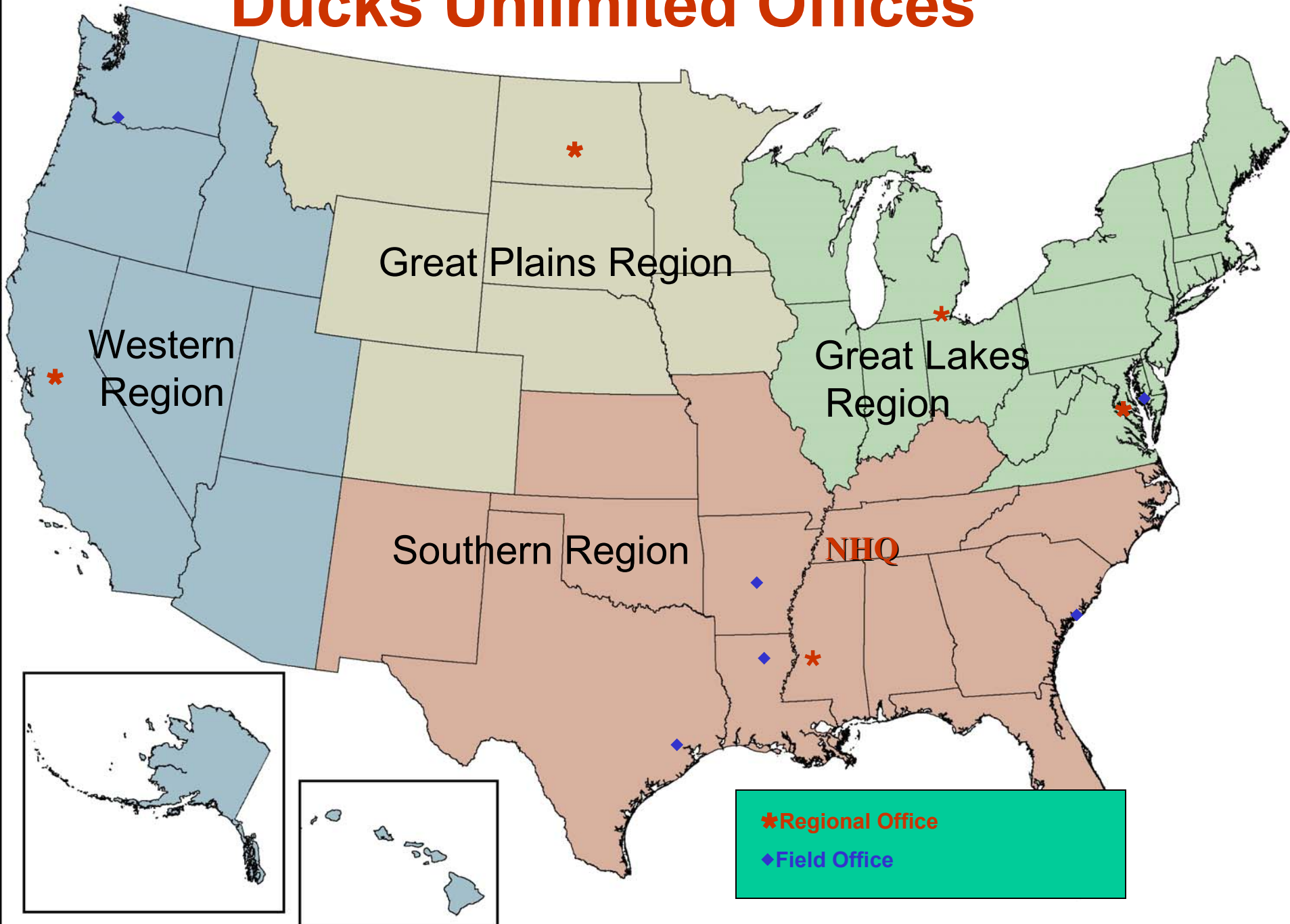
Focus Areas

Projects

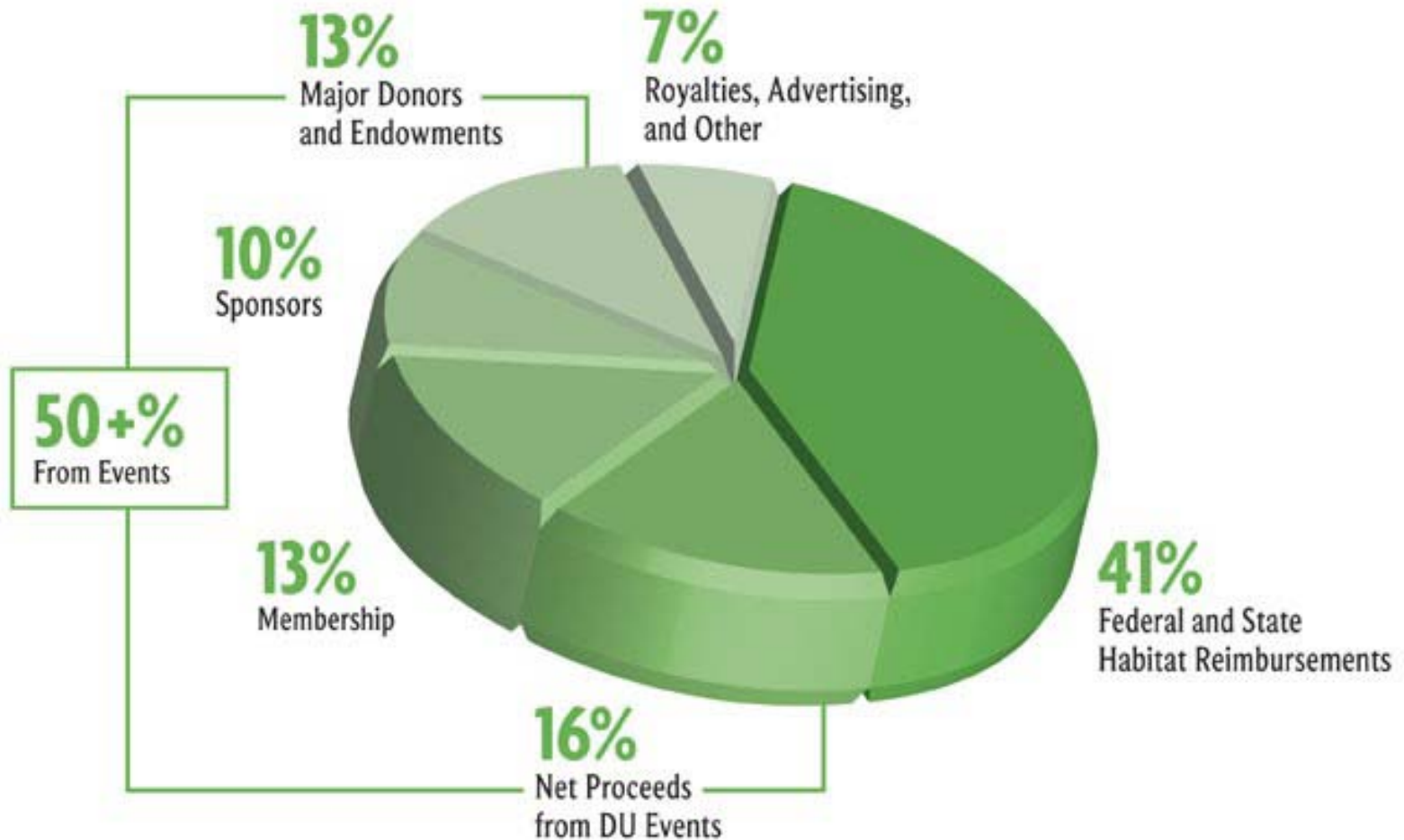


Today's Projects

Ducks Unlimited Offices



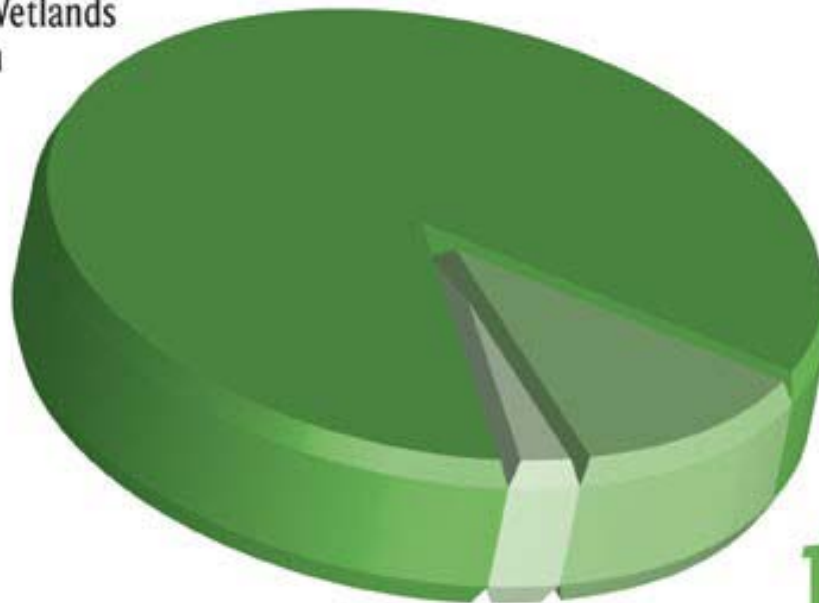
Where the Cash Comes From



The Efficiency of DU

85%

Waterfowl/Wetlands
Conservation



12%

Fundraising and
Development

3%

Administration and
Human Resources

Technical Review on *Global Climate Change and Wildlife in North America*



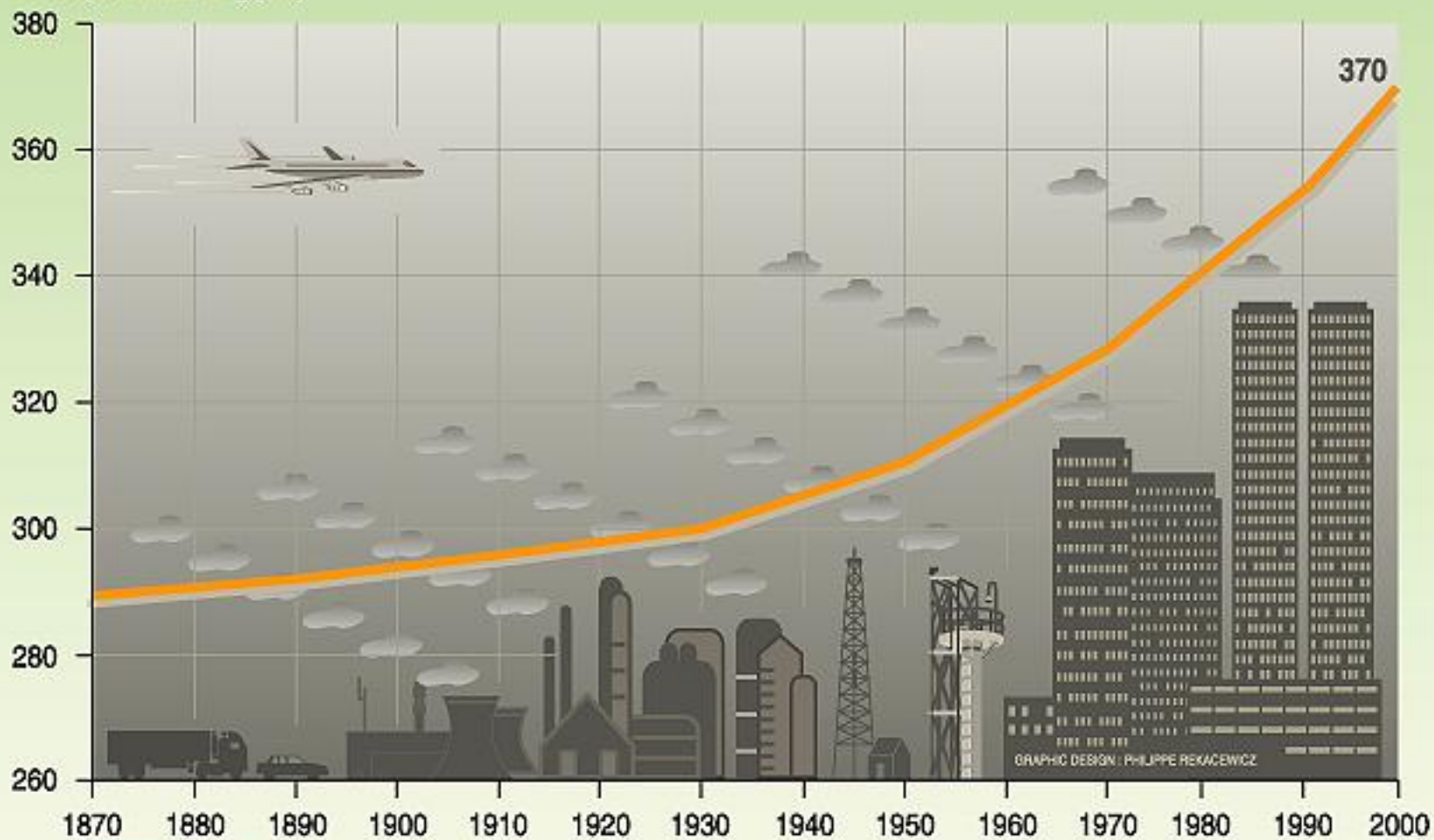
Case Study – Waterfowl

Prairie Potholes Prediction by 2080's:

- Significant declines in wetlands (from no change to -91%)
- Declines in the abundance of breeding ducks (-9% to -69%)

Global atmospheric concentration of CO₂

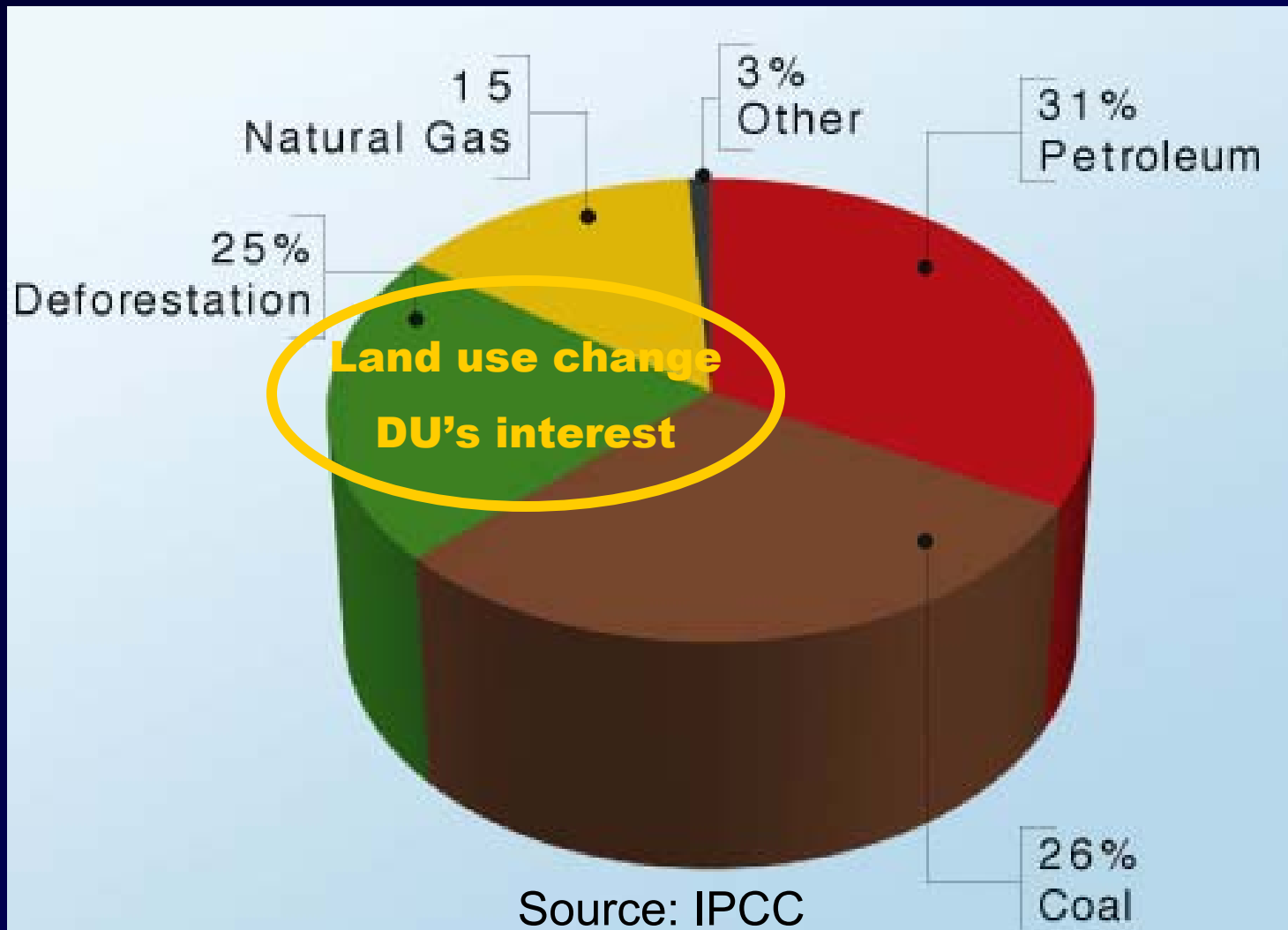
Parts per million (ppm)



GRU
Arendal UNEP

GRAPHIC DESIGN: PHILIPPE REKACIEWICZ

ANNUAL GLOBAL CO₂ EMISSIONS CAUSED BY HUMANS



Sources of CO₂ Emissions

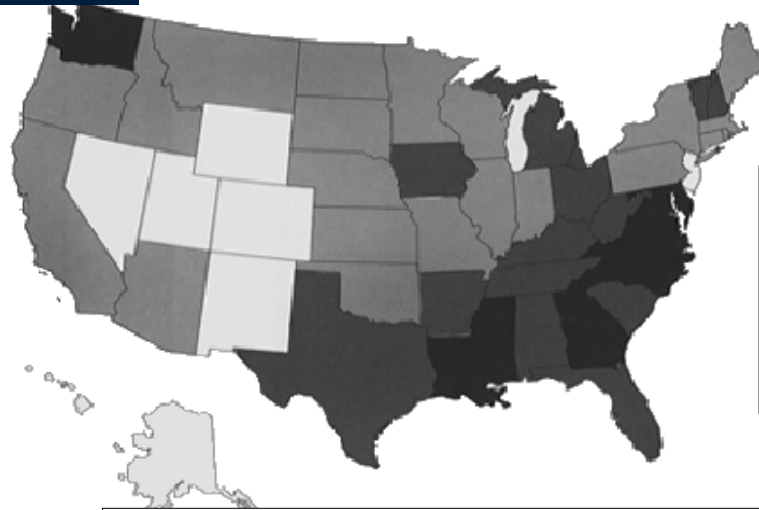
Carbon Sequestration







occurs when forests, grasslands, and seasonal wetlands capture carbon in plants and soil removing it from the atmosphere



“The rate of accumulation of carbon in live trees is greatest in the forest areas where trees have the fastest volume growth, the Southeast and the Pacific Northwest.” *Carbon Storage and Accumulation in United States Forest Ecosystems, USDA-Forest Service*



LEGEND

	0 to 800	lbs/acre/year
	800 to 1,400	lbs/acre/year
	1,400 to 2,000	lbs/acre/year
	2,000 +	lbs/acre/year

**Average Carbon Storage in Live Trees
on Forest Lands in the United States**

Role of Terrestrial Ecosystems in the Global Carbon Cycle...

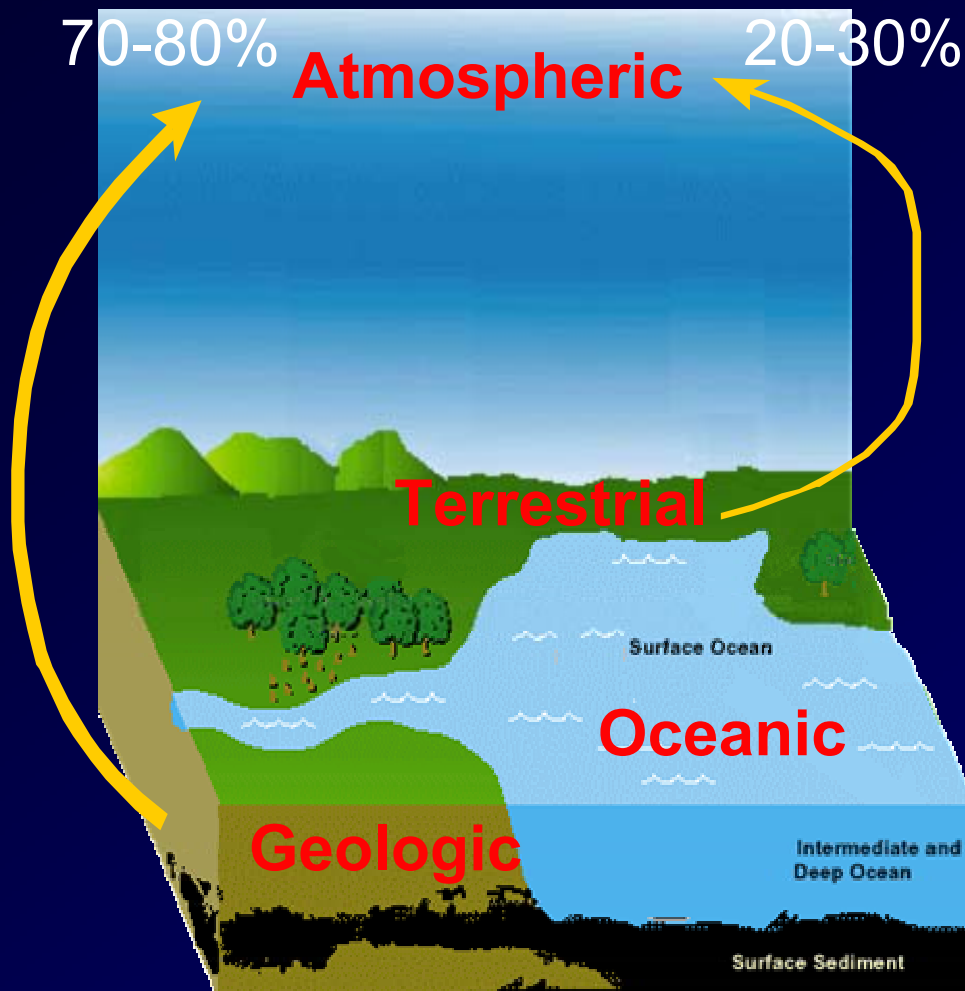
"The ultimate focus is on C sequestration at the landscape/regional scale, and this is based on the premise that land-use and ecosystem management offers the greatest potential for enhancing C storage in terrestrial ecosystems."

US Dept of Energy, 2002

...25-50% of U.S. fossil fuel emissions (at 1996 emissions rate) may be sequestered annually...



The Status of the Terrestrial Ecosystem in the Global Carbon Cycle...



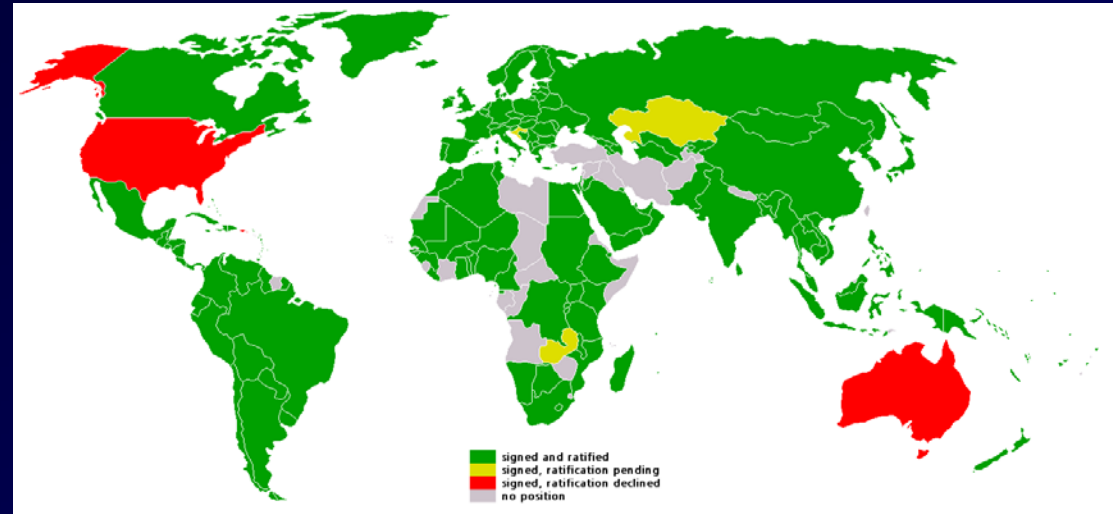
“The dominant drivers in terrestrial carbon emissions have been the conversion of forest and grassland to crop and pastureland, and the concomitant depletion of soil carbon from conventional agricultural management practices.” USDA 2002



Emerging Climate Change Policy

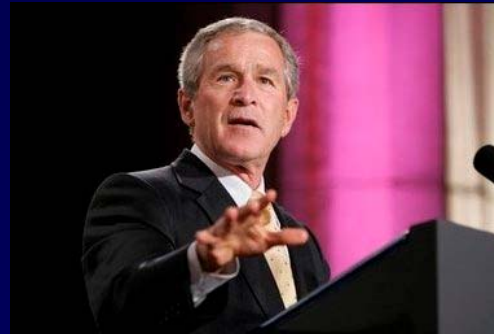
- International

- Kyoto protocol ratified February 16, 2005
- Sets carbon emissions caps by nation



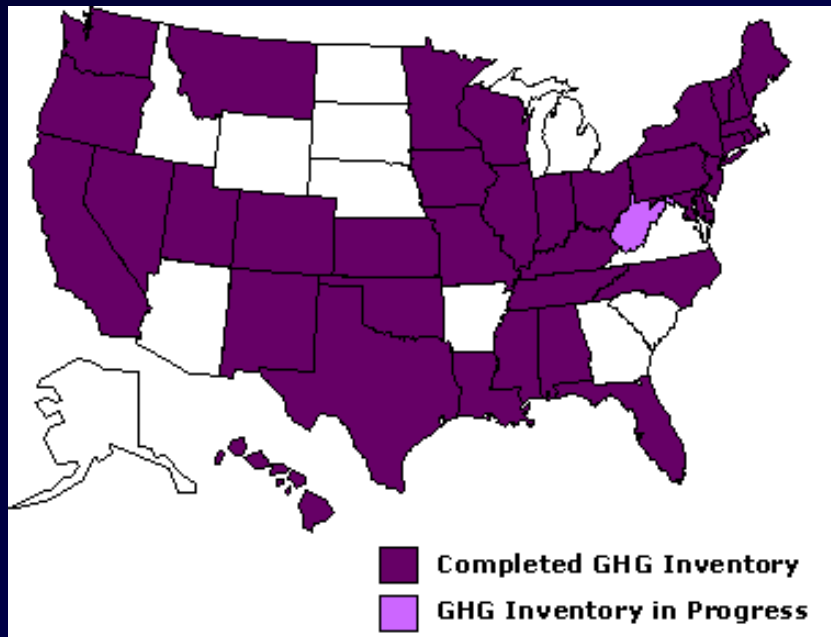
- National

- CO₂ Caps
- Carper, Alexander, Chafee

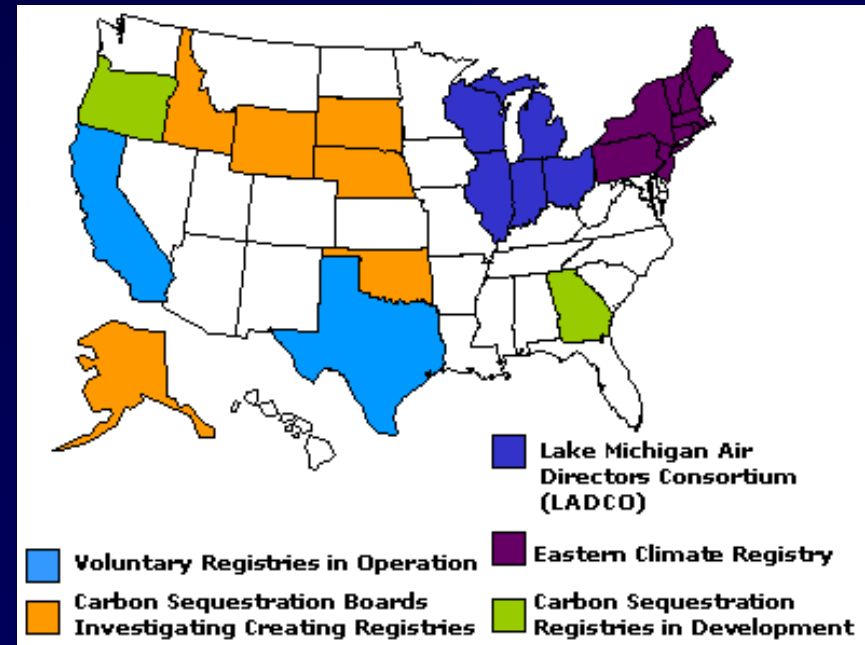


Carbon Policy Emerging

Nothing national yet, but likely in the future



States with Greenhouse Gas Inventories



Greenhouse Gas Reporting & Registries

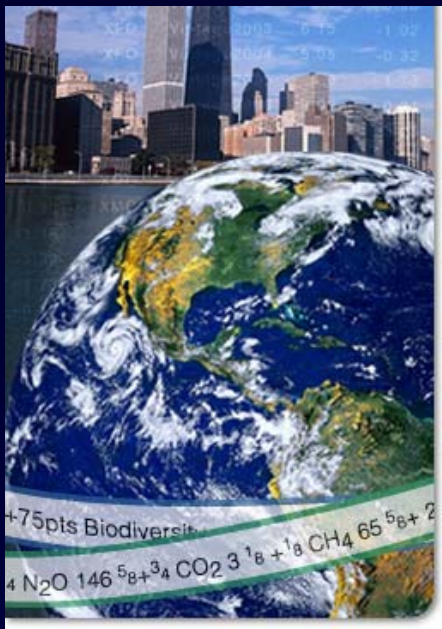
Special Report: London leads in carbon market
Trading in emission allowances has reached £40m a day and is set to grow rapidly

Potential annual European trading volumes in carbon of 2.7 billion tonnes – worth £37 billion at current market prices. This figure would increase hugely if America decided to join.

- *The Sunday Times – London, August 2005*

Carbon Trading Markets

Volume and price is rising!



European Union Emissions Trading Scheme (EU ETS)



Close Change

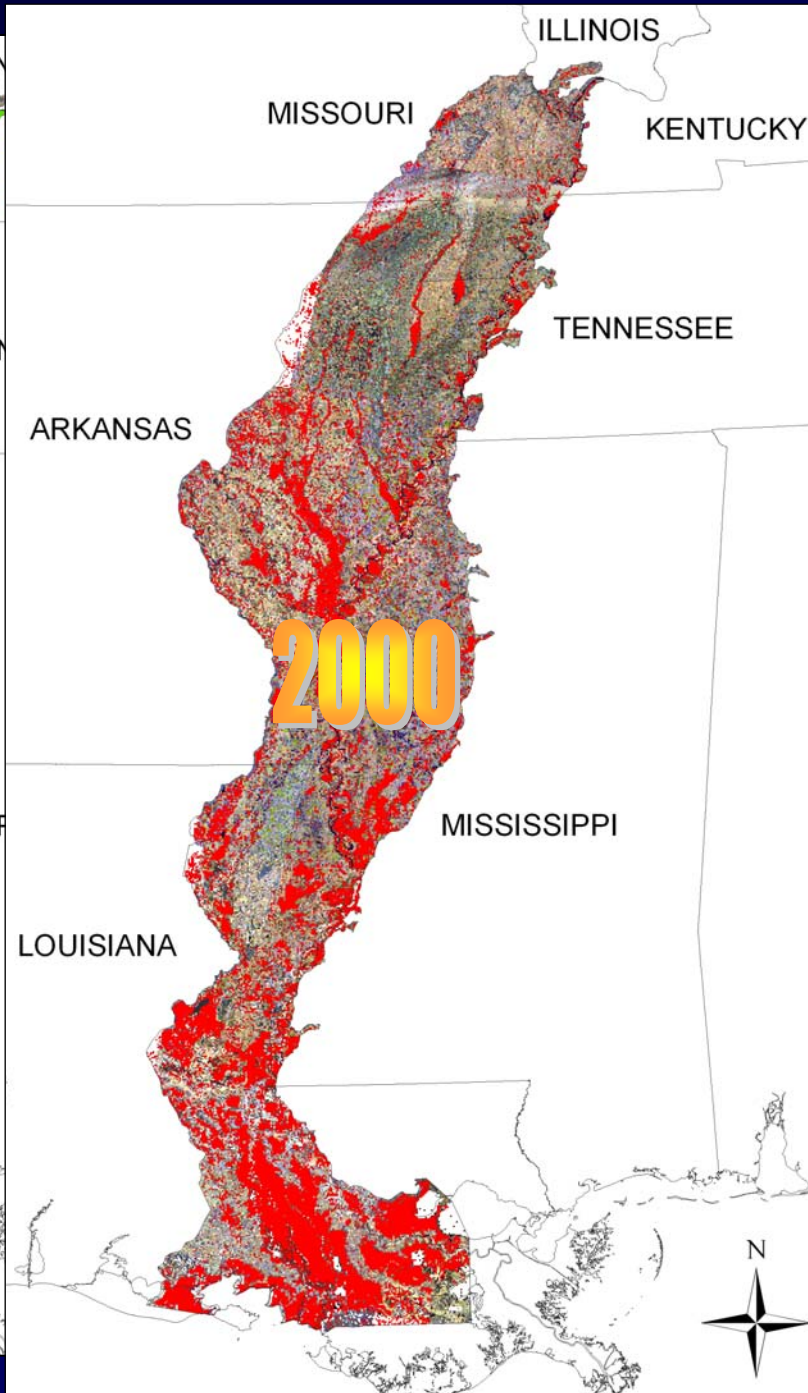
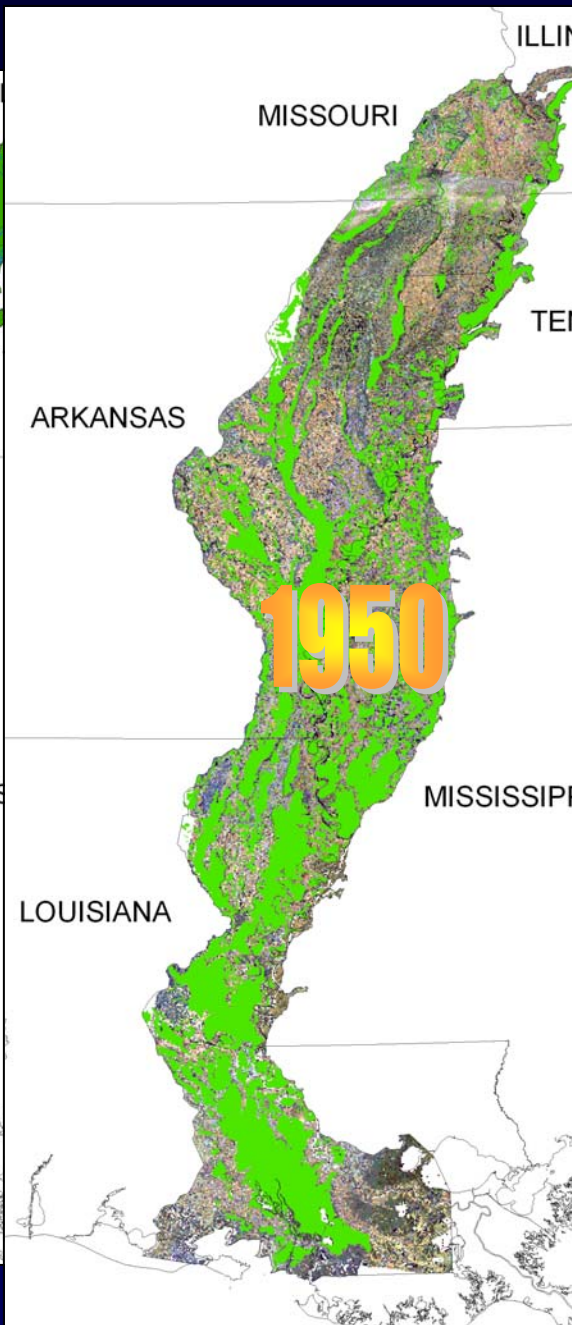
Vintage 2003	\$3.50	-0.80
Vintage 2004	\$3.45	-0.85
Vintage 2005	\$3.45	-0.85
Vintage 2006	\$3.45	-0.80
Vintage 2007	\$3.65	-0.90
Vintage 2008	\$3.65	-0.75
Vintage 2009	\$3.65	-0.75
Vintage 2010	\$3.65	-0.90

USD \$31.20

Mississippi River Basin

Draining 41% of U.S.
"Body of the Nation"





Agricultural Expansion in the Mississippi Valley

Environmental Issues

- Wetland loss
- Systemic water quality degradation
- Loss of natural flood storage
- Flood control/drainage controversies
- Impacts to federal trust species



Need = Restore Forests and Winter Water



**Over 35 million seedlings planted
and 195,000 acres of forests
protected, restored, or enhanced.**

PRAIRIE POTHOLE REGION



Grasslands provide secure nesting cover



62% (56 million acres) of grasslands converted to cropland in the U.S. Prairie Pothole Region.



70% of wetlands drained or filled
in U.S. Prairie Pothole Region

The Need = Conservation of Grasslands and Wetlands

Ducks Unlimited's Response:

- **Restore grasslands on marginal cropland.**
- **Protect existing grasslands and wetlands with long-term easements.**

Conservation Easement

Tremendous opportunities on private land!

- **Legal agreement with the land owner to protect the property from development**
- **Easement is recorded with the deed and stays with the land if sold**
- **Endowment Fund is setup for DU to monitor the site for the long term**
- **Convey carbon offsets to investor in a separate agreement**

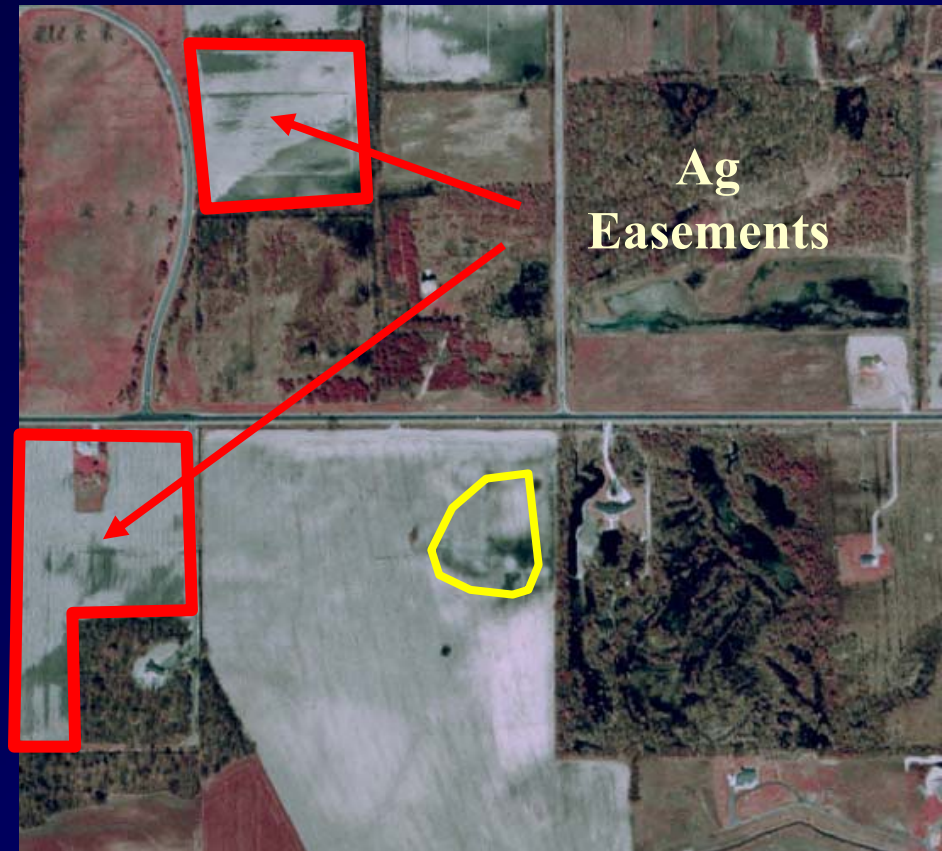
Project Breakdown

1. Investor expresses interest in carbon offset purchase
2. DU assesses candidate properties using GIS



LMVJV-Habitat Monitoring Database interface showing a table of records. The table has columns for Ownership, Program Type, Contract Dur, Managing Of, General Vicin, Site Name, and Estimated Ac. The current record is 346 of 821.

Ownership	Program Type	Contract Dur	Managing Of	General Vicin	Site Name	Estimated Ac
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	Lake Long Ce	22.52
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	Lake Long E	24.16
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp		17.33
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	West Central	44.4
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	N Central 310	293
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	N Central 200	187.09
Public	Refuge	Perpetual	CACHE_RIVER	1.5mi N/W of	Walker Ceme	182



Project Breakdown

3. Legal agreements – DU & Investor and DU & Landowner

4. Wetland and upland restoration design



Project Breakdown

5. Project delivery – vegetation and hydrologic restoration



Project Breakdown

6. Monitoring & Verification



7. Communication and Publicity

Media coverage.



Focus on conservation

Ducks Unlimited funds habitat preservation

Washington, D.C. (UPI) — Ducks Unlimited has announced a \$10-million grant to fund the restoration of wetlands in the state of Michigan. The grant will be used to purchase and restore 1,000 acres of wetlands in the state of Michigan. The grant will be used to purchase and restore 1,000 acres of wetlands in the state of Michigan.



Ducks benefit from wetlands

Group supporters raise one billionth dollar

Ducks Unlimited continues its dedication to waterfowl for the year.

WASHINGTON, D.C. — Ducks Unlimited celebrated the one billionth dollar in its support for waterfowl conservation. The group's supporters have raised more than \$1 billion for the organization since its founding in 1981. The group's supporters have raised more than \$1 billion for the organization since its founding in 1981.

Well-respected on Capitol Hill.



GREAT LAKES/ATLANTIC REGIONAL OFFICE

Wisconsin Conservation Report 2005

Wisconsin Habitat Happenings

Ducks Unlimited

Rush Lake

The conceptual plans to restore historic Rush Lake in Winnebago County have been completed. Restoration plans include replacing the water control structure on the Waukau Creek outlet and stream channel dredging to enhance water management capabilities. Following construction, the 3,000-acre lake will be drawn down for two years in an effort to reestablish bulrush and other beneficial moist soil plants. Construction is scheduled to begin in spring 2005 followed by the drawdown in spring 2006. Ducks Unlimited will be providing engineering services (survey, design & construction oversight) and \$100,000 towards this restoration. Partners in this project include Ducks Unlimited, the Wisconsin DNR, Fox River Natural Resources Damage Assessment, North American Wetlands Conservation Council, Winnebago County Land & Water Conservation Department, Pheasants Forever, Winnebago County Conservation Club, Bohn Farms, U.S. Fish and Wildlife Service, Lake Poygan Sportsman Club, U.S. Environmental Protection Agency, Jack Quigley, Tony Herbst, Gerald Berger, Lake Butte des Morts Conservation Club, Rush Lake Watershed Restoration, Inc., Ron Nielsen, Tri-County Powerboat Association, Oshkosh Area Community Foundation, and Tom Metz.

Northwest Pool - Uihlein Waterfowl Production Area

Ducks Unlimited engineers have finalized project plans to rehabilitate the Northwest Pool on Uihlein Waterfowl Production Area in Winnebago County. Permits have been applied for and the project will be put out to bid for construction once they are received. The project will rehabilitate 44 acres of wetland by renovating two existing levees and installing a new water control structure. Water will be supplied to the unit by an existing pump installed by DU. These improvements will allow managers to mimic natural wet-dry cycles to produce a diversity of wetland vegetation to maximize habitat for migratory birds and other wetland wildlife. Partners in this project include the U.S. Fish & Wildlife Service, Ducks Unlimited and Fox River Natural Resources Damage Assessment.

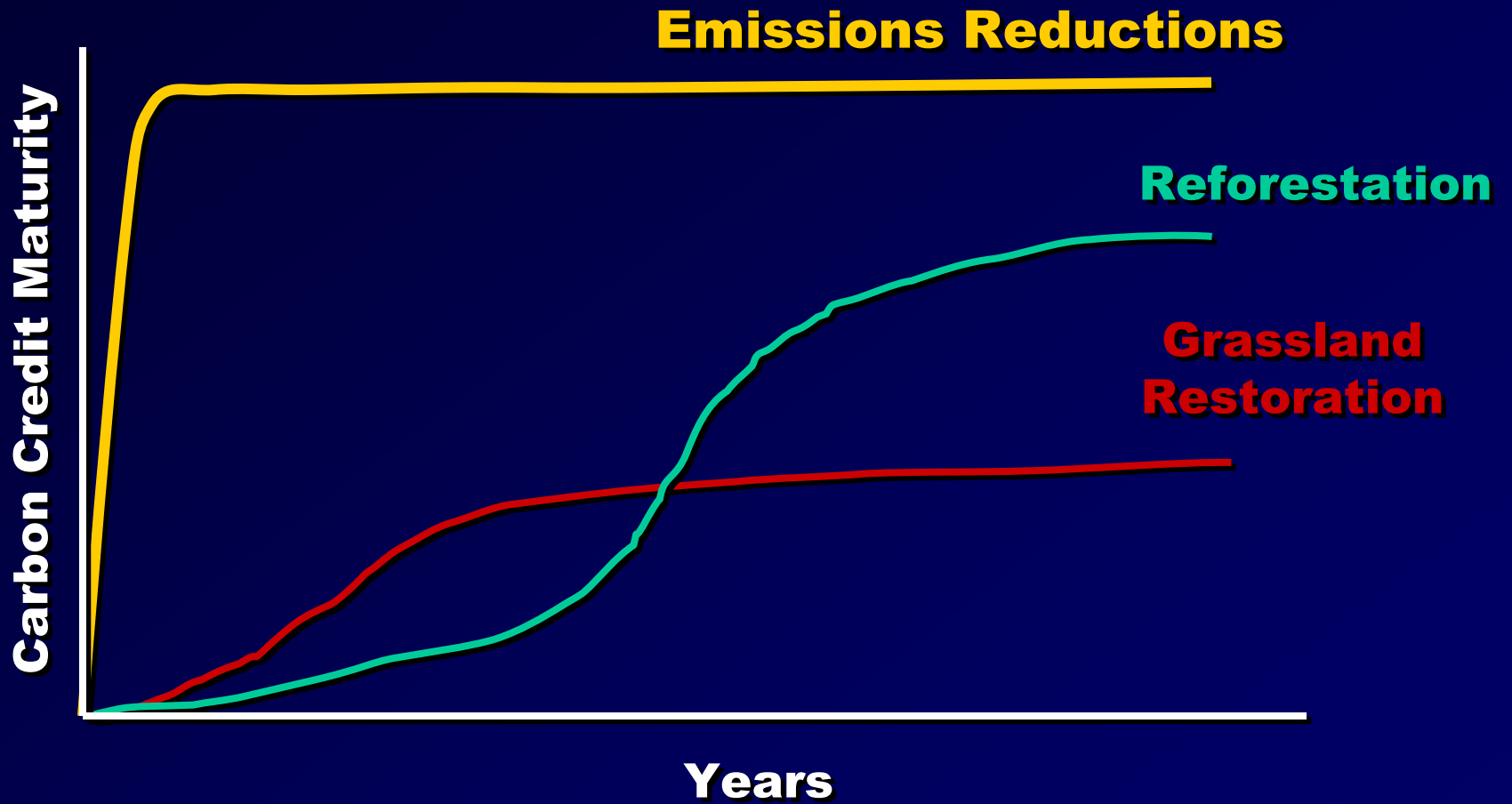
www.ducks.org
Great Lakes/Atlantic Region

Carbon Benefits


“Many type of wetland restoration have substantial carbon sequestration benefits.”



Portfolio Diversity



DU Approach

- DU will use easements to aggregate the carbon offsets for sale.
 - Transfer of potential carbon offsets to investor for restoration of private lands.
 - Cost of \$3-7 per ton of CO₂ compared to \$15-\$150 per ton to reduce emissions via energy efficiencies.
 - Capability to restore and/or secure easements that will generate 1 million ton + of CO₂ offsets annually.
 - Programs can be delivered across Western Hemisphere.
- 
- A photograph of two men in light-colored shirts and dark pants crouching in a vast, green field, possibly a prairie or grassland. They appear to be examining something on the ground. The background shows a flat horizon under a clear sky.



CINERGY®

Over 1600 acres!

PowerTree Carbon Company, LLC

The image is a promotional graphic for PowerTree Carbon Company, LLC. It features a central horizontal strip with four square panels containing images of wildlife: a black bear, a white-tailed deer with large antlers, a wood duck, and a raccoon. Below these panels is the company logo, which reads "PowerTree" in a large, stylized font with a leaf icon integrated into the letter 'P', and "CARBON COMPANY" in a smaller, sans-serif font below it. The background of the entire graphic is a lush forest with trees in vibrant autumn colors of yellow, orange, and green. The text at the bottom of the graphic provides details about the company's mission and funding.

PowerTree Carbon Company LLC is an initiative sponsored by 25 U.S. power companies to plant trees in critical habitats in the Lower Mississippi River Valley to manage carbon dioxide. Member companies have committed more than \$3 million for reforestation projects in Louisiana, Arkansas, and Mississippi. The projects will restore bottomland hardwoods on marginal agricultural lands, create habitat for birds and other wildlife, and provide other environmental benefits including improved water and soil quality.

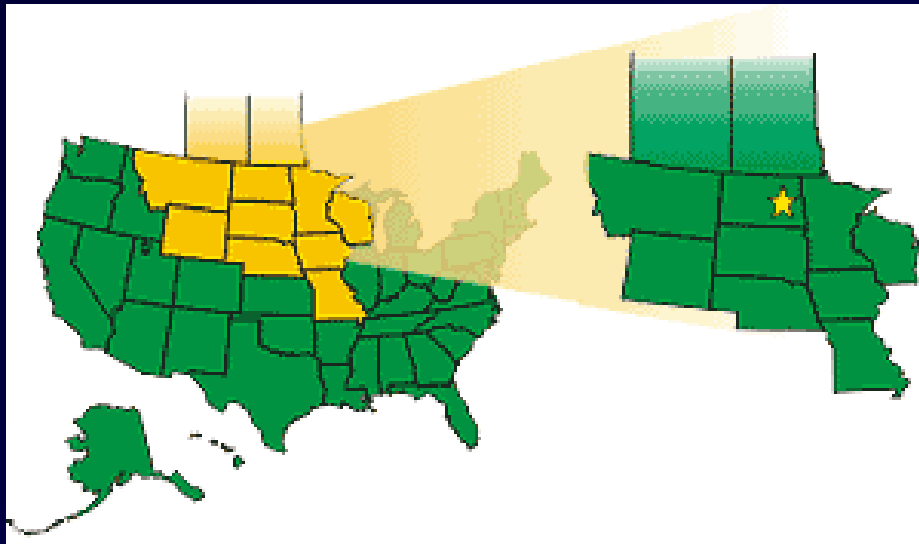
ARKANSAS

- *400 acres*
- *Marginal Agricultural Land*
- *Restoring Bottomland Hardwoods*
- *First ever all private carbon conservation easement!*



US DOE Plains CO2 Reduction (PCOR) Partnership

Regional Carbon Sequestration Partnerships



- Energy and Env. Research Center
- North Dakota State University
- USGS – NPWRC
- DU Inc & Canada
- Basin Electric Power Coop
- Nexant-Bechtel
- Prairie Public Television
- Several others
- Xcel Energy

Phase 2:

- DU Landowner aggregation program
- Awarded \$14 million on June 9, 2005*

Grassland Sequestration



Northern Prairie Wildlife
Research Center

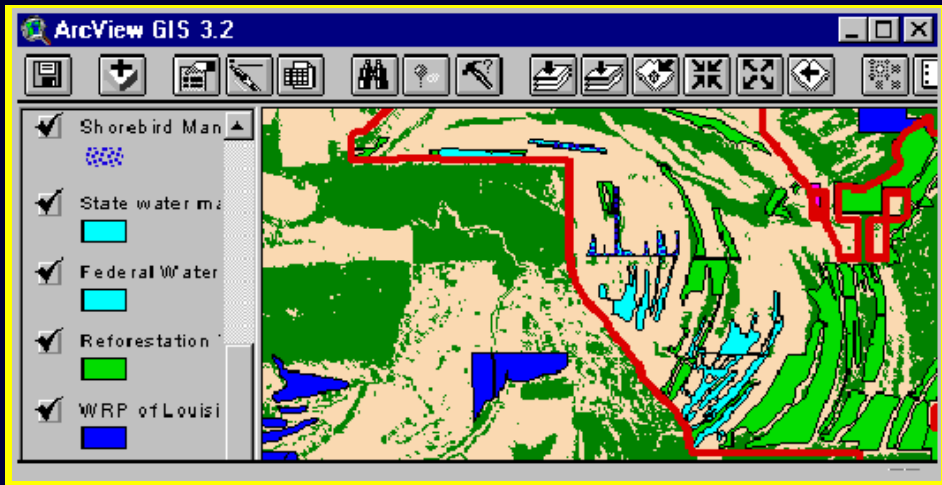


Objective: to identify, develop, and apply alternate land-use management practices to the prairie pothole region ecosystem that will result in greenhouse gas reductions.

- Carbon Seqx rates on former cropland converted to perennial grass
- Impacts of cattle grazing and emergency haying
- GIS modeling, landowner outreach and education
- Price Discovery



Carbon Tracking System



Web-enabled Reforestation Tracking System



Planting Week	Seeds Planted	Seedlings	Container	Age	Measurements
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Code Number:

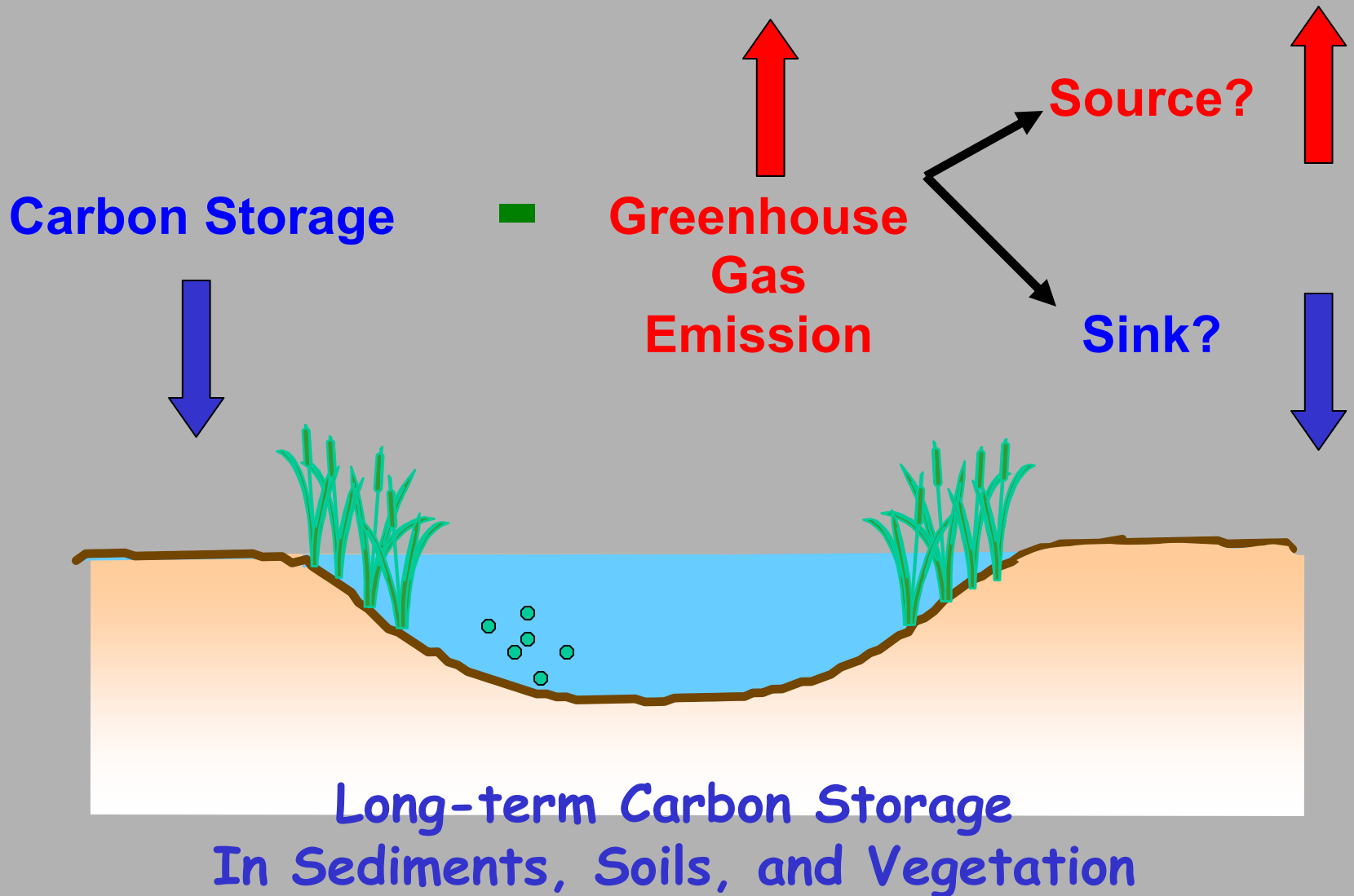
Buttons: Add Record, Save Record, Find Record, Help, Exit

Ownership	Program Type	Contract Dur	Managing Of	General Vicin	Site Name	Estimated Ac
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	Lake Long Ce	22.52
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	Lake Long E	24.15
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	.	17.33
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	West Central	44.4
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	N Central 310	293
Public	Refuge	Perpetual	Lake_Ophelia	Refuge Comp	N Central 200	187.09
Public	Refuge	Perpetual	Cache_River	1.5mi NW of	Walker Ceme	182

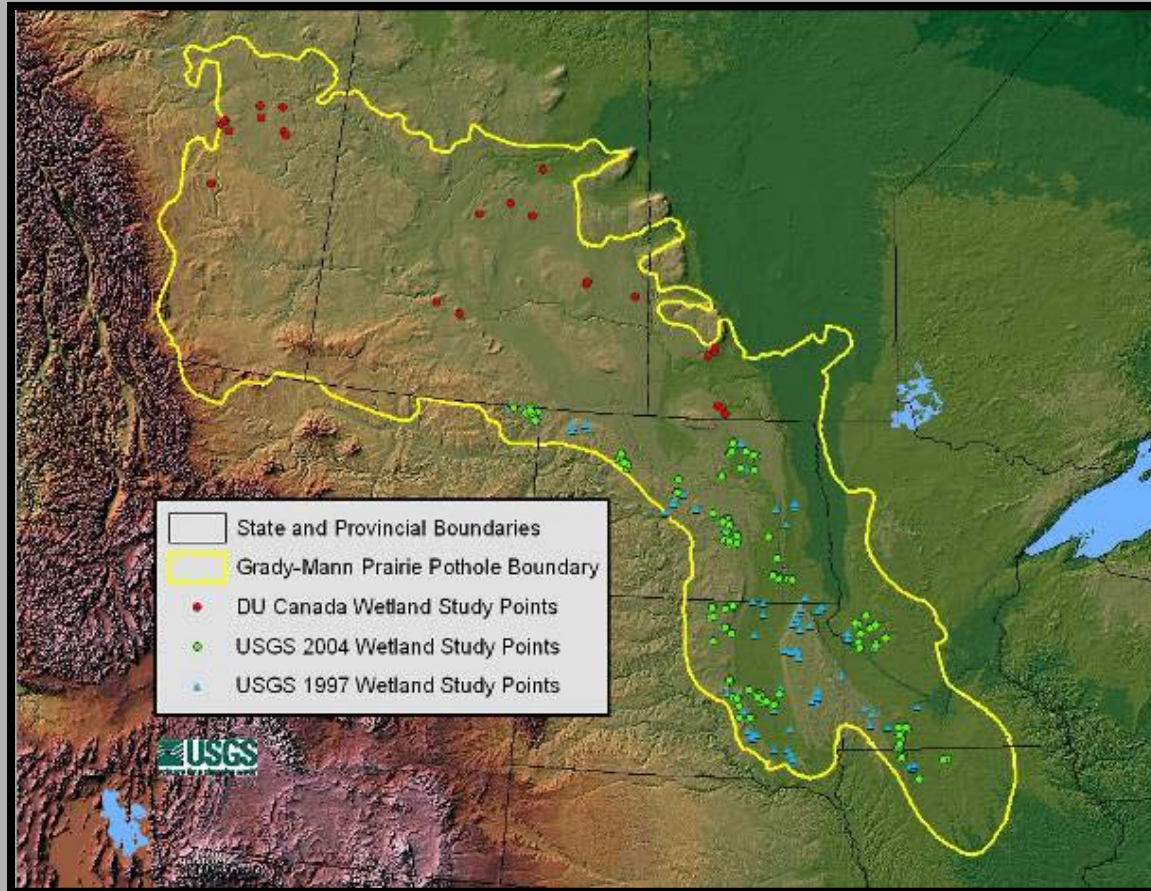
Record: 346 of 821

Datasheet View

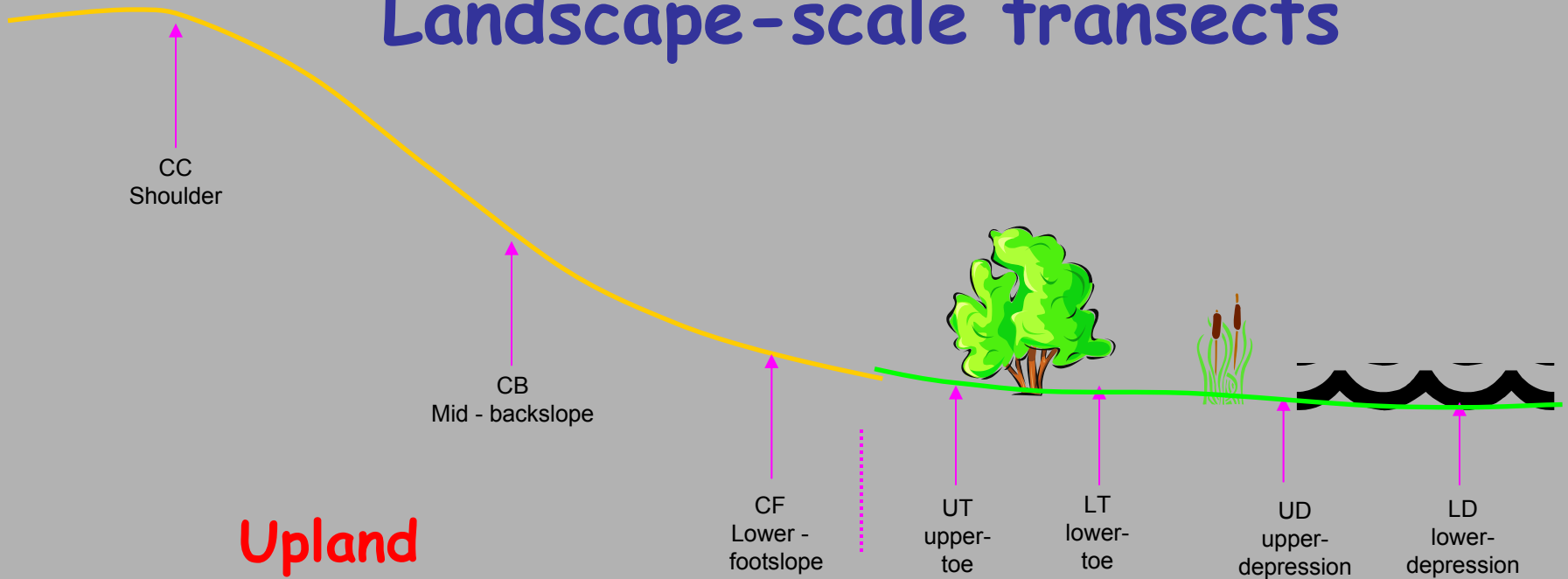
Are wetlands net sources or net sinks?



Terrestrial Field Validation Sites in the Prairie Pothole Region



Landscape-scale transects



Upland
(Crop or Grass)
(Slope positions)



Riparian
(Trees,
grass,
shrubs)

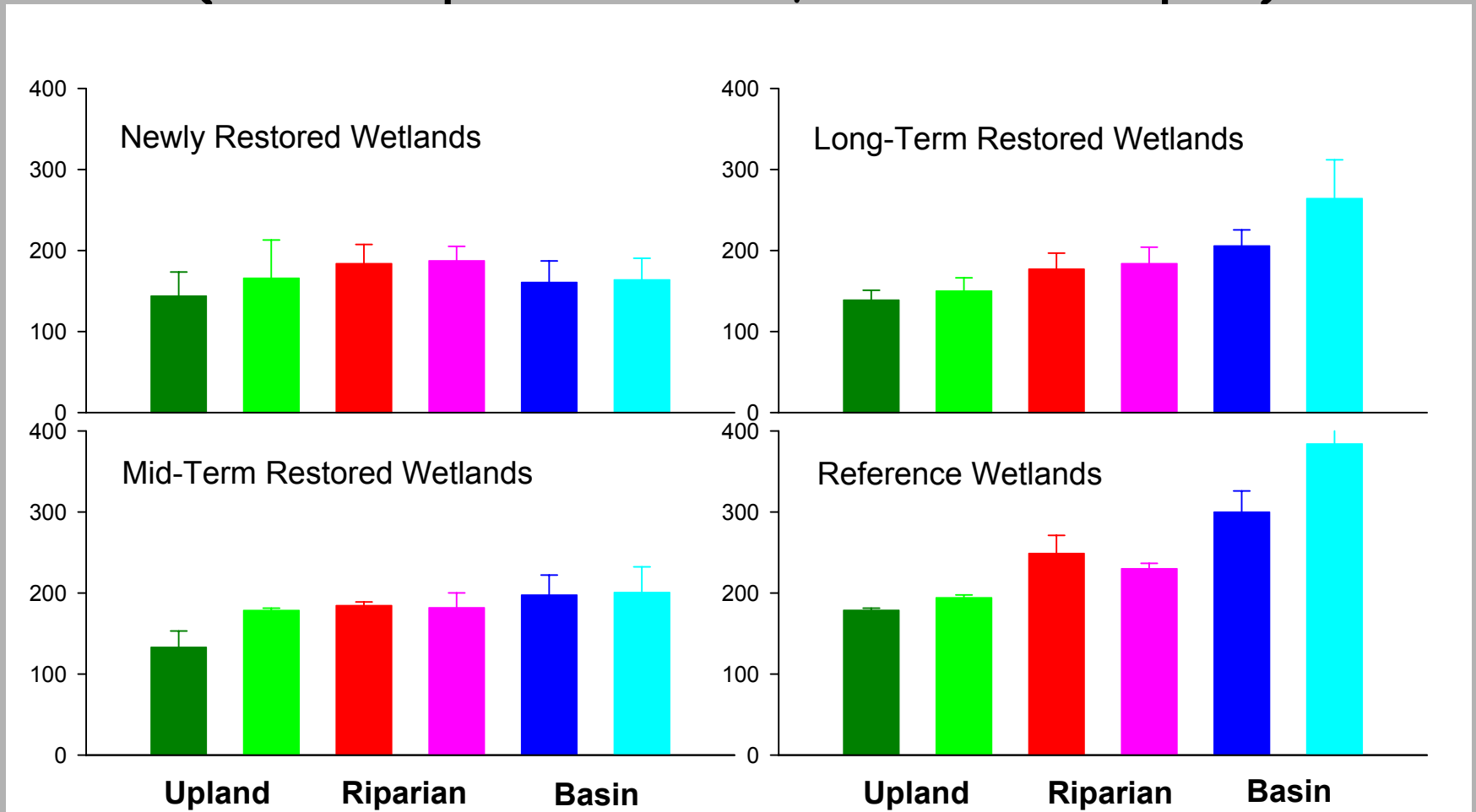


Wetland Basin
(Edge,
Centre)



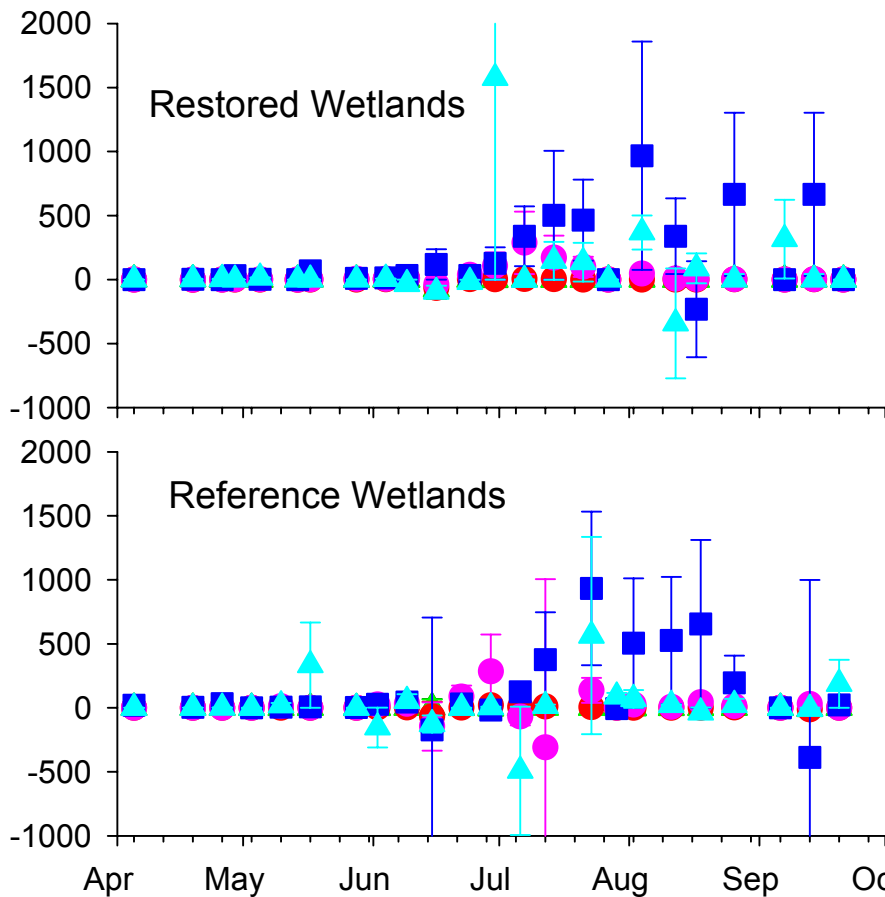
Soil Organic Carbon

(Tonnes per hectare, 0-90 cm depth)

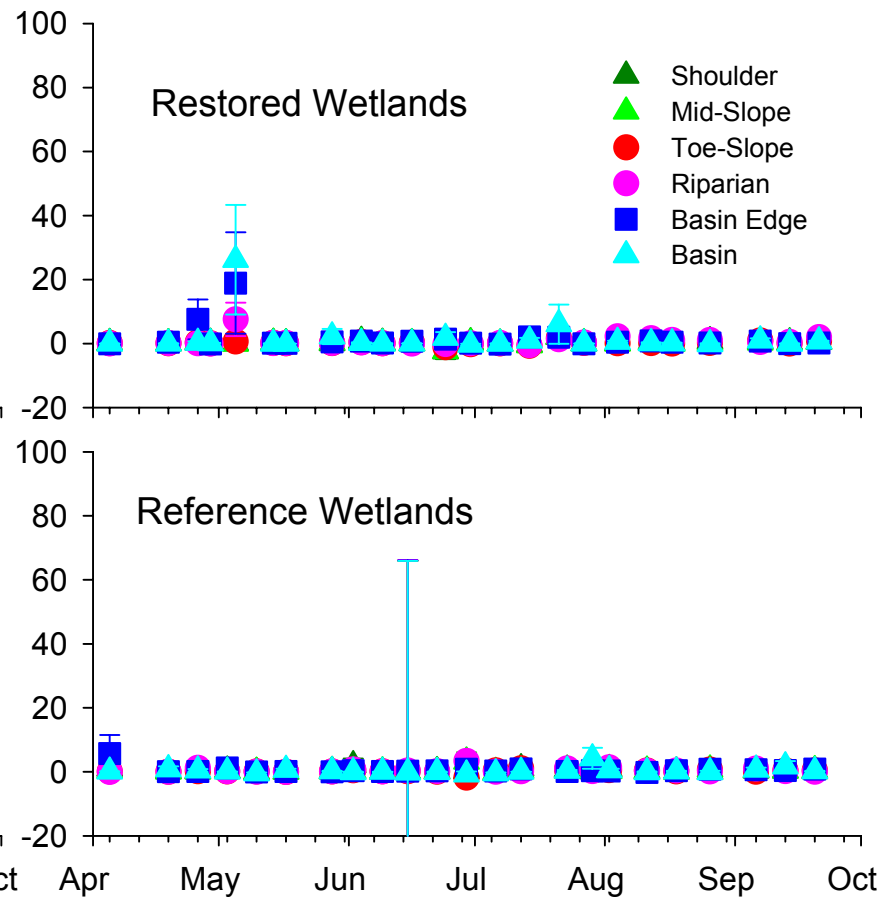


GHG Emissions

Methane ($\text{g ha}^{-1} \text{d}^{-1}$)



Nitrous Oxide ($\text{g ha}^{-1} \text{d}^{-1}$)



Wetlands?



Unlikely for more permanently-flooded wetlands due to CH₄ release.



Preliminary research indicates seasonal wetlands are sinks.

2-5 MTCO₂E/acre/yr

AGGREGATOR

- Investors provide capital for carbon purchase from DU on per ton basis (MTCO₂E)
- DU purchases land or carbon easements from landowners in high priority wildlife/carbon areas
- DU responsible for baseline carbon determination, restoration, transactional requirements, carbon protection for life of agree.

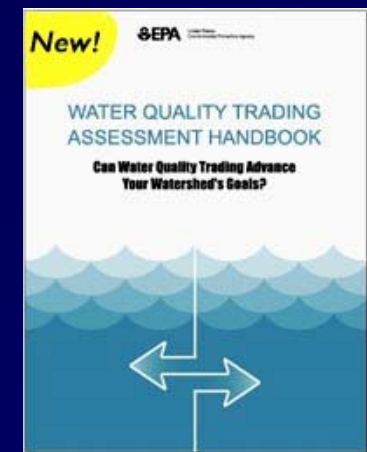
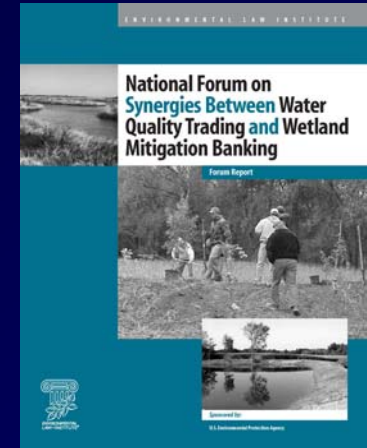
Potential for conservation is enormous if setup properly!

Why start now?

- **Address a significant environmental risk**
- **Preempt shareholder resolutions**
- **Support the President's voluntary initiative**
- **Build internal expertise in greenhouse gas markets**
- **Enhance the ability to shape U.S. policy**
- **Speculation - Get carbon in the ground and growing now**
- **Gain additional Eco-Assets**

Other EcoAssets

- **Wetland Mitigation Banking - restoration and easements**
- **Water Quality Trading – aggregate similar to carbon**



***Future - grassland (CRP)
and seasonal wetlands***

Terrestrial Carbon Sequestration

Strengthening Relations

Between Corporate America & the Conservation Community



Linking

Energy

Agriculture

Environment

Concurrent Benefits



Partnering

Touches everything we do!

- State wildlife agencies
- U.S. Fish and Wildlife Service
- USDA-Natural Resources Conservation Service & Forest Service
- North American Waterfowl Management Plan
- Private landowners
- Many others !!



Critical to leveraging resources !!



Nariva Swamp Restoration Initiative

Dick Kempka
901-758-3795
dkempka@ducks.org



THANK YOU

Carbon Project Structure

- **Agreement to convey carbon offsets to investor**
- **Site selection – GIS/economic info**
- **Land Securement/Protection**
- **Establish carbon baseline**
- **Restoration of vegetation and hydrology**
- **Carbon sequestration monitoring program**

(Transfer land to conservation buyer if applicable)

Why DU?

Well-respected on
Capitol Hill.



Conservation habitat preservation

These programs benefit more than 600 species of wildlife by conserving important wetland and upland habitat. In addition, Fair Wetland Conservation programs also benefit more than 200 endangered or threatened species of wildlife, fish and plants. LEI receives all contributions to pay credits to benefit wildlife.

According to LEI, their mission is to help the world's birds, fish and plants by providing education, training, and managing important wetlands and associated riparian habitat.

Since the early 1970s, LEI has been successful in securing 10 percent of the total wetland acreage of the U.S. and has been successful in securing 10 percent of the total upland acreage of the U.S.

LEI is currently working on a number of projects to improve the quality of the nation's wetlands and riparian habitat. These projects include:

• Wetland Conservation (Wetlands for the 21st Century)
• Wetlands for the 21st Century
• Wetlands for the 21st Century

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on
1998

Ducks benefit from wetlands

MEMPHIS, Tenn. - U.S. Secretary of Agriculture Dan Glickson has proposed changes to the Conservation Reserve Program that will provide major benefits for wetlands, water and wildlife, according to officials at Ducks Unlimited Inc.

Ducks Unlimited estimates the changes will permit landowners to enroll about 10 million additional wetland acres in the Conservation Reserve Program (CRP), which pays landowners to retire marginal farmlands from crop and livestock production for 10 years. CRP was reauthorized in the 1996 Farm Bill legislation. The new provisions would allow landowners to enroll unused wetlands and would provide them with financial incentives to retire these wetlands.

"Ducks Unlimited has been working full speed ahead for the continuation of CRP for nearly three years," said

See DUCKS, Page 10