

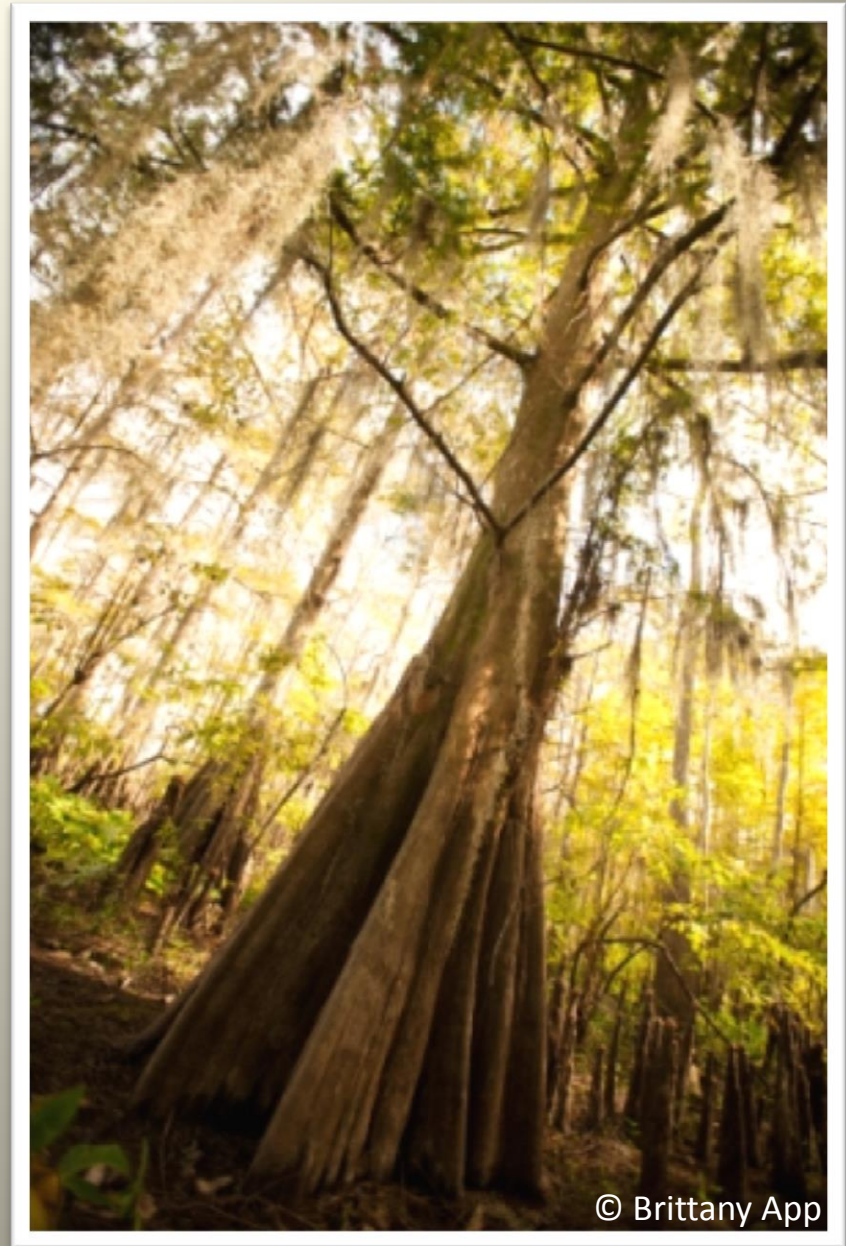
**The Atchafalaya River Basin:
Conservation and Restoration
in America's Largest Swamp.**

Bryan P. Piazza

Director, Freshwater and Marine Science

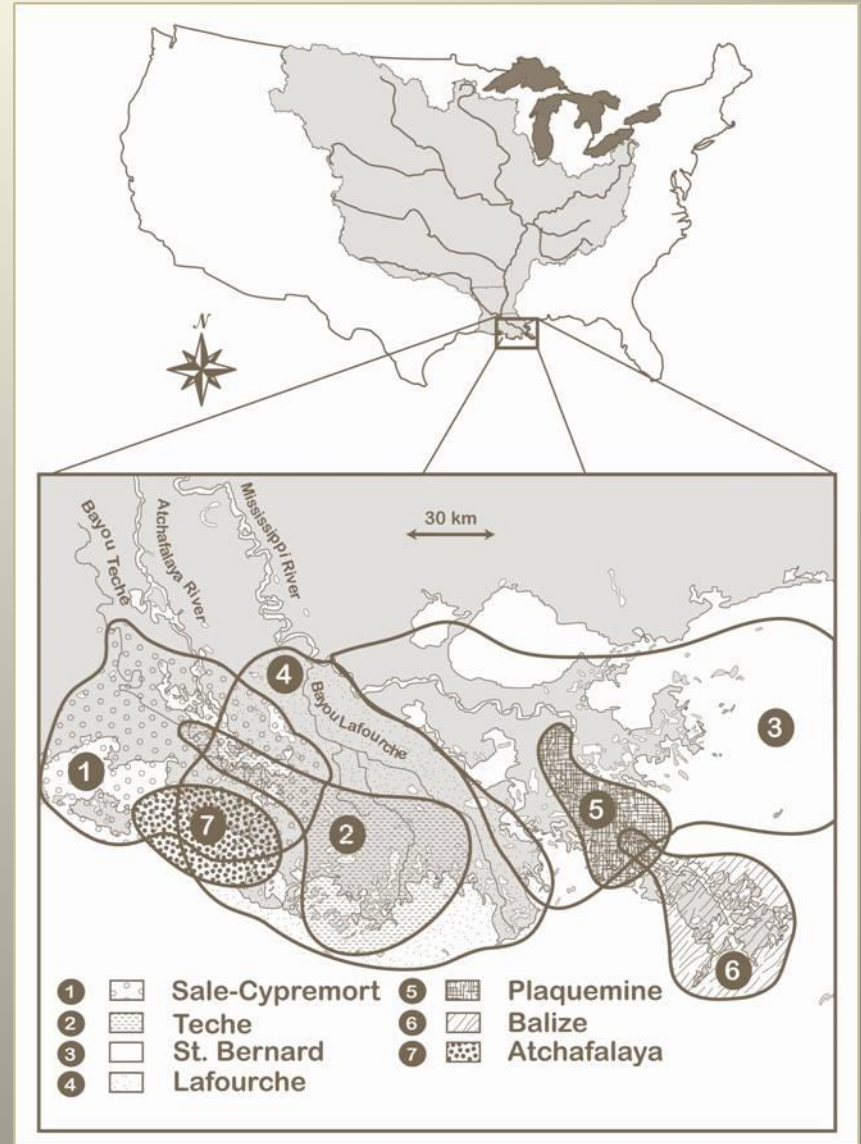
The Nature Conservancy

Baton Rouge, Louisiana



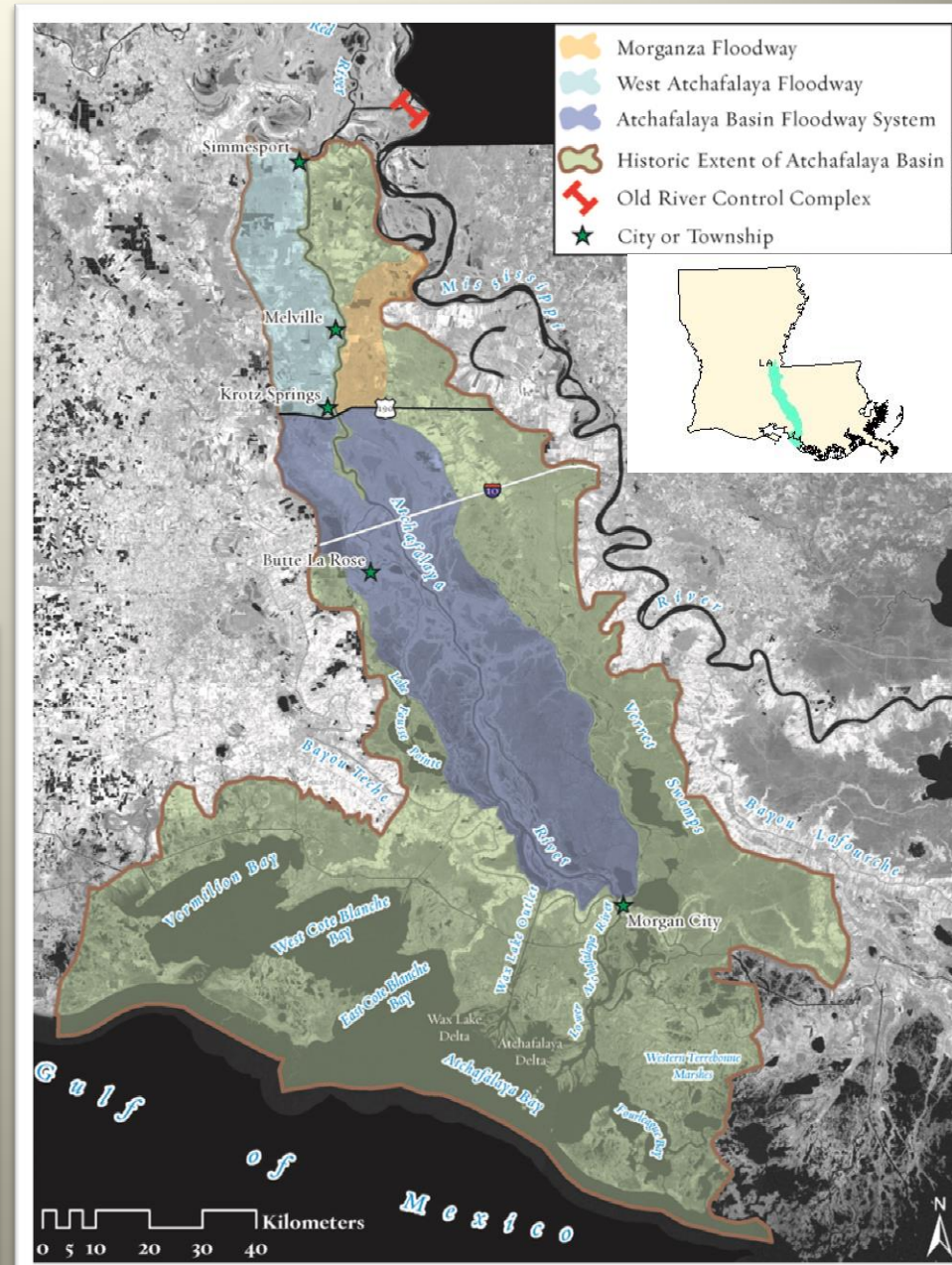
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The Mississippi River Drainage Basin



The Atchafalaya River Basin

- Original basin over 3,000 mi².
- Now 1- million acres.
- 5th largest river by discharge.
- Distributary system for the Lower Mississippi River.



Protection Levees



Old River Control Structure



Channel Training and Distributary Closure



Flood Control



Navigation



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Timber Resources

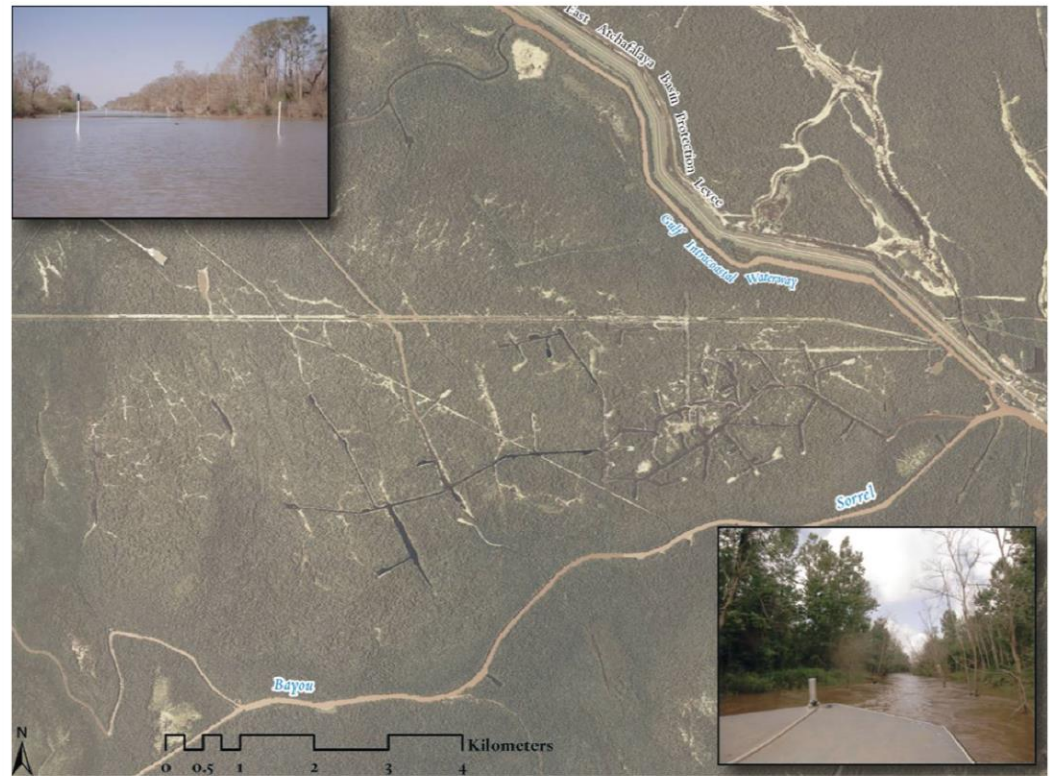


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Oil and Gas



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Forests



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Actively Building Delta



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Biodiversity Hotspot



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Biodiversity Hotspot



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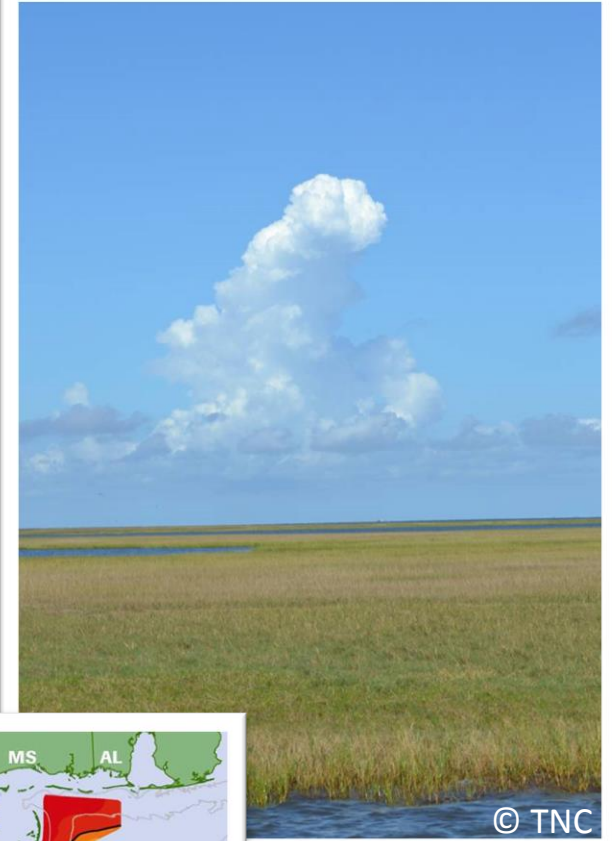


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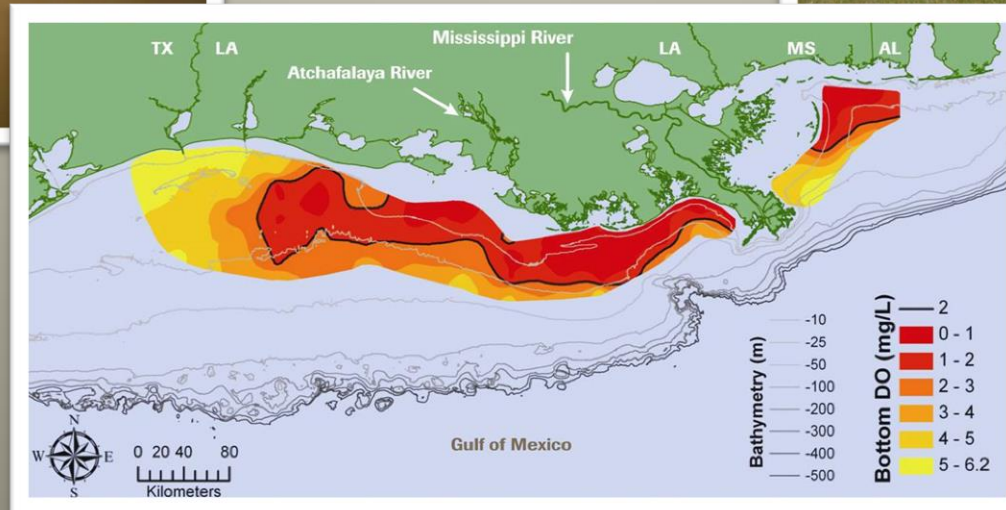
Nutrient and Carbon Sequestration



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Heartbeat of the Cajun Culture



© Erik Canning



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River-floodplain Interaction



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System-wide Flow Regulation



Canals and Levees



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Flow Barriers



Forests Degrade and Cannot Regenerate



Hypoxia



Tools and Approaches

- *Science*
- *Conservation*
- *Partnerships*

- *Hydrologic Restoration*
- *Land Protection*
- *Stakeholder Relations*
- *Decision Making*

- ***Working at all levels of our organization and with many partners.***

Nature Conservancy gives Atchafalaya Basin Program 'transparency'

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A MEMORANDUM OF UNDERSTANDING is signed at the Atchafalaya Welcome Center on I-10 by DNR Assistant Secretary Louis Buatt (left) and Dr. Keith Duchley, executive director of The Nature Conservancy in Louisiana.

BUTTE LA ROSE – Stung by criticism of water projects like the enlarging of Bayou Postillion, the Louisiana Department of Natural Resources has signed on The Nature Conservancy to ensure such projects have "a science-based approach and transparency."

The agreement, which was formally signed at the Welcome Center on I-10 last Friday, covers the whole state, but the focus is on the Atchafalaya Basin where state and federal funds are being used to improve water quality.

The Atchafalaya spillway consists of over 800,000 acres of hardwood bottoms, swamp and marsh sliced by many natural bayous and man-made canals and bracketed by levees invented to divert Mississippi flood water to the Gulf.

DNR's Atchafalaya Basin Program is in the first year of a new planning process involving public hearings and approval by both the state Coastal Protection and Restoration Authority and the Louisiana Legislature.

The dredging of Bayou Postillion under the program was widely criticized as benefitting oil companies and adjacent landowners more than water quality.

The Nature Conservancy is a non-profit conservation organization with over a million

1. The Atchafalaya River Basin: History and Ecology of an American Wetland

- *Scientific baseline.*
- *Adds to existing science tools.*
- *Informs work of TNC and partners.*
- *State will use in restoration planning.*



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2. Land Protection

1. Spatial analysis to determine highest-priority conservation areas in the ARB.
2. Assessed landowner support.
3. Determined market-based conservation price-points.

Why?

- Assist the USACE in meeting land protection targets.
- Develop platform preserve (~ 5,000 acres).
- Enhance land protection by attracting other public and private funds (e.g., WRP, HB 219).
- Use ARB as a system-wide floodplain model.



Priority Conservation Areas

6 PCAs - 190,000 acres.

- 21 – 38% suitable for regeneration
- 2 – 21% suitable for regeneration and high water quality index

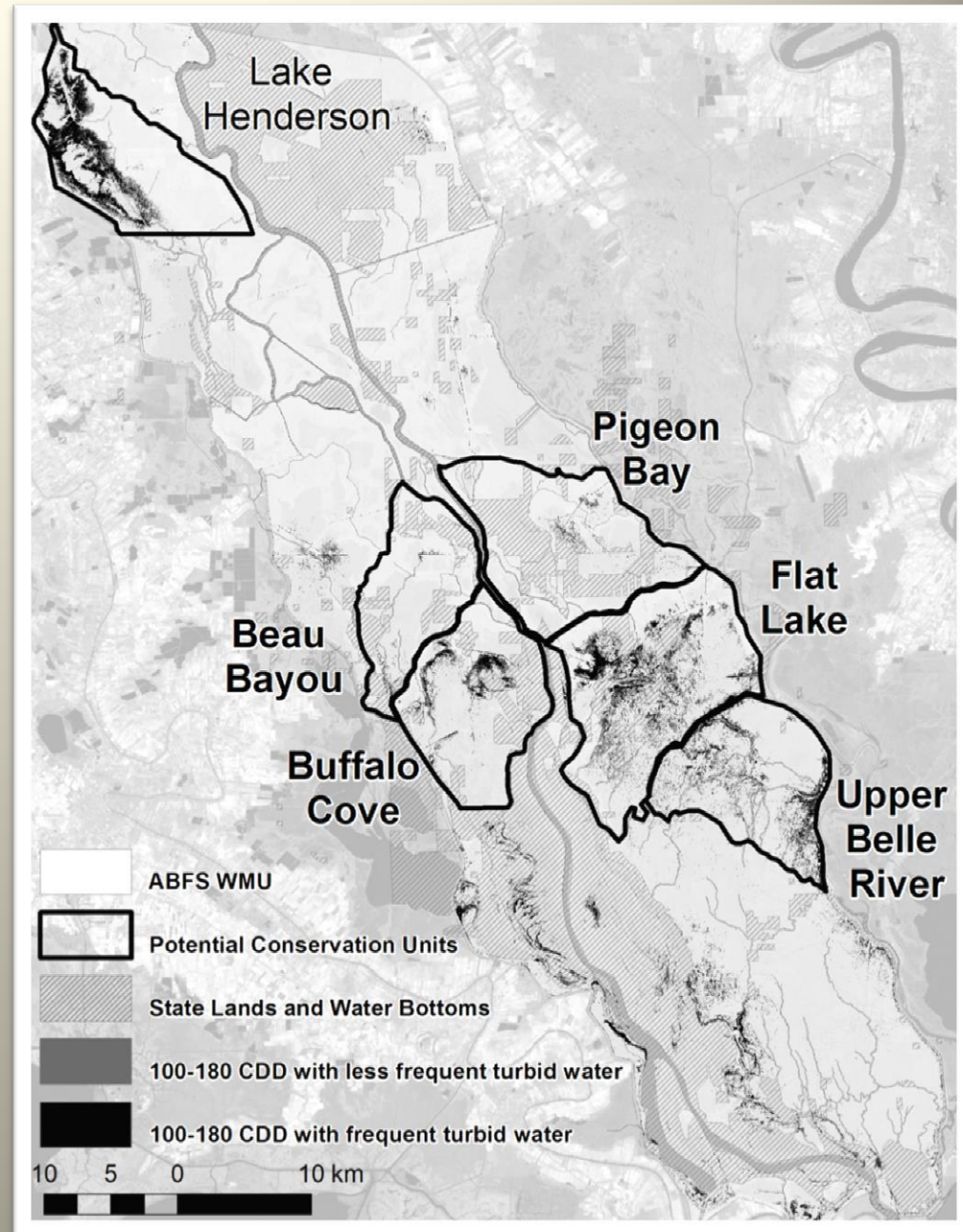
Landowner Support

- Contacted landowners held 63% of PCAs.
- 80% of contacted landowners were interested in land protection programs.

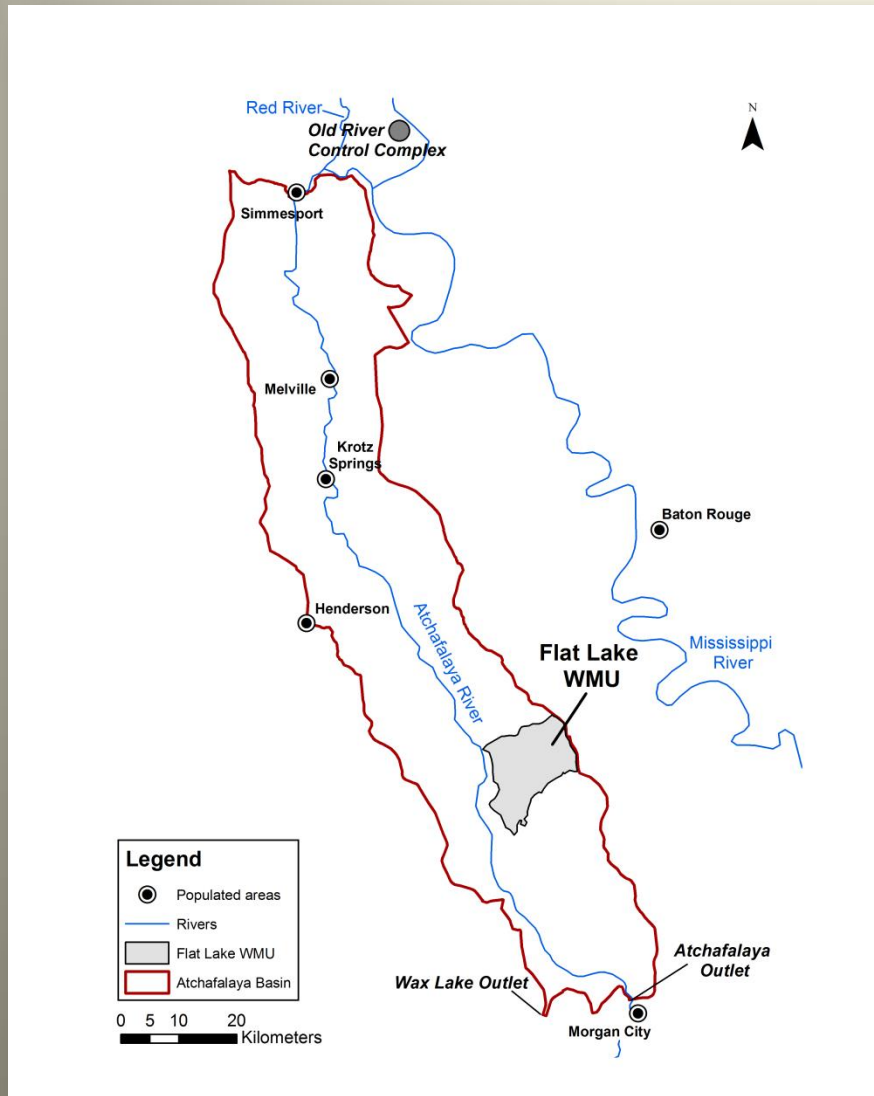
Land Protection Values

\$500 – \$1,000 USD acre⁻¹

- USACE value - \$140 acre⁻¹
- Additional restrictions – up to \$900 acre⁻¹.



3. Hydrologic Restoration and Landowner Outreach



Developed a GIS suitability analysis to determine areas most suitable for hydrologic restoration and baldcypress regeneration.

Objectives:

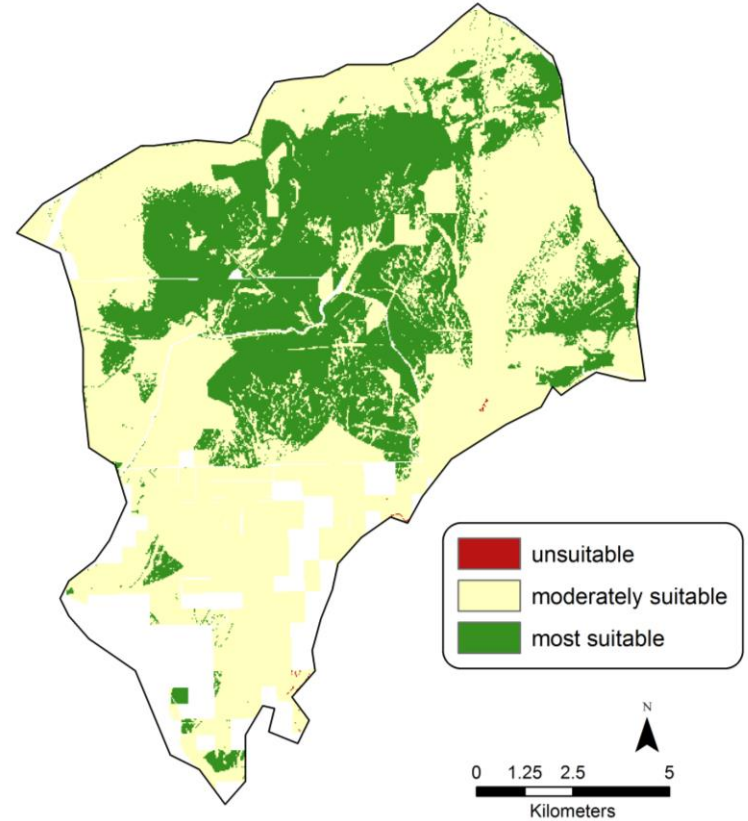
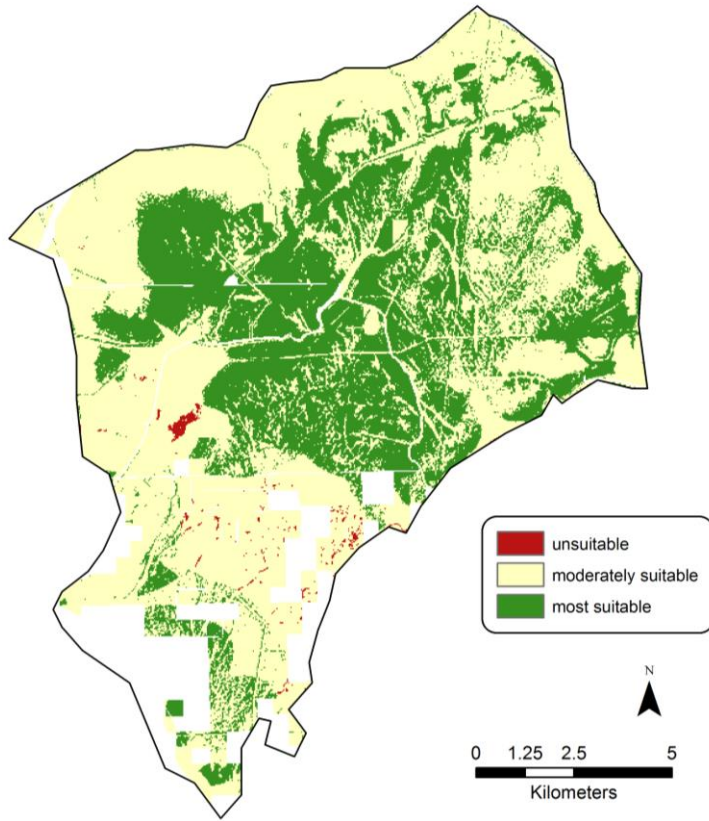
- Inform land protection efforts.
- Fit into existing restoration efforts.
- Improve landowner outreach through visualization.
- Provide a flexible framework that can be modified and expanded.

Hayden, A, BP Piazza, DP Harlan, JF Bergan. Combining GIS suitability analyses, hydraulic modeling, and stakeholder input to enhance environmental decision making in the Atchafalaya River Basin, Louisiana. In Prep.

Suitability Surfaces

Baldcypress Regeneration

Hydrologic Restoration



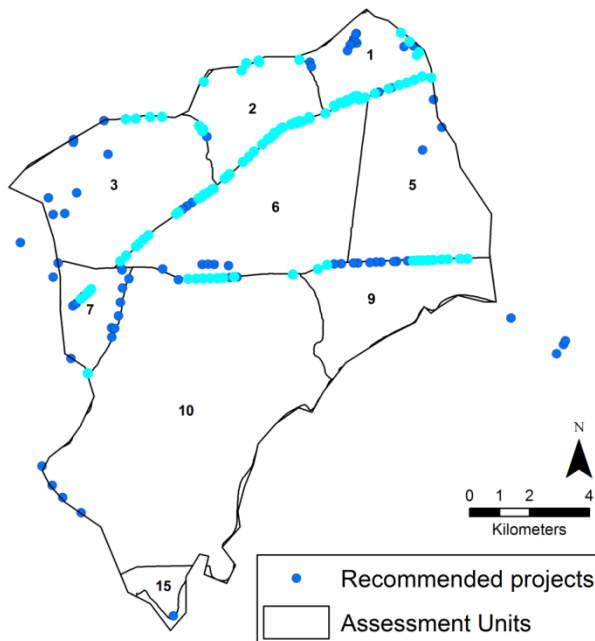
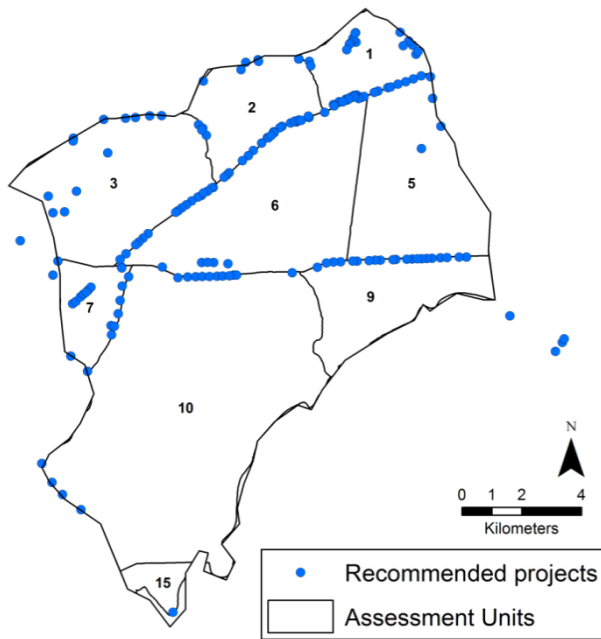
Project-level Restoration Scenario Analysis

Hydraulic modeling at water management unit (WMU) scale.

Testing planned project features to quantify how these will improve flow/water quality.

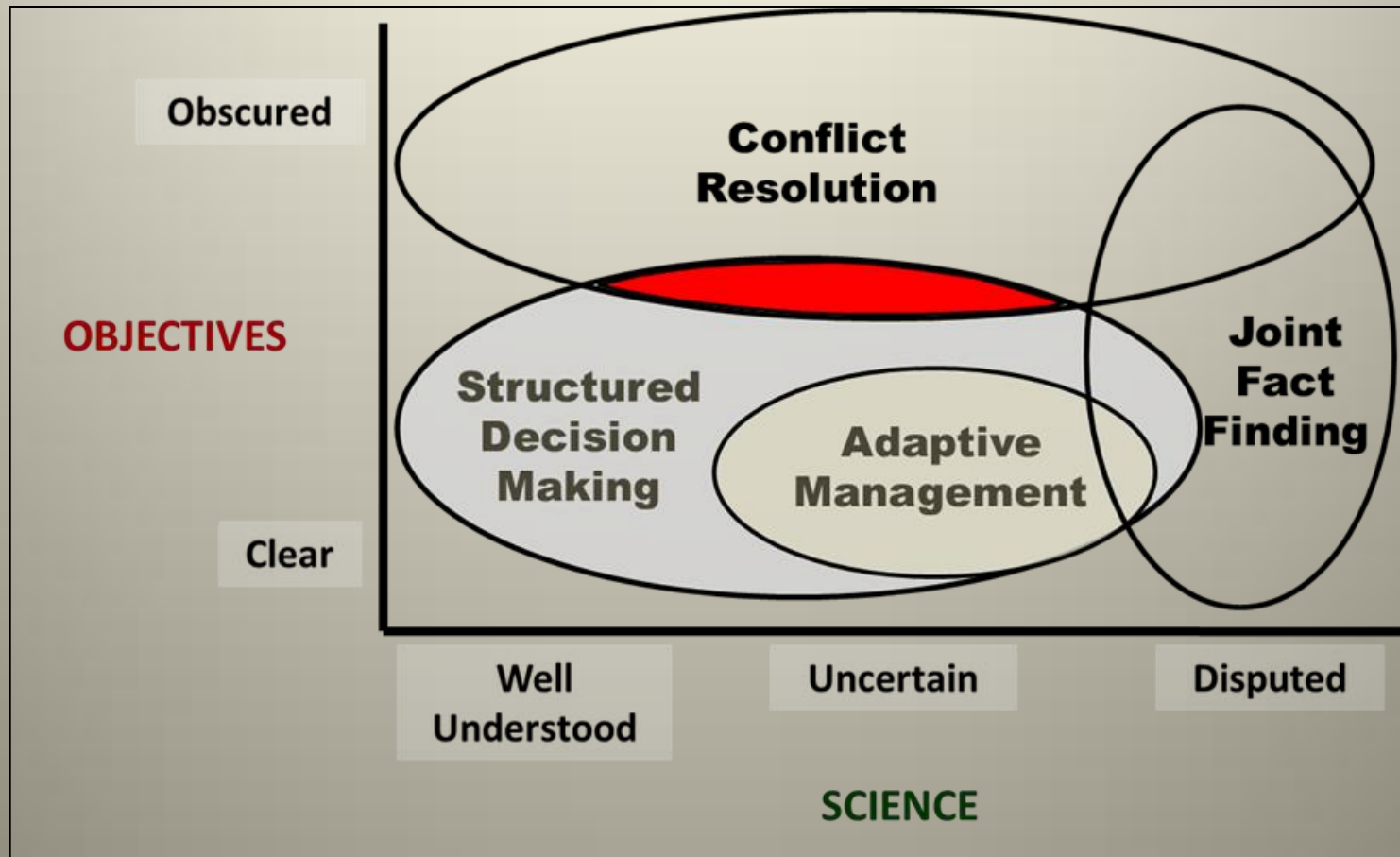
What is the impact of recommended project features?

Optimize desired project effects with cost-benefit and landowner willingness to participate.



Restoration Decision Making

Developed a process for applying Structured Decision Making to restoration planning in the Atchafalaya Basin.



Kozak, JP and BP Piazza. A proposed process for applying structured decision making to restoration planning in the Atchafalaya River Basin, Louisiana, USA. Restoration Ecology, Submitted.

Acknowledgements

- LDNR Atchafalaya Basin Program
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