

Building a Partnership for the Tchoutacabouffa River Watershed



2007 Action Plan

Harrison County and West Jackson County, Mississippi

Action plan sponsored by the Land Trust for the Mississippi Coastal Plain



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Pascagoula River Basin Team



Mississippi Department of Environmental Quality
Office of Pollution Control

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www.ecologic-restoration.com



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Tchoutacabouffa River Watershed
2007 Action Plan

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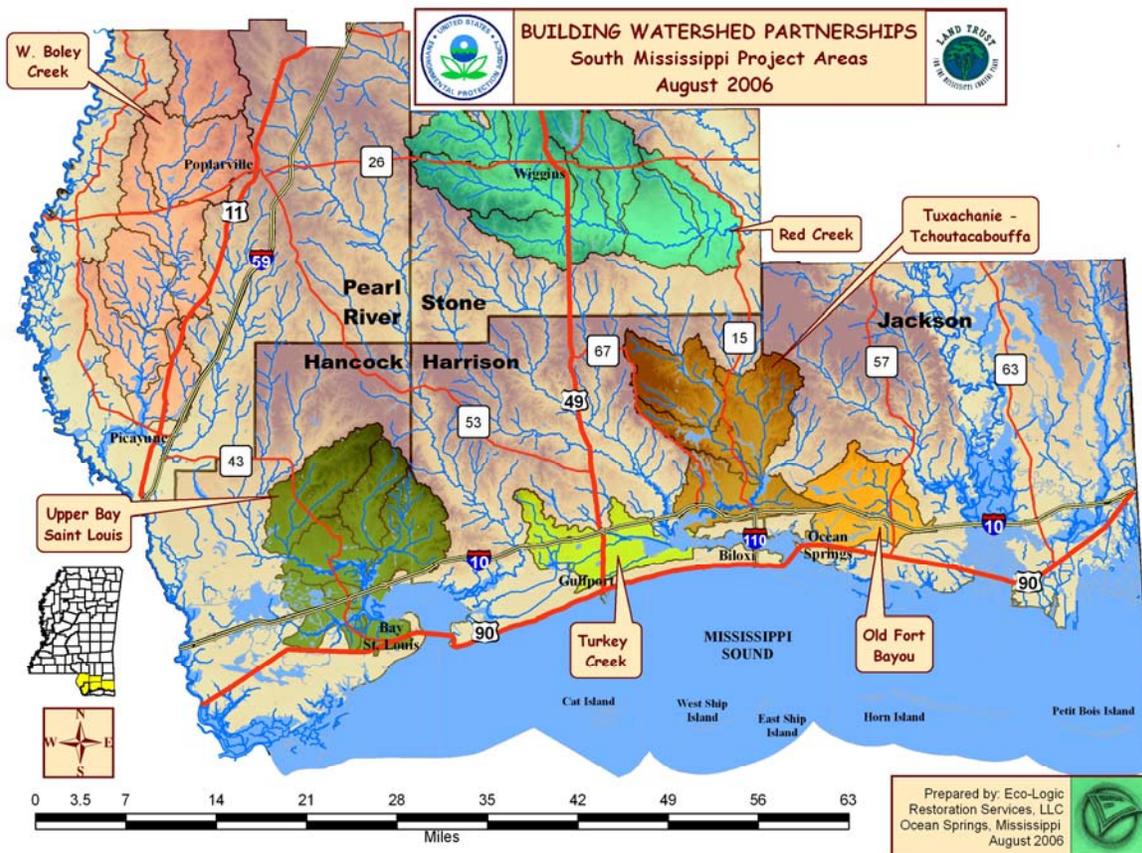
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BACKGROUND

Before Hurricane Katrina, the Land Trust for the Mississippi Coastal Plain (Land Trust) was awarded a grant from EPA Region IV to build watershed partnerships in six watersheds in south Mississippi. Criteria for selecting watershed partnership areas included: (1) watersheds that represented south Mississippi both geographically and ecologically; (2) watersheds where the Land Trust owned and managed lands; and (3) watersheds where there was a demonstrated need for restoration and protection. The six watersheds that were chosen included Turkey Creek in Harrison County, Red Creek (stream sections flowing through Stone County), Old Fort Bayou in Jackson County, West Hobolochitto Creek in Pearl River County, Tchoutacabouffa River (stream sections flowing through Harrison County) and Upper Bay of St. Louis (identified streams in Hancock County).



One of the goals of the watershed partnership was to develop and implement a solution-oriented, action plan. We have two primary objectives: (1) Research, identify and implement watershed protection and associated education strategies for the lower Tchoutacabouffa River; (2) Research, design and implement watershed restoration and associated education strategies for lower Tchoutacabouffa River.

Protection is defined as defending the existing natural and cultural resources of the Watershed from further degradation caused by encroachment, abuse or neglect. Restoration is defined as actively initiating or accelerating the recovery of the ecological and cultural health, integrity and sustainability of the watershed that has been degraded, damaged or destroyed.

INTRODUCTION

The Land Trust's efforts to build a partnership for the lower Tchoutacabouffa River began with two roundtable discussions in March and June of 2007 held at the homes of Judy and Sandy Steckler and David and Candace Wheeler. We learned much from the participants and are very appreciative of their time to meet and discuss the best ways to shape the direction of our watershed partnership.

This document is written to provide a strategic approach to watershed planning with particular focus on private sector participation in the process. We want to provide context and a brief overview of the ecological, cultural and scenic significance of the Tchoutacabouffa River Watershed. This is a record of our planning efforts and an accounting of actions identified to address watershed concerns. The hope of participants is to foster better stewardship of the natural resources of the watershed.

Forum participants were asked, "What characteristics of the Tchoutacabouffa do you want to protect?" They responded with consensus:

1. Aesthetic values of running bodies of water
2. Safe and clean for canoeing and swimming
3. White sandbars
4. Clean, clear water tinted with tannins
5. Beauty – lush tree canopy and native vegetation along the river banks
6. Industry-free river banks

Forum participants are extremely concerned about increased flooding along the river and about increased boat traffic (both faster and larger boats). They are also concerned about the impacts of increased development: impervious surface, bulk heading and wetland loss. From the impacts of storm debris and tree loss to the increased threats of flooding and shallowing streams, participants clearly want to see their watershed restored and protected. They want to be better educated about watershed issues: they are particularly interested to learn more about the impacts that their actions have on the watershed. They want neighbors and policy-makers to be better informed about the consequences and financial costs of wetland loss, hardened shorelines and impervious surface. They would like to see more monitoring of the watershed, particularly tracking flood levels, wetland loss and linear feet bulk headed along the river. They would like to see land use planning at the watershed scale and increased enforcement of wetland laws and water safety/boating laws.

There is a great need to educate the local citizenry about streamside management and the impacts that neighbors' choices have on the river and neighboring properties. There is a need for better public policy as the population grows.

PURPOSE

Our goal is to build a watershed partnership that will develop and implement a solution-oriented, action plan. This is the legacy that we want to leave: *a healthier, safer and more beautiful Tchoutacabouffa River.*

After reviewing literature about the Tchoutacabouffa River Watershed and developing maps for use in community discussions, the Land Trust for the Mississippi Coastal Plain (LTMCP) hosted two roundtable discussions with private landowners along the lower Tchoutacabouffa River. These meetings were the first formal discussions with landowners and the foundation of building a long-term partnership to address the health of the Tchoutacabouffa River Watershed.

The mission of the LTMCP is to conserve, promote and protect the open spaces and green places that have ecological, cultural or scenic significance in the counties of the Mississippi Coastal Plain. Riparian corridors, or streamside management zones, have great ecological, cultural and scenic significance and are a primary focus of the LTMCP. Healthy riparian corridors are also essential elements for maintaining clean water. The mission of EPA is to protect human health and to safeguard the natural environment - air, water, and land - upon which life depends. The foundation of building a watershed partnership for the Tchoutacabouffa River is funded through a grant from EPA Region IV to the LTMCP.

LTMCP is committed to achieving its mission in the Tchoutacabouffa River and is grateful for the EPA watershed grant that funded the exploration and initiation of this watershed partnership. LTMCP is committed to working with stakeholders –private landowners, local government and natural resource agencies, to implement the following education, protection and restoration strategies for the Tchoutacabouffa River Watershed

Tchoutacabouffa River Watershed Teams

Local Landowner Advisors

Judy Steckler, Land Trust for Mississippi Coastal Plain
Anita Arguelles
Danielle Brewer
Dr. Larry Drawdy
Patti and Jay Golden
Virginia and Joe Lococo
Judy and Sandy Steckler
Candace and David Wheeler
Elmer Williams

Technical Advisors

MDEQ, Coastal Basin Team Coordinator, Larry Estes
South Mississippi RC&D Council, Patty Rogers
MS Department of Wildlife Fisheries and Parks, Scenic Streams Program
MS DMR – Comprehensive Resource Management Program
Mississippi Gulf Coast Heritage Program
DeSoto National Forest
MS Soil and Water Conservation, Harrison County SWCD
Natural Resource Conservation Service
Harrison County Utility Authority
EPA, Gulf of Mexico Program (Habitat restoration team)
EPA, Region 4, Watershed program

Education and Recreation Resource Advisors

Land Trust for Mississippi Coastal Plain
City of Biloxi – Planning and recreation
City of D'Iberville – Planning and recreation
Rivers and Trails, National Park Service, Liz Incer-Smith
Harrison County Planning Commission, Smokey Johnson
MS Department of Marine Resources – Boating Safety coordinator
MSU Extension Service
South MS Environment and Agricultural Coordination Organization (SMEACO)
MS Canoe and Kayak Club
MS Gulf Coast Community College, Outdoor recreation program, Wayne Taylor
Watershed Harmony Puppet Show
Harrison County, Biloxi and D'Iberville School Districts

Description of the Tchoutacabouffa River Watershed and Project Area

The Tchoutacabouffa River Watershed is located in Harrison County, west Jackson County and southeast Stone County in south Mississippi. The watershed includes a fast-growing business corridor along Interstate 10. It also includes a rural landscape that is quickly converting into a more suburban landscape with residential homes and weekend getaways along the river. The watershed also includes significant acreage within the DeSoto National Forest.

The entire watershed includes several sub-basins that have been targeted for partnership building and action: Bayou Castopia, Railroad Creek-Hurricane Creek, Tchoutacabouffa River and Bayou Billie, Tchoutacabouffa River and Cypress Creek, Tuxachanie Creek and Bigfoot Creek, Tuxachanie Creek and Hester Creek, Tuxachanie Creek and Hog Creek.

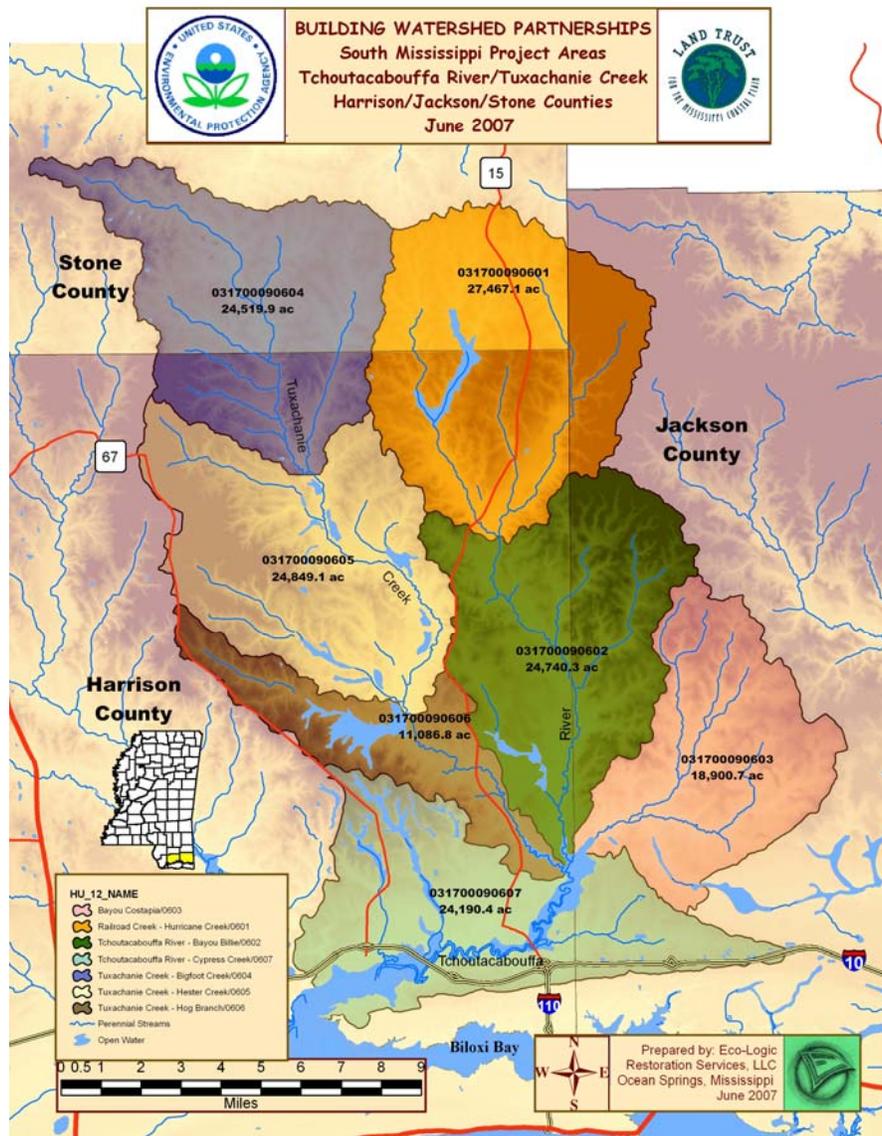


Figure 1: Map of Tchoutacabouffa River Watershed

Within the Tchoutacabouffa River Watershed, we have identified the lower watershed as the primary area for citizen action. The Targeted Area for Action Plan includes the following hydrologic units:

- I. Tchoutacabouffa River/Bayou Billie watershed covers @39 sq. miles and is 10.56 miles long. Hydrologic Unit Code: 031700090602
- II. Tuxachanie Creek/Hester Creek watershed covers @39 sq. miles and is 8.87 miles long. Hydrologic Unit Code: 031700090605
- III. Tuxachanie Creek/Hog Branch watershed covers @17 sq. miles and is 7.22 miles long. Hydrologic Unit Code: 031700090606
- IV. Tchoutacabouffa River/Cypress Creek watershed covers @ 38 sq. miles and is 11.98 miles long. Hydrologic Unit Code: 031700090607

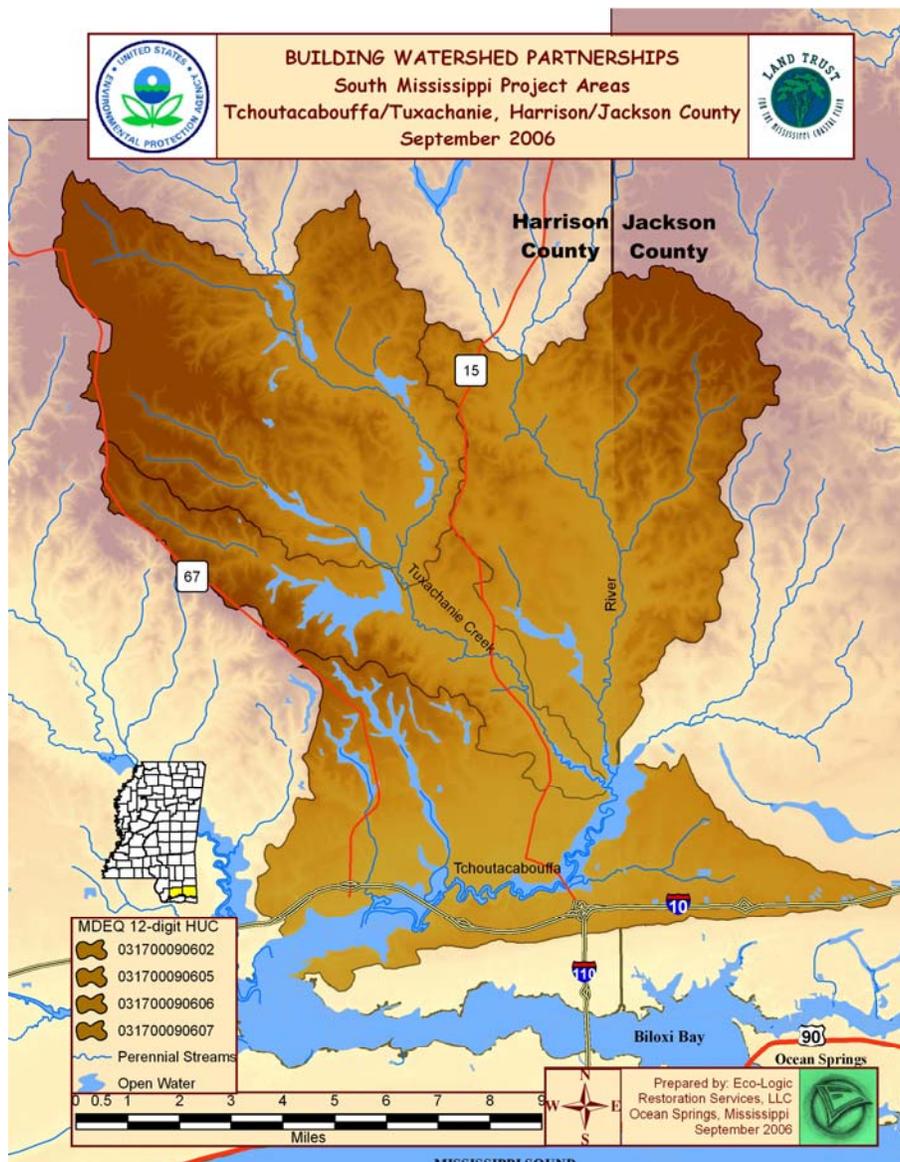


Figure 2. Map of lower Tchoutacabouffa River Watershed, Targeted Area for Action Plan

Stakeholder interests: results from roundtable discussions

- I. *What are the concerns and challenges in the Tchoutacabouffa River Watershed?*
 - c. Increased risk and frequency of flooding.
 - d. Increased velocity which causes erosion and loss of sandbars which causes increased sedimentation and shallower water. Observation from regular boater: where the river used to be 40' deep, it is now @25' deep. Where it used to be 24' deep, it is now @14' deep.
 - e. Channelization of headwater streams
 - f. Loss of wetlands, clear-cutting, great increase in impervious surface
 - g. water quality: some sections of river are impaired by fecal coliform (failing septic tanks and loss of wetlands)
 - h. Historical clearcutting (entire watershed was clearcut in the 1930s), as well as current clearcutting.
 - i. Upper river has high banks. Lower river has more spillways. How do you connect flooding concerns in the lower watershed to people who live in the upper watershed?
 - j. Littering and illegal dumping
 - k. Lack of silt fences – lack of BMPs, erosion control. Need education and enforcement from DEQ.
 - l. Water safety and public access concerns:
 - m. Public access is minimal. Need public access points that are safe and clean
 - n. There has been a great increase in boat traffic, concern over size of boats (25-30') and speed of boats. Need no-wake zones.
 - o. There is great concern about incompetent boat operators and use of alcohol. Need laws to protect people and property. Also need better education for boaters.
- II. *What do you want to protect?*
 - a. Aesthetic values of running bodies of water
 - b. Canoeing and swimming
 - c. Sandbars and white sand beaches
 - d. Beauty – healthy, clear water tinted with tannins
 - e. Beauty – trees and vegetation, there used to be lots of cypress along the river banks
 - f. Safety for children and grandchildren to swim
 - g. Non-commercial uses of the river. Want to keep industry off the river
 - h. Protect the wildlife
 - i. Protect wildflowers – particularly wild azaleas, mountain laurel
- III. *What do we need to know about our watershed?*
 - a. When lakes and wetlands are filled in, where does the water go?
 - b. Need to know: dumping of logs and debris – confusion about what to do
 - c. Need to know: what are the impacts of bulkheading, rip rap, debris dumped. Bulkheading and rip-rapping cause erosion of adjacent lands
 - d. Concerns about point source/non-point source at corner of scrap yard, Hickman and Hwy 15. Is business operating within existing environmental

permits? Are operations outside of environmental permits? How do we find out?

- e. There is a ditch just upstream where a ditch joins the river – there is a white-colored plume coming from the south side: possibly Pine Crest subdivision – is there some kind of violation going on?
- f. There is a development on Lamey Bridge Road – Randy Mason Trendsetters is giving property to City of D'Iberville – we see trucks, little cars, 4 wheel drives – now there is more car traffic – leaving trash on the sandbar. What can citizens do? Who do we contact?
- g. What are the effects of rip-rap and bulk-heading
- h. Why is river shallower?
- i. In general, we need to address the lack of information about causes and effects within our watershed
- j. Need geomorphic and hydrologic data – need to model what's happening to the river
- k. Need to know and understand wetland loss – can it be mapped?
- l. Need more measuring stations, more monitoring stations, - both for water quality and flood stages
- m. Need to understand the effects of land use changes on the river
- n. Need more satellite imagery with before and after Wal-mart/Lowes (Sangani) development
- o. New landowners need access to sustainable development practices. They need to know what to do to protect the property when putting in septic tanks or evaluating bank erosion. There is too much conflicting information. Where do you go to get sound advice?

IV. *Prioritized list of needs (from the second watershed forum)*

1. Address safety concerns. Safety is a real issue – especially with the advent of the wave-runner.
2. Provide education about:
 - a. wetland function for storage and how to maximize to decrease flooding risk
 - b. where to get watershed information
 - c. reaching out and connecting to others in the watershed: “We are all waterfront”
 - d. planting trees
 - e. streamside management – more information about the benefits of vegetation, particularly native vegetation in the riparian buffer.
3. Develop building and zoning codes that require setbacks from the rivers banks. Create a protected riparian corridor that enhances scenic beauty, water quality and public safety
4. Need funding for research and monitoring:
 - a. Is there still a proposed reservoir in the wings?
 - b. Need to know the % of impervious surface in the watershed

- c. Need land use planning at the watershed scale – identify areas for increased development as well as areas for protection. We need to manage and plan for growth. Do it right!
 - d. Need to understand the impacts of bulkheading and docks.
 - e. Need to know the % of river bank that has been bulk-headed
5. Need consistency in construction of bulkheads and docks.
6. Need to plant native plants and trees, e.g. cypress trees
7. Education need: how do we get people to care?
 - a. politicians and agencies
 - b. individuals - find ways to help people to care about their impact on others and the environment
8. Need a safe harbor upriver during storms
9. Address excessive boat traffic on weekends and throughout the summer – these problems with boating are unique to Tchoutacabouffa
10. Need to understand the politics of watershed protection – need to learn how to become an impetus for change
11. Develop and implement watershed signage program, possibly billboards too – educate and build pride in place
12. Start small – successful action is the key to success – start with educating and implementing streamside management and other BMPs.
13. Interested in adopt-a-stream program: citizen monitoring of water quality
14. Interested in recording river levels: citizen monitoring and reporting of river levels during storm events
15. Interested in a program where people come out to advise new landowners about best building practices, possibly through the MSU coastal extension center or CRMP?
16. Need comprehensive land-use planning with a watershed approach

BUILDING A PARTNERSHIP FOR THE TCHOUTACABOUFFA RIVER ACTION PLAN

After reviewing literature about the watershed and developing maps for use in community discussions, the Land Trust for the Mississippi Coastal Plain (LTMCP) hosted two roundtable discussions with private landowners along the lower Tchoutacabouffa River. These meetings, held in spring 2007, were the first formal discussions with landowners and the foundation of building a long-term partnership to address the health of the Tchoutacabouffa River Watershed.

First, we recommend an assessment at the watershed scale to (1) determine the full extent of geomorphic changes causing accelerated erosion and reduced water quality in the river, (2) understand increased risks of flooding and solutions/restoration strategies to abate flooding. The assessment needs to identify priority areas for stream restoration, preservation and sensitive areas for special land use planning. Further study and partnership efforts may ultimately result in the development of a watershed implementation plan that will include prioritized action, timelines, budget estimates and measures of success. We recommend continued strategic planning efforts to improve the scope of the Tchoutacabouffa River Watershed Action Plan.

The initial action plan, based on concerns and needs identified by landowners during spring 2007, is noted below:

EDUCATION STRATEGIES

1. Create a webpage for the Tchoutacabouffa Watershed Partnership that can provide answers to questions asked by local stakeholders:
 - a. General information about the watershed, what are the creeks and streams and lands that makeup the watershed?
 - b. Boating safety – Q&A with DMR and Coast Guard, boating safety class schedules, contact information for enforcement issues
 - c. Wetland Function
 - d. Recommendations about *green infrastructure* alternatives to bulkheading for erosion control
 - e. Streamside Management and Best Management Practices (BMPs)
 - f. Links to county and city zoning maps
2. Educate the public about watersheds and streamside management:
 - a. Develop a roadside/streamside education campaign to include signage on private lands (willing landowners) Design and install watershed signage that will (1) educate and build pride in place along the bayou and (2) encourage watershed protection.

- b. Host a neighborhood meeting, or series of meetings, about streamside management and best management practices. Include city and county public works employees in these discussions. Print and distribute *Tchoutacabouffa Streamside Management for Landowner's Handbook*
3. Discuss with MSU Coastal Extension Service the possibilities of designing and hosting a landowner education program for homeowners that addresses the primary information needs for homeowners and small land owners along the river, especially riverbank stabilization, native plants and reforestation.
4. Identify elementary schools in the watershed and contact them to schedule the Watershed Harmony Puppet Show during 2007-2008 school calendar. Develop a children's activity page to be used in conjunction with the Watershed Harmony Puppet Show.

PROTECTION AND RESTORATION STRATEGIES

1. Host a facilitated Q&A session with private landowners along the river and DMR boating and safety officials and possibly coast guard officials. Look for actions that can be taken to alleviate concerns over increased number of boats, size of boats and speed of boats. Create an action plan to address boating concerns.
2. Identify river bank areas that need re-planting and establish a streamside re-planting program to include native trees and vegetation, especially cypress trees.
3. Work with County and City planning commissions to establish "set-backs" along the river bank. Also an excellent opportunity to involve the new Harrison County Utility Authority in floodplain management focused on green infrastructure - vegetated riparian buffers
4. Work with Harrison County Board of Supervisors to identify currently available resources to address the land-use questions, including number of wetland acres lost and number of linear feet with hardened surfaces (bulkheading and rip-rap). Look for funding sources to monitor wetland loss and natural bank loss.
5. Identify landowners along the lower Tuxachanie Creek interested in protecting/improving water quality. Host and support an Adopt-a-Stream workshop for landowners on the lower Tuxachanie. (Note: the Tchoutacabouffa River is too deep to implement adopt-a-stream protocols in-stream.)
6. Host and support the development of a citizen's monitoring program for river levels. Contact Pat Harrison Waterway, Harrison County Utility Authority or USGS to see if model programs exist.
7. Work with state and federal partners, particularly EPA and MDEQ, to identify grant programs and primary partners to complete a watershed assessment and watershed

implementation plan that will inform private action and public policy and action in the watershed.

ORGANIZATIONAL STRATEGIES TO ENSURE IMPLEMENTATION AND SUPPORT OF ACTION PLAN

1. Identify a local champion(s) for the watershed
2. Ask the Land Trust for Mississippi Coastal Plain Board of Directors to establish a Tchoutacabouffa River Watershed Partnership Committee (steering committee) that will function as a special action committee under the Land Trust's auspices until which time the partnership desires to create an independent organization. The primary purpose of the committee will be to implement the action plan. This committee will be tasked with:
 - a. Categorizing and prioritizing the Action Plan;
 - b. Creating a timeline for the Action Plan;
 - c. Developing an estimated budget and volunteer staffing program to implement the timeline;
 - d. Conducting an annual review of the watershed Action Plan.
3. Formalize the technical advisory committee and send each person a copy of the action plan so that they are better prepared to participate and provide information and assistance as needed.
4. Formalize the education, recreation resources team and send each person a copy of the action plan so that they are better prepared to participate and provide information and assistance as needed.

EVALUATION OF PROGRESS AND PLAN REVISION

Regular evaluation of the watershed action plan will ensure that the plan remains a vital tool for developing a strong watershed partnership and to guide future management efforts in the watershed. LTMCP advisory team shall appoint a small working group to review the action plan annually. **Watershed plans are living documents that must be adapted to changing conditions within the watershed.** The annual review shall include consideration of tasks completed as well as reviewing changes in the watershed, in stakeholder interests and in understanding of the Tchoutacabouffa River Watershed.

RESOURCES

Watershed Description:

MARIS on-line mapping for Mississippi at www.maris.state.ms.us/HTM/maps.htm

Wildlife Resources:

Mississippi Natural Heritage Inventory on-line at www.mdwfp.com/museum/html/research/general_info.asp, NatureServe Explorer database of species information on-line at www.natureserve.org/explorer/

Water Quality Standards:

Through MDEQ Basin Management water quality standards website at www.deq.state.ms.us/MDEQ.nsf/page/WMB_Water_Quality_Standards?OpenDocument

Designated Beneficial Uses: through the MDEQ Basin Management website at www.deq.state.ms.us/MDEQ.nsf/page/WMB_Basin_Management_Approach?OpenDocument

Biological Ratings: Contact MDEQ.

303(d) List and 305(b) report: MDEQ on-line at www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument

Approved TMDLS: MDEQ TMDL website at www.deq.state.ms.us/MDEQ.nsf/page/TWB_Total_Maximum_Daily_Load_Section?OpenDocument
or through Basin Management website at www.deq.state.ms.us/MDEQ.nsf/page/WMB_Basin_Management_Approach?OpenDocument

Potential management actions:

Mississippi NRCS program website at www.ms.nrcs.usda.gov/programs/, particularly the EQIP program conservation practice, sign up, and ranking documents

Mississippi Streamside Landowner's Handbook. By Andrew Whitehurst, Scenic Streams Stewardship Program, Mississippi Museum of Natural Science, Mississippi Dept of Wildlife, Fisheries and Parks

Handbook for Developing Watershed Plans to Restore and Protect Our Waters, U.S. Environmental Protection Agency, Office of Water, Nonpoint Source Control Branch, Oct. 2005

Economic values (Natural Capital):

From Open Spaces to Wild Places, The Economic Value of Habitat protection to Your Community, a publication of the Southeast Watershed Forum.

www.southeastwaterforum.org

Appendix

MISSISSIPPI NATURAL HERITAGE DATA

PLANTS AND ANIMALS FOUND IN HARRISON COUNTY

Source: Mississippi Natural Heritage Program, located in the Mississippi Museum of Natural Science, Mississippi Department of Wildlife Fisheries and Parks:
www.mdwfp.com/museum/html/research/

The Mississippi Natural Heritage Program identifies the state's most significant natural areas through a comprehensive inventory of rare plant and animal species, exemplary natural communities, special geological features, and significant natural areas. From the inventory, the Natural Heritage Database compiles information on the distribution, biology, status, and preservation needs of these species and communities. The database is updated continuously and is used to set state, national and global priorities for the preservation of natural diversity.

The Natural Heritage Database

The Natural Heritage Database is a continuously updated inventory of rare plant and animal species and representative natural communities in Mississippi. Today current information on the statewide status and locations of special animals, plants, and natural communities is available in a central location. By utilizing the Heritage Program, resource planners are able to save time and money. The information contained within the Program's database was compiled from a broad range of sources, including museum and herbarium collection records, publications, unpublished reports, and experts throughout the southeast.

Specific Information Available:

- Tracks the status of more than 700 species of plants and animals that are rare or imperiled at the state or global level.
- Contains more than 9,400 records of locations for rare plants, animals, and natural communities.
- State and Federal protection status of select species.
- State and global ranking of species and communities.
- Protection and management priorities and urgency.

PLANTS – Harrison County

Scientific Name	Common Name	Global Rank	State Rank
AGALINIS APHYLLA	COASTAL PLAIN FALSE-FOXGLOVE	G3G4	S2S3
AGALINIS FILICAULIS	THIN STEMMED FALSE-FOXGLOVE	G3G4	S2?
AGRIMONIA INCISA	INCISED GROOVEBUR	G3	S3S4
ANDROPOGON PERANGUSTATUS	ELLIOTT'S BLUESTEM (VAR.2)	G5T3T4	S1?
ARISTIDA CONDENSATA	SANDHILLS THREE AWN	G4?	S3S4

AVICENNIA NITIDA	BLACK MANGROVE	G5	SH
BURMANNIA BIFLORA	NORTHERN BURMANNIA	G4G5	S3S4
CALOPOGON BARBATUS	BEARDED GRASS-PINK	G4?	S2S3
CAREX EXILIS	COAST SEDGE	G5	S2
CHAMAECRISTA DEERINGIANA	FLORIDA SENNA	G1G2	S1
CLEISTES DIVARICATA	SPREADING POGONIA	G4	S3
COREOPSIS BASALIS	GOLDEN-MANE TICKSEED	G5	S1?
DICHANTHELIUM ERECTIFOLIUM	ERECT-LEAF WITCHGRASS	G4	S3S4
ELYONURUS TRIPSACOIDES	PAN AMERICAN BALSAMSCALE	G5?	SH
EPIDENDRUM CONOPSEUM	GREEN-FLY ORCHID	G4	S2
ERIOCAULON TEXENSE	TEXAS PIPEWORT	G4	S2S3
GAYLUSSACIA FRONDOSA	DANGLEBERRY	G5	S2S3
HELIANTHEMUM ARENICOLA	GULF ROCKROSE	G3	S1S2
ILEX AMELANCHIER	JUNE BERRY HOLLY	G4	S3
ILEX CASSINE	DAHOON HOLLY	G5	S2
ILEX MYRTIFOLIA	MYRTLE HOLLY	G5?	S3S4
IPOMOEA PES-CAPRAE	RAILROAD VINE	G5	S2S3
ISOETES LOUISIANENSIS	LOUISIANA QUILLWORT	G3	S2
JUNIPERUS SILICICOLA	SOUTHERN RED CEDAR	G5T4T5	S2
LACHNOCAULON DIGYNUM	PINELAND BOGBUTTON	G3	S2
LILAEOPSIS CAROLINENSIS	CAROLINA LILAEOPSIS	G3G5	S2S3
LINDERA SUBCORIACEA	BOG SPICE BUSH	G2	S2
LINUM MACROCARPUM	LARGE FRUITED FLAX	G2?	S2
LYCOPODIUM CERNUUM	NODDING CLUBMOSS	G5	S2
MACRANTHERA FLAMMEA	FLAME FLOWER	G3	S3?
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER	G5	S2S3
MIKANIA CORDIFOLIA	FLORIDA KEYS HEMPVINE	G5	S3S4
PANICUM NUDICAULE	NAKED-STEMMED PANIC GRASS	G3Q	S2
PARONYCHIA ERECTA	BEACH SAND-SQUARES	G3G4	S1S2
PASPALUM MONOSTACHYUM	GULFDUNE PASPALUM	G4?	SU
PELTANDRA SAGITTIFOLIA	WHITE ARUM	G3G4	S2S3
PETALOSTEMON GRACILIS	PINE BARRENS PRAIRIE CLOVER	G5T3T4	S2S3
PHYSALIS ANGUSTIFOLIA	COAST GROUND-CHERRY	G3G4	S3S4
PINGUICULA PLANIFOLIA	CHAPMAN'S BUTTERWORT	G3?	S2

PINGUICULA PRIMULIFLORA	SOUTHERN BUTTERWORT	G3G4	S3
PLATANThERA BLEPHARIGLOTTIS	LARGE WHITE FRINGED ORCHID	G4G5	S2
PLATANThERA CRISTATA	CRESTED FRINGED ORCHID	G5	S3
PLATANThERA INTEGRa	YELLOW FRINGELESS ORCHID	G3G4	S3S4
POLANISIA TENUIFOLIA	SLENDER-LEAF CLAMMY-WEED	G5	S1S2
POLYGALA HOOKERI	HOOKEr'S MILKWORT	G3	S1S2
QUERCUS MYRTIFOLIA	MYRTLE-LEAF OAK	G5	S1?
RHYNCHOSPORA MACRA	LARGE BEAKRUSH	G3	S3
RHYNCHOSPORA STENOPHYLLA	CHAPMAN BEAKRUSH	G4	S1?
RUPELLIA NOCTIFLORA	NIGHT-FLOWERING RUELLIA	G2	S2
RUPELLIA PEDUNCULATA SSP PINETORUM	PINE BARREN RUELLIA	G5T3?	S3
SARRACENIA LEUCOPHYLLA	CRIMSON PITCHER-PLANT	G3	S2S3
SORGHASTRUM APALACHICOLENSE	OPEN INDIAN GRASS	G3Q	S3
SPIRANTHES LONGILABRIS	GIANT SPIRAL LADIES'-TRESSES	G3	S2S3
STEWARTIA MALACODENDRON	SILKY CAMELLIA	G4	S3S4
STYLISMA AQUATICA	WATER SOUTHERN MORNING-GLORY	G4	S1
SYNGONANTHUS FLAVIDULUS	YELLOW PIPEWORT	G5	S2?
UTRICULARIA PURPUREA	PURPLE BLADDERWORT	G5	S2S3
XYRIS CHAPMANII	CHAPMAN'S YELLOW-EYED GRASS	G3	S2?
XYRIS DRUMMONDII	DRUMMOND'S YELLOW-EYED GRASS	G3	S2
XYRIS FLABELLIFORMIS	FAN-SHAPED YELLOW-EYED GRASS	G4	SU
XYRIS SCABRIFOLIA	HARPER'S YELLOW-EYED GRASS	G3	S1S2

ANIMALS – Harrison County

Scientific Name	Common Name	Global Rank	State Rank
ACCIPITER STRIATUS	SHARP-SHINNED HAWK	G5	S1?B,SZN
ACIPENSER OXYRINCHUS DESOTOI	GULF STURGEON	G3T2	S1
AIMOPHILA AESTIVALIS	BACHMAN'S SPARROW	G3	S3?B,SZN
ANAS FULVIGULA	MOTTLED DUCK	G4	S3B,S4N
CARETTA CARETTA	LOGGERHEAD; CABEZON	G3	S1B,SZN
CHARADRIUS MELODUS	PIPING PLOVER	G3	SZN
COTURNICOPS NOVEBORACENSIS	YELLOW RAIL	G4	S2N

DRYMARCHON CORAIS COUPERI	EASTERN INDIGO SNAKE	G4T3	S1
EGRETTA RUFESCENS	REDDISH EGRET	G4	SZN
ENNEACANTHUS GLORIOSUS	BLUESPOTTED SUNFISH	G5	S3
FALCO COLUMBARIUS	MERLIN	G5	SZN
FALLICAMBARUS BYERSI	LAVENDER BURROWING CRAYFISH	G4	S3
FALLICAMBARUS DANIELAE	SPECKLED BURROWING CRAYFISH	G2	S2
FUNDULUS JENKINSI	SALTMARSH TOPMINNOW	G2	S3
GOPHERUS POLYPHEMUS	GOPHER TORTOISE	G3	S2
GRUS CANADENSIS PULLA	MISSISSIPPI SANDHILL CRANE	G5T1	S1
HAEMATOPUS PALLIATUS	AMERICAN OYSTERCATCHER	G5	SPB,SZN
HALIAEETUS LEUCOCEPHALUS	BALD EAGLE	G4	S1B,S2N
HETERANDRIA FORMOSA	LEAST KILLIFISH	G5	S3
HETERODON SIMUS	SOUTHERN HOGNOSE SNAKE	G2	SH
LATERALLUS JAMAICENSIS	BLACK RAIL	G4	S2N
LEPIDOCHELYS KEMPII	KEMP'S OR ATLANTIC RIDLEY	G1	S1N
MACROCHELYS TEMMINCKII	ALLIGATOR SNAPPING TURTLE	G3G4	S3
MALACLEMYS TERRAPIN PILEATA	MISSISSIPPI DIAMONDBACK TERRAPIN	G4T3	S2
NERODIA CLARKII CLARKII	GULF SALT MARSH SNAKE	G4T3	S2?
NOTROPIS CHALYBAEUS	IRONCOLOR SHINER	G4	S2
NYCTICORAX NYCTICORAX	BLACK-CROWNED NIGHT-HERON	G5	S3?B,SZN
ONTHOPHAGUS POLYPHEMI	ONTHOPHAGUS TORTOISE COMMENSAL SCARAB BEETL	G?	S?
PANDION HALIAETUS	OSPREY	G5	S3B,SZN
PELECANUS ERYTHORHYNCHOS	AMERICAN WHITE PELICAN	G3	S2N
PELECANUS OCCIDENTALIS	BROWN PELICAN	G4	S1N
PEROMYSCUS POLIONOTUS	OLDFIELD MOUSE	G5	S2S3
PICOIDES BOREALIS	RED-COCKADED WOODPECKER	G3	S1
PITUOPHIS MELANOLEUCUS LODINGI	BLACK PINE SNAKE	G4T3	S2
PROCAMBARUS FITZPATRICKI	SPINY-TAILED CRAYFISH	G2	S2
PSEUDEMYIS POP 1	MISSISSIPPI REDBELLY TURTLE	G?	S1
PSEUDOTRITON MONTANUS	MUD SALAMANDER	G5	S2S3
RANA HECKSCHERI	RIVER FROG	G5	S1
RANA SEVOSA	DARK GOPHER FROG	G1	S1
REGINA RIGIDA SINICOLA	GULF CRAYFISH SNAKE	G5T5	S3?

RHADINAEA FLAVILATA	PINE WOODS SNAKE	G4	S3?
STERNA ANTILLARUM	LEAST TERN	G4	S3B,SZN
STERNA MAXIMA	ROYAL TERN	G5	S1B,S4N
THRYOMANES BEWICKII	BEWICK'S WREN	G5	S2S3B,SZN
TRICHECHUS MANATUS	MANATEE	G2	SZ