

Gulf Coast Tree Assessment

A Partnership Responding to
Community Needs & Urban Tree
Damage Following Hurricane Katrina



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[Presentation to the International Society of Arboriculture at their 82nd Annual Conference & Trade Show in Minneapolis, Minnesota July 29-August 2, 2006]

The Gulf Coast Tree Assessment (GCTA) project was a partnership created to provide U&CF assistance to communities impacted by Hurricane Katrina.

The specific project focus was the risk assessment of trees remaining in the public rights-of-way following the initial storm clean-up by FEMA and the Corps of Engineers.

Statement of the Project

- **Following any disaster, many urban trees and forest remnants remain viable**
- **These trees & forests can form the foundation for rebuilding the urban forest**
- **Communities may experience additional losses when tree assessments are not done by experienced professionals**
- **Communities often lack the expertise or capacity to make these assessments**



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The project was initiated based on:

1. Interest of professional arborists & their employers in providing some meaningful assistance
2. The interest of professional organizations and UF corporate partners in supporting the project
3. USDA Forest Service (Region 8) interest in facilitating the project to support our state agency partners
4. And these four statements:
 - a. Many viable trees and forests remain following disasters
 - b. These remnants are biologically and psychologically important to the community rebuilding effort
 - c. Without professional expertise, additional trees may be lost (or damaged) beyond what the Corp of Engineers removed in the initial cleanup
 - d. Expertise and/or capacity is often lacking, especially in smaller communities

Remnant Trees – Live Oak



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Along the Gulf Coast, Live oak (*Quercus virginiana*) is an example of an important disaster remnant that should be retained when possible with pruning or other suitable mitigation.

The Partnership

- **State Agencies**

- Mississippi Forestry Commission
- Louisiana Department of Agriculture & Forestry
- Mississippi State Cooperative Extension Service

- **Professional Organizations**

- Society of Municipal Arborists (SMA)
- International Society of Arboriculture (ISA)

- **Davey Resource Group (DRG)**

- Environmental Systems Research Institute (ESRI),
- Geospatial Information & Technology Association (GITA)



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The project implementation was to be based on impacted communities working through their state forestry agency.

Consequently, the project partners included:

1. State agencies that would:
 - a. Function as the point of contact for communities
 - b. Continue to serve as liaison between the community, other partners, and the volunteers
 - c. Provide other local logistics when possible
2. Professional organizations that would:
 - a. Set standards/requirements for volunteers
 - b. Coordinate the recruitment of volunteers
 - c. Provide mechanism and funding to reimburse volunteers for expenses
3. Davey Resource Group, the project's primary corporate partner who:
 - a. Provided technical expertise for inventorying and data collection
 - b. Solicited equipment and software donations from other corporations or organizations
 - c. Developed a web presence following the project

These project partners worked with the USDA Forest Service (Region 8, Southern Research Station and WO U&CF) to define, develop and implement the Gulf Coast Tree Assessment project.

The Partnership

- **Community Organizations**
 - Land Trust for the Mississippi Coastal Plain
- **Local Communities**
 - Municipal Staff
 - Volunteers
- **Volunteer Arborists & Urban Foresters**
 - 35 Volunteers
 - 16 States, 3 Provinces, plus Argentina
- **USDA Forest Service**
 - Region 8
 - Southern Research Station (SRS)



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As communities were identified, the partnership expanded to include:

4. Community organizations that provided housing for volunteers
5. Municipal staff and local volunteers from the communities
6. And the 35 arborists and urban foresters that volunteered for the project

Implementation

- Organize Partnership (Nov/Dec 2005)
- Call for Professional Volunteers
 - Certified Arborists
 - SMA & ISA
- Develop Assessment Protocol & Obtain Equipment
 - Davey Resource Group
 - Southern Center for Urban Forestry
- Conduct Training & Coordination
 - Southern Center for Urban Forestry
 - Region 2
 - Northeastern Area
- Provide Funding
 - ISA
 - Region 8 (Southern Center for Urban Forestry)



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The core group of partners began conference call discussions in November 2005 that resulted in:

1. Region 2 assistance (Susan Ford) to Region 8 to determine safety & other logistic issues for the FS
2. SMA recruitment efforts initiated
3. ISA commitment of funding
4. DRG and SRS development & testing of data collection protocol in Wiggins, MS
5. SRS (Eric Kuehler) development of volunteer training
6. Allocation of additional funding from Region 8 through the ISA
7. And the initial group of volunteers working in Biloxi, MS in mid-January

In mid-February the project moved to Kenner, LA to begin work in the New Orleans area (south and north of Lake Ponchartrain).

At that time the Northeastern Area (St. Paul) sent Katie Armstrong from Detroit to work for 1 month as the project's on-site coordinator.

Project Statistics

Timeframe:	December 2005 through May 2006
Communities Assisted:	10
Population Directly Affected	110,000
Volunteers:	35
State/Local Contacts:	17
Partner Participation:	>20
Trees Assessed:	7,175



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From mid-December through the project's completion in mid-May, professional volunteers assisted 10 communities.

Their tree risk assessment work directly affected over 100,000 people. That is, volunteers evaluated trees on the streets in front of the homes of 100k residents.

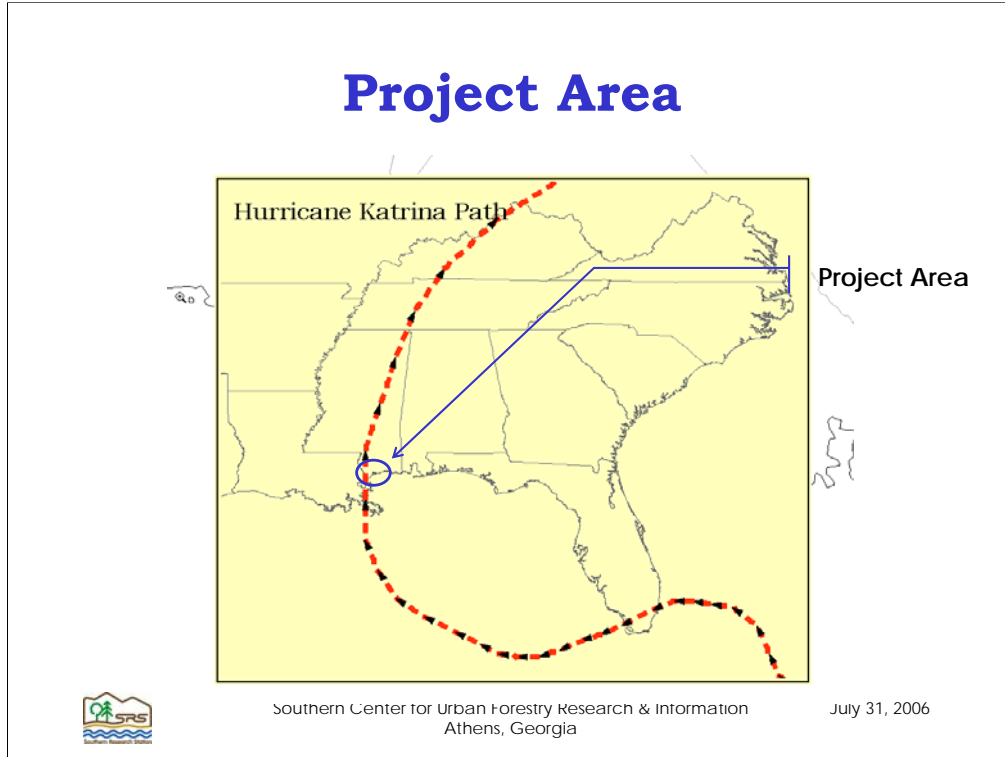
Obviously, the traveling public in general was also a beneficiary of our project, but no attempt was made to enumerate those people.

The core group of partners had at least 20 staff members working on the project at various stages, and an additional 17 local & state staff assisted in various capacities.

Assessments were made on over 7,000 individual trees in the 10 communities.

An additional inventory of dead trees on private property in Hancock County (MS) included nearly 6,000 trees that posed a risk to property owners as they prepared to move home & rebuild.

Project Area



The tree risk assessment project was centered in the coastal area where Hurricane Katrina made landfall in August 2005.

Project Communities

Biloxi, MS
Ocean Springs, MS
Kenner, LA
City Park, LA
Mandeville, LA
Lake Vista, LA
Covington, LA
Jefferson Parish, LA
St. Tammany Parish, LA
Hancock County, MS



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We began work in Biloxi and Ocean Springs (MS) and then moved to Kenner (LA) to work 7 locations around Lake Ponchartrain.

The project concluded at the request of the Mississippi State Cooperative Extension Service in Hancock County (MS) in the Waveland community and other neighborhoods in the area as time permitted.

Volunteers & Training



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Volunteers recruited were Certified Arborists or Urban Foresters with storm experience. They were asked to commit to a 8-9 day tour in the Gulf region.

Photo on left: Orientation by Tom Campbell & Mahlon Doucet in “Lower 9th Ward”, New Orleans

Photo on right: Field exercise at first training session in Biloxi (MS) conducted by Eric Kuehler

Volunteers typically arrived on a Monday afternoon; training in safety, data collection and equipment operation (after Biloxi) was conducted on Tuesday.

Local or state staff also provided an orientation to the disaster in that community and helped prepare the volunteers for their work.

Volunteers & Training



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Electronic data collection & GPS equipment was used when the project was moved to Kenner (LA).

Photo on left: Street maps produced by SCUFR&I in Athens (GA) for Old Metairie (LA)

Photo on right: Leica GPS data collection equipment from GITA

In all communities, paper maps were used and helpful for navigation and coordination of multiple assessment teams.

Tree Damage



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Assessment teams were evaluating trees for two primary risk factors:

1. Damage to an extent that could result in a whole tree failure or level of risk that could only be mitigated with a “tree removal”
2. Damage that posed a risk to the public that could be mitigated with “pruning”
3. On the Mississippi coast, some live oaks were identified for soil replacement

Photo on left: Longleaf pine with major stem failure along the public right-of-way; tree recommended for removal

Photo on right: Live oak with soil erosion that occurred when the storm surge receded

Tree Damage



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Many trees not directly damaged by high winds were damaged when houses or vehicles were washed into them during the storm surge.

In City Park (New Orleans) flooding from levee breaks created flooding that remained for weeks.

Photo on left: Live oak along a street in Biloxi (MS)

Photo on right: Live oak in City Park with GCTA volunteer (Craig Herwig, Fairfax County, VA); black lines indicate various levels while flood waters drained over several weeks;

in City Park, GCTA trees were marked with numbered aluminum tags (hence the hammer & nail pouch)

Assessment Teams



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Assessment was done by teams. Teams provided some element of safety, and made measurement and recording of data easier.

We also tried to pair arborists from within the region with those from other US regions to impart some knowledge of local tree species.

Photo: Team (Phil Pierce, Springfield, NE and Dudley Hartel, Athens, GA) discusses relative risk of a hanger over the street

Assessment Teams



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When a tree was identified as a public risk, the team would record the location of the tree, species, diameter and the mitigation recommendation (prune or remove).

Trees on the public right-of-way were marked (red for removal, white for pruning) with paint. Trees on private property that could affect the public right-of-way were usually marked by painting the red or white code at the edge of the pavement.

Photo: Check Weber (Huntsville, AL) and Gary Bishop (Merced, CA) mark a tree for pruning (white paint at the edge of pavement indicating that the tree is on private property)

Limiting Factors

- **Community need, interest & ability to assist**
 - Staffing (or relationship with state agency)
 - Scale of disaster
- **Our coordination with local community**
- **Volunteer recruitment & management**
- **Housing for volunteers**
- **Scheduling**
- **Relationship with FEMA**
 - Communities
 - Their Response



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During the course of the project, several factors were encountered that limited the extent and success of the volunteer assessment.

These included:

1. In many cases, the intensity and scale of the disaster made it difficult for communities to respond to our offer of risk assessment even six to nine months after the storm
2. Most communities did not have urban forestry staff that could respond, or when those staff did exist, most communities were experiencing staff vacancies because of displaced workers and their families
3. When communities did respond to our assessment offer, it was often difficult to get the necessary data needed to produce maps for volunteers or delineate priority areas for the assessment; state forestry agencies provided assistance to overcome these (#2 & 3) problems
4. Volunteers interested in the project often needed more advanced notice of dates than we could provide because of the logistical difficulties in the disaster area
5. Housing for volunteers was not budgeted because in nearly all cases, housing (i.e., hotels) was not available in most areas; cities could not provide this easily; in Biloxi and Ocean Springs (MS), the local Land Trust arranged for housing in private homes; Kenner (LA) was able to provide four FEMA trailers that they had in excess of their needs (they were housing some displaced workers and their families)
6. Estimating the arborist-hours needed in any community was difficult because of differences in remaining tree density (i.e. trees per mile or block), and travel and access difficulty (i.e. heavy traffic because of damage crews working in the area and streets still closed for debris removal)
7. Many communities had a tenuous connection with FEMA at best; once our assessment was completed the success with their local FEMA contacts gave mixed results
8. FEMA responded differently to our reports depending on the communities contact at the district or local level

Reports & Maps

Tree Risk Assessment
City of Kenner, Louisiana

Trees Recommended for Removal: Public

Tree	Address	Street	Diameter	Species
Tree is on: 34th St between: Colorado Ave and: California Ave				
399	1805	34th St	17-19"	Other
398	3400	34th St	20-24"	Pine
Tree is on: 43rd St between: Indiana Ave and: Illinois Ave				
836	4300	43rd St	9-12"	Pine
Tree is on: 44th St between: Idaho Ave and: Georgia Ave				
830	4340	44th St	13-16"	Pine
Tree is on: Alabama Ave between: 39th St and: 40th St				
145	3920	Alabama Ave	9-12"	Magnolia
Tree is on: Androus Ave between: Gelpi Ave and: Montego Ave				
681	51	Androus Ave	13-16"	Other
Tree is on: Antigua Dr between: Emile Dr and: Osborne Ave				
183	37	Antigua Dr	17-19"	Maple
184	37	Antigua Dr	9-12"	Magnolia
268	37	Antigua Dr	17-19"	Maple
269	37	Antigua Dr	9-12"	Magnolia



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The assessment resulted in detailed reports of tree removal and pruning recommendations. These were either presented in a street/block format which were easy for a contractor to follow in locating trees, and also included maps with the trees plotted. The maps helped the city identify neighborhoods with the most or most significant damage. (If they didn't already have a good idea!)

Cities were also provided with an electronic copy of the data and GIS layers to overlay onto their GIS street layer.

Community Status

- **Biloxi**
 - Received \$180,000 for contracting reimbursement
- **City Park**
 - FEMA contractor “reviewing” our assessments
- **Kenner**
 - Initial verbal agreement with FEMA for ROW hazards
- **Hancock County**
 - FEMA contracting for public ROW hazards
 - Working with Governor’s office for dead tree mitigation
- **St. Tammany Parish**
 - RFB for hazard reduction and FEMA involvement



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As indicated, initial results of the project are mixed. Biloxi (MS) got immediate approval for tree removals and pruning affecting the public right-of-way. After some negotiations, Kenner (LA), St. Tammany Parish (LS), and Hancock County (MS) have received some level of debris removal contract approval (or verbal promises of approval).

After starting a contractor in Kenner (LA), the local FEMA coordinator stopped the project.

Next Steps

- **Complete project review with partners**
 - Improve recruitment process
 - Modification to training/orientation
 - Reimbursement process
- **Test new equipment & procedures**
 - In progress (Athens, July 25th)
- **Limited “real world” test in Fall 2006**
 - Hancock County (mid-September)



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Following the project closeout in May, the partners will evaluate all components of the project to make improvements where needed. Specific areas include: recruitment & scheduling, training and orientation, and the expense reimbursement process.

The SCUFR&I has started testing new equipment and data collection protocols and will be returning to Hancock County (MS) in mid-September for testing and needed data collection pending FEMA approval of risk tree removal.

Next Steps

- **Include FEMA/Army Corps as partner**
 - Coordination of effort
 - WO U&CF
- **Solve volunteer housing limitations**
- **Establish pre-disaster U&CF databank**
- **Connections to related projects**
 - Region 8 U&CF Coordinators Storm Committee
 - Two year effort to assemble southern material related to disasters
 - SGSF funded "Storm Damage Assessment" procedure



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Before another disaster of this scale strikes the southern region (Region 8) we plan to work on the following issues:

1. Make pre-disaster connections with FEMA & Corps of Engineers (i.e. debris contracting)
2. Try to setup (probably through FEMA) volunteers housing trailers like we had in Kenner (LA)
3. The SCUFR&I is proposing a pre-disaster databank of GIS & other community information that would facilitate assessment scheduling
4. Continue to connect the post-cleanup Tree Assessment project with other regional storm efforts being developed by state U&CF coordinators

Project Conclusion

- First southern attempt at post-storm urban tree assessments at this scale
- Positive (but mixed) results in communities assisted
- Refinement of process underway in preparation for similar assessments
- Individual tree assessments are part of other pre & post-storm procedures



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At this point (mid-2006) we can make these statements about the GCTA partnership:

1. The tree assessments by volunteers at this scale was the first project of its type in the South
 - a. Professional arborists and their employees demonstrated a desire and willingness to assist other communities
 - b. The project provided training to volunteers that would otherwise not be available
 - c. Our “simple” objective (i.e. tree assessment for public risk) was needed by and useful to communities regardless of the stage of clean-up
2. We had good results in some communities
3. We are refining the process with the expectation that we may wish to implement this type of assessment again (i.e.. on an as-needed basis)
4. We look at this project as a component of a broader pre-disaster planning & mitigation and post-disaster response process

Gulf Coast Tree Assessment

Photo Credits:

Carlos Anaya, Buenos Aires, Argentina

Bill Candlish, Arleta, CA

Sam Gravel, Huntsville, AL

Patrick Milling, Hood River, OR

Todd Nelson, Alexandria, VA

Chuck Weber, Huntsville, AL



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Thanks to these volunteers who provided photographs for this presentation and other project documentation.

Volunteer Housing



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FEMA trailers provided by the City of Kenner (LA) from mid-February to the conclusion of the project in Mid-May.

In addition, the Kenner Planning Department provided office space (24/7) and Internet access.

In Biloxi and Ocean Springs (MS), the Biloxi Planning Department and City Arborist provided 24/7 office space and map (GIS) printing.

Project Coordination



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Katie Armstrong, USDA FS Northeast Area, works with Leica equipment in City Park, New Orleans (?). Katie provided on-site coordination and volunteer scheduling in February and March before returning to her Emerald Ash Borer duties in Detroit.

Assessment Teams



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The first volunteer crew just before field training in Biloxi, MS. Mid-January, 2006.

Joining the 6 volunteers were Steve Shurtz of SMA (Baton Rouge), Bonnie Stine, LA Dept of Ag & Forestry (Baton Rouge), Rick Olson and Todd Matthews of the MS Forestry Commission (Jackson and Wiggins, MS), City Arborist, Eric Nolan and USDA FS staff (Eric Kuehler and Dudley Hartel).

Volunteers included:

- Gary Bishop, Merced, CA
- Sam Gravel, Huntsville, AL
- James Milling, Hood River, OR
- Philip Pierce, Springfield, NE
- Chuck Weber, Huntsville, AL
- Robert Crawford, Long Beach, MS

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Assessment team during training in City Park, New Orleans. April 26, 2006
Our largest volunteer crew!

Volunteers included:

- Antonio Botelho, Qualicum Beach, BC
- Bill Candlish, Arleta, CA
- Paul D'Agostino, Evanston, IL
- John Haas, West Haven, CT
- Dan Hicks, Moncton, NB
- Susan McAllister, Cambridge, ON
- Peter Rausch, Little Rock, AR
- Jill-Anne Spence, Falls Church, VA

Also in photo are: Mahlon Doucet, LA Dept of Ag & Forestry and Eric Kuehler, USDA FS

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Assessment teams worked in pairs.

Waveland, MS in May 2006.

Here, volunteer Carlos Anaya, Buenos Aires, Argentina discusses the local situation with Joe Pettigrew with the Hancock County (MS) Cooperative Extension Service.

Assessment Teams



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Volunteers exhibited both commitment and innovation in their work.

April 2006 in Kenner, LA.

Assessment teams walked some areas and in other neighborhoods drove.

Here, volunteers Gordy Gonyo (Rochester, NY) and Mark Mead (Tacoma, WA) evaluate street-side hazards in Kenner, LA.

A mix-up at the car rental agency gave them an opportunity to “trade-up” from the typical 4-door sedan to this PT Cruiser (there other choice was a Mustang convertible!) which proved to be an ideal vehicle for neighborhood tree assessments where we needed to drive.

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For additional information, contact the SCUFR&I in Athens (GA) or visit
www.UrbanForestrySouth.org (“Quick Search” = ‘GCTA’)