



How Communities Recover From Disasters

**TREE CITY USA®
BULLETIN**

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No one likes to think about natural disasters, but they are a fact of life. When one strikes a community, trees are invariably involved and sometimes on the losing end of the event. This bulletin is dedicated to showcasing how some communities have responded to their loss of trees and how planning ahead can reduce such losses. Using the framework of the Tree City USA program, sound urban forestry management has proven essential to loss prevention and recovery.



Natural disasters take their toll on people in many ways. Restoration of damaged or destroyed trees not only provides environmental benefits, it helps lift the spirits of residents who have lost possessions and, in many cases, familiar surroundings.

Natural disasters come in many forms and affect the lives of residents at many levels. In this bulletin we limit our considerations to the role of trees and urban forestry. This is not meant to diminish the impact from the loss of lives, homes, businesses, or the other effects of a disaster, but rather to focus our efforts on what we know and do best. In times of disaster, there is a role for everyone.

The scientific consensus is that climate change is occurring and that in many cases it is making natural disasters worse. Any planning to mitigate disasters should also include planning to reduce human-caused acceleration or magnification of climate change. According to a survey by the Massachusetts Institute of Technology, nearly three-quarters of U.S. cities see

environmental shifts that can be linked to climate change. More than 1,000 city leaders have signed the U.S. Conference of Mayors Climate Protection Agreement to strive to meet or exceed Kyoto Protocol targets in their communities to reduce greenhouse gas emissions. A healthy canopy of trees play an important role in this effort. In fact, trees need to be considered part of every city's infrastructure and a focus of recovery efforts after any disaster. Sound urban forestry management through the framework of the Tree City USA program has been proven to be essential time and again.

For preventative measures or recovery efforts, planning for trees is essential. In the pages that follow are examples of how some communities are doing this.

Storm Winds Devastate Community Forests

Tornadoes, hurricanes, and strong thunderstorms can wreak havoc on trees and nearby wires and other property. Severe storms, especially tornadoes, can even transform a well-treed community into a bleak, open landscape. Here is how two devastated areas of the country recovered from some of the worst natural disasters in U.S. history.

ALABAMA'S SEASON OF TORNADOES

“Losing my home in the tornado was terrible, but losing all the trees in my yard was so much worse...” a resident of Tuscaloosa, Alabama, told a reporter. A monster EF4 tornado had just torn through her community on April 27, 2011, destroying more than 5,000 street and yard trees. This and a swarm of others were reported as the largest outbreak of tornadoes in history and the storms hit communities throughout Alabama and other southern states.

The response by the Alabama Forestry Commission was fast. One state official said, “People here started talking about replanting and moving forward almost immediately after the storm.” Fortunately, help was also quickly rendered from throughout the state and country. In Tuscaloosa and several of the other affected cities, it helped that they held Tree City USA status and had a management plan. This expedited cleanup of tree debris and replanting in a number of ways. Lessons learned from this and other disasters can be seen on page 7.

THE ALABAMA TREE RECOVERY CAMPAIGN

Arbor Day Foundation members wanted to help Alabama communities affected by the Tornadoes. To facilitate this generosity, the Foundation accepted special donations that have funded seedlings for distribution in storm-damaged communities. More than 30,000 trees were provided to the Alabama Forestry Commission for distribution the first year alone, with species selected for wind resistance and sustainability in Alabama’s climatic conditions. Local professionals provided advice on how and when to plant and the trees were intended primarily for use on private property where residents could provide water and care.

Larger trees of approximately 2- to 2.5-inch caliper were donated by Alabama Power and the Horticulture



Thousands of trees were destroyed when tornadoes swept through Alabama and other southern states in the spring of 2011. Along with restoring homes, businesses, and utilities, planting became a high priority.



Seedlings provided through donations by Arbor Day Foundation members were made available for planting on private property.

Department at Auburn University for planting on street rights-of-way and in parks. Students, power company retirees, and numerous other volunteers pitched in to coordinate distribution of trees and help with actual planting.

THE GULF COAST AND INFAMOUS KATRINA

Hurricane Katrina holds the distinction as the costliest storm in U.S. history. This hurricane swept over Louisiana and the Gulf Coast on August 29, 2005. While the winds were bad enough, Katrina brought the largest surge of ocean water ever to hit the coast, ultimately breaching the levee system that protects low-lying New Orleans from the Mississippi River and coastal Lake Pontchartrain.

Some 100,000 trees were lost in New Orleans, a city that takes special pride in its magnolias and live oaks. Seventy percent of the urban canopy was gone, some due to the wind but even more from lengthy inundation of roots in the flood water. The response to this disaster by partners throughout the country was remarkable and essential to recovery. For example, American Forests partnered with the nonprofit Shreveport Green to contribute trees from Shreveport Green's nursery to devastated areas throughout the region. The funding also helped plant more seeds in the nursery for the future. The Home Depot Foundation, like many other organizations, contributed badly needed funds, and the Arbor Day Foundation's Trees for America program donated more than 120,000 trees to Gulf Coast families to help restore the environment they once knew. Finally, volunteers provided much of the labor needed in the recovery effort. At New Orleans City Park alone, some 19,000 volunteers spent over 90,000 hours restoring some of the 2,000 trees that were lost. They also waged war against the toxic, invasive Chinese tallow that has become a problem following the flood.

HIKE FOR KATREENA

One innovative method of fundraising was undertaken by a single individual — Monique Pilié, a New Orleans resident who had once worked as an employee at the New Orleans Job Corps Center. Monique had long planned to hike the 2,175-mile Appalachian Trail and after Katrina struck, she decided to turn the adventure into a fundraising event. To do this, she founded the nonprofit organization Hike for KaTREENA and used its website to ask viewers to buy a tree for each mile she hiked. The result was thousands of dollars raised. Better yet, the nonprofit became permanent and more than 20,000 trees have now been restored in New Orleans as it continues serving the community.

FLY-BY-NIGHTS COMPLICATE TREE WORK

New Orleans looked like a war zone (after Katrina) and we all wondered how we were ever going to come through this. The devastation was so severe and the response so chaotic that it created new and unforeseen challenges for a reputable tree care business. Our area was flooded with opportunists who preyed on distressed property owners. These hacks, who sold tree work by "volume," cut down many good trees that could have survived.



Chris Esquerré
Tree Topics, Bartlett Tree Experts

A CASE FOR URBAN FORESTRY

Few people paid attention to the professional forestry team in Lincoln, Nebraska, before an October storm once dumped 13 inches of heavy, wet snow when most of the trees were in full leaf. Thankfully, Lincoln, a perennial Tree City USA, had the forestry leadership and expertise in place to respond to the crisis. While other communities experiencing similar storms are caught off guard and suffer unnecessary losses, Lincoln's urban forest recovered fast — thanks in large part to the staff who were on the scene as soon as tree limbs started falling.

Today, you would be hard pressed to find any evidence of the devastating storm. Other cities weren't so lucky. They gambled by underestimating their need for forestry expertise, and poorly supervised contractors brought in to respond to the damage left cities with inflated bills and deformed trees.

With a sound urban forestry staff and leadership in place, recovery begins immediately, many trees are saved, costs are minimized, and overall results are highly effective.



The Largest Fire in Texas

The Bastrop Complex Wildfire of September 2011 is just one of many that has plagued our country in recent years. However, it has been called the most destructive of its kind in Texas history. "It was like Satan coming out of the ground," said one local official.

Local leaders, public safety officials, and residents were overwhelmed by the magnitude and far-reaching effects of the Bastrop Complex Wildfire.



THE DISASTER

Wildfires today frequently involve homes as well as forests. So it was when the Bastrop Wildfire ravaged 34,000 acres of land that was suffering from hot weather and lack of rain. Two lives were lost, as were 1,600 homes and most of the loblolly pines in Bastrop State Park, a site that represented the western-most range of this tree and harbored the endangered Houston toad. "The occurrence itself was not unexpected," wrote Mike Fisher, the county's emergency management coordinator after the fire. For years people like him, as well as the Texas A&M Forest Service, had tried to warn about the need to mitigate development in forested areas. He even coined the term "fire plain" to draw an analogy with building in flood plains. A case study of the fire and statistics collected in its aftermath adds new emphasis to the need for developers, planners, and local officials to work together to prevent future tragedies. See page 8 for information about a link to this study.

SEEDLINGS NEEDED

To restore the forest and its many ecological and social benefits, the Lost Pines Forest Recovery Campaign was launched. This partnership included the Arbor Day Foundation, Texas Parks and Wildlife Department, and the Texas A&M Forest Service. The



This photo of watering seedlings for the Lost Pines Forest Recovery Campaign is symbolic of the partnerships and cooperation necessary for all disaster recovery efforts.

goal: to plant more than 4 million new seedlings over a five-year period.

Fortunately, an agency geneticist had stored 1,100 pounds of seeds from the relict loblolly population. Also fortunately, the agencies had built good relationships with a number of nursery operators in the region and they agreed to sow the seeds and grow them to transplantable size. Funding came from several sources, including Arbor Day Foundation members who were invited to donate to the Lost Pines Disaster Recovery Campaign via a special page at the Foundation's website, arborday.org.

Fighting Back Against Invasive Insects

As international travel and trade shrink our world and climate change stresses our trees, both native populations of insects and their invasive cousins pose increased threats to the urban forest. Advance planning and decisive action is helping to counter this trend. The emerald ash borer epidemic serves as an example.

THE EMERALD ASH BORER INVASION



Ash trees have long been an economically valuable forest tree and a favorite in urban landscapes. In 2002 the emerald ash borer (EAB), a native of Asia, was discovered near Detroit and has since spread throughout the northeast quarter of the U.S. The borer is deadly to all species of ash and has killed millions of trees, sometimes laying waste to entire once-shady city blocks.

THE RESPONSE

Universities, state foresters, the U.S. Forest Service, private industry and urban foresters have rallied in unprecedented ways to stop the spread of the EAB. Research revealed the insect's life cycle, methods of spread, and potential treatments. Detection and quarantine practices were implemented, and a massive educational campaign was mounted.

Thanks to the miracle of the internet, communication about all aspects of the EAB and its control have been made available to home and business owners. One such website is titled simply, Emerald Ash Borer (emeraldashborer.info). This site

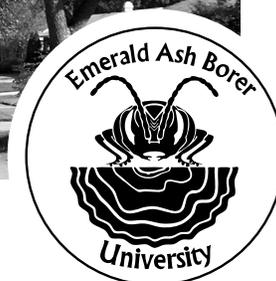
is a portal to just about everything anyone needs to know to help counter the invasion. Its simple format belies the fact that it was created and is maintained by a consortium of 18 states, two Canadian provinces, three universities, and the U.S. Forest Service. Additionally, many communities have created their own EAB websites to help residents respond to the epidemic.

Another effective tool is a detailed management plan. With some 14,000 ash trees lining the city streets of Fort Wayne, Indiana, newly hired city forester Chad Tinkel was alarmed at the prospect of losing what amounted to 25 percent of the city's tree canopy. Using the best of available research and advice from experts, he promptly initiated treatment of 11,000 trees. He then stepped back and took the time to develop a management plan that was more in line with economic sustainability given the budget crisis that began with the Great Recession. Now the city has a goal of maintaining 10 percent of its best ash trees and treating 1,300 trees every year through soil and trunk injections. Treatments begun before infestation occurs have been found to be very effective. Throughout the city, ongoing risk assessments are made to categorize trees for removal (by contractors) based on their condition and other risk factors. Replacement is also part of the plan, again staying within budget

limitations. The goal is to have all removed trees replaced within 10 years, providing both species and age diversity to prevent future devastation. At the same time, homeowners are advised to similarly treat or replace the ash trees on their property.



The onslaught of emerald ash borers was a disaster to many communities. Some, like Fort Wayne, Indiana, have made an aggressive effort to save healthy ashes and replace others with insect-resistant species, favoring native trees whenever possible.



This catchy logo is the portal to past and upcoming webinars about all aspects of the emerald ash borer infestation, including prevention and recovery. It is one of the many features found at "Emerald Ash Borer," a website created and maintained by cooperators with the common goal of fighting back against the disastrous insect.

The Urban Forest Strike Team

In 2007, state urban and community forestry (U&CF) coordinators throughout the South decided to do something proactive to assist communities after natural disasters. The result: strike teams composed of certified arborists ready to respond and lend aid to any community requesting their service.



Members of a strike team are professionals in urban forestry that are specially trained and prepared to respond to help communities recover from disasters.

The idea for Urban Forest Strike Teams originated with state urban and community forestry coordinators in Virginia and North Carolina, with development assistance from the U.S. Forest Service and support of the Southern Group of State Foresters. Since they were founded, these trained teams have responded in the wake of numerous disasters such as an ice storm in Tulsa, Oklahoma; Hurricanes Gustav and Ike; the Joplin tornado; Hurricane Irene; and an October snow storm in Manchester, New Hampshire.

WHAT IS A STRIKE TEAM?

Strike team members are certified arborists working for state or federal agencies, municipalities, commercial tree care companies, or consulting firms who become eligible for regional deployment following training. These professionals receive special training and are entered into a roster for deployment. Teams are mobilized when requested by a community through their U&CF coordinator and state forester's office. Although not affiliated with FEMA or other more formalized disaster organizations, team members are trained and work under an Incident Command System structure that is modified to work closely

with local urban foresters, community leaders, and emergency management officials.

DUTIES OF A STRIKE TEAM

Once on site, team members provide a number of services in a stricken community or region. Urban Forest Strike Teams may:

- Assist state emergency management or communities with debris estimation, providing the basis for FEMA Public Assistance compensation in federally declared disaster areas.
- Conduct rapid, unbiased tree risk assessments of damaged but standing trees, considering public safety while at the same time emphasizing the retention of viable trees.
- Provide training for local and state arborists for immediate disaster response/recovery.
- Work through public information officers to keep the community informed of the risk assessment activities of the strike team. In later stages of disaster recovery, an in-state deployment might assist with evaluation of tree planting sites and species recommendation for replanting.

WHEN RECOVERY BEGINS

Healing and hope for communities hit by severe storms almost always includes planting new trees to replace those that were lost. Recovery will be more likely to result in a healthy urban forest for decades to come if it is guided and supported by professional urban forestry management as embodied by Tree City USA standards.

A Summary of Lessons Learned

Thanks to sound urban forestry management, beginning with fundamental Tree City USA guidelines, there are silver linings even in the clouds of catastrophic weather events or other disasters. Here are some of the lessons learned in communities that have successfully recovered from heavy damage to their urban forests.

- ✓ Understand that eventually your community will face a disaster that affects your trees. Be prepared with an emergency management plan, including delineation of FEMA requirements, categories, and procedures.
- ✓ Destruction often provides a clean slate for re-establishing the urban forest. Time should be taken to plan and select sustainable species and to plant the right tree in the right place. A major consideration — or opportunity — is to plant low-maturing trees under and near overhead lines, and tall-maturing species that are wind-firm or salt-resistant. “Doing it right” should be a clear message to all cooperating organizations and residents.
- ✓ Having a tree board provides an instant cadre of help. In most cases, these individuals will have additional contacts who can serve as a volunteer force, especially when the time comes for replanting.
- ✓ A management plan with a storm contingency section speeds recovery and is a valuable asset because:
 - It represents something that was created in partnership with the mayor and city council, so when help is needed after the storm, they know who you are and what you represent.
 - It can guide the selection of desired species.
 - Contact information can be included that lists people who can help at all levels.
 - Standards for pruning and planting will have been established.
 - Information for the mass media can be ready for immediate distribution. Warnings about unqualified tree workers can be included. At no other time will the media be as receptive to such educational materials.



Replanting projects should follow the rules of species diversity and planting the right tree in the right place. Spreading replanting over a number of years also provides age diversity.

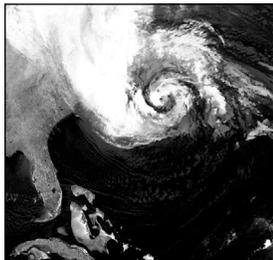
- ✓ Communities with an established budget for tree care are in a better position for cleanup and replanting than those that must compete and wait for appropriations or grants.
- ✓ Accepting all tree donations may be unwise. For example, a nursery being generous with 4-inch caliper planting stock, especially if leafed out and possibly for “only” a planting fee, may result in an expensive disappointment due to low survival. Similarly, insist from the start that only healthy and site-appropriate trees can be accepted. Money donations are always needed and welcome! Lining up volunteers for follow-up watering and care is just as important as having volunteers for planting.
- ✓ Care should be taken to not plant in advance of reconstruction activities. Select sites that will not be disturbed as other recovery efforts take place.



The preparation of an emergency management plan, tree care workshops, employee training and public education projects are just some of the ways your community can earn points toward receiving a Tree City USA Growth Award. For more information, please visit arborday.org/programs and navigate to the Growth Awards page.

Preparing for Climate Change

While the causes of climate change may be a favorite target of debate, there is little room to argue about whether it is happening or what consequences to expect. University of Colorado scientists are among those who concur with the U.N. Intergovernmental Panel on Climate Change that the number of severe hurricanes could rise sharply in this century. A university website states, "Scientists have long studied the relationship between warmer sea surface temperatures and cyclonic, slowly spinning storms in the Atlantic Ocean... The extreme storms are highly sensitive to temperature changes, and the number of Katrina-magnitude events could double due to the increase in global temperatures..." Add to that slowly rising ocean levels as melting occurs in Greenland and the poles and the result is storm surges of unprecedented levels above normal high tides. Superstorm Sandy in 2012 is an example of the havoc that these events can bring to coastal communities.



Hurricanes and superstorms such as Sandy are predicted to increase in number and severity due to warmer ocean waters and damage from storm surges will be greater as sea levels rise. Measures to reduce climate change as well as planning for change are two ways to help counter the threat to people, property, and wildlife.

Inland drought and warmer winters are causing tree stress that is changing forest composition in some areas and making trees more vulnerable to insect and disease attacks as well as larger, more deadly megafires.

Urban forestry must take these changes into account when planning what species to plant. Drought-resistant planting, closer attention to native species, strategic use of vegetation to create fire-safe developments, and the

use of vegetation to mitigate flood waters are some of today's concerns. Wildlife habitat, too, needs to be addressed as climate change affects birds and mammals. "Climate-Smart Communities" is a project of the National Wildlife Federation to provide guidance for nature-based approaches to preparing for the impacts of climate change on both people and wildlife.

For More Information

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