



2011 Annual Report

National Center for Preservation Technology and Training
Natchitoches, LA

National Park Service

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Director's Note

2011 brought new challenges to the National Center for Preservation Technology and Training (NCPTT), but along with those challenges came new opportunities. We are pleased to present in the following pages the story of how those challenges were met and how those opportunities became accomplishments.

NCPTT was established by Congress in 1992 to serve as a clearinghouse for preservation technology information and an advocate for advancing the use of science and technology in the field. In Fiscal Year 2011 our research and training programs broke new ground in content and delivery methods. But we also initiated a self-study directed toward rethinking every aspect of our work and forging closer ties to the National Parks managed by our home agency.

NCPTT supported a wide-ranging and varied research program for 2011. In response to the Mississippi Canyon Oil Spill, the Center completed research on cleaners for removal of crude oil from historic masonry and archeological collections, updated building and site assessment tools at the request of FEMA, and developed a baseline and injury assessment tool for the Oil Spill Incident Command. Onsite assistance was provided to the State of Louisiana for the cleanup of Ft Livingston, a 3rd System fort on the Gulf coast. NCPTT also updated disaster preparedness information on its website in advance of hurricane Irene, assisted Chalmette National Cemetery by evaluating wind-damaged headstones and offering treatment recommendations, and undertook research on best practices for cleaning government-issued headstones.

Also during 2011, NCPTT hosted or participated in 20 training events, held in 7 states and the District of Columbia, and provided training to 1300 people. Workshops offered in 2011 included Cemetery Conservation Techniques in St. Augustine (with the University of Florida), Preservation of Ornamental Iron in Savannah, Ga., LEED for Historic Buildings in Washington, DC, Historic Tree Preservation in Fredericksburg, VA, and a Preservation Reengineering Symposium which explored traditional design principles to decrease energy consumption in an historic house museum. The Center also co-hosted and helped instruct the National Park Service course on historic property management for facility managers. Work continued on a landscape maintenance curriculum in partnership with the Olmsted Center and various private nonprofit partners, and a new video was produced on Turf Management at National Parks and Other Historic Sites (filmed at the Cane River Creole National Historical Park located downriver from NCPTT's headquarters).

NCPTT presented a five paper session on Cultural Resource Response to the Gulf Oil Spill at the George Wright Society bi-annual meeting, two papers at the American Institute for Conservation meeting, a symposium at the American Institute of Architects convention (attended by more than 500 architects),

and a paper on the use of laser profilometry in stone conservation at the Lasers in Art Conservation Conference (LACONA) in London England.

The Center's heritage education efforts included offering a "Conservation Scientist for a Day" event to the Avoyelles Public Charter School students, hosting a K-12 robotics training camp, and producing a video on Burial Traditions in the Cane River Region (part of the Center's Underserved Communities initiative). NCPTT's Youth Initiative this year funded a field study of African-American historic resources in our local community and introduced a diverse group of high school students to historic preservation.

The rest of this report describes all of these activities in more detail, and I invite you to explore the narratives and photographs that follow. If you have comments or suggestions, I also invite you to visit our website at www.ncptt.nps.gov and provide us your feedback, or contact us by phone or mail at the address on the back of this report. We are anxious to improve our service to our customers both inside and outside of the National Park Service, and look forward to hearing from you.

Kirk A. Cordell
Executive Director

NCPTT is located in historic Lee H. Nelson Hall on the campus of Northwestern State University of Louisiana, Natchitoches, LA.





Architecture & Engineering

NCPTT's Architecture & Engineering program seeks to provide preservation practitioners with unique training opportunities and innovative research in the areas of building science, disaster preparedness, and environmental sustainability.

PARTNERSHIPS: REACHING A LARGER AUDIENCE

The National Center partners with preservation organizations, non-profit preservation groups, and other National Park Service offices to leverage its research and training capabilities. In FY2011, NCPTT joined with the Association for Preservation Technology (APT) to offer a workshop entitled, "Envelope Performance Testing, Modeling and Monitoring," October 6–7, 2010, in Denver, Colorado. This workshop featured an overview of emerging analysis, simulation and measuring tools used in evaluating the energy performance of historic buildings. The National Center also partnered with APT and the Presidio Trust to offer "Preserving Engineering: Nondestructive Evaluation Methods for Historic Structures," November 5-6, at the Presidio in San Francisco, California. This workshop covered the concepts, theory and applications of nondestructive test methods for evaluating historic building materials and structural systems.

Recognizing that the future of the preservation profession is seeded in the next generation of practitioners, NCPTT is working with universities to enhance the state of pre-professional training in the field. In FY2011, the National Center hosted and funded the initial meeting of the Southeastern College Art Conference (SECAC) Consortium for Historic Preservation and Conservation Studies. SECAC is an academic

consortium consisting of twelve universities located across the southeastern United States. Members of the consortium met with NCPTT staff to discuss development of a preservation curriculum that would supplement courses at SECAC architecture schools. The goal of this project is to create an intercollegiate program that provides students with a state-of-the-art education in preservation theory, technology, and design—drawing experience from the faculty of each of school as well as professionals in government and private practice. Incorporating modern mechanical systems into historic buildings can involve complex decisions, fraught with difficult choices. In the spring of 2011, NCPTT partnered with the Louisiana Landmarks Society and Tulane University School of Architecture to offer a workshop entitled, "Preservation Re-engineering," on implementing 21st century low-energy environmental systems in 19th century buildings. The workshop, held at the historic Pitot House in New Orleans, Louisiana, exposed participants to the decision making process inherent in designing and implementing low impact environmental systems for historic buildings.

PREPARING FOR DISASTER

The impact of Hurricane Katrina in 2005 served as a "wake up call" for many, including the historic preservation community. Since that catastrophic event, NCPTT has been committed to

NCPTT sponsored a two-day workshop on non-destructive evaluation methods for historic structures held at the Presidio in San Francisco, CA.

providing preservationists and emergency managers with the knowledge and resources they need to prepare for disaster and respond appropriately when it affects cultural heritage. In FY2011, the National Center organized and participated in a session at the George Wright Society Conference held March 14-18, 2011, in New Orleans. The session brought together a panel of experts to help identify risks to heritage resources in coastal areas, share on-going disaster planning efforts, and discuss pre-disaster mitigation strategies. The goal of the session was to create a larger dialog with emergency management professionals on the importance of integrating cultural resource protection into disaster preparedness planning and response.

BUILDING CAPACITY THROUGH INTERNAL PARTNERSHIPS

In FY2011, the Architecture & Engineering program sought to increase its engagement of other units in the National Park Service (NPS) and expand its utility to the entire agency.

Partnering with the Cane River National Heritage Area, NCPTT convened a roundtable discussion on urban ecology on November 3, 2011, in Natchitoches, Louisiana. Urban ecology promotes an ecosystems approach in understanding the nexus formed between natural and cultural systems in sustainable communities. Participants in the November roundtable discussed creating an urban ecology network where case studies of best and worst practices could be shared to edify community planners, architects, and developers alike.

In January 2011, the National Center convened a roundtable meeting of Washington NPS cultural resources staff and other interested parties to discuss activities related to sustainability in historic preservation. The goal of the Washington meeting was to improve communications and coordination of efforts on this topic. Participants discussed their recent work including the Park Service's Project Sustainability Checklist, the development of new guidance on meeting sustainability and historic preservation goals, and offering LEED workshops designed for cultural resource specialists.

Each year, the threat of budget reductions reinforces the need to utilize cost-saving technologies to advance the Na-

tional Center's mission. In March, NCPTT staff members Ed FitzGerald and Jason Church travelled to Kentucky to film a workshop put on by the Pine Mountain Settlement School, Kentucky Heritage Council, and NPS Historic Preservation Training Center. This week-long workshop covered log care and repair techniques as participants got their hands dirty preserving a Civilian Conservation Corps-built ranger station. Footage collected from this workshop will be assembled in a series of instructional videos, allowing park staff and the public access to essential skills. This project serves as a prototype for capturing and disseminating information on a small budget.

In May, 2011, NCPTT partnered with the Washington Office of the National Park Service and the National Conference of State Historic Preservation Officers to offer "Green Preservation: A LEED Technical Review and Exam Preparation Workshop" at the Hall of States in Washington, DC. This three-day workshop prepared participants to take the LEED Green Associate Exam and presented them with real-world case studies of historic preservation projects pursuing LEED certification. Participants represented the National Park Service, General Services Administration and the National Trust for Historic Preservation.

The Stephen T. Mather Training Center collaborated with Cane River Creole National Historical Park (NHP) and the National Center to hold a course on "Preservation and Treatment of Park Cultural Resources" in Natchitoches in September, 2011. This forty-hour course was open to Facility Managers and Chiefs of Maintenance, the front-line stewards for park cultural resources. The curriculum focused on critical knowledge and skills these professional must possess in order to provide for the preservation, treatment, and maintenance of the cultural resources they oversee. The course was offered at NCPTT with a field day at Cane River Creole NHP, using the park as a laboratory for applying the knowledge and skills presented in classroom sessions.

Ed FitzGerald films a worker notching a log during a workshop in Putney, KY.



RESEARCH AND FIELD PROJECTS

In the summer of 2011, NCPTT concluded its research entitled, A Comparative Study of Commercially Available Paint Strippers, which evaluated the performance of six products for removing paint from low and medium-fired historic brick. After analyzing the data, the National Center presented its research in Denver, Colorado, at the APT Annual Conference in October. With the completion of this study, testing began on evaluating the durability of limewash recipes to expand upon earlier work done on this traditional finish by NCPTT's Sarah Jackson. Additional lime sources are being examined along with the effectiveness of additional coats.

In 2011, Jackson completed the requirements for certification by the Infrared Training Center as a Level I Thermographer. This qualification comes in addition to a Building Analyst certificate that she earned from the Building Performance Institute in 2010. These certificates qualify Jackson to oversee NCPTT's research in using energy audits to improve the energy efficiency of historic buildings. Over the summer, she worked with Architecture & Engineering intern Jennifer Mui to perform an energy audit of the historic Seed House at Oakland Plantation, part of Cane River Creole NHP. Operational changes for the building may be required in the future as part of the NPS Green Parks Plan and data gathered through the energy audit will help identify areas for improvement and serve as a baseline from which to measure success.



Jennifer Mui using an infrared camera during an energy audit at Oakland Plantation, Natchez, LA.

NPS Sustainability

The NPS Cultural Resources Programs are working internally and with partners to define and promote national policies that encompass both sustainability and historic preservation. The National Center for Preservation Technology and Training, Technical Preservation Services (TPS) and others have participated in sustainability initiatives within the NPS such as the NPS Climate Change Response Implementation Plan. They have also engaged in collaborative efforts on this front with partners including the Environmental Protection Agency, the National Trust for Historic Preservation, the Association for Preservation Technology International, and the Advisory Council on Historic Preservation, which has organized an interagency Sustainability Task Force. Through these efforts, three common needs have been identified: the need for a shared research agenda, the need for guidance that satisfies the goals of both historic preservation and sustainability, and the need for information on how best to utilize LEED standards in historic preservation projects.

Research Agenda

In 2008, the NPS and the NTHP convened experts to discuss sustainability and preservation. The group created the *Pocantico Proclamation on Sustainability and Historic Preservation*, which was followed in 2009 by the *Nashville Challenge* focusing on the impact of increasing energy performance requirements and emerging green building practices for historic buildings. A small working group called “Spitfire” was created to continue this process. Spitfire is currently engaged in developing a prioritized research agenda that aims to quantify the statement that “the greenest building is the one that is already built.” While much anecdotal information exists about the utility of recycling older and historic buildings, the preservation community lacks rigorous scientific research and data to support this notion. The NPS is committed to filling this gap and supports research through the Preservation Technology and Training Grants program.

Technical Guidance

The NPS is continuing to develop technical guidance to support sustainable preservation projects. These have included the release of *The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability*

for Rehabilitating Historic Buildings (published April 2011); a complete revision of Preservation Brief #3 on Energy Conservation (to be published Fall 2011); and enhanced sustainability-related information on the websites of both TPS and NCPTT.

LEED Training

The LEED Green Building Rating System has become the industry standard for demonstrating the sustainability of construction projects. Many NPS and other rehabilitation projects aspire to achieve LEED certification. NPS has developed and offered workshops to prepare preservation professionals to attain LEED accreditation, and is currently compiling a collection of case studies of rehabilitation projects that have satisfied historic preservation guidelines and earned LEED certification. The NPS and other preservation organizations have played an important role in reviewing LEED standards and working to better incorporate preservation principles in the LEED process.

Activities

The NPS has made presentations and participated in several conferences and meetings, including the National Preservation Conference in Austin in October 2010, the Traditional Building Conference in Chicago in October 2010, USGBC Greenbuild Conference in Chicago in November 2010, and the EPA's Greening Historic Communities Symposium in June 2011. The NPS will also be supporting a pre-conference symposium on sustainability and the upcoming APT conference “Heritage on the Edge: Sustaining Buildings, Landscapes and Communities” which will take place in Victoria, British Columbia, in early October, 2011.

Other activities have included offering workshops on *Envelope Performance Testing, Modeling and Monitoring*, and *Preservation Reengineering: Finding Green Environmental Management in Vernacular Historic Buildings in a Hot and Humid Climate*. Recognizing that a truly sustainable future for our nation's heritage extends beyond the energy performance of historic buildings, the NPS sponsored a roundtable on Urban Ecology and the creation of an Urban Ecology Network to examine ways of extending sustainability to myriad other facets of the environment.

The NPS, through its Cultural Resources Programs, is committed to collaborating with a wide variety of partners to define and develop the role of historic preservation for safeguarding historic resources in a sustainable manner.



Materials Conservation

NCPTT's Materials Conservation program works to bridge the gap between laboratory science and real-world historic preservation applications.

CRUDE OIL AND CULTURAL HERITAGE

In the spring of 2010, NCPTT staff mobilized in response to the Deepwater Horizon Oil Spill in the Gulf of Mexico. The tragedy of this event shocked many and as response efforts escalated, gaps in understanding of how to treat affected cultural heritage became apparent. While threats posed by crude oil to the natural environment are generally acknowledged, its potential to damage archeological or architectural materials has not been widely studied.

The National Center has been leading the way in research on mitigating damage to archeological materials caused by crude oil. During the summer of 2011, NCPTT intern Erin White undertook a study examining the effectiveness of six different oil removal products on bone and shell. She evaluated the products based on their ability to remove oil without affecting sensitive archeological material. Other considerations included the ease of use and potential environmental toxicity of the cleaners. Results of this study will serve as a guide to archeologists and a basis for future research.

NCPTT used the literature review undertaken for this research as a launching point to develop general guidance for the care of archeological materials contaminated by oil spills in marine environments. This guidance, entitled "Protecting Ar-

cheological Objects Contaminated with Crude Oil," includes treatments for shell, bone, ceramics, glass, metal and wood, and can be accessed on NCPTT's website.

In addition to archeological heritage, oil spills can have an adverse effect on the built environment. This past year, NCPTT partnered with the University of Texas at Austin to establish a methodology for evaluating the effectiveness of cleaners used to remove oil from historic masonry. UT graduate student, Payal Vora tested six products for cleaning weathered and unweathered oil from historic brick as part of her master's thesis research (available through the University of Texas Library website). NCPTT expanded Vora's work during the summer with the help of intern Katherine Langdon.

The National Center continues developing methods for evaluating and assessing the adverse effects of oil spills and other disasters on cultural heritage. Mary Striegel, Chief of NCPTT's Materials Conservation program, is partnering with Dave O'Brien at the City University of London's Center for Cultural Policy and Management to better understand economic methods for the valuation of damage resulting from disasters. NCPTT also continues its work in the Gulf of Mexico, monitoring conditions at historic Fort Livingston, one of the structures affected by the Deep Water spill.

Katherine Langdon compares poultice recipes for crude oil removal at Fort Livingston, Grand Isle, LA.

HONORING NATIONAL HEROES

National Cemeteries are the final resting places of America's military heroes nationwide. They encompass a wide range of cultural resources, including sites, landscapes, monuments, and structures. Efforts to maintain a visual appearance that honors veterans while preserving the material fabric of their memorials are equally important. To aid in these efforts, NCPTT released its recommendations for cleaning government-issued marble headstones. This document is the culmination of seven years of research that compared five different commercially available cleaners. Testing was conducted under a mixture of environmental conditions in cemeteries across the country and in laboratories at NCPTT and the Harvard School of Engineering and Applied Sciences. The recommendations describe methods that can remove biological growth and soiling and delay re-growth of microorganisms.

NCPTT has also played an active role in the NPS National Cemetery Task Force. The Task Force recently revised maintenance policies for the operation of fourteen National Cemeteries under Park Service care. This work led to Director's Order 61, released in July 2010, and the forthcoming companion Reference Manual 61.

COMBATING RUST

Ornamental iron railings and fences are a common feature on historic structures. However, exposure to the elements can cause these character defining elements to deteriorate over time. Over the past year, NCPTT has undertaken research to evaluate the effectiveness of chemical rust converters for treatment of ornamental iron. Materials conservator Jason Church tested five types of commercially available converters and a custom blend formulated for conservation use. The chemical treatments were applied to samples and monitored while undergoing accelerated weathering. Results of this study were presented at the annual meeting of the American Institute for Conservation in May, 2010, and a full report is forthcoming.

NCPTT is expanding its comparative study of rust converters to include outdoor natural and accelerated weathering in our newly developed weathering facilities. This past summer, Materials Conservation intern Dennis Gibson installed a wire-

less weather station and outdoor racks for samples undergoing natural weathering on the roof of NCPTT's Lee H. Nelson Hall. This fall, a solar concentrator that will allow for accelerated outdoor weathering will be installed on the campus of NCPTT's host institution, Northwestern State University.

Drawing from NCPTT's study of rust converters and other conservation research, the National Center offered a two-day training workshop on the conservation of ornamental iron, May 18–19, 2011, in Savannah, Georgia. The event attracted fifteen students, contractors, government employees, and maintenance managers. Participants were exposed to a wide range of skills, from documentation and cleaning to rust conversion and painting. A similar course will be held October 7–8, 2011, in Bloomington, Indiana.

CATERING TO UNDERSERVED COMMUNITIES

NCPTT continues to offer products to underserved communities. As part of the National Park Service Latino Initiative, NCPTT produced two Spanish language videos on cemetery preservation methods. The videos, "Recolocación Básica de Monumentos" and "Limpieza Básica para Monumentos," are available on NCPTT's website. Also, NCPTT produced a video capturing the traditions surrounding burial practices of African-American and Creole community members in the Cane River region as part of our cemetery preservation efforts.

Jason Church tests cleaning solutions on headstones at Alexandria National Cemetery, Pineville, LA.



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NOV 21 1989

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Historic Landscapes

Preservation of historic landscapes includes protection and treatment of both natural and man-made resources. In FY2011, the Historic Landscape program focused on projects that addressed documentation, maintenance and protection of these varying resources.

HERBICIDES AND THE BUILT ENVIRONMENT

From vines and grasses to invasive species, unwanted vegetation can plague the grounds of historic sites. Resource managers and homeowners alike need methods to control weeds and plants without causing damage to surrounding historic features. Chemical methods are often used to control vegetation. But what are the potential interactions between herbicides and masonry materials? Are other methods available that are safer or better at targeting specific vegetation?

Caitlin Oshida is helping NCPTT answer these questions. Oshida, a graduate student at the University of Georgia, began research on the use of herbicides at cultural sites as a summer intern at NCPTT in 2010 and continued her exploration of the topic this year as part of her master's thesis. Oshida completed experiments on the effects of the herbicides Roundup® and Garlon®4 on brick, limestone, concrete, and granite materials. Her studies show that herbicides can have negative effects, including pitting and efflorescence, on stone and masonry.

NCPTT is experimenting with non-chemical ways to control vegetation using a hand-held, filtered microwave system. A prototype design of the system is based on the concept that specific microwave wavelengths can disrupt cell walls, resulting in the plant's death. Users are able to operate the system

in complete safety as it generates less radiation than a conventional microwave oven. Heat generated by the radiation is filtered out to prevent damage to sensitive historic materials. Further research of the system is underway in partnership with Northwestern State University.

DOCUMENTING HISTORIC LANDSCAPES

Compiling thorough documentation is the first step in protecting historic landscapes. While a number of publications focus on nominating landscapes for historic registers or creating detailed cultural landscape reports, these do not contain the “nuts and bolts” information needed to research and document sites. NCPTT is working to fill this gap by providing a “how to” guide for documenting historic landscapes.

A two-fold landscape documentation project began during the summer of 2011 with the help of intern Derek Linn, a recent graduate of the Bachelor of Landscape Architecture degree program at Arkansas State University. He researched and documented the design history of Hodges Gardens State Park, a Mid-century style landscape in Florien, Louisiana. Using a variety of resources including the internet, archives, and oral history interviews, he pieced together information about the garden's design history. Linn recorded the documentation process in real time on the blog, “Exploring Hodges Gardens.”

The Mid-century designed landscape at Hodges Gardens State Park, Florien, LA, served as a proving ground for NCPTT researchers.

The next step of the project is to incorporate his experience at Hodges as a case in the “how to” guide. The final product will be available in hard copy and on the NCPTT website.

TEACHING HISTORIC LANDSCAPE MAINTENANCE

Maintenance workers charged with caring for cultural landscapes are faced with the complex challenge of integrating preservation practices with traditional horticultural techniques, while balancing the retention of historic integrity with the demands of contemporary site usage. Yet all too often, these workers lack an understanding of their role in protecting historic features.

In FY2011, NCPTT and the Olmsted Center for Landscape Preservation hosted a second roundtable discussion on the creation of a landscape preservation maintenance curriculum to address this deficiency. These discussions included site managers from the National Park Service and other organizations, as well as maintenance supervisors, landscape architects and educators. With funding from NCPTT, the Olmsted Center built upon ideas generated during the roundtable meetings and created a framework for the education program. The draft curriculum includes three core units incorporating the knowledge and skills essential to properly understand and care for all historic landscape resources. An optional specialization unit includes topics related to a variety of different landscape types, ranging from agricultural to ornamental landscapes. The next step in this project will be development of the first unit and an accompanying hands-on workshop.

NCPTT also partnered with the Olmsted Center to host a three-day historic tree preservation workshop at the George Washington Birthplace National Monument in Fredericksburg, Virginia. The workshop attracted thirty participants from across the country and addressed topics that included condition assessment, hazardous tree identification, and replacement strategies.

MOURNING GLORY: PRESERVING HISTORIC CEMETERIES

Historic cemeteries comprise some of our country’s most significant historic landscapes. Yet cemetery preservation efforts

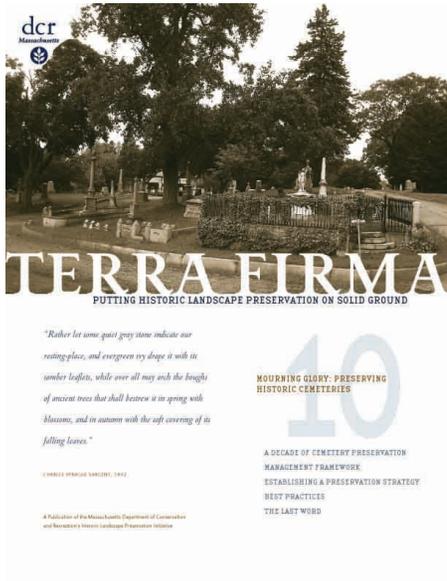
focus almost entirely on built features with little understanding or preservation of the landscape as a whole.

Through a cooperative agreement with NCPTT, the Massachusetts Department of Conservation and Recreation produced “Mourning Glory: Preserving Historic Cemeteries” in FY2011. The publication provides guidance on cemetery landscape preservation topics such as establishing a preservation strategy, educating the public about character, and implementing best practices.

“Mourning Glory” is the tenth issue in a series, called *Terra Firma*, which addresses landscape preservation issues ranging from protection of historic roads to caring for mature trees. As part of the cooperative agreement, NCPTT both funded and contributed “best practice” sections on maintaining decorative iron fences and cleaning headstones. With further financial support from NCPTT, the Massachusetts Department of Conservation and Recreation will host a one day training workshop addressing topics presented in the publication. The final publication will be released at the November 18, 2011 workshop and will be available soon after on the NCPTT website.

WIKIPROJECT CULTURAL LANDSCAPES

This past summer, Addy Smith-Reiman joined the staff of NCPTT as an intern in a joint project between the Architecture & Engineering and Historic Landscapes programs. Smith-Reiman spearheaded a new initiative to grow the cultural landscapes section of Preservapedia.org, a wiki knowledge base for preservationists. To date the initiative has garnered the support of the Society for College and University Planning and The Cultural Landscape Foundation. With help from these partners, staff and volunteers will generate a library of project case studies to share lessons and best practices in cultural landscape preservation.



A special issue of *Terra Firma* focusing on historic cemeteries was published through an NCPTT cooperative agreement.

PTT Grants

NCPTT supports the research, development, and transfer of technologies to the field of preservation through its PTT Grants program.

Each year, the National Center awards grants of up to \$25,000 for innovative research, unique training opportunities, and publications about preservation technology. Universities, non-profit organizations, and federal, state, and local agencies are eligible for these awards, which require in-kind or cash matches to leverage the PTT Grant funds. In FY2011, NCPTT announced thirteen grant awards selected from a pool of thirty-four complete applications. These grants, totaling \$285,000, leveraged matches of \$490,100 in cash and in-kind services. Recipients included:

Understanding Traditional and Modern Paints and Stains for Exterior Wood: The Association for Preservation Technology will develop selection guidelines on paints and stains for extending the life of exterior historic wood materials. (\$25,000)

Development of Life-Cycle Assessment Charts for Preservation and Rehabilitation (LCA-PR) of historic structures: Clemson University researchers will extend structural engineering analysis techniques to develop Life-Cycle Assessment charts in order to predict the lifetime of historic structures. (\$25,000)

Permanent Conditions Monitoring to Validate the Energy Design Models: The Georgia Department of Natural Resources will partner with researchers to collect data at an historic site in order to validate computer models on building energy performance. (\$11,000)

Archeological Survey Technologies, Data Integration, and Applications (ASTDA) Workshop and Seminar: Archeologists at Brown University will host workshops that advance the latest archeological survey techniques. (\$25,000)

Practical Applications of Low-cost Digital Photogrammetric Methods for Preservation Documentation: The Georgia O’Keeffe Museum staff will evaluate the practical applications of digital photogrammetric methods for preservation documentation at Georgia O’Keeffe’s historic home and studio at Abiquiu and Ghost Ranch, New Mexico as a case study. (\$25,000)

Raman Spectroscopy Workshop and Database Training for the Preservation Community: Conservation scientists at the Philadelphia Museum of Art will offer a workshop on Raman Spectroscopy and aid in development of a Raman spectral database

for identifying cultural materials and treatments. (\$12,000)

New York State Energy Conservation Code Compliance Training for Historic Properties: Staff of the Preservation League of New York State will create a training program tailored for historic property owners on compliance with the state's energy code. (\$25,000)

An Innovative Educational Game Strategy for Conservation and Preservation: Researchers at the Rochester Institute of Technology will create a working example of an educational role playing computer game to teach preservation and conservation. (\$25,000)

Comprehensive Understanding of Archeological Magnetism and Instrumentation: Archeologists at the University of Arkansas will undertake research to improve the knowledge obtained from archeological magnetism studies. (\$18,000)

pXRF Guidelines for Pesticide Residue Survey and Removal Evaluation on Textiles: University of Arizona researchers will use pXRF to analyze a Navajo textile collection known to

be contaminated with heavy metal pesticides in order to develop guidelines for pesticide residue surveys and treatments. (\$25,000)

LiDAR Surveyor: Automated Extraction of Archeological Features from Light Detection and Ranging (LIDAR) Imaging Data: Staff at the University of Iowa Office of the State Archeologist will develop automated methods to improve the identification of archeological features, such as burial mounds, using Light Detection and Ranging (LIDAR) Imaging Data. (\$22,000)

Dendrogeomorphological Investigation of Earthwork Stability at Poverty Point SHS, Louisiana: Researchers from the University of Louisiana at Monroe will use novel methodology based on tree growth rings to evaluate the stability of earthworks at Poverty Point State Historic Site in Louisiana. (\$22,000)

Austin Historical Survey MOBILE: Optimizing a Survey Web Tool for Data Collection in the Field: University of Texas at Austin researchers will develop and optimize a web tool to survey historic resources in the field. (\$25,000)

Five Most Ordered Grant Products in FY2011

Cleaning a Stone Grave Marker (2007-01)	442
Resetting a Stone Grave Marker (2007-02)	441
Basic Iron Fence Care (2007-03)	431
Resetting a Stone Grave Marker, Volume 2: Lifting and Hoisting (2010-01)	342
Application and Preparation of Limewash (2008-07)	305

Information Technology

The rapid proliferation of mobile devices such as smartphones and tablet computers featuring GPS, high-resolution cameras, compasses, and long battery life provides an opportunity for the development of applications to serve the preservation community.

NCPTT has continued investing in mobile information technology projects with the goal of developing a suite of simple mobile apps to help preservation professionals collect and analyze data on the go. While current projects focus on Apple's iOS platform, NCPTT plans to port apps to the Android platform in the future.

The Northwestern State University College of Business and the National Center have partnered on a grant application to develop a year-long course in mobile application development. If the grant is successful, NCPTT will assist with curriculum design and the setup of a mobile laboratory. The National Center will fund internships available to students who successfully complete the course to help develop preservation applications.

ERS: EMERGENCY RESPONSE AND SALVAGE

The National Institute for Conservation and NCPTT partnered to develop an iPhone and iPod Touch app modeled after the Emergency Response and Salvage Wheel. The original project provides a guide to salvaging collections damaged in disasters. The app version, named Emergency Response and Salvage (ERS), keeps the information at the fingertips of collections managers and the general public. Submission to the Apple App Store is underway and after approval, ERS is ex-

pected to be available for download by the end of 2011.

LANDSCAPES

NCPTT has been developing an app titled Landscapes, which allows people to inventory and record the condition of historic trees, vegetation, and other features in an historic landscape. Data on the health of tree components, GPS locations of features such as grave markers, photographs, field notes and other features will equip landscape professionals with a unique and useful management tool. After testing, the original version of this app was determined to be too complex. A thorough redesign has made using app much easier and the ability to synchronize data has been added. The app will be finished by the end of the calendar year.

SITES

NCPTT and the NPS Southeast Archeological Center (SEAC) have been collaborating on an iPad app for rapid condition assessment of archeological sites. This project is based in part on archeological site vulnerability assessment work previously conducted with the Louisiana Army National Guard and on current paper-based surveys in use at SEAC. This app is currently in the early design stages and will be further developed in 2012.



NCPTT WEBSITE

In FY2011, the NCPTT web site received over 735,000 visits by over 127,000 unique visitors who viewed over 4.75 million pages, and have downloaded thousands of PDF publications and videos. Since it began podcasting in 2008, the National Center has published thirty-four episodes of the Preservation Technology Podcast series, exploring various topics with leaders in preservation technology. These podcasts have been downloaded over 18,000 times in the past year alone. NCPTT continues to engage its audience via social media on Facebook, Twitter, YouTube, and Flickr. The National Center has a following of over 1,900 people on Facebook and its posts have been viewed over 177,000 times in 2011.

NCPTT's website utilizes the open source content management system, WordPress, to publish its vast array of articles, pages, photos, products and other files. The system makes use of themes which can change the look and feel of the site, and in 2011 a new theme was developed to closely follow the look of NPS.gov and introduce additional features. NCPTT staff are reclassifying website content along thematic lines to make information easier to find. The new site will be launched in early FY2012.

The National Center is committed to sharing its technical expertise not just with preservation professionals and the general public, but also with other units of the National Park Service. NCPTT is using its knowledge of WordPress to help the NPS Facility Maintenance and Cultural Resources Career Academies develop a web presence that will foster a community where workers can share professional resources and less-experienced employees can develop mentoring relationships. To help with these projects, the National Center is adding a web development assistant to its staff and capitalizing on its partnership with Northwestern State University, which brings to the table a wealth of experience in electronic delivery of education.

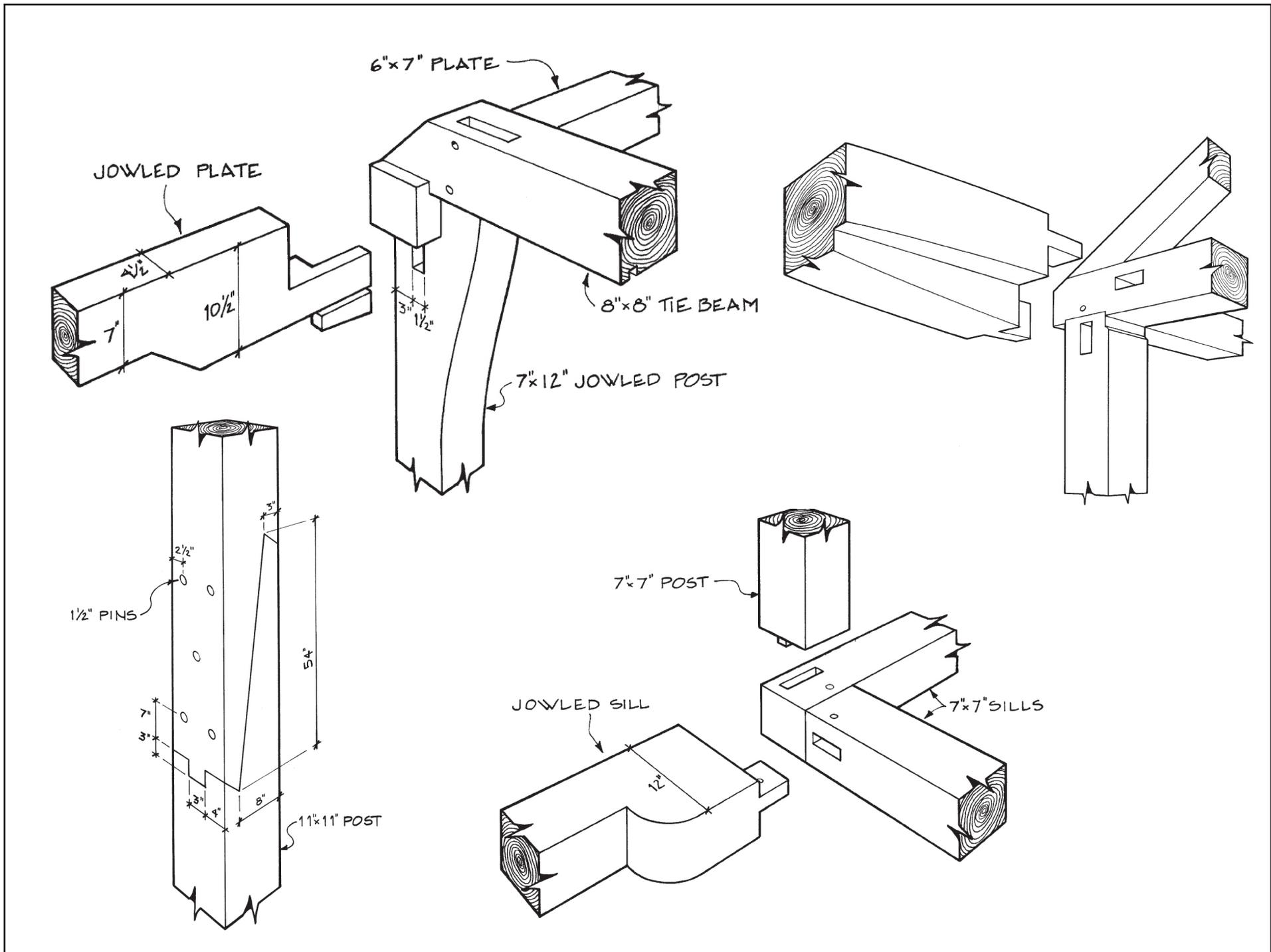
PRODUCT DISTRIBUTION

In addition to the robust resources available electronically through NCPTT's website, the National Center offers many of its publications and products in hard copy. In 2011, 579 requests for these materials were received and filled.

Five Most Downloaded Products in FY2011

Historic American Timber Joinery: A Graphic Guide (2004-08) PDF	2,056
Rapid Building Site Assessment PDF	2,030
Cemetery Monument Conservation Cleaning Booklet (English) PDF	1,047
Podcast 29: Aaron Lubeck on how we are (and are not) adaptively reusing whole cities MP3	861
Testing the Energy Performance of Wood Windows in Cold Climates — A Report to The State of Vermont Division for Historic Preservation, Agency of Commerce and Community Development (1996-08) PDF	822

Methods of joining structures are illustrated in *Historic American Timber Joinery: A Graphic Guide*, available for download from our website.





Community Engagement

The National Center recognizes that preservation is very much a community affair. As such, it makes a conscious effort to reach out and share its staff and expertise with local residents.

CONSERVATION SCIENTIST FOR A DAY

It's never too early to start thinking about a career in conservation science. In April 2011, NCPTT offered its second annual "Conservation Scientist for a Day" event, teaching local students about the intersection between science and culture. During this half-day hands-on event, forty-five sophomores from the Avoyelles Public Charter School learned about production of low and high-fired pottery and documented Native American and French Colonial pottery fragments. The students were also given a chance to perform diagnostic tests on the objects, including microscopy, chemical spot tests, and portable X-ray fluorescence spectroscopy.

ROBOTS INVADE NCPTT

In August 2011, the National Center's Curtis Desselles taught Natchitoches area students about robots during a five-day camp held at Lee H. Nelson Hall. Nineteen students from grades K-12 learned about robotics research, electronics, and computer programming as they designed and built small robots of their own. This event was held in partnership with the Louisiana School for Math, Science, and the Arts; Northwestern State University of Louisiana; Natchitoches Chamber of Commerce; and Weyerhaeuser.

AFRICAN AMERICAN HERITAGE IN THE CENTER'S BACKYARD

The American South is a treasure trove of African American history and culture, and the National Center is pleased to be involved in bringing this legacy to light. This past summer, NCPTT engaged a team of interns to survey African American heritage resources in Natchitoches and Natchez, Louisiana. Teams spent the summer researching and documenting historic resources in the area, with the goal of submitting nominations to the National Register of Historic Places to create an African American historic district. This project was supported by an award of the NPS Youth Program, and was led by local preservation advocate and NCPTT Summer Institute alum, Donna Isaacs.

THERE'S PLENTY TO PRESERVE IN NATCHITOCHES

NCPTT is happy to help when members of the public call with their preservation conundrums. Over the past year, the National Center helped out at two local sites in need of a little preservation TLC. NCPTT staff Andrew Ferrell and Ed FitzGerald responded to a call from the Association for the Preservation of Historic Natchitoches regarding some cracks appearing in the masonry walls of Lemee House, a circa 1837 Creole cottage. The two assessed the situation, found minor structural settling to be the likely cause, and installed crack monitors to track future movement.

A participant solders a circuit board during a robotics camp held at Lee H. Nelson Hall, Natchitoches, LA.

Training

The National Center develops and conducts seminars and workshops nationwide on topics ranging from energy efficiency in historic buildings to the preservation of historic landscapes. The following is a list of training programs offered in FY2011:



Envelope Performance Testing Monitoring & Modeling
Oct. 10–6, 2010, Denver, CO

This hands-on workshop, sponsored through a cooperative agreement with the Association for Preservation Technology, focused on tools and approaches to quantify energy consumption in historic structures.



Urban Ecology Round Table
Nov. 3, 2010, Natchitoches, LA

The National Center hosted a roundtable discussion on urban ecology and the development of an Urban Ecology Network. The network will be a virtual resource where those involved in revitalizing existing and historic communities in a sustainable, livable, and affordable way can share best and worst practices with like-minded folks from across the globe.



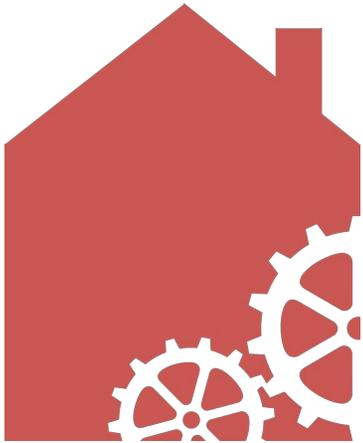
Preservation of Historic Trees
Nov. 20 –Dec. 2, 2010, Fredericksburg, VA

This hands-on workshop, held in partnership with the Olmsted Center for Landscape Preservation and the George Washington Birthplace National Monument, addressed tree biology, documentation, maintenance, and replacement strategies.



Cemetery Monument Conservation Workshop
April 1–2, 2011, St. Augustine, FL

Held in partnership with the University of Florida, Flagler College, Tolomato Cemetery Association, St. Augustine Basilica, and the Florida Public Archeology Network. Lectures focused on documentation, planning, condition assessment, and proper cleaning techniques. A hands-on portion addressed cleaning, resetting and repointing markers, epoxy repairs, and applying limewash.



Preservation Re-engineering
April 7, 2011, New Orleans, LA

This workshop, sponsored through NCPTT's Grant program, focused on solutions for implementing 21st century low-energy environmental systems in 19th century buildings in hot and humid climates.



Cemetery Monument Conservation Basics
April 16, 2011, Chireno, TX

Held in partnership with the Texas Historic Commission and a Save America's Treasures Grant through Stephen F. Austin State University, workshop topics included documentation, planning, condition assessment, and cleaning techniques for cemetery monuments.



LEED Exam Preparation Workshop
May 10–12, 2011, Washington, DC

This workshop, held in partnership with the National Conference of State Historic Preservation Officers, prepared participants to take the LEED Green Associates examination while focusing on the preservation related aspects of LEED certification.



Ornamental Iron Workshop
May 18, 2011, Savannah, GA

This hands-on workshop was held in partnership with the City of Savannah and addressed corrosion control, finishing techniques, simple repairs, riveting, forging work, and small part casting.



Preservation and Treatment of Park Cultural Resources
Sept. 19–23, 2011, Natchitoches, LA

Sponsored by the Stephen T. Mather Training Center in collaboration with NCPTT and Cane River Creole National Historical Park. Training included aspects of park cultural landscape preservation and treatment.

Publications & Media

RESEARCH AND TECHNICAL PUBLICATIONS

2011 Updated Building and Site Condition Assessment Forms and Database, Chris Stavroudis and Mary Striegel, NCPTT.

Best Practice Recommendations for Cleaning Government-Issued Marble Headstones, Mary Striegel and Jason Church, NCPTT.

Comparative Study of Commercially Available Cleaners for Use on Marble Veterans Affairs Headstones, Jason Church, Mary Striegel, Christopher McNamara, Kristen Bearce Lee, and Ralph Mitchell, in *Biocolonization of Stone: Control and Preventive Methods*, Proceedings from the MCI Workshop Series, Smithsonian Institution, 2011.

Controlling Salt Damage, George Scherer, Princeton University.

Creation of a Website and Online Community Forum for Osteoware: a Software Application for Human Skeleton Documentation, J. Christopher Dudar, Smithsonian Institution, National Museum of Natural History.

Development of a Micro-fading Tester with Near-UV Capability, Paul Whitmore, Art Conservation Research Center, Carnegie Mellon University.

Development of Ceramic Reference Materials for Calibration and quantification of Portable XRF Data, Caitlin O'Grady, Virginia Department of Historic Resources.

Digital Recovery of Water Damaged Manuscripts Using Transportable, Multispectral Imaging Laboratory, Gregory Hayworth, University of Mississippi.

Effects of Herbicides on Stone and Masonry, Caitlin Os-hida, University of Georgia.

Evaluation of Ca(OH)₂ Nano-Particle Treatment of Cordage/Basketry, Nancy Odegaard, University of Arizona, Arizona State Museum.

Field Report: Fort Livingston, Grand Terre Island, Carol S. Chin and Jason Church, NCPTT.

Guide for Use of Wood Preservation in Historic Structures, Stan Lebow and Ron Anthony, USDA, Forest Service, Forest Products Laboratory.

Improve Method for Repairing Wooden Structural Beams in CCC NHL District, Bandelier National Monument.

Nanotechnology and Materials Testing: Using Nanoparticles to Tag Consolidant to Determine Depth of Penetration, New York State Office of State Parks, Recreation & Historic Preservation.

Polymer Issues in Conservation and Preservation of Cultural Heritage, Mary F. Striegel, in *Proceedings of the Waterborne Symposium, New Orleans, February 28-March 4, 2011*, University of Southern Mississippi, School of Polymer Science, 2011.

Protecting Archeological Objects from Crude Oil, Erin White and Carol Chin, NCPTT.

Remediation of Brick Masonry in Historic Structures Impacted by the Gulf Coast Oil Spill, Payal Vora, University of Texas at Austin.

Structural Health Monitoring of Nation's Cultural Heritage, Huriye Sezer Atamturktur, Clemson University.

VIDEOS

African-American and Creole Superstitions Surrounding Death in the Cane River Region, Catherine Lobre, NCPTT.

Turf Management at National Parks and Other Historic Sites, Stephanie Nelson, NCPTT.

PODCASTS

Episode 26. Derek Patton on a collaborative project funded by a National Science Foundation grant to study POSS polymers for stone conservation.

Episode 27. Conversations on sustainability at the 2010 APT Conference.

Episode 28. John Watson on the philosophy of in-use musical instrument conservation.

Episode 29. Aaron Lubeck on how we are (and are not) adaptively reusing whole cities.

Episode 30. Patrick Sparks talks about Texas Dancehall Preservation and restoration of the Hays Street Bridge.

Episode 31. Karen Pavelka on her experiences helping to setup a conservation lab at the Cultural Recovery Center in Port-au-Prince, Haiti.

Episode 32. Claire Turcotte on campus heritage landscapes.

Episode 33. Andy deGruchy on the historic uses of lime mortar and its continuing importance today.

Episode 34. Diana Greenlee on earthwork stability research at Poverty Point.



Workers demonstrate string trimming techniques for an instructional video on turf management available for download from our website.

People

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U.S. Department of the Interior

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