

# Final Report

**Forest Service Grant No. 04-DG-111244225-447**

Period covered by this report: July 23, 2004 through December 31, 2006

**Note: Please review the following information and revise/complete as necessary.**

**Issued to:** ArborMaster Training, Inc

**Address:** P.O. Box 62, Willington, CT 06279

**Congressional District Number:** 2

**Project Name:** Saving Tree Workers Lives: The Neglected Component of Urban Forest Management

**Contact Person/Principal Investigator:**

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**Date of Award:** July 23, 2004

**Grant Modifications:** Mod.1: Time extension from August 15, 2006 to December 31, 2006

**Date of Expiration:** December 31, 2006

**Funding: Federal Share:** \$25,600 **plus Grantee Share:** \$39,000 = **Total Project:** \$64,600

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Please provide an abstract on your project and its results. This abstract will be posted on the NUCFAC internet site (aprox 200 words or less)

Tree worker equipment and climbing techniques have changed greatly during the past decade; however, our approach to aerial rescue has remained essentially the same. The current procedures may be based upon unrealistic situations and may be placing rescuers at risk. The objective of this project was to examine the types of accidents where aerial rescue is most needed and what procedures may be best suited to safely and efficiently rescue victims yet minimize risk to the rescuers. The study found that aerial accidents could be placed into five different categories based upon the situation in which the accident occurred. These are: aerial lift, electrical contact, incapacitated, palm/pole, and trapped/pinned. Each of these categories requires different responses from rescuers in terms of first-aid and

extraction/evacuation training and skills and may involve a non-medical or medical rescue. If it is a medical rescue the need to extract and evacuate may take priority to medical needs due to the victim or environment considerations or the reverse may be true. The key is to provide thorough training so tree workers have the knowledge and skills to perform any potential rescue rather than only the one currently practiced today.

**Project objectives:**

The objective of this project was to determine the mostly likely situations where aerial rescue would be necessary for tree workers and prepare protocol for the safest and most efficient means of conducting these types of rescues.

**Objectives met successfully:**

We identified the dates and locations for each of the regional meetings. All 5 regional meetings have been completed, as outlined below:

- San Diego, CA            May 5-6, 2005
- Atlanta, GA             May 25-26, 2005
- Providence, RI:        June 9-10, 2005
- St Louis, MO:          June 23-24, 2005
- Seattle, WA:            October 25-25, 2005

A meeting was conducted with the Emergency Medical Physicians at the Mayo Clinic on January 10, 2006 to discuss the findings of the regional meetings and to formulate questions for the Delphi survey that was later sent to the participants of the meetings.

Development of protocol was completed and presented to the ISA's Safety Committee at their International Society of Arboriculture conference this past August, 2006. Upon receiving approval from of the Committee regarding the text for the brochure, copies were made and sent out for final review and approval as discussed in the proposal.

Again, the point was not to create a "how-to-do" brochure regarding emergency response for tree workers but to illustrate the most common categories of accidents in which workers may have to respond to an emergency and how such training may be obtained.

**Objectives not yet met:**

N/A

**List the major research of policy findings of your project?**

The major research finding of this study are that aerial rescues are not limited to the current scenerios currently practiced. The knowledge, skills and equipment to safely and efficiently rescue a victim need to be expanded to incorporate the entire array of situations and injuries that a rescuer may face.

If not apparent above, or if your project did not involve research, how did the project increase the knowledge about urban forestry? How did (will) the public benefit?

The basic findings of this study indicate that the current training for aerial rescue is inadequate to meet the needs of the types of accidents that are occurring in the field. This project will increase the awareness among arborists and urban foresters regarding this deficiency and the need to expand training.

What recommendations might you make for community foresters or others who might benefit from your project?

The primary recommendation is the need for all individuals engaged in tree work, both commercial and municipal, to become skilled in aerial rescue as one part of their emergency response training efforts.

Attach copies of reports, publications, or videos. If your work has been published (journals, popular press, etc) provide where they have been published or reported and how copies can be obtained.

Enclosed is the final brochure.

Also, the results have been incorporated into a Master thesis Kezar, J. 2006. Aerial Rescue Protocol for the Tree Care Industry. M.S. Thesis. Industrial Management, College of Engineering, South Dakota State University, Brookings, SD and the thesis is being modified and submitted as a referred journal article.

How were your results disseminated to the public?

The primary product of this project is a four-page color brochure that details new approaches to aerial rescue. A web site will also be maintained that has a downloadable version of the brochure. The findings and conclusions of this study will also be made available to the tree care and landscape maintenance profession and fire/EMT through publication in trade publications. While not part of this grant, the information gathered during this project and prepared in the brochure, will be the basis for the development of a new training video to replace the outdated material currently available to the industry. The information will also be made available to the International Society of Arboriculture to be included in their interactive CD series on arborist training.

What are the next logical steps or future direction of your project/research?

While not part of this grant, the information gathered during this project and prepared in the brochure, will be the basis for the development of a new training video/video series to replace the outdated material currently available to the industry. The information will also be made available to the International Society of Arboriculture to be included in their interactive CD series on arborist training.

List the active partners (key individuals or organizations) involved in the project to-date:

- Tree Care Industry Association (TCIA)
- International Society of Arboriculture (ISA) and their partners:
  - o Society of Municipal Arborists (SMA)
  - o Society of Commercial Arborists (SCA)
  - o Utility Arborist Association (UAA)
- We have been in contact with fire and rescue organizations as well as Emergency Medical Technicians. We had an Emergency Medical Technician attend the Providence meeting and Chief of the St Louis Fire Department attend the St Louis meeting. We also had representatives from the Seattle Fire Department and the Seattle Fire Dept Special Operations/Technical Rescue division attend the Seattle meeting in October. We met with an Emergency Medical Physicians at the Mayo Clinic in Rochester, NY January 10, 2006.

Photo or Illustrations: If possible, please provide a photo or illustration for our use that summarizes or represents the project. Indicate how this illustration should be used.



If no cost extension was granted for this project, why was it needed?

A no-cost extension was requested for December 31, 2006 to ensure that all billing is completed.

How would you evaluate the grant process? What changes, if any, would you recommend?

The process went very well - no recommended changes.

Comments considered of importance but not covered above:

NA

**This report was prepared by:** ArborMaster Training, Inc

**Name:** Ken Palmer

**Title:** President/CEO

**Phone Number:** 860-429-5028

**Date:** January 16, 2007

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## INCIDENT COMMAND SYSTEMS

The majority of aerial rescues are performed or assisted by fire rescue or high angle rescue teams. It is critical that arborists know the procedures these professionals use when called to perform a rescue and the roles arborists may serve in the rescue of another worker. Emergency medical professionals and fire/high angle rescue teams follow a command system during emergency situations. It is called the Incident Command System.

The Incident Command System is an established line of communication, duties and responsibilities during rescue situations. Every member has a particular role and outside assistance may be rejected as the arborist offering to help is an unknown to the team and their potential role is not clear nor abilities. Tree care companies should contact their local emergency rescue teams in their area and establish how the command system will work if an emergency occurs.



## ARBORIST EDUCATION

Arborists often focus on speed when practicing aerial rescues. Unfortunately this has resulted in arborists being seriously injured or killed during practices. While there are rescue scenarios that require a rapid evacuation of the victim, in many situations it is far better for the victim and the rescuer if time is taken to properly evaluate the victim's condition, the safety of the environment and the resources available.

All arborists need to have first-aid and CPR training so they know how to respond to the victim's injuries and be able to effectively communicate with emergency medical and rescue personnel.

In addition, arborists need to be trained and practice conducting aerial rescues that fit all five of the general categories. Only practicing one, most commonly a rapid descend with a seriously injured victim, prepares an arborist for this situation only and limits their response when the accident conditions are different.

There is an immediate need within the industry for consistent training of emergency response to all categories of accidents. Furthermore, each arborist company should work closely with local emergency medical professionals when training for emergency situations.

## RESEARCH GRANT

ArborMaster®, Inc would like to thank the National Urban and Community Forestry Advisory Council and the USDA Forest Service for funding this important study of aerial rescue needs for arborists. We would also like to thank the following individuals for their assistance:

Dr. John Ball, professor, Sam Kezar and Shane Vosberg, graduate students, South Dakota State University, and Dr. Andy Boggust, M. D., Emergency Medicine

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## Emergency Response &



## Aerial Rescue Protocol

## EMERGENCY RESPONSE AERIAL RESCUE PROTOCOL

Operating power equipment in a swaying tree canopy is for the professional arborist, an individual who continuously sharpens his or her skills for working safely in this environment. Arboriculture is a high-risk occupation with an average annual fatality rate about 10 times the all-industry average. The non-fatal accident rate also exceeds the all-industry average and injuries are often severe with life-long consequences for the victims.

While less common than accidents on the ground, aerial accidents occur weekly and every arborist should know how to respond when faced with this situation.

The knowledge and skills for responding to these accidents, while not unique to our profession, are very specialized and require training and practice so an arborist can quickly and safely assist a victim.

This brochure will illustrate the five most common aerial rescue scenarios and the general process to respond to them.



## AERIAL RESCUE CATEGORIES

These five categories represent the most common situations or injuries in which an aerial victim requires assistance. These are not listed in order of importance – arborists should be trained to respond to accidents in all five categories:

### ➤ **Trapped/Pinned**

The victim is trapped and or pinned by a log or branch or tangled in rigging.

### ➤ **Incapacitated**

The victim is unable to lower him/herself on his or her own due to an injury or medical condition.

### ➤ **Electrical Contact**

The victim has contacted an energized electrical conductor.

### ➤ **Trunk/Palm/Pole**

The victim is immobilized on a palm or limbless trunk.

### ➤ **Aerial Lift**

The victim is an aerial lift operator and is unable to lower his or herself due to injuries or has been ejected from the lift and is supported by their fall protection system.

## CHECK CALL CARE

Regardless of the category in which the accident occurs these general steps should be followed:

- ✓ First the victim should be quickly **checked** for whatever injuries they may have. If the emergency involves an aerial situation, this should be initially done from the ground.
- ✓ Next, emergency medical personnel should be **called** and given as complete information as possible. This includes the location of the accident, the type of accident (e.g. the need for a high angle rescue as the victim is in the tree), victim condition as best known, and what basic emergency care is being given.
- ✓ Finally, **care** should be given to stabilize the victim. Unless there is a life-threatening medical condition that requires the victim to be immediately lowered to the ground, it is best to stabilize the victim in the tree or aerial lift and await further guidance from the emergency medical and rescue personnel who arrive at the scene.

