CROET

Oregon Fatality Assessment and Control Evaluation
Center for Research on Occupational and Environmental Toxicology
Oregon Health & Science University
503-494-2281   orface@ohsu.edu   www.ohsu.edu/croet/face

OREGON HEALTH & SCIENCE UNIVERSITY

Logging Safety:
Fallers Point-of-View Video Observation Study

Pacific Northwest Agricultural Safety and Health Center pilot project, conducted by the Center for Research on Occupational and Environmental Toxicology
Principal Investigator: Gary Rischitelli MD JD MPH FACOEM   Research Associate: Terry Hammond MPH   Logging Safety Consultant: Jeff Wimer BA

PURPOSE OF STUDY

Working as a faller in logging is one of the most dangerous jobs in Oregon. The Faller's Point-of-view Video Observation Study tests the feasibility of using video to directly observe fallers at work in a remote work environment and assess the effectiveness of safety training. Observation of actual work practices is the most reliable method to evaluate safe work practices.

1. ASSESS THE AREA - Identify and control hazards in the work area, including snags, danger trees, hanging limbs, uneven ground, power lines, or roads.

FEATURES OF STUDY

• Use a video camera attached to a hardhat to observe fallers at work in the woods.

• Participants include two student fallers and two professional fallers at two time periods, before and after a safety training intervention with the OR-FACE safety booklet, *Fallers Logging Safety*.

• Code video data into five steps in safe falling:
  1. Assess the Area
  2. Assess the Tree
  3. Establish a Safe Work Area
  4. Fall the Tree
  5. Get in the Clear

• Code video data for direction of view, and elements of safe practice.

• Analyze differences between subjects and times.

• Document features and challenges in the study to inform future research.

2. ASSESS THE TREE - Look up at the tree to determine the lean, canopy weight, and other forces that will influence the falling direction; find an opening; assess wind, terrain, and potential impacts.

EQUIPMENT

• Viosport POV.1 lightweight camera attached to a standard hardhat, with 5-foot cable connected to a recorder unit secured in a belt pack.

• High-capacity rechargeable batteries and charger.

• 2 gb SD card for camera with a write speed of at least 2.5 mb/sec. (20 mb/sec. video card available)

• Transana video analysis software

• High-capacity computer file storage (500 gb external hard drive, 8 gb memory stick).

DATA COLLECTION - PHASE 1

May 9, 2008: One student faller
Video time: 3 hrs 30 min. / 2 trees

May 23, 2008: One student faller
Video time: 3 hrs 50 min. / 3 trees

July 24, 2008: One student faller
Video time: 5 hrs. / 7 trees

Oct. 3, 2008: Two professional fallers
Video time: (1) 1 hr 15 min. / 21 trees
(2) 4 hrs. / 123 trees

One camera failed on first two trials (compression error on longer recordings), requiring warranty repair and upgraded SD card.
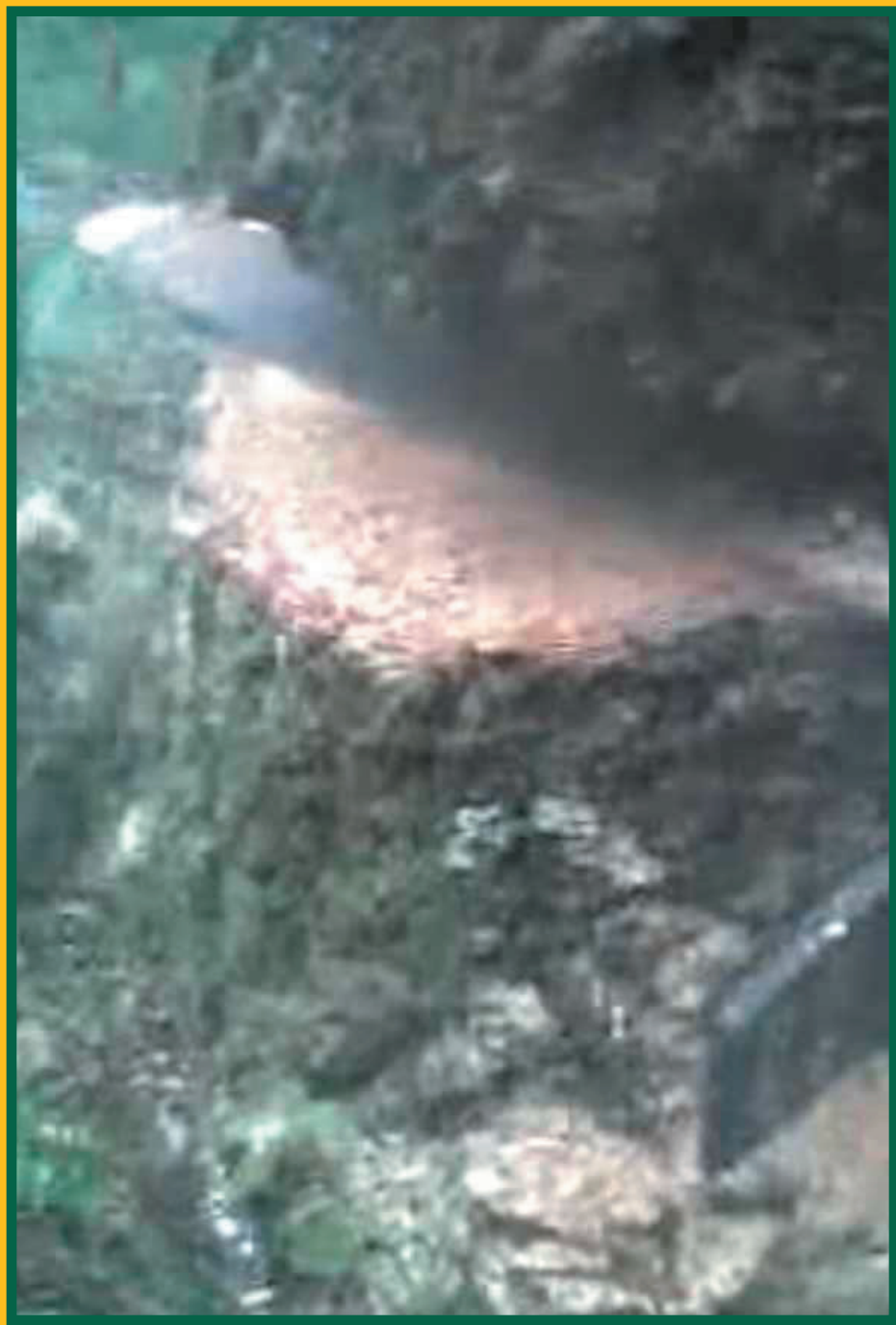
4. FALL THE TREE - Make a clean face-cut, make a backcut that protects the hinge; keep wedges within reach, bring saw back to idle before using wedges.

DATA CODING

Initial coding identified segments related to the five steps in safe falling, coded in a transcript with time markers and descriptive notes. Coding was reviewed by a logging safety consultant.

The second step in coding identified the direction of view within work segments (ahead, left, right, back, up, down, etc.). Coding was oriented to the direction of the body, and oriented to the target tree and falling direction once identified. This coding will be checked for interrater reliability.

3. ESTABLISH A SAFE WORK AREA - Clear the area around the tree and plan at least one escape route back and to the side of the falling direction.

From the time markers, the video analysis software produces a report of the frequency and duration of views.

Final coding addresses critical behavioral questions, such as: Does the faller look up at the tree during assessment, and how often? Does the faller view the tree as it falls?

CHALLENGES

• Human subjects: assure privacy – designate use of archived video for future studies contingent upon review board approval.

• Technical issues: ensure camera SD card is appropriate for video data; record at low quality to reduce file size.

5. GET IN THE CLEAR - Get away from the stump as soon as the tree is committed to fall; keep an eye on the tree and watch for impacts.

PRELIMINARY RESULTS

Phase 1
Summary of Selected Observations

	# Trees Felled	Avg Time to Fall	Avg Time Get Clear to Tree Down	Get in Clear?	View Tree on Impact?
Student Faller 1	2	11 min. 26 sec.	9.1 sec. 7.4 to 10.7	100%	100%
Student Faller 2	10	6 min. 16 sec.	9.2 sec. 3.6 to 25.4	100%	100%
Prof. Faller 1	21	58 sec.	6.9 sec. 4.4 to 10.1	100%	100%
Prof. Faller 2	123	49 sec.	4.0 sec. 0 to 9.6	81%	97%

The first phase of data collection and initial coding of work activities is complete. The second phase of data collection is in process, along with detailed coding of direction of view.

In Phase 1, student fallers took far more time felling a tree. Student fallers also moved earlier to get clear of the falling tree. The fastest professional faller failed to get in the clear on each tree as all other fallers did, and also neglected to view the impact of the falling tree each time.

The camera unit produced video data files of exceptional quality, though the lens did not always capture the subject's exact view, due to elevation above eye level. In most cases, the five essential steps in safe falling were plainly observed.