

# The Forest Operations Network

A publication of the Forest Operations Science Program at The University of Maine

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Helping to keep New England's foresters, loggers, and landowners informed of education opportunities, research and innovative practices, and current issues in the field of forest operations.

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**Forest Operations Science**

The Forest Operations Network is published twice annually — in January and in June. The objective is to help keep foresters, loggers and others informed about current educational opportunities, research and innovations, and issues in the field of forest operations.

Submissions to The Forest Operations Network are welcome and can be made by contacting Andy Egan, Forest Operations Science Program, The University of Maine, 5755 Nutting Hall, Orono, Maine 04469-5755; ph: (207)581-4739; fx: (207) 581-2875; e-mail: [andy\\_egan@umenfa.maine.edu](mailto:andy_egan@umenfa.maine.edu).

Due to space limitations, not all submissions can be published.

## Education

### Forest operations videotapes

The Forest Operations Science Program has produced two videotapes: A Practical Guide to Maine's BMPs and A Practical Guide to Wooden Swamp Mats and Skidder Bridges. A third videotape is currently being produced and will address forest road construction and maintenance practices that are compatible with water quality. Support for the BMP and road construction tapes has come from the US Department of Environmental Protection, the Maine DEP and The University of Maine. Videotapes can be borrowed from the Northeastern Loggers Association video library (315-369-3078). Limited copies are available from Andy Egan ([andy\\_egan@umenfa.maine.edu](mailto:andy_egan@umenfa.maine.edu); 207-581-4739)

### 2003 COFE meeting

The 2003 Council on Forest Engineering (COFE) National Meeting will be hosted by the New England Regional Conference on Forest Engineering (NER.COFE) and The University of Maine. The meeting will be held at Atlantic Oakes By-The-Sea in Bar Harbor, Maine on September 7-10, and will bring together forestry practitioners and scientists from many states and several countries to discuss forest operations and to participate in field trips. Check the NER.COFE website ([www.forest-resources.umaine.edu/nercofe/](http://www.forest-resources.umaine.edu/nercofe/)) for updates.

### New BMP demonstration site in southern Maine

A new BMP demonstration site has been developed at the Sid Emery Forest in Lyman, Maine. Funded by the US EPA, Maine DEP, and The University of Maine, the site demonstrates swamp mats, portable skidder bridges, stone fords and other BMPs.

Information on the site may be obtained from Debbie St. Pierre (207) 324-7015.

## **New BS program in Forest Operations Science at The University of Maine**

A new BS in Forest Operations Science has been developed at The University of Maine. The interdisciplinary program combines coursework and faculty expertise in forest management, wood science, forest engineering and introductory business administration. The program is accredited by the Society of American Foresters (SAF) and anticipates accreditation by the Society for Wood Science and Technology (SWST).

The Forest Operations Science program aims to develop individuals (a) with the knowledge and abilities to better manage timber resources and forest operations in an environment of increasing public scrutiny and environmental concern; (b) with an understanding of the processes and challenges related to the efficient and environmentally acceptable harvest and primary processing of timber resources; and (c) with an appreciation for the local, regional and global competition for forest product raw materials and markets.

In addition to existing Forestry and Wood Science courses, required courses include Forestry Mechanization, Forest Road Engineering, Timber Appraisal and Acquisition, Forest Operations Planning and Analysis, and business electives.

More information can be obtained from the program's website: [www.forest-resources.umaine.edu/fsc/](http://www.forest-resources.umaine.edu/fsc/) or by contacting Andy Egan, Program Leader ([andy\\_egan@umenfa.maine.edu](mailto:andy_egan@umenfa.maine.edu); 207-581-4739).

## **Research and Innovations**

### **Unused logging capacity in Maine**

A USDA-funded survey of Maine's loggers was conducted by The University of Maine to better understand the unused logging capacity phenomenon in the state. The survey complemented information gathered from a southern US/Maine study on idle logging capacity that was funded by the Wood Supply Research Institute.

Results from the Maine survey indicated that about 75 percent of the state's loggers experience unused capacity. The most often cited cause of unused logging capacity by Maine logging business owners was weather (n = 168 respondents), followed by road conditions (n = 113), equipment breakdowns (n = 112), and mill imposed quotas (n = 111). Other commonly reported causes included regulations (n = 56), moving equipment to other locations (n = 51), inability to find stumpage (n = 47), and mill closure(s) (n = 46).

However, when asked to rate a battery of items that they considered as barriers to maintaining or expanding their logging businesses, unused logging capacity was rated the lowest: 65 percent of logging contractors and 73 percent of independent loggers rated as "unimportant" the statement "I already have too much logging capacity;" 32 percent of contractors and 18 percent of independent loggers rated this as "important;" and 2 percent of contractors and 9 percent of independent loggers rated it as "very important."

Survey results from about 1,000 loggers from across all three northern New England states are currently being analyzed. For more information contact Andy Egan.

### **FRA's in-woods delimiting study**

In recent years, an increasing number of landowners throughout Maine are requesting that tree limbs be left in the woods during harvesting rather than being piled along roadside yards. Under traditional harvesting operations, whole trees are skidded to the roadside and delimited by a stroke delimitter. The brush is usually carried back into the harvest area by grapple skidders and deposited in the skid trail where soft ground conditions exist. While this is an effective means for moving brush off the yard, landowners are seeking operators who can delimit in the woods for a variety of perceived benefits such as:

- Possible extension of the operating season; delimiting in-woods allows greater use of brush

in trails during wet conditions, thereby extending the fall and spring seasons.

- Roadside aesthetics is improved without the presence of brush piles.
- Fire hazard from accumulated roadside debris is reduced.
- Smaller log landings are possible.
- Residual stand damage is lessened.

While contractors are also interested in these desired outcomes, they cite operator safety, machine productivity and cost as additional concerns of in-woods delimiting.

As a result of these concerns, a study of in-woods delimiting was conducted by Forest Resource Association's Northeastern Technical Division - Production Efficiency Committee. The intent of the study is to provide useful information to harvesting contractors and land managers in determining which method provides the most desirable outcome based on their given circumstances. Combining the silvicultural and operational interests of landowners and contractors, this study specifically examines the effects of in-woods delimiting on: operator safety; machine productivity (for the delimitter, grapple skidder and loader); residual stand damage; ground disturbance; and trail width.

Since in-woods delimiting is being requested of more contractors utilizing their existing mechanized equipment (e.g. stroke delimitter, grapple skidders) the study only field sampled those operators who had not yet modified their operations significantly with the addition of clambunks or forwarders to transport the delimited wood to roadside. Delimiting as a function of cut-to-length systems was not a focus of this study.

The two-part study involved a contractor questionnaire and field data collected from active harvesting operations with both in-woods and roadside delimiting systems. Data were collected on machine productivity (cords/minute) and associated site impacts.

The study findings are based largely on field observations of three operations and supported by questionnaire responses and interviews of several contractors. Terrain, stand stocking, machine brands, and many other characteristics varied widely among the three field sites. As such, the findings are not intended to prove or disprove the advantage of in-woods delimiting over roadside delimiting.

*Key findings:*

- Delimitter productivity during in-woods delimiting increased on two out of the three sites compared to roadside delimiting.
- Skidder productivity during in-woods delimiting increased on all three sites compared to roadside delimiting.
- Residual stand damage was higher for in-woods delimiting due, in part, to how the hitches were placed along the skid trail (parallel versus diagonally in the leave strip).
- In-woods delimiting had less severe ground disturbance overall.
- Four of the seven contractors surveyed replied that the equipment liability insurance on their stroke-delimitters increased between 5 and 40 percent when they converted to in-woods delimiting.
- Three of the seven in-woods delimiting contractors reported that the duration of their operating season increased in the range of two to four weeks.

For more information contact Patrick Hackley:  
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## **Is there a better way to accumulate delimbed branches and tops?**

On a related subject: Grapple skidder operators know how difficult (and frustrating) it often is to use a grapple to accumulate branches, tops, and other debris from around a delimeter (or chipper) for transport back into the woods. As part of his senior project, Jared Dunn, a Forest Engineering student at The University of Maine, is designing a skidder blade attachment mechanism that would help facilitate this debris accumulation operation.

## **Remote controlled skidder winch pre-study**

Chuck Simpson, UMaine University Forest Manager, performed a preliminary timing study of the efficiencies associated with using a radio controlled skidder winch vs. conventional manual control. A Timberjack 208 skidder was equipped with 65-foot of mainline cable, and used to thin a 6-acre Norway and white spruce plantation on the University Forest, reducing the basal area from 144 ft<sup>2</sup> to 56

ft<sup>2</sup>.

The timing study considered only the hook-up, unhook and total cycle times associated with using a remote controlled winch vs. not using the remote controlled winch. Preliminary findings indicated that, when the remote controlled winch was used, hook-up times were reduced 38.3 percent, unhook times were reduced 25.6 percent, and the average turn (cycle) times were reduced 22.6 percent. In addition, on/off skidder times at the landing were reduced 56.7 percent; on/off skidder times in the woods were reduced 51.6 percent.

It is projected that using the remote controlled winch could result in 2.7 more turns per day, and increase daily production from 26.2 cords to 32.7 cords — a production increase of 25 percent.

For more information contact Chuck Simpson: [csimpson@maine.edu](mailto:csimpson@maine.edu); 207-581-3626.