Muddy forests, shorter winters present challenges for loggers

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Stable, frozen ground has long been recognized a logger's friend, capable of supporting equipment and trucks in marshy or soggy forests. Now, a comprehensive look at weather from 1948 onward shows that the logger's friend is melting.

The study, published in the current issue of the *Journal of Environmental Management*, finds that the period of frozen ground has declined by an average of two or three weeks since 1948. During that time, wood harvests have shifted in years with more variability in freezing and thawing to red pine and jack pine—species that grow in sandy, well-drained soil that can support trucks and heavy equipment when not frozen.

Jack pine, a characteristic north woods Wisconsin species, is declining, and areas that have been harvested are often replaced with a different species, changing the overall ecosystem.

The study was an effort to look at how long-term weather trends affect forestry, says author Adena Rissman, an assistant professor of forest and wildlife ecology at the University of Wisconsin-Madison. "When my co-author, Chad Rittenhouse, and I began this project, we wanted to know how weather affects our ability to support sustainable working forests. We found a significant decline in the duration of frozen ground over the past 65 years, and at the same time, a significant change in the species being harvested."

"This study identifies real challenges facing forest managers, loggers, landowners, and industry," says Rittenhouse, now an assistant research professor of natural resources and the environment at the University of Connecticut. "Once we understood the trends in frozen ground, we realized how pulling out that issue tugged on economics, livelihoods, forest ecology, wildlife habitat and policy."

Mud can make forests impassable in fall, and even more so after the snow melts in spring, making life difficult for companies that buy standing trees, Rittenhouse says. "Nobody wants to get stuck; you lose time and have to get hauled out or wait for the ground to firm up again."

Shorter winters and uncertainty complicate management for logging companies, Rissman adds. "They often need to plan out their jobs for the next six months or year." The same is true for managers of state and county forests, which typically allow two years for a cut to be completed. "In some cases," she says, "they are going to three-year contracts to give more time to get the timber out."

Even if equipment can traverse muddy roads, their ruts may ruin the road and cause unacceptable erosion. "There is increased attention to rutting on public land, and on private land that is in the state's managed forest program or in a form of sustainable forest certification," says Rissman. "Excessively wet and muddy ground during harvest is a lose-lose-lose for the logger, the landowner and the environment."

The study drew data from weather records from airports, used to model when the ground was frozen; Department of Natural Resources records on harvest levels for various tree species; and interviews with forest managers and loggers.

"People in the forestry industry say this is a big deal; winter is normally the most profitable time," Rissman observes. "It's more and more

difficult to make a profit in forestry (with) more loggers (taking) on a lot of debt—they are heavily mechanized, have heavy labor and insurance expenses, and these costs don't end when they don't have work."

The uncertainty about when and where they can work emerged during an interview with a veteran logger, who is quoted as follows in the study: "When I started in the business ... the typical logger ... would shut down and not do anything for the month or two months that the spring break up would last for. Nowadays, with the cost of equipment, and just the cost of insurance on that equipment alone, you're looking for work almost 12 months out of the year."

The shorter winters seem linked to climate change, Rissman acknowledges. "For many people, climate change is something that happens, or not, in places that are far away, at scales that are difficult to see or understand through personal experience. Here's an example of something we can clearly document, of a trend that is having an impact on how forests are managed, right here at home."

Provided by University of Wisconsin-Madison

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