Study finds logging effects vary based on a forest's history, climate

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A Smoky Mountain forest's woodland herb population has shown that climate may play a role in how forest understories recover from logging, according to Purdue University research.

Despite heavy logging in portions of the forest nearly 80 years ago, the distribution of trillium plants on the secondary forest floor was similar to that of undisturbed areas. Michael Jenkins, a Purdue assistant professor of forestry and natural resources, said that contrasts with a study by other researchers of an Oregon forest in which trillium didn't recover after logging.

Jenkins said the findings, reported in a November issue of the journal *Forest Ecology and Management*, suggest that climate and history play a role in a forest's ability to rebound from logging. The study was done in collaboration with Christopher R. Webster, an associate professor of forest resources at Michigan Technological University.

"There's still a lot of controversy about the effects of logging," Jenkins said. "There is an effect on a forest, but there is also recovery as we've seen."

The Smoky Mountain site receives 51.3 centimeters of rain in the summer months, compared to an Oregon site - which received 7.3 centimeters of rain - in which trillium did not rebound well after logging. Also, the Oregon site was burned and replanted after it was logged. The Smoky Mountain site was not treated post-logging.

Trillium is a woodland herb that spreads slowly, often with ants moving its seeds only a meter at a time. The slow spread makes trillium a model plant to show the effect that a major disturbance such as logging has on a forest's understory. Trillium plants also can live for more than 20 years, and stem scars act much in the way rings do in tree trunks to allow for determining the plant's age.

"The old-growth trillium populations were structurally complex, but the secondary-growth populations were nearly as complex," Jenkins said. "It suggests that the population in secondary forests was not eliminated by historic logging. Populations of secondary-forest trillium are quite healthy and still expanding. They've had sufficient time to develop more complex clusters of individual plants."

"We would expect that you'd see similar trends in other understory species, but they're difficult to study because you don't have the ability to age the plants the same way you can trillium," Jenkins said.

Jenkins' future research will focus on whether logged and unlogged areas differ in how often populations of trillium occur across large forest areas to confirm this study's findings on a larger scale.

Source: Purdue University (news : web)