The Laboratory of Tree-Ring Research

presents a talk by

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Evaluating the abruptness of dendrochronologically-reconstructed western spruce budworm outbreaks

Wednesday, December 1, 2021 - 12:00pm to 1:00pm
Room: Zoom Only

Reconstructed insect regimes provide information on outbreak interval length, periodicity, duration, and associations with climatic patterns. We explored patterns associated with western spruce budworm outbreak initiation, dating "foremost years" as when the percentage of trees recording defoliation reached a prescribed limit, and quantified outbreak abruptness as the number of years between when 25 and 50% of the trees were defoliated. We re-analyzed budworm data from Colorado and New Mexico to demonstrate the utility of these statistics. On average, after reaching 25% involvement, 33-53% of sites reach 50% involvement within 2 years, an additional 30% reach 50% with 5 years, but sometimes 50% of trees are not involved until 6-14 years. Outbreaks developed within sites more rapidly in the San Juan Mountains of southern Colorado than in the Jemez and Sangre de Cristo Mountains of northern New Mexico. Preliminary spectral analyses found 1) different periodic behaviors in southern Colorado than in northern New Mexico, 2) that significant periods based on foremost years were somewhat longer than the maxima-based periodicities in the original publications, and 3) that outbreaks initiated when drought patterns switched to pluvials, but the strength of drought vs pluvial signals was variable.

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