HISTORICAL RECONSTRUCTION OF WESTERN HEMLOCK LOOPER OUTBREAKS IN COASTAL BRITISH COLUMBIA

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ABSTRACT
This is the first reconstruction of western hemlock looper (Lambdina fiscellaria lugubrosa Hulst) outbreaks in coastal forests using dendroentomological methods. Eight western hemlock looper outbreaks were inferred using the program OUTBREAK by comparing individual tree-ring series of western hemlock (Tsuga heterophylla (Raf.) Sarg) to a control western redcedar (Thuja plicata Donn. ex D. Donn) chronology. All four outbreaks that occurred during the time period coincident with historical records followed previously documented western hemlock looper outbreaks, providing verification of our methods. Four additional outbreaks, which occurred prior to the first recorded outbreak in 1911, were also inferred and contain new historical data. Analysis of the eight outbreaks allowed for the calculation a site-level return interval of 15 to 39 years for western hemlock looper outbreaks in forests within the Coquitlam River watershed, British Columbia. Outbreaks of western hemlock looper have been a consistent occurrence along the south coast of British Columbia for at least 200 years. This reconstruction increases understanding of the temporal aspects of western hemlock looper as a disturbance agent in this region beyond what was known using the Canadian Forest Service’s Forest Insect and Disease Surveys (FIDS).

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