

Public Abstract

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Title:DESIGNING A LANDIS PRO HARVEST MODULE AND EXAMINING THE EFFECTS OF TEMPORAL RESOLUTION ON SIMULATION OUTCOMES

The development and testing of forest landscape models is an ongoing process. This thesis documents a portion of this process working with the LANDIS PRO 7.0 forest landscape model in two parts. In the first chapter I detailed the theoretical design and testing of a disturbance module that simulates harvest events in the LANDIS PRO model. The design operates on quantitative attributes such as number of trees and basal area to control harvest events, giving the user the ability to parameterize harvest treatments using parameters that are common in forestry measurement. Model outputs can also be directly compared to forest inventories and management plans. These features increase the usefulness of the LANDIS PRO model as a management planning tool. In the second chapter I examined the effect of using a variable time-step on the LANDIS PRO model simulation results. Three different time-steps were examined under two simulation scenarios and compared using statistical and qualitative comparisons to assess the degree of difference caused by using a finer temporal resolution. The results showed that time-step had a significant effect on simulation outcomes and that the model should be parameterized and calibrated for the specific temporal resolution used.