

Study of Succession in Jack Pine-Dominated Forest Stands of Boreal Ontario

EXECUTIVE SUMMARY

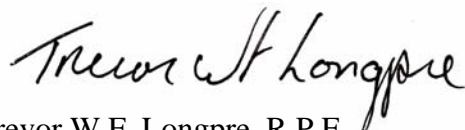
A study of succession in jack pine-dominated forest stands of boreal Ontario was undertaken, and presented in two reports: a graduate thesis prepared for Lakehead University's Faculty of Forestry and the Forest Environment investigating environmental drivers of succession; and, a technical report prepared for the Forest Ecosystem Science Co-operative Inc. that summarized trends for the jack pine-dominant standard forest unit.

Photo chronosequencing was used to sample forest succession in 221 stands; though when studying the environmental drivers of succession, stands within the 4W ecoregion, stands comprised by rare species (rare to the dataset), and stands having experienced fire during the period of observation (cutting the period into two of shorter duration) were dropped from consideration so as to minimize sensitivity in the analyses. This study was based on 178 stands. Each of the stands were linked to growth and yield monitoring plots, which provided ground-truth benchmarks for photo interpretation and empirical information on site.

Using survival analysis, investigations into environmental drivers of succession found that above all, deep sands were influential, as was slope gradient and precipitation during the growing season. Recast to the specifications of the jack pine-dominant standard forest unit of boreal Ontario, succession trends are presented in a format suitable for use in the Strategic Forest Management Model, and several probability-based models.

Photo chronosequencing proved to be a logistically-effective alternative for sampling forest succession, and its expanded use is recommended. Key environmental drivers for other boreal species should be studied, and succession trends for all boreal forest units should be summarized.

Survival analysis proved to be well suited to summarizing and testing successional trends. Using derived thresholds for identified environmental drivers, and the empirical trend for the jack pine-dominant standard forest unit, forest management planners can improve their forecasts of wood supply, wildlife habitat availability, and ecological sustainability. Its expanded use is also recommended.



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