

INTEGRATED MODELING OF FOREST INVASIVE ALIEN SPECIES RISKS IN CANADA

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ABSTRACT

The Canadian Forest Service has embarked on a program to help develop better risk assessment capacities for invasive alien species in Canada. This poster describes several aspects of this work including the development of specific data and models to address issues such as host availability, potential distributions of new alien species, possible spread/dispersal patterns, and cost-benefit analyses of mitigation and eradication options.

One current example of concern is *Sirex noctilio*, a wood wasp found relatively recently in both the United States and Canada. We also briefly present some preliminary results for modeling the potential spread of this species in eastern Canada. The model tracks basic population parameters such as growth rate, mortality, and viability and uses these to predict dispersal possibilities. A set of traveling wave algorithms is used to calculate the

dispersal vectors and rates of spread in a landscape. The biophysical spread models are linked with GIS forest inventory databases to assess the susceptibility of landscape to infestations and track the potential spatial extent of the outbreak.

Clearly all models require appropriately humble interpretations in the face of limited knowledge on new alien species. However, it is the process of building models, rather than the models themselves, that is often most useful. Model building synthesizes knowledge, provides a quantitative framework to implement and (sometimes) test theories, and helps identify knowledge gaps and research priorities. Our overall intent is to enhance the contribution of science-based activities and modeling to address policy-relevant questions.