A Computer Model to Project the Outbreak of Agrilus planipennis in New Hampshire

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The purpose of this experiment was to create a computational model to project the path of the current outbreak of Agrilus planipennis (emerald ash borer) in New Hampshire. Each model is based on a set of variables including distance from current outbreak, human population size, likelihood of wood transportation, average low temperature and ash tree coverage. Each variable has a designated a weight pertaining to its overall importance in the model. The weights of the variables were adjusted during testing in order to increase the accuracy of the model. The models produced were tested for accuracy using historical data from the current outbreak of Agrilus planipennis in New Hampshire. The variables and their weights were altered based on the results. The best performing test was able to approximate historical results and project the future spread of Agrilus planipennis to particular locales in New Hampshire. The data retrieved from the model could be used to help curb the current Agrilus planipennis outbreak in New Hampshire by focusing on detection and eradication in the highest risk areas. The model could also be used to project the chance of infestation for other states, including Vermont.

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