

## **Spread of nonindigenous plants in the landscape: the role of time, habitat availability, and biological traits**

**R. G. AHERN<sup>1</sup>, D. W. SCHEMSKE<sup>2</sup>, A. A. REZNICEK<sup>3</sup>, D. A. LANDIS<sup>1</sup>**

<sup>1</sup>Department of Entomology, Michigan State University, East Lansing MI. USA. <sup>2</sup>Department of Plant Biology and Kellogg Biological Station, Michigan State University, East Lansing MI. USA. <sup>3</sup>University of Michigan Herbarium, Ann Arbor MI. USA.

Species introduction results in enormous economic and environmental costs. However, despite over a century of research, very little consensus has been achieved regarding particular mechanisms involved in the spread of introduced organisms. We conducted an analysis of 948 nonindigenous plants to examine the relative importance of residence time, availability of potential habitat, and biological traits on county-level distribution in Michigan. We found the time since introduction explained a large amount of variation in spread throughout the state. In general, plant species found in more counties than would be predicted by time alone were considered weeds by state and local authorities, while those distributed in fewer counties were not. We found no relationship between the type of habitat required by a plant, as estimated by coefficient of wetness, and the extent of the plant's distribution, indicating habitat availability does not limit spread in this system. Finally, we found that pollination and dispersal systems are associated with relatively high rates of spread in some species. Through this work we will develop an improved understanding of the mechanisms that facilitate persistence and spread of nonindigenous plants, and the long-term impacts of our research are more robust guidelines for inclusion of species on watch lists.