A bridgehead effect in the invasion of the Western conifer seed bug in Europe?

Vincent Lesieur, Marie-Anne Auger-Rozenberg, Alain Roques

A bridgehead effect in the invasion of the Western conifer seed bug in Europe?

V. LESIEUR, M.A. AUGER-ROZENBERG & A. ROQUES

Unité de Zoologie Forestière, INRA - Centre de recherche d'Orléans, Orleans, France
Email : vincent.lesieur@orleans.inra.fr

In Europe, almost 1600 alien arthropod species have already established and among them, some forest insects that represent a risk to European forests and plantations. The Western conifer seed bug, *Leptoglossus occidentalis* Heidmann (Heteroptera, Coreidea) is an insect native of Western North America, its original range extending from British Colombia to Mexico and from the Pacific Coast to Colorado. Since the 1950s the species spread eastwards and reached the East coast in the 1990s. In Europe, *L. occidentalis* was first observed in 1999 in Northern Italy. It expanded its range very quickly and within just a decade, the species colonized most of Europe from Norway to Sicily and from Portugal to Turkey. Even if this species is described as a good flyer little is actually known about its dispersal capacities. Isolated records in Germany, Spain and in the United Kingdom strongly suggested the occurrence of different introduction events, and its present distribution in Europe may have resulted from a combination of natural expansion with long-distance translocations through human activities (transport of eggs, nymphs or adults as hitchhikers). Using molecular tools we intended to precise the source of the European populations and the invasion routes. Here we present the preliminary results of a phylogeography study using mitochondrial gene sequence data (Cytochrome *b*) to compare the level of genetic variability in bug populations sampled across the entire native range in North America and in some European populations with regard to the date of first record in the country. Haplotype richness in Europe is limited compared that observed in the native range. Our first results suggest that the populations having invaded Eastern North America may have acted as a bridgehead for the European invasion which may not originate directly from the Western North American native range. Such a bridgehead effect has already been observed in some other invasive species such the Harlequin ladybird. New analyses using microsatellite markers are in progress which may allow us to obtain a better vision of the genetic structure in both native and invaded areas.