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Marie-Anne Auger-Rozenberg, Lionel Roques, Solen Boivin, Alain Chalon,
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**INVASIVE PATTERNS OF AN EXOTIC SEED CHALCID,
MEGASTIGMUS SCHIMITSCHEKI NOVITZKY, IN THE CEDAR
PLANTATIONS OF SOUTHERN FRANCE**

M.A. AUGER-ROZENBERG¹, L. ROQUES², S. BOIVIN¹, A. CHALON³, J.P. FABRE³,
AND A. ROQUES^{1*}

¹Institut National de la Recherche Agronomique (INRA), Station de Zoologie Forestière,
45166 Olivet Cedex, France

²University Paris 6, Laboratory J.L.Lions, 175 rue du Chevaleret, 75013 Paris, France

³Institut National de la Recherche Agronomique (INRA), Unité de Recherches Forestière
Méditerranéennes, Av. Vivaldi, 84000 Avignon, France

Worldwide exchange and trade of tree reproductive materials is rapidly increasing with the development of plantations and ornaments using exotic tree species. Such exchanges are highly favorable to the invasion of new pests because no or few phytosanitary regulations exist for importation of such material in a number of countries, and seed-borne organisms are not easily surveyed because of their cryptic way of life. An exotic seed chalcid, *Megastigmus schimitscheki* (Hymenoptera: Torymidae), specialized in the exploitation of seeds of cedars (*Cedrus* spp.), has thus been introduced from Turkey to southern France during the early 1990s. From 1994 to 2002, seeds were screened for insect damage in the main cedar plantations of Southern France, as well as in the stands where cedar is mixed with firs (*Abies* spp.). X-rays were used to identify chalcid-infested seeds from which the insects were then reared. The surveys revealed that *M. schimitscheki* progressively invaded all the stands of Atlas cedar, *C. atlantica*, planted in south-eastern France. However, it has not yet reached the plantations in south-western France, where the seeds are colonised by a related exotic insect, *M. pinsapinis*, originating from North Africa. In the invasion zone, *M. schimitscheki* seems to be competitively superior to *M. pinsapinis* possibly because of an earlier emergence of adults. From the survey data, a mathematical model was tentatively developed to forecast the annual expansion of *M. schimitscheki*. In parallel, we intended to compare the genetic structure of the invasive populations with these of the native, Turkish populations using microsatellite markers. A native chalcid species, *M. suspectus*, was also shown to have shifted to a slight extent from a native fir, *Abies alba*, onto cedar. The presence of three chalcid species competing for cedar seed resources may result in a substantial decline of the regeneration potential of that tree species. At Mt Ventoux, up to 92.6% of the cedar seeds were attacked, with 86.8% due to *M. schimitscheki*.