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Recent progress in the early warning and detection of potentially invasive alien insects through sentinel plantings in other continents and extensive surveys in major European botanical gardens

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Identifying appropriate and effective tools for the prior warning and early detection of exotic insect arrivals is urgently needed but extremely challenging because the potential invaders are often unknown, sometimes even to science. Recent sentinel plantings of European trees in China demonstrated one method of creating lists of insects that may need to be prevented from entering Europe but the experiments also revealed many limitations. Extensive surveys of arboreta provide an alternative as illustrated by findings of alien seed insects. Botanical gardens at the Paris Museum of Natural History and at Kew were sampled during 2013-2015 for wild rose hips, *Rosa* spp. Up to 32 species in Paris and 70 in Kew were surveyed. X-rays of ca. 60000 seeds were extracted and revealed a significant infestation by insect larvae (up to 28% in Paris but only 6% in Kew). In addition to a native seed chalcid, adult emergence revealed infestations by 4 alien species of *Megastigmus* not previously recorded in Western Europe. Two species confirmed by molecular analyses originated from North America and one came from Eastern Europe but the origin of the fourth is currently unknown. The exchange/trade in seeds is the most likely pathway.