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Molecular phylogeny of *Megastigmus* seed chalcids (Hymenoptera: Torymidae) related to conifers

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Most chalcid species in the genus *Megastigmus* (Hymenoptera: Torymidae) develop entirely within tree seeds, especially of conifers on which 48 species are currently recognized. Phylogenetic relationships within this group were inferred from the molecular analysis of 22 species related to host families Pinaceae (15 spp.) and Cupressaceae (7 spp.). We used both mitochondrial (cytochrome *b*) and ribosomal sequences (D2 variable region of the 28S subunit) individually and in combined analyses. Although the cyt. *b* gene seemed to be more suited than the 28S to resolve inter-specific relationships, maximum likelihood and maximum parsimony analyses produced congruent results. Whatever the method of analysis or the dataset analysed, the species grouped per conifer family, and then per conifer genus for most of them. This grouping pattern probably proceeds from the strong specific association existing with host seeds. A phylogeographic radiation at host-species level was also suggested for the species groups related to Pinaceae. In addition, the analyses clearly confirmed that a number of species are invasive in regions other than the native ones.