The Sex Pheromones of Two Pine Sawfly Species, *Gilpinia frutetorum* and *Gilpinia socia*: Chemical Identification, Synthesis and Biological Activity

Erik Hedenström[a,*], Helene Edlund[a], Ann-Britt Wassgren[b], Gunnar Bergström[b], Olle Anderbrant[c], Fredrik Östrand[c], Andrzej Sierpinski[d], Marie-Anne Auger-Rozenberg[e], Annette Herz[f,g], Werner Heitland[f,g], and Martti Varama[h]

[a] Chemistry, Department of Natural Sciences, Technology and Mathematics, Mid Sweden University, SE-851 70 Sundsvall, Sweden. Fax: +46 60 14 88 02. E-mail: erik.hedenstrom@miun.se
[b] Chemical Ecology, Göteborg University, Carl Skottsbergs Gata 22, SE-413 19 Göteborg, Sweden
[c] Department of Ecology, Lund University, Sölvegatan 37, SE-223 62 Lund, Sweden
[d] Forest Research Institute, Bitwy Warszawskiej 1920 R. No. 3, Box 61, 00-973 Warsaw, Poland
[e] Institut National de la Recherche Agronomique, Centre de Recherches d'Orleans, Ardon, F-45160 Olivet, France
[f] Lehrstuhl für Angewandte Zoologie, Forstwissenschaftliche Fakultät, Technische Universität München, Am Hochanger 13, D-85343 Freising, Germany
[g] Present address: Federal Research Centre for Cultivated Plants – Julius Kuehn-Institute, Institute for Biological Control, Heinrichstraße 243, D-64287 Darmstadt, Germany
[h] The Finnish Forest Research Institute, Vantaa Research Centre, P. O. Box 18, FIN-01301 Vantaa, Finland

* Author for correspondence and reprint requests

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3,7-Dimethylpentadecan-2-ol and 3-methylpentadecan-2-ol were identified in female whole body extracts from the two pine sawfly species *Gilpinia frutetorum* and *Gilpinia socia*. This is the first observation of 3-methylpentadecan-2-ol in extracts of a female pine sawfly species. Synthetic and highly pure stereoisomers of 3,7-dimethylpentadecan-2-ol and 3-methylpentadecan-2-ol were used to verify that the (2*S*,3*R*,7*R*)-isomer of 3,7-dimethylpentadecan-2-ol and (2*S*,3*R*)-3-methylpentadecan-2-ol were present in the extracts. The four stereoisomers of 3-methylpentadecan-2-ol and their biologically active esters were produced via chemoenzymatic methods and the synthesis is described in detail. Male *G. socia* antennae responded strongly in EAG recordings to the (2*S*,3*R*)-isomer of the acetate and propionate of 3-methylpentadecan-2-ol. Male antennae of both *G. frutetorum* and *G. socia* also responded to the (2*S*,3*R*,7*R*)- and (2*S*,3*R*,7*S*)-acetates of 3,7-dimethylpentadecan-2-ol.

Key words: Sex Pheromone, *Gilpinia frutetorum*, *Gilpinia socia*