Analysis of the Labial Gland Secretions of the Male Bumble Bee *Bombus perplexus* Cresson (Hymenoptera: Apidae) from North America

Andreas Bertsch[a], Horst Schweer[b,*], and Andreas Titze[a]

[a] Department of Plant Ecology, Philipps-University Marburg, Karl-von-Frisch-Strasse 8, D-35032 Marburg
[b] Department of Pediatrics, Philipps-University Marburg, Deutschhausstr. 12, D-35033 Marburg. Fax: +49-6421-2865724. E-mail: schweer@med.uni-marburg.de

Author for correspondence and reprint requests

Z. Naturforsch. **59 c**, 263–270 (2004); received October 7/October 29, 2003

The labial gland secretions from males of the bumble bee *Bombus (Pyrobombus) perplexus* Cresson were analysed by gas chromatography/mass spectrometry (GC/MS) in the electron impact and positive ion chemical ionization mode. The major compound of the complex mixture of alkenols, alkenals, fatty acids, hydrocarbons, wax type esters and steroids is 3,7,11,15-tetramethyl-2,6,10-hexadecatrien-1-ol (geranylcitronellol), considerable amounts of hexadecan-1-ol and *Z*-9-hexadecen-1-ol were also found. All alcohols were present as esters of the detected acids. In older samples both the acids and the alcohols sometimes could not be detected in the GC; therefore, the possibility to check the detected acid-alcohol pattern by interpreting the wax type ester peaks is very instructive. Moreover, the labial gland contains a rich mixture of mono- and di-unsaturated straight chain hydrocarbons. The similarity in composition of the labial glands of the North American *B. (Pyrobombus) perplexus* with the Eurasian species *B. (Pyrobombus) hypnorum* corroborates the assumption that the two species are conspecific. The likely supposition that the hydrocarbons could play an essential role in the chemical communication in bumble bees is discussed.

Key words: Bombus perplexus, Labial Glands, Hydrocarbons, Steroids