

## The species specific cephalic secretions of the homoplastic and oligolectic bumblebees *Bombus consobrinus* and *Bombus gerstaeckeri*

Pierre Rasmont, Michael Terzo, Audrey Coppée, Irena Valterova

Université de Mons-Hainaut, Laboratoire de Zoologie, Place du Parc, B-7000 Mons, Belgium  
Email: pierre.rasmont@umh.ac.be

*Bombus gerstaeckeri* Morawitz and *B. consobrinus* Dalhobom are both members of the subgenus Megabombus DT, characterised by the longest tongue in the bumblebees. Both taxa show a similar morphology. They are both highly specialised, foraging on the same very special resource: pollen and nectar of *Aconitum* spp. All the parts of these Ranunculaceae are impregnated with aconitin, a highly toxic alkaloid. *B. gerstaeckeri* inhabits the woody subalpine level in the Pyrenees, the Alps, the Carpathian and the Caucasus while *B. consobrinus* lives in the Palaearctic boreal taiga from Norway to the West to the Kamchatka, to the East. These characteristics could lead to the hypothesis that *gerstaeckeri* and *consobrinus* are just one single species with a classical boreo-alpine disjunction. However, Hines *et al.* recently show that they are phylogenetically distinct. The main tool of species specific mating recognition for the bumblebees is the cephalic labial gland secretion sprayed by the males during the nuptial flight. Highly differentiated cephalic secretions are always related to different species. To verify the specific status of *B. gerstaeckeri* and *B. consobrinus*, the authors sampled and analysed the chemical respective composition of their cephalic labial gland. The result is without any doubt: *gerstaeckeri* and *consobrinus* are confirmed as two well different species. This example shows that a converging way of life could lead to an extremely homoplastic morphology. In such cases, only genetical and biochemical evidences could clarify the relationships.

## Land management for the conservation of the great yellow bumblebee, *Bombus distinguendus*

Nicola Redpath, Dave Goulson, Kirsty Park, Dave Beaumont

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SBES, University of Stirling, Stirling, FK9 4LA, SCOT, United Kingdom  
Email: nicola.repath@stir.ac.uk

Once widespread across much of the UK, *Bombus distinguendus* is now found only in the very north and west of Scotland. The decline of this species, and that of several other *Bombus* species, has been linked to the progressive intensification of agricultural practices both within the UK and across much of Western Europe.

*B. distinguendus*, although not considered to be a habitat specialist, is now strongly associated with the machair grasslands of North West Scotland. A global rarity itself, Scottish machair is traditionally a cultivated landscape on which crofting communities graze livestock and grow crops. It is these low intensity farming systems which have allowed the machair vegetation, and the species which rely upon it, to flourish.

However, the competitive agricultural market has seen crofting become an increasingly financially unviable agricultural strategy. As a result, the abandonment of traditional crofting practices such as small scale rotational cropping has allowed some areas of machair to become rank and degraded, losing floral diversity as a result. As a vital foraging resource for *B. distinguendus* and other rare *Bombus* species, it is