

Notes and references for Species Concept Dictionary comments (BWARS 2017)

The basic nomenclature follows that set out in Else et al. 2016 Checklist of British and Irish Hymenoptera. However, there have been several important updates to this and these are incorporated in the BWARS 2017 Species Dictionary.

Considerable re-assessment of the higher-level taxonomy and relationships within the Hymenoptera have been undertaken. Bransetter, 2017. *Phylogenomic Insights into the Evolution of Stinging Wasps and the origin of Ants and Bees* has been taken as setting out the the most recent view. The superfamilies used in the Species Dictionary follow those set out in Bransetter, not those of Else et al. 2016.

These are (in a British Isles and Ireland context):

Chrysidioidea; Vespoidea; Tipioidea; Pompiloidea; Scolioidea; Formicoidea; Apoidea

Following Edwards and Else 2017 (submitted for publication 2018) the bees are all treated as a single family, the Apidae, in this they follow the approach taken with the Ants, which are all considered within the Formicidae. Further rationale for this may be found in that volume.

Bransetter points out the remaining confusion in assigning the 'Specidae and Crabronidae' to monophyletic groupings. For the moment the Species Dictionary retains the major groupings (Crabronidae, Sphecidae) of Else et al., awaiting further clarification.

Some useful key references:

Bitsch et al, 1993; 1997; 2001, *Faune de France* **79; 82; 86**.

Csosz and Seifert 2003, *Ponera testacea* Emery, 1895 stat. n. – a sister species of *P. coarctata* (Latreille, 1802), *Acta Zoologica Academiae Scientiarum Hungaricae* **49** (3).

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Falk, S. and Lewington, R. 2015. *Field Guide to the Bees of Great Britain and Ireland*. Bloomsbury.

Notton and Norman, 2017. *Hawk's Beard Nomad Bee, Nomada facilis, new to Britain (Hymenoptera: Apidae)*. *Br. J. Ent. Nat. Hist* **30**.

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Seifert, B. 1992. *A Taxonomic Revision of the Palearctic Members of the Ant Subgenus Lasius s. str. (Hymenoptera: Formicidae)*. *Abhandlungen und Berichte des Naturkundemuseums Górlitz* **66**.

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Seifert, B. 2007. *Die Ameisen Mittel- und NordEuropas*, Lutra.

Seifert, B. 2012 *Clarifying naming and identification of the outdoor species of the ant genus Tapinoma FÖRSTER, 1850*. *Myrmecological News*.

Seifert, B. 2013 *Hypoponera ergatandria* (Forel, 1893) - a cosmopolitan tramp species different from *H. punctatissima* (Roger, 1859). *Soil Organisms* **85**.

Czechowski, W. 2002. *Ants of Poland*. Warszawa.

Vikberg, V. V., 2000. *A re-evaluation of five European species of Spilomena with a key to European species and relevance to the fauna of North Europe, especially Finland (Hymenoptera: Pemphredonidae)*. *Entomologica Fennica*.