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## **2: Aculeates (Bees, Wasps, Ants)**

**1. Introduction.** This information sheet is the second of a series which aims to provide a summary of what is known, who is involved in recording and to suggest what someone new to the area or an interest may usefully contribute. To keep the information up-to-date and relevant, please let the compiler have any comments or corrections.

The aculeates (insects with a sting - bees, wasps and ants) comprise the most familiar members of the insect order Hymenoptera. Also in that order are the sawflies, the most distinctive of which is the Horntail or Wood Wasp *Uroceras gigas* though many others are a lot more abundant; and the ichneumons and other parasitic Hymenoptera whose larvae feed on the eggs or larvae of other insects. The aculeates can be recognised by the female egg-tube or ovipositor being modified as a sting. They are easily distinguished from the sawflies by their thin waist, and from ichneumons by their shorter, 12-13 segmented antennae.

Bees feed primarily on nectar and pollen, wasps feed their young on animal food (insects and spiders), while ants are all highly colonial and flightless as workers. These broad definitions hide an enormous diversity in ecology, sociality and life-cycles.

**2. Recording areas.** For information on the recording area and Vice Counties, please see part 1, *Flowering Plants and Ferns*.

**3. Recorders.** The recording of aculeates in the British Isles is co-ordinated by the Bees, Wasps and Ants Recording Society (BWARS, [www.bwars.com](http://www.bwars.com)). This is a membership organisation which records the distribution and ecology of all aculeates UK wide, holds the database of aculeate records, and publishes the results in book form (currently five Provisional Atlases) and on the NBN gateway ([www.searchnbn.net](http://www.searchnbn.net)).

There is no formal system of VC or district recorders, but aculeate records from Highland (or more widely in Scotland) may be passed to the following for onward submission to BWARS:

Murdo Macdonald, 'Tigh nam Beithe', Strathpeffer, Ross & Cromarty IV14 9ET. [records@hbrg.org.uk](mailto:records@hbrg.org.uk).  
HBRG, c/o Inverness Museum and Art Gallery, Castle Wynd, Inverness IV2 3SE.

An Excel spreadsheet for submitting records electronically is available on the HBRG website [www.hbrg.org.uk](http://www.hbrg.org.uk).

**4. Published information.** The HBRG Bumblebee Atlas was published in spring 2006. For other groups, the *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland* in five parts is provided free or at reduced price to members on joining BWARS, or can be purchased from CEH at (<http://www.ceh.ac.uk>) for £6-£8 each.

**Anon 1980.** *Atlas of the Bumblebees of the British Isles*. ITE. ISBN 0 904282 32 5.

**Archer, M. 1979.** *Provisional Atlas of the Insects of the British Isles. Part 9 Hymenoptera: Vespidae Social Wasps*. BRC. ISBN 0 904282 38 4.

**Edwards, R. (ed.) 1997.** *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland Part 1*. BRC, Monks' Wood. ISBN 1 870393 39 2.

**Edwards, R. (ed.) 1998.** *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland Part 2*. BRC. ISBN 1 870393 42 2.

**Edwards, R. & Telfer, M. (eds) 2001.** *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland Part 3*. BRC. ISBN 1 870393 58 9.

**Edwards, R. & Telfer, M. (eds) 2002.** *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland Part 4*. BRC. ISBN 1 870393 65 1.

**Edwards, R. & Broad, G. (eds) 2005.** *Provisional Atlas of the aculeate Hymenoptera of Britain and Ireland Part 5*. CEH. ISBN 1 870393 78 3.

**Macdonald, M. & Nisbet, G. 2006.** *Highland Bumblebees: Distribution, Ecology and Conservation*. HBRG. ISBN 0 9552211 0 2.

Papers on bumblebees in Highland are:

**Macdonald, M.A. 1998.** The feeding ecology of some *Bombus* and *Psithyrus* Bumble-bees (Hym., Apidae) in Northern Scotland. *Scottish Naturalist* **110**: 51-104.

**Macdonald, M.A. 1999.** A contribution to the *Bombus magnus/lucorum* debate. *BWARS Newsletter, Autumn 1999*: 9.

**Macdonald, M.A. 2000a.** Ecological observations on *Bombus jonellus* (Kirby) (Hym., Apidae) in Northern Scotland. *Scottish Naturalist* **112**: 3-14.

**Macdonald, M.A. 2000b.** Ecological observations on *Bombus soroensis* (Fabr.) (Hym., Apidae) in Northern Scotland. *Scottish Naturalist* **112**: 45-53.

**Macdonald, M.A. 2001.** The colonisation of Northern Scotland by *Bombus terrestris* and *B. lapidarius* (L.) (Hym., Apidae) and the possible role of climate change. *Entomologist's Mon. Mag.* **137**: 1-13.

**Nisbet, G.E. 2004a.** The ecology of the bumblebee *Bombus jonellus* (Kirby) (Hym., Apidae) in the Central Highlands of Scotland. *Entomologist's Mon. Mag.* **140**: 69-88.

**Nisbet, G.E. 2004b.** The ecology of the bumblebee *Bombus monticola* Smith (Hym., Apidae) in the Central Highlands of Scotland. *Entomologist's Mon. Mag.* **140**: 193-214.

**Nisbet, G.E. 2005.** A Comparison of the Phenology and Ecology of Bumblebees, *Bombus* spp., (Hym., Apidae) in the Central Highlands of Scotland. *Entomologist's Mon. Mag.* In Press.

## **5. Other sources of information.**

Information on some aculeates of particular interest is available on the HBRG website [www.hbrg.org.uk](http://www.hbrg.org.uk).

The **Local Biodiversity Action Plans** produced by Highland Council contain lists of aculeate species important at both local and national level. More details are available from the Biodiversity Officer, Planning and Development, Highland Council, Glenurquhart Road, Inverness, IV3 5NX (01463.702274). **Inverness Museum and Art Gallery** has an extensive library and small collection. Contact them at Castle Wynd, Inverness, IV2 3SE (01463 237114).

**Local Field Clubs** operate in Assynt, Caithness, Inverness, Moray, South-West Ross, Tain and Ullapool. Their members may be a useful source of information about their local wildlife. Contact details are available from HBRG or the compiler of this information sheet.

## 6. Identification guides.

**Archer, M. 1979.** *Provisional Atlas of the Insects of the British Isles. Part 9 Hymenoptera: Vespidae Social Wasps.* BRC. ISBN 0 904282 38 4.

**Benton, T. 2006.** *Bumblebees.* Collins. ISBN 0 00 717451 9.

**Day, M.C. 1988.** *Spider Wasps Hymenoptera: Pompilidae.* Handbooks for the Identification of British Insects, vol.6 part 4. Royal Entomological Society of London. ISBN 0901546 70 4.

**Edwards, M. & Jenner, M. 2005.** *Field guide to the Bumblebees of Great Britain & Ireland.* Ocelli Ltd. ISBN 0 954971 30 2.

**Else, G.R. 1994.** Social Wasps. *British Wildlife* 5: 304-311.

**Macdonald, M. & Nisbet, G. 2006.** *Highland Bumblebees: Distribution, Ecology and Conservation.* HBRG. ISBN 0 9552211 0 2.

**Prys-Jones, O. and Corbet, S. 1991.** *Bumblebees.* Richmond. ISBN 0 855462 57 4.

**Skinner, G. & Allen, G.W. 1996.** *Ants.* Naturalists' Handbooks 24. Richmond. ISBN 0 855463 05 8.

**Willmer, P. 1993.** *Bees, Ants and Wasps.* Field Studies Council. ISBN 1 851538 07 1.

**Yeo, P.F. & Corbet, S.A. 1995.** *Solitary Wasps.* Naturalists' Handbooks 3. Richmond. ISBN 0 855462 95 7.

Keys to British bumblebees are available at [www.nhm.ac.uk/entomology/bombus/bumblebeeid.html](http://www.nhm.ac.uk/entomology/bombus/bumblebeeid.html). Keys to all the bees (Apidae) are in preparation at the Natural History Museum.

## 7. What can I do; what is worth recording?

Highland is a large and sparsely-populated area, with only a few resident entomologists. While bumblebees are well recorded thanks to the HBRG Atlas scheme, the other aculeates are very poorly known. Some species are of local or national conservation interest. The following aculeates on the current UK BAP list are present or potentially present in Highland: *Bombus distinguendus*, *Osmia uncinata*, *O. inermis*, *Colletes floralis*, *Chrysura hirsuta*, *Formica exsecta*, *F. aquilonia*, *F. lugubris*. In addition, four species are being recommended for inclusion in the current revision of the list: *B. soroeensis*, *B. monticola*, *B. muscorum* and *B. ruderarius*. The first three of these have strong populations in Highland, and the fourth could potentially recolonise from Coll & Tiree.

HBRG is running an Ant Atlas scheme from 2006-2010, details on the website, and all records are welcome. It is safe to assume that records of social wasps, solitary aculeates and ants from anywhere in Highland, and any of the rarer Highland bumblebees away from known sites, will be welcome. Records from remote sites and unusual habitats are especially valuable.

While many bumblebees may be identified with confidence in the field or from photographs, this is not possible with wasps, ants, or solitary bees. For these, a specimen must be taken for microscopic examination. Specimens can be killed if necessary in the freezer, dried in air, and mailed in a small box or tube wrapped loosely in tissue. For ants, it is recommended that at least five workers from a nest should be taken, and males (flying ants) should be sent if encountered.

Minimum data accompanying the specimen or species record will be 10km square, but in practice date, location, 6-figure NGR, numbers/sex/caste, forage plants, collector and determiner are preferred. An Excel spreadsheet for submitting records electronically is available on the HBRG website [www.hbrg.org.uk](http://www.hbrg.org.uk).

Please note that all records submitted to HBRG may be made available freely to members, submitted by HBRG to national recording schemes, and placed by HBRG on the NBN Gateway with full public access. If you wish any restrictions to be placed on the availability of data, please make this clear at the time of reporting. A full statement of the conditions is available on the HBRG website [www.hbrg.org.uk](http://www.hbrg.org.uk).

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