

HBRG Atlas of Social Wasps

HBRG has already produced atlases for bumblebees and ants. We are now planning a companion atlas for the social wasps. These are the ‘yellow-jacket’ wasps known (but not necessarily loved) by everyone.



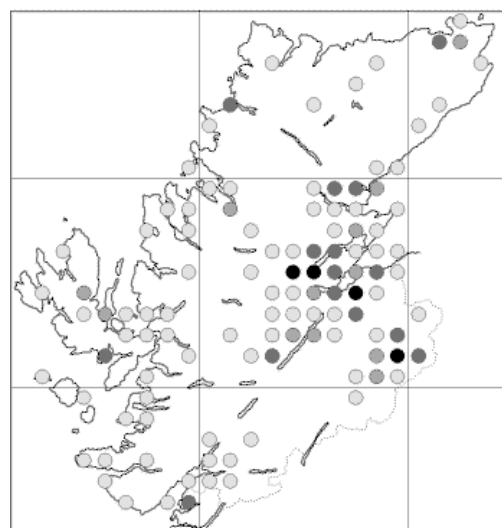
Saxon Wasp *Dolichovespula saxonica* ([source](#)).

One major driver for this idea is the northward expansion of the Saxon Wasp *Dolichovespula saxonica*, which was first recorded in the UK in Surrey in 1987. It has since spread steadily northwards, and was in Highland by 2013. In 2018, it became obvious that it was well established in the north, at least as far north as Evanton on the Cromarty Firth in the east and Oban in the west. We in HBRG are in an ideal position to monitor its further spread,

As we have only eight species recorded in Highland (see [below](#)), two of them (Hornet and German Wasp) very scarce at best, it is a manageable group. We know remarkably little about the distribution of even the common species. Another aim of the project is to establish a baseline against which to measure any changes in distribution caused by environmental change or by the colonisation by the Saxon Wasp. To succeed in discovering more, we do need the help of our members, especially those living in or visiting the more remote corners of the area. We will cooperate with a UK-wide project run by [BWARS](#) with very similar aims.

The nature of the task

Currently, only 4 of our 351 hectads (10km squares) have all 6 truly Highland species recorded since 1995 (the cut-off date for the Atlas); only 31 have three or more species; and 238 have none at all! In the coverage map opposite, blanks or pale grey squares need to be targeted. Every square with suitable habitat should have at least four species. Maps on our website will be updated as records come in, so you can see where effort is required. To give credibility to the results we aim for a minimum 75% of hectads, spread over all districts, with at least one species recorded, and the target for every hectad should be at least three species. This will not be achieved in less than 5 years, so we will plan to complete fieldwork in 2022.



How can you help?

Anyone can contribute to this project by collecting dead wasps they find, whether in the house or in the countryside, and especially from the more remote parts of Highland. You can also sign up to the national [Big Wasp Survey](#) which involves setting beer-traps for 7 days in August to attract foraging workers. If you want to become competent at identifying wasps yourself, that would be a great help.

Collecting wasps

Social wasps are difficult to identify to species, especially in the field, so a body, or in some instances a good picture, will be necessary. The easiest (and safest) way to collect is to check window-sills, attics and outhouses for dead wasps. Often, these will be caught in cobwebs, but are still identifiable. If you are comfortable with taking and killing specimens, they can be caught in a tube – for example placed over a wasp on a window, or while foraging on a flower – and killed in the freezer. In late summer and autumn, the ‘plates’ of Hogweed and Angelica are good hunting grounds.

Great care must be taken if you are around an active wasp nest or handling live wasps.

Please do not risk being stung!

Queens (the first wasps seen in the spring, and those beginning to build a nest, will always be queens) should never be killed, as doing so effectively destroys an entire colony. Taking a few workers in summer will have no effect, and any workers or males in autumn are soon going to die anyway. Any that are swatted for your own comfort can become valuable scientific material. Just swat gently!

Identifying wasps

Because of the difficulty of identifying wasps to species, all records used in our Atlas will need to be reliable. As a default, this will mean sending bodies or pictures to me. With a good image of the right parts of a wasp, a photograph will often be enough to confirm identification. The essential views to take are a full-face portrait, and a view of the entire wasp in side view.

After a bit of practice and training you can soon learn to recognise queens and workers reliably with nothing more complex than a lens. This is not as daunting as it sounds, as we have only three species in each of two genera. Males are more variable, and often require dissection and a microscope. There are resources and links below, and I am always happy to help and advise.

Sending samples

Any bodies should be wrapped loosely in tissue and left to dry in air in a warm place for a few days. This will avoid the growth of mould. Many samples from a single location may be stored together, but collections from different places must be kept separate.

All samples should be marked with the date, place and OS grid reference. They can be sent (address below) either as they are found, or in batches at the end of the season. To avoid damage in transit, protect the wasps in a tube, matchbox, or similar container.

Murdo Macdonald ‘Tigh nam Beithe’, Strathpeffer, Ross & Cromarty IV14 9ET.
records@hbrg.org.uk

Brief outline of the species

The social wasps in Highland are in the family Vespidae, subfamily Vespinae, and two genera. We have four species in *Vespula* and three in *Dolichovespula*. There is the faint possibility that the Hornet *Vespa crabro* and the Median Wasp *D. media* might be recorded. The Hornet bred on the Black Isle in 2014, almost certainly arriving with human assistance. The Median Wasp, like the Saxon, is a recent colonist which has reached the Central Belt and may spread farther north.

The four short-faced wasps in UK are:

Species	Comment
<i>Vespula austriaca</i> Cuckoo Wasp	A social parasite on the Red Wasp which has its main UK distribution in Scotland, and is inevitably scarcer than its host.
<i>Vespula germanica</i> German Wasp	Very rare in Scotland, and especially in Highland where we know of only one current site. It was apparently commoner in the past and may be moving north along the Moray coast.
<i>Vespula rufa</i> Red Wasp	A relatively scarce wasp, but distributed across our area.
<i>Vespula vulgaris</i> Common Wasp	The commonest species overall.

Our three long-faced wasps are:

<i>Dolichovespula norwegica</i> Norwegian Wasp	A common species across Highland.
<i>Dolichovespula saxonica</i> Saxon Wasp	The recent arrival in Highland after its appearance in S England in 1987.
<i>Dolichovespula sylvestris</i> Tree Wasp	A very common species, not always associated with trees.

Key to Highland species

Most people will recognise a social wasp when they see one, but there are other insects that might cause confusion to beginners.

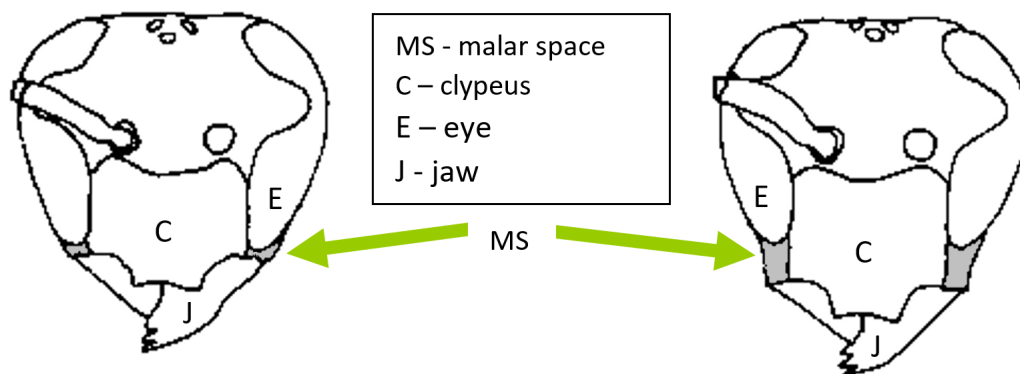
All our social wasps have:

- a relatively hairless body (most bees are conspicuously hairy);
- long antennae (some flies mimic wasps, but all these have very short antennae);
- obvious yellow stripes and spots on the thorax (almost all black in the solitary potter-wasps);
- wings which are folded lengthwise when at rest, giving them a very narrow appearance (wings of flies, bees, and the solitary digger-wasps are never folded lengthwise);
- an abdomen (strictly the gaster) widest and rather straight at the front and tapering to a point (in potter-wasps the abdomen tends to be oval, widest in the middle).

This simple key will help you to identify the social wasps we have in Highland, with the minimum of technical requirements. The three main parts of the insect body will be called here head, thorax and gaster (more or less equivalent to the abdomen). You may see elsewhere reference to mesosoma (\approx thorax) and metasoma (= gaster). Only females are considered, as males are more variable and often require dissection and a microscope.

Females are recognised by having a sting. This often protrudes in dead wasps, which are the safest specimens to use when learning. All wasps active in early and mid-summer will be females, as males do not appear until later. Males do not sting, and with practice can be recognised by their longer and obviously curved or hooked antennae. Gentle pressure on the gaster will extrude either a sting or the blunter and more complex male genitalia to remove all doubts.

- | | | |
|---|--|---|
| 1 | Body obviously hairy, or antennae short.
Body inconspicuously hairy and antennae long. | Not a social wasp!
2 |
| 2 | Wings when at rest remain flat, appearing broad.
Wings when at rest folded longitudinally, appearing very narrow. | Not a social wasp!
3 |
| 3 | Gaster widest in the middle.
Gaster widest at the front. | Not a social wasp!
4 |
| 4 | Face with a long malar space (gap between eye and jaw, see diagram).
Face with a short malar space. | <i>Dolichovespula</i> 5
<i>Vespula</i> 7 |
| 5 | Clypeus (see diagram) yellow or with a small black spot. Tree Wasp <i>Dolichovespula sylvestris</i>
Clypeus with more extensive black marking. | 6 |
| 6 | Strong stripe on clypeus; usually reddish marks on gaster.
Clypeal stripe weak and often broken, no red marks. | Norwegian Wasp <i>D. norvegica</i>
Saxon Wasp <i>D. saxonica</i> |
| 7 | Hair on the front of the gaster pale.
Hair on the front of the gaster dark. | 8
9 |
| 8 | Clypeus with a strong anchor-shaped mark.
Clypeus with three dark marks, sometimes faintly connected. | Common Wasp <i>vulgaris</i>
German Wasp <i>V. germanica</i> |
| 9 | Clypeus with three small spots in a triangle.
Clypeus with a strong vertical bar or anchor mark. | Cuckoo Wasp <i>V. austriaca</i>
Red Wasp <i>V. rufa</i> |



<i>Species</i>	S. Falk's Images	Confirmatory features
<i>Vespula austriaca</i> Cuckoo Wasp	images	Tip of clypeus well curved with two sharp points; hind tibia with long black hairs; one pair of spots on the rear of the thorax.
<i>Vespula rufa</i> Red Wasp	images	Reddish-brown markings of variable intensity on the front of the gaster; indentation on the inner edge of the eye yellow only on the lower margin; one pair of large spots and a pair of very small spots on the rear of the thorax.
<i>Vespula germanica</i> German Wasp	images	Yellow stripe on the side of the thorax widened in the middle; yellow stripe on the side of the head not divided; three pairs of spots, well separated, on the rear of the thorax.
<i>Vespula vulgaris</i> Common Wasp	images	Yellow stripe on the side of the thorax parallel-sided; yellow stripe on the side of the head broken by a dark area; three pairs of spots, with a narrow gap, on the rear of the thorax..
<i>Dolichovespula norvegica</i> Norwegian Wasp	images	Hairs on the side of the thorax mostly dark; rear of the thorax usually with one pair of yellow spots; stripe on the clypeus typically broad for the full length.
<i>Dolichovespula saxonica</i> Saxon Wasp	images	Hairs on the side of the thorax almost all pale; rear of the thorax usually with two pairs of yellow spots; stripe on the clypeus typically broken, and thin or absent from the lower part.
<i>Dolichovespula sylvestris</i> Tree Wasp	images	Rear of the thorax with one pair of yellow spots.

Wasps are natural products and their appearance is subject to variation. Some of the features used in the key can vary significantly, and may cause confusion. For example, the clypeal pattern of the German Wasp, typically three small dots, may be two dots and a vertical bar; that of Common Wasp, typically a strong anchor mark, can look similar if weakly developed. All identifications made with this key should be checked against the following resources, which will also help with identification of males.

Hornet and Median Wasp will not key out here, but both are very distinct from the other species - more reddish-brown than the others, and larger. If suspected in Highland, a photograph or specimen will be required for confirmation.

Dvorak L. & Roberts S. P. M. 2006. Key to the paper and social wasps of Central Europe (Hymenoptera: Vespidae). *Acta Entomologica Musei Nationalis Pragae* 46: 221–244. Available as a .pdf file from http://www.aemnp.eu/PDF/46_0/46_0_221.pdf.

Steven Falk's excellent images on Flickr at <https://www.flickr.com/photos/63075200@N07/collections/72157629294465012/>.

The identification of Nottinghamshire's Social Wasps. <http://www.eakingbirds.com/eakingbirds2/insectswaspsidentification.htm>.

The Social Wasps of Britain. <http://bio.kuleuven.be/ento/courses/waspsp1600dpi.pdf> and <http://bio.kuleuven.be/ento/courses/waspsp2600dpi.pdf>.