

Wasps of the family Vespidae

Is it a social wasp?

All the vespid wasps have wings which fold in half, lengthwise, when the insect is resting. (01VES) No vespid wasp has a sting which can be seen from the outside- this is purely the stuff of comic books!

There are two main groups within this family in Great Britain.

The social species (Vespinae) and the solitary species (Eumeninae) may be distinguished as follows:

1. Vespines have a generally larger body size. Queens are bigger than males, which are bigger than workers, range across the group: 11-31mm, head to tail.

- Individuals smaller than this are almost certainly eumenines, but some of these are as big as the smaller workers of the social species.

2. Vespines are broader in the body than eumenines and the overall shape of the back section of this, known as the metasoma (roughly equivalent to the abdomen), is conical, wider towards the front and sharply cut off (truncate), not rounded, tapering smoothly towards the end. (02VES) Each segment of the metasoma is of a similar length.

- The metasoma of the eumenines is bulbous, broadest at the second segment, and tapers strongly, both frontwards and backwards from this, being more pear-shaped overall. This second segment is noticeably longer than the others. (03VES)



01VES *Vespula vulgaris*, folded wings.



01VESind *Vespula vulgaris*, folded wings.



02VES *Vespula vulgaris*, metasoma.



02VESind *Vespula vulgaris*, metasoma.



03VES *Odynerus spinipes*, metasoma.



3VESind *Odynerus spinipes*, metasoma.



04VES *V. vulgaris*, hair on mesosoma.



05VES *Symmorphus gracilis*, hair on mesosoma.

3. In vespines, the middle body segment, the mesosoma (roughly equivalent to the thorax) has denser, obvious hairs on the top, appearing fuzzy to the naked eye. (04VES)

- In eumenines there is much less hair on the top of the mesosoma. (05VES)



06VES *V. vulgaris*, metasomal pattern.



06VESind *V. vulgaris*, metasomal pattern.

4. Vespines are either brown and honey-coloured or yellow and black in approximately equal proportions (some individuals are darker than others). The hind margin of the black band on each metasomal segment is usually pointed in the middle, often with smaller points at the side. (06VES)

- Eumenines appear blacker with some yellow markings. The hind margin of the black bands on the metasoma is often even, not clearly drawn out into points. (07VES)



07VES *O. spinipes*, metasomal pattern.



07VESind *O. spinipes*, metasomal pattern.

Distinguishing the species of social wasps

1. Metasomal colour brown and honey, no black present at all. (08VES) Seen from above, distance behind eye as much as the width of the eye. (09VES) Very large insects.

Vespa crabro
(The hornet)

- Metasomal colour including yellow and black patterning. There may be patches of rusty red-brown. 2



08VES Worker *Vespa crabro*.



09VES Head of *V. crabro*, showing eye margin.

2. Distance between the lower eye margin and the top of the mandible (malar space) half of the width of the mandible at its articulation. (10VES, 11VES) 3

Genus *Dolichovespula*



10VES Malar space of *Dolichovespula saxonica*.



10VESind Malar space of *D. saxonica*.



11VES Malar space of *Dolichovespula saxonica*



11VESind Malar space of *D. saxonica*.

- Distance between the lower eye margin and the top of the mandible (malar space) a quarter of the width of the mandible at its articulation. (12VES, 13VES)

10

Genus *Vespula*



12VES Malar space of *Vespula vulgaris*.



12VESind Malar space of *Vespula vulgaris*.



13VES Malar space of *Vespula vulgaris*.



13VESind Malar space of *Vespula vulgaris*.



14VES Antennae of female *D. sylvestris*.



15VES Metasoma of female *D. sylvestris*.

3. Antennae evenly curved. (14VES)
 Metasoma with six segments. (15VES)
 4
 Queens and workers



16VES Antennae of male *D. sylvestris*.



3. 17VES Metasoma of male *D. sylvestris*.

- Antennae hooked towards end.
 (16VES) Metasoma with 7 segments.
 (17VES) 7
 Males

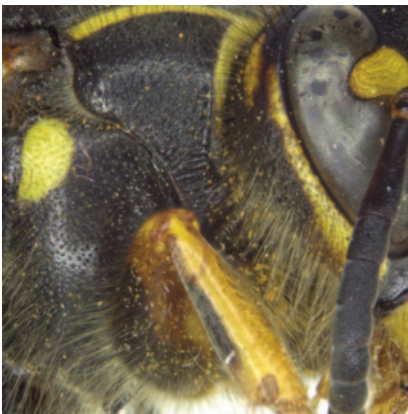


18VES Eye margin of *Dolichovespula media*.



18VESind Eye margin of *D. media*.

4. Indentation of eye-margin (ocular sinus) filled with yellow. (18VES) Side of mesosoma with extensive wrinkling.
 (19VES) *Dolichovespula media*



19VES Side of mesosoma of *D. media*.



19VESind Side of mesosoma of *D. media*.

Queens have extensive reddish-brown 'shoulder-patch' markings, with a dull-yellow bar above, on the mesosoma. (20VES)

Some workers have the metasoma almost completely black with narrow, almost parallel yellow bands on the ends of the segments. (21VES)



20VES Shoulder patches of Queen *D. media*.



21VES metasomal bands, worker *D. media*.

- Indentation of eye-margin largely black above. (22VES) Side of mesosoma without extensive wrinkling. (23VES)

5



22VES Eye margin of *Dolichovespula saxonica*.



22VESind Eye margin of *D. saxonica*.



23VES Side of mesosoma of *D. saxonica*.



23VESind Side of mesosoma of *D. saxonica*.

5. Clypeus (central area between eyes and above mandibles) yellow with a central black dot (occasionally missing altogether). The large punctures on the clypeus close, about a puncture-width apart. (24VES)

Dolichovespula sylvestris

- Clypeus yellow with a central vertical line or anchor mark. The large punctures on the clypeus widely spaced, more than a puncture-width apart. (25VES)

6



24VES Face of *Dolichovespula sylvestris*.



25VESind Face of *Dolichovespula saxonica*.

26VES Lateral view of *D. norwegica*.26VESind Lateral view of *D. norwegica*.27VES Head of *D. norwegica*, showing ocelli.27VESind Head of *D. norwegica*.28VES Lateral view of *D. saxonica*.28VESind Lateral view of *D. saxonica*.29VES Head of *D. saxonica*, showing ocelli.29VESind Head of *D. saxonica*, showing ocelli.

6. Usually a red-brown mark on the side of the first and second metasomal segments. This is most extensive on the 2nd segment, but may be considerably reduced occasionally. (26VES)

The distance between the back of the head and a rear ocellus about the same as the width of an ocellus. (27VES)

Hairs on the sides of the mesosoma black

Dolichovespula norwegica

- Never red-brown marks on the sides of the first and second metasomal segments. (28VES)

The distance between the back of the head and a rear ocellus rather more than the width of an ocellus. (29VES)

Hairs on the sides of the mesosoma pale

Dolichovespula saxonica

Both these species are often smaller and rather darker in appearance than *D. sylvestris*.

7. (Males) Indentation of eye-margin (ocular sinus) filled with yellow. (as in 18VES) Side of mesosoma with extensive wrinkling. (as in 19VES)

Dolichovespula media

- Indentation of eye-margin largely black. (as in 22VES) Side of mesosoma without extensive wrinkling. (as in 21VES) **8**

8. Clypeus yellow with a central black dot (occasionally missing altogether). The large punctures on the clypeus close, about a puncture-width apart. (as in 24VES) ***Dolichovespula sylvestris***

- Clypeus yellow with a central vertical line or anchor mark (care, this may be reduced in intensity). The large punctures on the clypeus widely spaced, more than a puncture-width apart. (as in 25VES)

9

(A dead specimen and microscope may be essential for distinguishing the following pair of males. The genital capsule will need pulling out.)

9. Usually a red-brown mark on the side of the first and second metasomal segments. This is most extensive on the 2nd segment, but may be considerably reduced occasionally. (30VES)

The distance between the back of the head and a rear ocellus about the same as the width of an ocellus. (as in 27VES)

Inner corner of the gonocoxite (side of genital capsule) rounded. (31VES)

Antennal segments 11-13 with one tyloid (small, raised shiny areas, hard to find) on each. (32VES)

Dolichovespula norwegica



30VES Lateral view of *D. norwegica*.



30VESind Lateral view of *D. norwegica*.



31VES Genital capsule of *D. norwegica*.



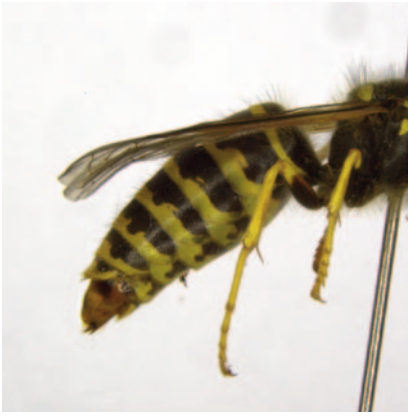
31VESind Genital capsule of *D. norwegica*.



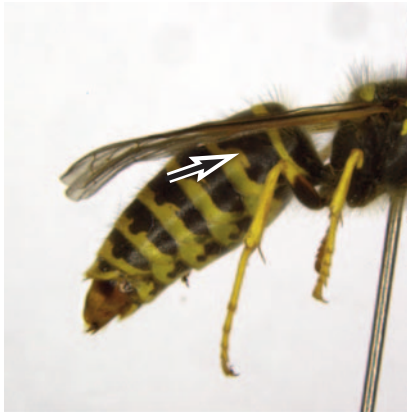
32VES Antennal seg. 11-13 of *D. norwegica*.



32VESind Antennal seg. 11-13 of *D. norwegica*.



33VES Lateral view of *D. saxonica*.



33VESind Lateral view of *D. saxonica*.

- Never red-brown marks on the sides of the first and second metasomal segments. (33VES)

The distance between the back of the head and a rear ocellus slightly more than the width of an ocellus.

Inner corner of gonocoxite with an angled 'shoulder'. (VES34)

Antennal segments 11-13 with two tyloids on each. (35VES)

Dolichovespula saxonica

10. Antennae evenly curved. (as in 14VES) Metasoma with six segments. (as in 15VES)

11

Queens and workers

- Antennae hooked towards end. (16VES) Metasoma with 7 segments. (17VES)

14
Males



34VES Genital capsule of *D. saxonica*.



34VESind Genital capsule of *D. saxonica*.



35VES Antennal seg. 11-13 of *D. saxonica*.



35VESind Antennal seg. 11-13 of *D. saxonica*.



36VES Face of *Vespula austriaca*.



36VESind Face of *Vespula austriaca*.

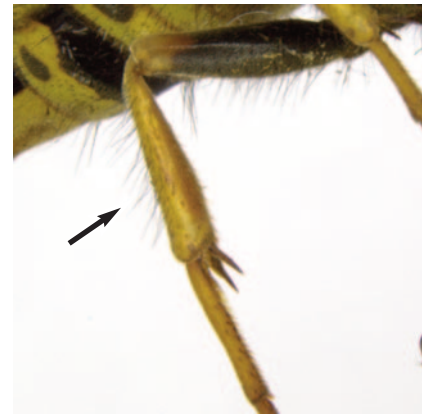
11. Lower edge of clypeus strongly curved, strongly downward-pointed at each side (36VES). Hind tibia with long black hairs, almost as long as the tibial spurs. (37VES) ***Vespula austriaca***

A social parasite, females and males only, no workers.

- Lower edge of clypeus less strongly curved and less pointed at each side.
(38VES) Hind tibia without long black hairs. (39VES) 12



37VES Hind tibia of *Vespula austriaca*.



37VESind Hind tibia of *Vespula austriaca*.



38VES Face of *Vespula germanica*.



38VESind Face of *Vespula germanica*.



39VES Hind tibia of *Vespula germanica*.



39VESind Hind tibia of *Vespula germanica*.



40VES Face of *Vespula rufa*.



40VESind Face of *Vespula rufa*.

12. Indentation of eye-margin (ocular sinus) yellow on lower edge only. (40VES)
Red-brown markings on 1st and 2nd metasomal tergites. Long hairs on first metasomal tergite black. (41VES)

Vespula rufa



41VES Metasoma of *Vespula rufa*.



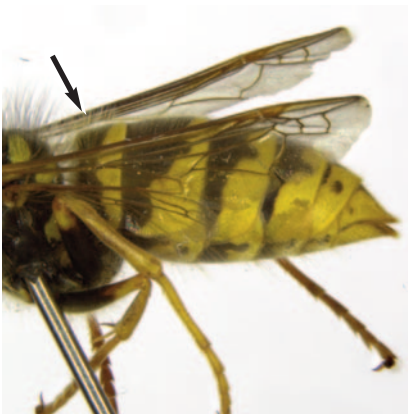
42VES Face of *Vespula vulgaris*.



42VESind Face of *Vespula vulgaris*.

- Indentation of eye-margin (ocular sinus) yellow above and below. (42VES)
No red-brown markings on 1st and 2nd metasomal tergites. Long hairs on first metasoma tergite pale yellow. (43VES)

13



43VES Metasoma of *Vespula vulgaris*.

13 Yellow band behind eye margin broken by black about half-way down. (44VES) Black band in centre of clypeus forming an anchor mark. (45VES)

Vespula vulgaris



44VES Behind eye of *Vespula vulgaris*.



45VES Face of *Vespula vulgaris*.

- Yellow band behind eye margin entire (46VES). Black band in centre of clypeus reduced to three dots. (47VES)

Vespula germanica

14 (Males) Hind tibia with long black hairs, almost as long as the tibial spurs. (as in 37VES)

Vespula austriaca

- Hind tibia with hairs pale.

Vespula males



46VES Face of *Vespula germanica*.



47VES Face of *Vespula germanica*.

It has become clear that the males of *Vespula* are much more variable than at first thought. The only reliable character lies in microscopic examination of the fully extracted genitalia. This is beyond the intended scope of this key. This is not helped by the fact that the image labelled as *V. germanica* (49 VES) in earlier versions is not, in fact, this species!