

Wasps of the family Vespidae

Is it a vespid wasp?

All the vespid wasps have wings which fold in half, lengthwise, when the insect is resting. (01VES)



01VES *Vespula vulgaris*, folded wings.



01VESind *Vespula vulgaris*, folded wing

This fold is not obvious when the wings are fully open, it is along one of the main wing veins (02VES.) The comments on body shapes may help if the wings are not folded.



02VESind *Vespula vulgaris*, unfolded wing.



02VESind *Vespula vulgaris*, unfolded wing.

No vespid wasp has a sting which can be seen from the outside - this is purely the stuff of comic books!

There are three main groups within this family in Great Britain: The social species, Vespinae and Polistinae, plus the solitary species, Eumeninae. These 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 polistines or 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 polisines 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. (03VES) Each segment of the metasoma is of a similar length.



03VES *Vespula vulgaris*, metasoma.



03VESind *Vespula vulgaris*, metasoma.

04VES *Odynerus spinipes*, metasoma.04VESind *Odynerus spinipes*, metasoma.05VES *Pollistes dominula*, metasoma05VESind *Pollistes dominula*, metasoma06VES *V. vulgaris*, hair on mesosoma.07VES *Symmorphus gracilis*, lack of hair on mesosoma.08VES *Polistes dominula*, lack of hair on mesosoma.

- The metasoma of the eumenines and polistines 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. (04VES, 05VES)

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. (06VES)

- In eumenines and polistines there is much less hair on the top of the mesosoma. (07VES, 08VES)

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. (09VES)



09VES *V. vulgaris*, metasomal pattern.



09VESind *V. vulgaris*, metasomal pattern.

- 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. (10VES)

- Polistines have similar markings and distribution of yellow and black to Vespines, but the body shape is quite different (05VES, 08VES).



10VES *O. spinipes*, metasomal pattern.



10VESind *O. spinipes*, metasomal pattern.

Distinguishing the species of vespine wasps

1. Metasomal colour brown and honey, no black present at all. (11VES) Seen from above, distance behind eye as much as the width of the eye. (12VES) Very large insects.

Vespa crabro
(The hornet)



11VES Worker *Vespa crabro*.



12VES Head of *V. crabro*, showing eye margin.

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



13VES Malar space of *Dolichovespula saxonica*.



13VESind Malar space of *Dolichovespula saxonica*.

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. (13VES, 14VES)

3

Genus *Dolichovespula*



14VES Malar space of *Dolichovespula saxonica*.



14VESind Malar space of *Dolichovespula saxonica*.



15VES Malar space of *Vespula vulgaris*.



15VESind Malar space of *Vespula vulgaris*.

- 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. (15VES, 16VES)

10

Genus *Vespula*



16VES Malar space of *Vespula vulgaris*.



16VESind Malar space of *Vespula vulgaris*.

3. Antennae evenly curved. (17VES)
 Metasoma with six segments. (18VES)

4
Queens and workers



17VES Antennae of female *Dolichovespula sylvestris*.



18VES Metasoma of female *D. sylvestris*.

- Antennae hooked towards end.
 (19VES) Metasoma with 7 segments.
 (20VES)

7
Males



19VES Antennae of male *Dolichovespula sylvestris*.



20VES Metasoma of male *Dolichovespula sylvestris*.

4. Indentation of eye-margin
 (ocular sinus) filled with yellow.
 (21VES) Side of mesosoma with
 extensive wrinkling. (22VES)

Dolichovespula media



21VES Eye margin of *Dolichovespula media*.



21VESind Eye margin of *Dolichovespula media*.



22VES Side of mesosoma of *Dolichovespula media*.



22VESind Side of mesosoma of *Dolichovespula media*.



23VES Shoulder patches of Queen *Dolichovespula media*.



24VES metasomal bands, worker *Dolichovespula media*.

Queens have extensive reddish-brown 'shoulder-patch' markings, with a dull-yellow bar above, on the mesosoma. (23VES)

Some workers have the metasoma almost completely black with narrow, almost parallel yellow bands on the ends of the segments. (24VES)



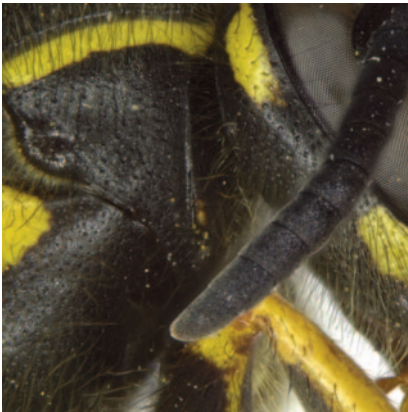
25VES Eye margin of *Dolichovespula saxonica*.



25VESind Eye margin of *Dolichovespula saxonica*.

- Indentation of eye-margin largely black above. (25VES) Side of mesosoma without extensive wrinkling. (26VES)

5



26VES Side of mesosoma of *Dolichovespula saxonica*.



26VESind Side of mesosoma of *Dolichovespula 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. (27VES)

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. (28VES)

6



27VES Face of *Dolichovespula sylvestris*.



28VESind Face of *Dolichovespula saxonica*.

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. (29VES)

The distance between the back of the head and a rear ocellus about the same as the width of an ocellus. (30VES)

Hairs on the sides of the mesosoma black

Dolichovespula norvegica



29VES Lateral view of *Dolichovespula norvegica*.



29VESind Lateral view of *Dolichovespula norvegica*.



30VES Head of *Dolichovespula norvegica*, showing ocelli.



30VESind Head of *Dolichovespula norvegica*, showing ocelli.

- Never red-brown marks on the sides of the first and second metasomal segments. (31VES)

The distance between the back of the head and a rear ocellus rather more than the width of an ocellus. (32VES)

Hairs on the sides of the mesosoma pale

Dolichovespula saxonica

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



31VES Lateral view of *Dolichovespula saxonica*.



31VESind Lateral view of *Dolichovespula saxonica*.



32VES Head of *Dolichovespula saxonica*, showing ocelli.



32VESind Head of *Dolichovespula saxonica*, showing ocelli.

7. (Males) Indentation of eye-margin (ocular sinus) filled with yellow. (as in 21VES) Side of mesosoma with extensive wrinkling. (as in 22VES)

Dolichovespula media

- Indentation of eye-margin largely black. (as in 25VES) Side of mesosoma without extensive wrinkling. (as in 26VES) **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 27VES)

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 28VES)

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. (33VES)

The distance between the back of the head and a rear ocellus about the same as the width of an ocellus. (as in 30VES)

Inner corner of the gonocoxite (side of genital capsule) rounded. (34VES)
Antennal segments 11-13 with one tyloid (small, raised shiny areas, hard to find) on each. (35VES)

Dolichovespula norwegica



33VES Lateral view of *Dolichovespula norwegica*.



33VESind Lateral view of *Dolichovespula norwegica*.



34VES Genital capsule of *Dolichovespula norwegica*.



34VESind Genital capsule of *Dolichovespula norwegica*.

- Never red-brown marks on the sides of the first and second metasomal segments. (36VES)
 The distance between the back of the head and a rear ocellus slightly more than the width of an ocellus. (as in 29VES)
 Inner corner of gonocoxite with an angled 'shoulder'. (VES37)
 Antennal segments 11-13 with two tyloids on each. (38VES)

Dolichovespula saxonica



35VES Antennal seg. 11-13 of *Dolichovespula norvegica*.



35VESind Antennal seg. 11-13 of *Dolichovespula norvegica*.



36VES Lateral view of *Dolichovespula saxonica*.



36VESind Lateral view of *Dolichovespula saxonica*.



37VES Genital capsule of *Dolichovespula saxonica*.



37VESind Genital capsule of *Dolichovespula saxonica*.



38VES Antennal seg. 11-13 of *Dolichovespula saxonica*.



38VESind Antennal seg. 11-13 of *Dolichovespula saxonica*.

10. Antennae evenly curved. (as in 17VES) Metasoma with six segments. (as in 18VES) **11**
Queens and workers

- Antennae hooked towards end. (as in 19VES) Metasoma with 7 segments. (as in 20VES) **14**
Males



39VES Face of *Vespula austriaca*.



39VESind Face of *Vespula austriaca*.

11. Lower edge of clypeus strongly curved, strongly downward-pointed at each side (39VES). Hind tibia with long black hairs, almost as long as the tibial spurs. (40VES)

Vespula austriaca

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



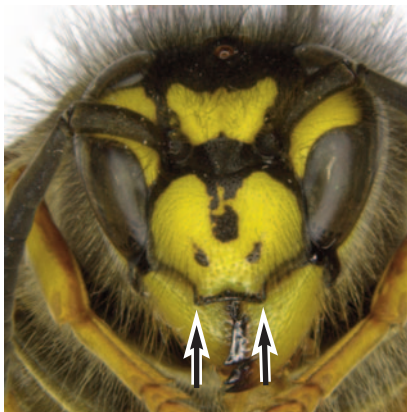
40VES Hind tibia of *Vespula austriaca*.



40VESind Hind tibia of *Vespula austriaca*.



41VES Face of *Vespula germanica*.



41VESind Face of *Vespula germanica*.

- Lower edge of clypeus less strongly curved and less pointed at each side. (41VES) Hind tibia without long black hairs. (42VES) **12**



42VES Hind tibia of *Vespula germanica*.



42VESind Hind tibia of *Vespula germanica*.

12. Indentation of eye-margin (ocular sinus) yellow on lower edge only. (43VES) Red-brown markings on 1st and 2nd metasomal tergites. Long hairs on first metasomal tergite black. (44VES)

Vespula rufa



43VES Face of *Vespula rufa*.



43VESind Face of *Vespula rufa*.



44VES Metasoma of *Vespula rufa*.

- Indentation of eye-margin (ocular sinus) yellow above and below. (45VES) No red-brown markings on 1st and 2nd metasomal tergites. Long hairs on first metasoma tergite pale yellow. (46VES)

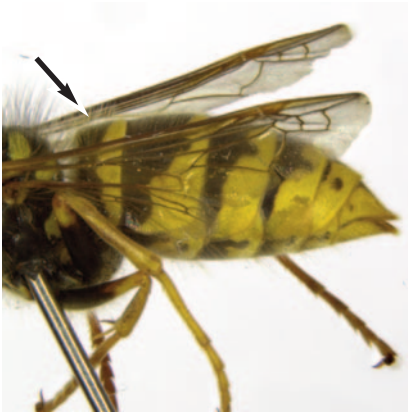
13



45VES Face of *Vespula vulgaris*.



45VESind Face of *Vespula vulgaris*.

46VES Metasoma of *Vespula vulgaris*.47VES Behind eye of *Vespula vulgaris*.48VES Face of *Vespula vulgaris*.49VES Face of *Vespula germanica*.50VES Face of *Vespula germanica*.

13. Yellow band behind eye margin broken by black about half-way down. (47VES) Black band in centre of clypeus forming an anchor mark. (48VES) ***Vespula vulgaris***

- Yellow band behind eye margin entire (49VES). Black band in centre of clypeus reduced to three dots. (50VES) ***Vespula germanica***

14. (Males) Hind tibia with long black hairs, almost as long as the tibial spurs. (as in 40VES)

Vespula austriaca

- Hind tibia with hairs pale. **15**

(A dead specimen and microscope is essential for accurately distinguishing males of the following three species. The genital capsule will need pulling out. The facial markings are variable, especially in the last pair)

15. The central 'tongue' of the genitalia (adeagus) broad at the base, not a lot narrower than the end. (51VES). Additionally, the indentation of eye-margin (ocular sinus) yellow on lower edge only. (as in 43VES) Red-brown markings on 1st and 2nd metasomal tergites. Long hairs on first metasomal tergite black (as in 44VES).

Vespula rufa

- The central 'tongue' of the genitalia (adeagus) very narrow at the base, much narrower than the end. (52VES). Additionally, indentation of eye-margin 3/4 or over yellow. No red-brown markings on 1st and 2nd metasomal tergites. **16**

16. Adeagus with large barbs on either side just before the widened 'bulb'. The edge of this bulb entire at the tip (53VES). ***Vespula vulgaris***

- Adeagus with rounded flanges on either side just before the widened 'bulb'. The edge of this bulb slightly emarginate at the tip (54VES).

Vespula germanica



51VES Genitalia of *Vespula rufa*, male.



51VESind Genitalia of *Vespula rufa*, male.



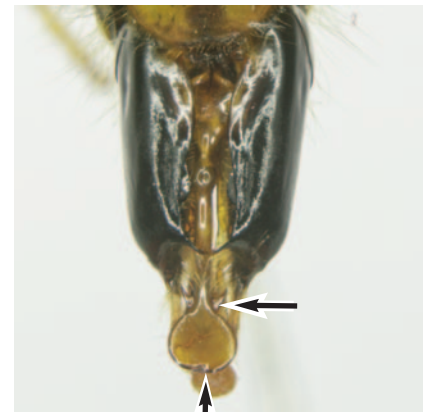
52VES Genitalia of *Vespula germanica*, male.



52VESind Genitalia of *Vespula germanica*, male.



53VES Adeagus of male *Vespula vulgaris*



53VESind Adeagus of male *Vespula vulgaris*



54VES Adeagus of male *Vespula germanica*



54VESind Adeagus of male *Vespula germanica*.