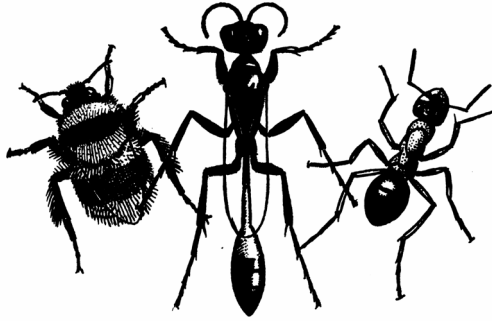


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## Results of wasp beer trapping 2006 in the UK

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### **Introduction**

The response of social wasps to different natural and chemical attractants has been part of a long term study in the USA (see LANDOLT et al. 2005 for review). The only comparable European study focusing on wasps attracted to baited traps was published by DVORÁK & LANDOLT (2006), who compared their results with those from the USA.

This study brings together the results of the 2006 field experiment on the attractiveness of beer to different wasp species in forest/woodland ecosystems in the United Kingdom.

### **Methodology**

A colourless and transparent Polyethylene bottle (1.5 or 2 litre capacity) was filled with 0.5 l of beer. The bottle was hung on a tree branch ca. 1.5 m high above the ground; a free entrance for wasps was guaranteed. The bottle was placed in an area of woodland. The trap was installed ca. on July 10<sup>th</sup> plus minus several days and recovered after 30–35 days.

### **Localities under study**

Localities are written in order: locality number, county, locality, geographical coordinates and/or coordinates of the grid mapping, biotope specified as accurately as possible, altitude, date of installation and recovery, and author of picking. Wasps were identified by the author of each pick (or his collaborating persons) except localities 10–21 (identification by L. Dvorák).

UK 1 – Somerset, Newton Park, ST693637, 51°22'17" N, 2°26'31" W, Vinery Wood, Ash forest, 75 m a.s.l., 6 July –9 August 2006, Darrel Watts

UK 2–3 – Staffordshire, Staffordshire Moorlands, West Midlands, Consall Nature Park, SJ993479, Upland Oak/ Silver Birch woodland with old coppice hazel understorey, 7 July –5 August 2006, James Hill

UK 4 – Middlesex, Hanger Wood, TQ186820, small ancient woodland fragment in suburban area, clay soil, mixed deciduous trees, 65 m a.s.l., 11 July –12 August 2006, Mike Fox

UK 5 – Wiltshire, Blackmoor Copse, SU232291, 51.060231°N, 1.668908° W, Ancient deciduous coppice woodland with standards. *Quercus*, *Fraxinus*, *Acer campestre* and *Corylus avellana*, at edge of large clearing with regenerating shrubs, 65 m a.s.l., 12 July –15 August 2006, Stuart Roberts

UK 6 – Hampshire, New Forest; Bramshaw Wood, SU256171, 50.952212° N, 1.635529° W, open grazed wood pasture. *Fagus*, *Quercus*, *Betula* with *Ilex aquifolium* understorey, at edge of small clearing, 65 m a.s.l., 12 July –15 August 2006, Stuart Roberts

UK 7 – Hampshire, New Forest; Millersford Plantation, SU200175, 50.956035° N, 1.715218° E, 100 m, coniferous plantation. *Pinus sylvestris*, at side of broad track through plantation, 100 m a.s.l., 12 July –15 August 2006, Stuart Roberts

UK 8 – Norfolk, Strumpshaw, TG344057, wet floodplain forest on alluvial peat (*Alnus*), <5 m a.s.l., 11th July – 12th August 2006, Tim Strudwick.

UK 9 – Norfolk, Strumpshaw, TG341064, mixed deciduous woodland at floodplain edge on

- sand/gravel (*Alnus, Salix, Fraxinus, Quercus, Betula*), <5 m a.s.l., 11 July –12 August 2006, Tim Strudwick.
- UK 10 – Berkshire, Newbury, Lambourn Downs, SU43891768, N 51° 29' 19.7", W 1° 26' 28.0", oak, sycamore. Young plantation. No ground cover, 139 m a.s.l., 11 July –10 August 2006, Emily Chambers
- UK 11 – Berkshire, Newbury, Lambourn Downs, SU43991757, N 51° 28' 43.9", W 1° 25' 36.6", Beech, oak, ash. Mature wood. Brambles, 171 m a.s.l., 11 July –10 August 2006, Emily Chambers
- UK 12 – Berkshire, Newbury, Lambourn Downs, SU43741741, N 51° 27' 52.7", W 1° 27' 46.8", Sycamore, oak, ash, beech. Mature wood. Sparse dog's mercury, bluebell, some bramble, 166 m a.s.l., 11 July –10 August 2006, Emily Chambers,
- UK 13 – Berkshire, Newbury, Lambourn Downs, SU43861736, N 51° 27' 36.2", W 1° 26' 44.8", Beech, elder, ash, field maple. Mature wood. Nettles, 151 m a.s.l., 11 July –10 August 2006, Emily Chambers
- UK 14 – Berkshire, Newbury, Lambourn Downs, SU44051735, N 51° 27' 32.5", W 1° 25' 06.4", Beech, ash, sycamore. Mature wood. Nettles, 101 m a.s.l., 11 July –10 August 2006, Emily Chambers
- UK 15 – Berkshire, Newbury, Lambourn Downs, SU44001768, N 51° 29' 19.5", W 1° 25' 31.0", Oak, ash, sycamore. Mature wood. Ivy, nettles, 176 m a.s.l., 11 July –10 August 2006, Emily Chambers
- UK 16 – Berkshire, Reading, Chilterns, SU462218, N 51° 31' 15.3", W 1° 06' 17.6", Beech, silver fir. Mature wood. Brambles, dog's mercury, 122 m a.s.l., 11 July –11 August 2006, Emily Chambers
- UK 17 – Berkshire, Reading, Chilterns, SU46301809, N 51° 31' 24.7", W 1° 05' 35.9", Beech, oak. Mature wood. Bramble, bracken, 147 m a.s.l., 11 July –11 August 2006, Emily Chambers
- UK 18 – Berkshire, Reading, Chilterns, SU46331804, N 51° 31' 08.3", W 1° 05' 20.7", Silver birch, oak, silver fir. Mature wood. Nettles, brambles, bracken, ground ivy, var. forbs, grass, moss, 161 m a.s.l., 11 July –11 August 2006, Emily Chambers
- UK 19 – Berkshire, Reading, Chilterns, SU46161795, N 51° 30' 39.9", W 1° 06' 49.4", Ash, beech, yew. Mature wood. Sparse dog's mercury, 49 m a.s.l., 12 July –11 August 2006, Emily Chambers
- UK 20 – Berkshire, Reading, Chilterns, SU46341798, N 51° 30' 48.9", W 1° 05' 15.9", Beech. Mature wood. Bramble, bracken, 167 m a.s.l., 12 July –11 August 2006, Emily Chambers
- UK 21 – Berkshire, Reading, Chilterns, SU46341789, N 51° 30' 19.8", W 1° 05' 16.5", Beech, sycamore, holly. Mature wood. Ivy, 147 m a.s.l., 12 July –11 August 2006, Emily Chambers
- UK 22 – North Hampshire, Rake Hangar, SU794264, beech, birch, 90 m a.s.l., 14 July –13 August 2006, Sarah Patton
- UK 23 – North Hampshire, Rake Hangar, SU794264, beech, birch, 90 m a.s.l., 14 July –13 August 2006, Sarah Patton
- UK 24 – North Hampshire, Rake Hangar, SU794264, oak, birch, 90 m a.s.l., 14 July –13 August 2006, Sarah Patton
- UK 25 – North Hampshire, Rake Hangar, SU794264, oak, birch, 90 m a.s.l., 14 July –13 August 2006, Sarah Patton
- UK 26 – Oxfordshire, Shotover Hill (SSSI), Midvale Ridge, Johnson's Piece, SP565060, mixed deciduous natural woodland, over 100 years old, 155 m a.s.l., 11 July –15 August 2006, Alex Rey and Xenia Snowman
- UK 27 – Oxfordshire, Shotover Hill (SSSI), Midvale Ridge, Horspath Common, SP573054, derelict 30 year old broadleaf plantation with older birch, sycamore and ash, 125 m

a.s.l, 11 July –15 August 2006, Alex Rey and Xenia Snowman

UK 28 – Oxfordshire, Shotover Hill (SSSI), Midvale Ridge, Brasenose 1, SP560052, coppiced with standards (ancient semi natural woodland), 90 m a.s.l, 11 July –15 August 2006, Alex Rey and Xenia Snowman

UK 29 – Oxfordshire, Shotover Hill (SSSI), Midvale Ridge, Brasenose 2, SP557053, coppiced with standards (ancient semi natural woodland), 90 m a.s.l, 11 July –15 August 2006, Alex Rey and Xenia Snowman

## Results and discussion

Across the 29 sites, a total of 1 127 specimens of 6 social wasp species were trapped (see Table 1).

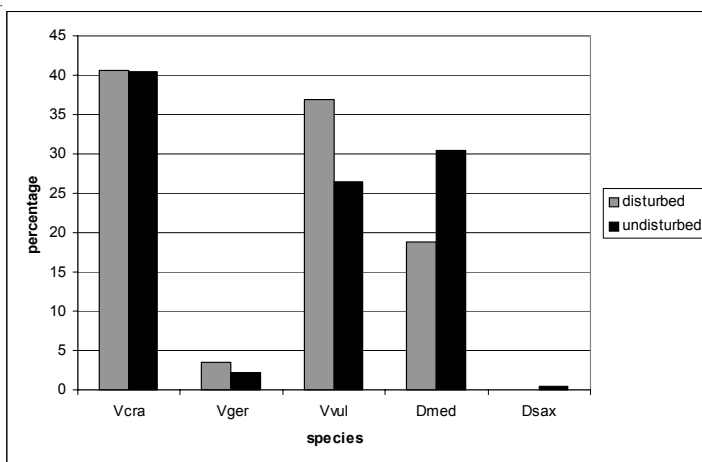
code loc.	Vcra	Vger	Vvul	Vruf	Dmed	Dsax	sum
UK 1			20		1		21
UK 2							0
UK 3							0
UK 4			32		4		36
UK 5	127	1	13		14	1	156
UK 6	32		4		7		43
UK 7	4		5		1		10
UK 8	20	1	2				23
UK 9	7		29				36
UK 10	50	9	21		10		90
UK 11	33		18		32		83
UK 12	32	1	13		3		49
UK 13	3		20		2		25
UK 14	3	1	10		3		17
UK 15	2		30		7		39
UK 16	2		7		3		12
UK 17	24	2	24		1		51
UK 18	20	1	12		54	1	88
UK 19	3		3		2		8
UK 20	42	2	7		9		60
UK 21	1		7				8
UK 22	7	1	7				15
UK 23	8		13	1	3		25
UK 24	17	1	30		6		54
UK 25	26	1	13		8		48
UK 26			42		1		43
UK 27	5	4	18		9		36
UK 28	5		20		3		28
UK 29	1	3	11		8		23
sum	474	28	431	1	191	2	1127

**Table 1.** The wasp numbers at each locality. Explanations: Vcra – *Vespa crabro*, Vger – *Vespula germanica*, Vvul – *V. vulgaris*, Dmed – *Dolichovespula media*, Dsax – *Dolichovespula saxonica*.

The commonest species were: Hornet (*Vespa crabro*), Common Wasp (*Vespula vulgaris*), and Median Wasp (*Dolichovespula media*). These three species were also euconstant. The very low numbers of the other species, (which one might expect to be regularly attracted to sweet baits) viz. the German wasp (*Vespula germanica*), can be easily explained by the species dislike of wooded biomes. The species assemblage is completed with Red Wasp (*Vespula rufa*) and Saxon Wasp (*Dolichovespula saxonica*). All data are summarised in Table 1. This species composition is similar to that noted on the continental mainland. The other European species which is relatively regularly attracted to sweet baits, *Polistes dominulus*, is silviphobic too and it was trapped during the 2006 research only in dry and light forest of South Europe (Spain, France) and in very small numbers only.

The numbers of individuals at each locality varied between 0 and 156, with the mean at 39. Similarly large numbers were not recorded in other European countries. Individual traps were sometimes richer, (with up to 215 specimens) but no country had such a high mean number as the UK. The largest individual number of specimens came from the Czech Republic, where only numbers of *V. vulgaris* are comparable to the UK figures. The high numbers of the wasp species *D. media* and, partly, *V. crabro* in the UK can be explained because these two species have been undergoing range expansion in last few years. The other common (and in the UK, spreading) species, *D. saxonica*, is attracted only very occasionally to sweet baits and this is the main reason why only two specimens of this species were recorded (for other comments of wasps attracted to sweet baits see DVORAK & LANDOLT 2006).

The impact of simple<sup>1</sup>, and complex<sup>2</sup> landscape structures was studied at localities 10–21. Localities 10–15 lie within a simple landscape and localities 16–21 within a diverse landscape. Fig. 1 shows that the most obvious differences lie with the responses of *Vespula vulgaris* and *Dolichovespula media*. *V. vulgaris* has ca. 10% greater abundance in sites in simple landscapes. On the other hand, the recent colonist *D. media* has ca. 12% greater abundance in sites in a more complex landscape structure. As is shown in Table 1, this fact is based on mass occurrence (54 ex.) of *D. media* at locality 18. These results indicate that *V. vulgaris* occurs in slightly higher numbers in woodlands in simple, agriculture-dominated landscapes while other species does not show any clear preference.



**Fig. 1.** The percentage representation of wasp species at disturbed (303 ex.) and undisturbed (227 ex.) sites. Explanations: Vcra – *Vespa crabro*, Vger – *Vespula germanica*, Vvul – *V. vulgaris*, Dmed – *Dolichovespula media*, Dsax – *Dolichovespula saxonica*.

Probably the most interesting result of our trapping is the high attractiveness of beer for *D. media*. This Palaearctic species is a relatively recent addition to the UK fauna (COLVIN 1992, ELSE 1992) and after a period of consolidation in the mid-1980's, it spread rapidly northwards and westwards. (for a current distribution map see Fig. 2). *D. media* was considered to be relatively rare in Europe in the past. The beer trapping project has shown that *D. media* is, in fact, a rather common species in the mild climatic regions of the continent. At present, we have no firm indications that the high numbers are because of range extension (similar to the case in UK) or because the result is influenced by high attractiveness of beer to this species, *D. media* is only sporadically trapped using Malaise and Moericke (yellow pan-) traps. Information on the relatively high response of *D. media* to the sweet baited traps was published by DVORÁK & LANDOLT (2006).

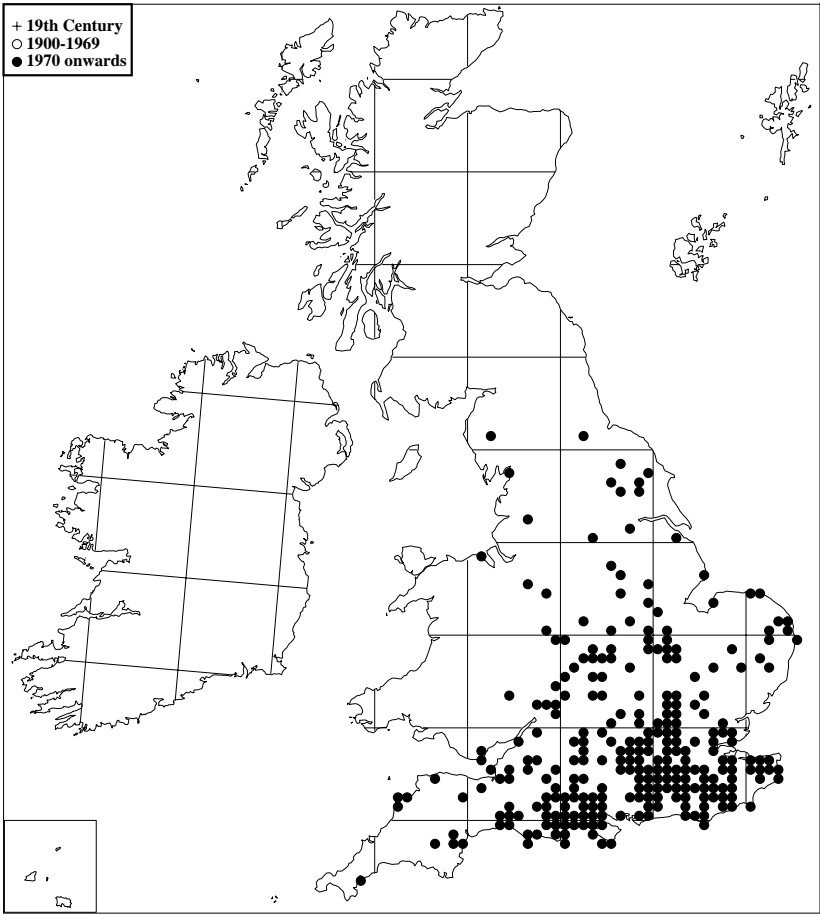


Fig. 2. The present distribution of *Dolichovespula media* in the UK.

## Conclusions

1. Beer is very attractive for several wasp species occurring in woodland/forest ecosystems.
2. *Vespa crabro*, *Vespula vulgaris*, and *Dolichovespula media* are the only wasp species, which can be regularly trapped with beer in woodland/forest ecosystems.
3. The high numbers of *Dolichovespula media*, which has spread rapidly in the UK last two decades and occupies bushy and woodland biotopes, are the most interesting results of this study.
4. The numbers of *Vespula vulgaris* were higher at sites in simple landscapes.

## Acknowledgements

The authors wish to thank all the people who participated at this project for their enthusiasm, for managing the traps and identifying the wasps.

## References

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## (Footnotes)

- 1 Simple landscapes are dominated by a single land use type. In these study sites these are agricultural or other anthropogenic habitats with very little natural or semi-natural vegetation.
- 2 Diverse landscapes have a mosaic of semi-natural, agricultural and anthropogenic habitats.

## Interesting records from the north

**Ian Cheeseborough** 87 Watling Street South, Church Stretton, SY6 7BH  
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All of the records apart from *Myrmica sulcinodis* (Lancashire) are from Watsonian Yorkshire and Lincolnshire.

The recorders are as follows ;

Michael Archer (MEA), Harry Beaumont (HB), John Coldwell (JC), Bill Ely (WAE), Annette Faulkner (AF), Peter Kendall (PK), Phil Porter (PP), Derek Whiteley (DW), Harry Whiteley (HW), Michael Wilcox (MW).

All records are for 2006 unless indicated otherwise.