

Table S1: Intraclass correlation coefficients for intra-rater reliability of all antenna types

Sensilla type	N	ICC	95% CI	F	p
Type i) olfactory plates	33	0.89	0.78 < ICC < 0.94	16.9	6.28x10 <sup>-13</sup>
Type ii) olfactory hairs	33	0.85	0.72 < ICC < 0.93	12.3	1.02x10 <sup>-10</sup>
Type iii) thermo/hygroreceptors	19	0.94	0.85 < ICC < 0.98	30.6	2.43x10 <sup>-10</sup>

Table S2: Air temperature data taken from the wunderground website from nearest weather stations to each site where bees were collected. Shown are monthly maximum, minimum and mean temperatures (means ± standard deviations across all months) in years that bees that were collected from each site developed. Data from two years are provided for Migdale (Scotland) as bees were collected in two years (2018 and 2020 after developing in 2017 and 2019 ([www.wunderground.com/history](http://www.wunderground.com/history))). Also included are soil temperatures recorded at depths of 1cm and 15cm at Migdale and Knepp sites in 2019 and 2020 respectively (using TinyTag data loggers; Gemini data loggers). At Knepp 1 logger was deployed and recovered at 1cm and 1 at 15cm. At Migdale 4 loggers were deployed and recovered at 1cm and 2 at 15cm.

Population	Nearest weather station	Year	Month	Max air temp (°C)		Min air temp (°C)		Average air temp (°C)		Soil temp (1cm) ± SD (°C)		Soli temp (15cm) ± SD (°C)	
Migdale (Scotland)	Inverness airport	2017	April	11.7	16 ± 3.0	3.5	6.9 ± 3.0	7.8	11.7 ± 2.8				
			May	16.8		5.2		11.7					
			June	17		9.0		13.1					
			July	18.6		9.9		14.2					
		2019	April	13.3	3.2	6.9 ± 3.9	8.5	11.4 ± 3.4	11.3 ± 5.0	14.7 ± 6.3	10.3 ± 3.1	14.3 ± 3.8	
			May	12.8	4.2		8.9		13.3 ± 6.5		13.0 ± 3.0		
			June	16.2	8.2		12.4		15.6 ± 5.4		15.2 ± 2.7		
			July	19.6	11.8		15.7		18.4 ± 4.9		17.8 ± 2.7		

<b>Boscastle and Bodmin (south-west)</b>	Newquay airport	2017	April	11.4	15.3 ± 2.9	6.6	10.9 ± 3.3	9.7	13.6 ± 3.0				
			May	14.7		10.0		13					
			June	17.4		13.0		15.6					
			July	17.7		14.0		16.2					
<b>Belfast (North)</b>	Belfast City airport	2019	April	11.9	15.6 ± 3.3	6.3	9.3 ± 3.2	9.0	12.4 ± 3.2				
			May	14.1		7.4		10.9					
			June	16.9		9.9		13.4					
			July	19.5		13.6		16.4					
<b>South-East (Knepp)</b>	Gatwick airport	2020	April	17.2	19.8 ± 2.0	5.5	9.3 ± 3.3	11.4	14.7 ± 2.7	14.1 ± 4.5	18.1 ± 6.7	15.3 ± 2.5	18.3 ± 3.4
			May	19.3		7.6		13.7		17.1 ± 5.8		18.2 ± 2.8	
			June	20.7		11.6		16.2		20.8 ± 7.5		19.7 ± 3.0	
			July	21.9		12.5		17.5		20.7 ± 6.1		20.1 ± 3.0	