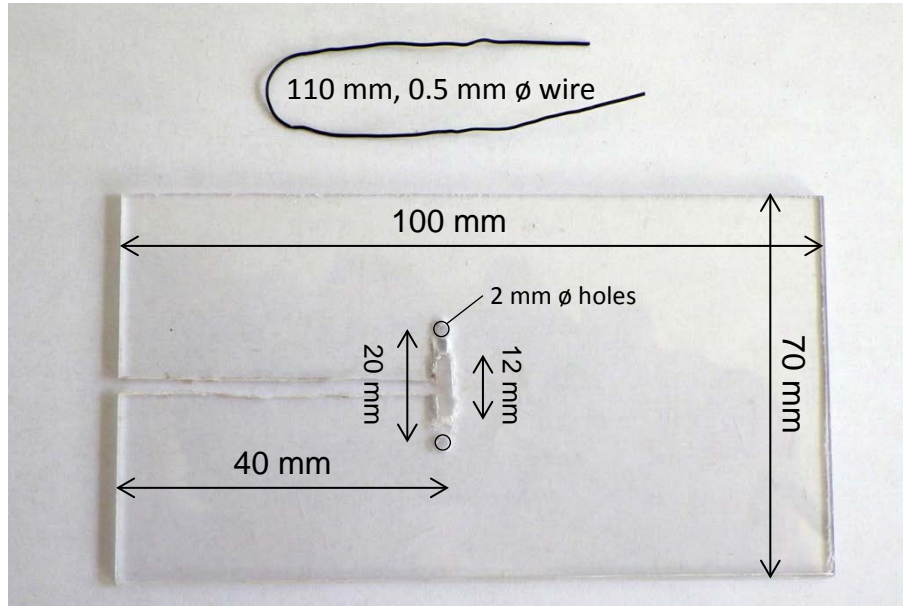
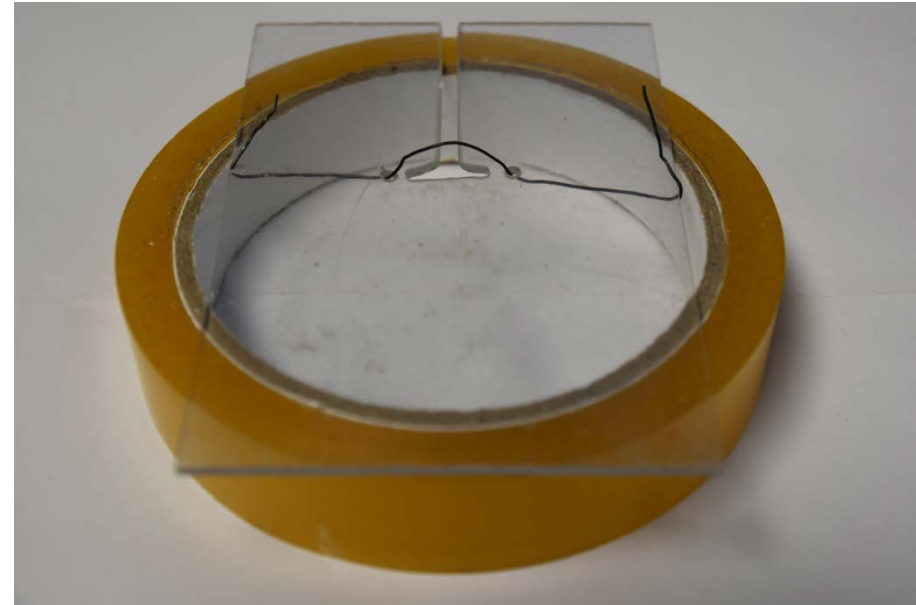


**Supplementary Figure 1. Restraining plate for attaching a radio tag to a hornet**

**(a)**



**(b)**



Restraining plate: **(a)** top view with dimensions, and **(b)** with wire tie in place. The plate is made from a 100 mm x 70 mm rectangle of 1.7 mm thick acrylic sheet, with a 2 mm slit extending centrally from a short edge into a 40 mm long and 12 mm wide T-shape. Two 2 mm diameter holes were drilled 20 mm apart, either side of the 12 mm wide 'head' of the cut T. A wire tie (110 mm long; 0.5 mm diameter) was bent into a u-shaped hoop and its ends passed through the two drilled holes in the restraining plate. Figure annotated in Microsoft PowerPoint, using photographs taken by P.Kennedy.

**Supplementary Table 1. Tagged worker hornet's flight performance.**

| Hornet |                  | Tag             |        |               | Tag:Hornet<br>wt. ratio | Flight performance |                |          |                  |          |
|--------|------------------|-----------------|--------|---------------|-------------------------|--------------------|----------------|----------|------------------|----------|
| ID     | Fresh<br>wt. (g) | Type (battery)  | Active | Weight<br>(g) |                         | Date               | In flight cage |          | On field release |          |
|        |                  |                 |        |               |                         |                    | Rating         | Category | Max. dist. (m)   | Category |
| W15    | 0.321            | Pip19 (Ag190)   | No     | 0.203         | 0.63                    | 25/07/17           | 5              | Good     | > 50             | Good     |
| W16    | 0.335            | Pip19 (Ag190)   | Yes    | 0.224         | 0.67                    | 26/07/17           | (not assessed) |          | < 2              | Poor     |
| W17    | 0.460            | Pip19 (Ag190)   | Yes    | 0.225         | 0.49                    | 27/07/17           | (not assessed) |          | > 50 *           | Good     |
| W32    | 0.475            | PicoPip (Ag337) | Yes    | 0.305         | 0.64                    | 13/09/17           | (not assessed) |          | 528 *            | Good     |
| W39    | 0.317            | Dummy           | No     | 0.338         | 1.07                    | 15/09/17           | 1              | Poor     | 30               | Good     |
| W34    | 0.379            | Dummy           | No     | 0.360         | 0.95                    | 15/09/17           | 2              | Poor     | (not assessed)   |          |
| W37    | 0.378            | Dummy           | No     | 0.352         | 0.93                    | 15/09/17           | 3              | Poor     | 23               | Good     |
| W35    | 0.291            | Dummy           | No     | 0.291         | 1.00                    | 15/09/17           | 2              | Poor     | (not assessed)   |          |
| W38    | 0.370            | Dummy           | No     | 0.216         | 0.58                    | 15/09/17           | 5              | Good     | 59               | Good     |
| W36    | 0.333            | Dummy           | No     | 0.312         | 0.94                    | 15/09/17           | 5              | Good     | 37               | Good     |
| W40    | 0.314            | Dummy           | No     | 0.244         | 0.78                    | 15/09/17           | 3              | Poor     | 3                | Poor     |
| W42    | 0.409            | Dummy           | No     | 0.291         | 0.71                    | 15/09/17           | 4              | Good     | 27               | Good     |
| W43    | 0.328            | Dummy           | No     | 0.269         | 0.82                    | 15/09/17           | 1              | Poor     | 8                | Poor     |
| W45    | 0.426            | Dummy           | No     | 0.280         | 0.66                    | 15/09/17           | 4              | Good     | 28               | Good     |
| W44    | 0.305            | Dummy           | No     | 0.230         | 0.75                    | 15/09/17           | 1              | Poor     | 58               | Good     |
| W41    | 0.466            | Dummy           | No     | 0.334         | 0.72                    | 15/09/17           | 4              | Good     | 51               | Good     |
| W53    | 0.422            | Dummy           | No     | 0.465         | 1.10                    | 18/09/17           | 3              | Poor     | 17               | Good     |
| W54    | 0.286            | Dummy           | No     | 0.256         | 0.90                    | 18/09/17           | 5              | Good     | 72               | Good     |
| W52    | 0.291            | Dummy           | No     | 0.267         | 0.92                    | 18/09/17           | 2              | Poor     | 12               | Poor     |
| W48    | 0.303            | Dummy           | No     | 0.262         | 0.86                    | 18/09/17           | 2              | Poor     | (not assessed)   |          |
| W46    | 0.402            | Dummy           | No     | 0.473         | 1.18                    | 18/09/17           | 2              | Poor     | 4                | Poor     |
| W50    | 0.326            | Dummy           | No     | 0.254         | 0.78                    | 18/09/17           | 5              | Good     | (not assessed)   |          |
| W47    | 0.344            | Pip19 (Ag190)   | No     | 0.210         | 0.61                    | 18/09/17           | 5              | Good     | (not assessed)   |          |
| W49    | 0.335            | Pip19 (Ag190)   | No     | 0.217         | 0.65                    | 18/09/17           | 5              | Good     | 16               | Good     |
| W51    | 0.294            | Dummy           | No     | 0.273         | 0.93                    | 18/09/17           | 4              | Good     | 22               | Good     |
| W55    | 0.258            | Dummy           | No     | 0.347         | 1.34                    | 18/09/17           | 3              | Poor     | 3                | Poor     |
| W57    | 0.233            | Pip19 (Ag190)   | No     | 0.233         | 1.00                    | 18/09/17           | 1              | Poor     | 14               | Poor     |

**Supplementary Table 1 (continued). Tagged worker hornet's flight performance.**

| ID   | Fresh wt. (g) | Type (battery)  | Active | Weight (g) | Tag:Hornet wt. ratio | Date     | In flight cage |          | On field release |          |
|------|---------------|-----------------|--------|------------|----------------------|----------|----------------|----------|------------------|----------|
|      |               |                 |        |            |                      |          | Rating         | Category | Max. dist. (m)   | Category |
| W56  | 0.233         | Pip19 (Ag190)   | No     | 0.219      | 0.94                 | 18/09/17 | 2              | Poor     | 13               | Good     |
| Y21  | 0.300         | Pip19 (Ag190)   | Yes    | 0.215      | 0.72                 | 19/09/17 | 2              | Poor     | < 5              | Poor     |
| W58  | 0.387         | PicoPip (Ag337) | Yes    | 0.276      | 0.71                 | 19/09/17 | 5              | Good     | (not assessed)   |          |
| W59  | 0.356         | PicoPip (Ag337) | Yes    | 0.281      | 0.79                 | 19/09/17 | 5              | Good     | 351 *            | Good     |
| W60  | 0.376         | PicoPip (Ag337) | Yes    | 0.276      | 0.73                 | 20/09/17 | 4              | Good     | 1331 *           | Good     |
| W61  | 0.401         | PicoPip (Ag337) | Yes    | 0.278      | 0.69                 | 20/09/17 | 4              | Good     | 54 *             | Good     |
| W62  | 0.431         | PicoPip (Ag337) | Yes    | 0.280      | 0.65                 | 20/09/17 | 5              | Good     | 195 *            | Good     |
| W64  | 0.412         | Dummy           | No     | 0.494      | 1.20                 | 21/09/17 | 3              | Poor     | 52               | Good     |
| W63  | 0.328         | Dummy           | No     | 0.291      | 0.89                 | 21/09/17 | 3              | Poor     | 12               | Good     |
| W29  | 0.229         | Dummy           | No     | 0.195      | 0.85                 | 21/09/17 | 2              | Poor     | 13               | Poor     |
| W65  | 0.305         | Dummy           | No     | 0.269      | 0.88                 | 21/09/17 | 3              | Poor     | 5                | Poor     |
| W69  | 0.368         | PicoPip (Ag337) | Yes    | 0.285      | 0.77                 | 21/09/17 | 4              | Good     | 343 *            | Good     |
| W67  | 0.341         | PicoPip (Ag337) | Yes    | 0.286      | 0.84                 | 21/09/17 | 2              | Poor     | –                | Poor     |
| FG59 | 0.35          | PicoPip (Ag337) | Yes    | 0.28       | 0.80                 | 25/09/17 | 3              | Poor     | –                | Poor     |
| FG1  | 0.34          | PicoPip (Ag337) | Yes    | 0.28       | 0.82                 | 25/09/17 | 3              | Poor     | –                | Poor     |
| G1   | 0.49          | PicoPip (Ag337) | Yes    | 0.28       | 0.57                 | 26/09/17 | 3              | Poor     | –                | Poor     |
| G2   | 0.47          | Pip19 (Ag190)   | Yes    | 0.23       | 0.49                 | 26/09/17 | 4              | Good     | > 32 *           | Good     |
| G3   | 0.36          | PicoPip (Ag337) | Yes    | 0.28       | 0.77                 | 27/09/17 | 1              | Poor     | (not assessed)   |          |
| G4   | 0.41          | PicoPip (Ag337) | Yes    | 0.28       | 0.68                 | 27/09/17 | 5              | Good     | > 40 *           | Good     |
| G5   | 0.46          | PicoPip (Ag337) | Yes    | 0.28       | 0.61                 | 28/09/17 | 4              | Good     | '238 *           | Good     |

Flight performance assessed in the flight cage was rated on a scale of 1-5 (1 = sharp descending flights or no flights; 2 = mainly descending flights; 3 = both horizontal & descending flights; 4 = mainly horizontal flights; 5 = ascending & strong horizontal flights); hornets rated 4 or 5 were categorised as 'Good flyers'. Flight performance on field release was similarly categorised as 'Poor' or 'Good' based on whether flights were largely descending or ascending, respectively. On occasions, when hornets landed in a nearby tree (12-16 m from release point), flight performance was judged on performance prior to that point. Distances indicated equate to the maximum distance from release to point of landing, to last visual sighting of a flying hornet (e.g. perimeter wall), or – if tracked (indicated by \*) – to location where tracked to.

**Supplementary Table 2. Tracked hornets' summary information.**

| Hornet ID | Tag type | Date     | Caught    |           | Released |           |           |         | Destination |           |           |           | Summary values |     |          |
|-----------|----------|----------|-----------|-----------|----------|-----------|-----------|---------|-------------|-----------|-----------|-----------|----------------|-----|----------|
|           |          |          | Latitude  | Longitude | Time     | Latitude  | Longitude | Compass | Time        | Latitude  | Longitude | Descript. | D (m)          | B ° | Duration |
| W17       | Pip19    | 27/07/17 | 44.787529 | -0.576049 | 14:42    | 44.787825 | -0.576114 | 125°    |             |           |           | Lost      |                |     |          |
| W32       | PicoPip  | 13/09/17 | 44.787564 | -0.576039 | 16:45    | 44.787745 | -0.575876 | 112°    | 17:30       | 44.785378 | -0.570071 | Nest      | 528            | 119 | 0h 45m   |
| W59       | PicoPip  | 19/09/17 | 44.791409 | -0.575086 | 16:00    | 44.791409 | -0.575086 | 140°    | 17:36       | 44.790567 | -0.570806 | Nest      | 351            | 105 | 1h 36m   |
| W60       | PicoPip  | 20/09/17 | 44.789711 | -0.580583 | 11:43    | 44.789549 | -0.580870 | 310°    | 19:42       | 44.789903 | -0.597734 | Nest      | 1331           | 271 | 2h 13m   |
| W61       | PicoPip  | 20/09/17 | 44.789711 | -0.580583 | 16:21    | 44.789469 | -0.580578 | 2°      | 18:09       | 44.789742 | -0.580093 | Conifer   | 49             | 50  | 0h 53m   |
| W62       | PicoPip  | 20/09/17 | 44.789711 | -0.580583 | 16:12    | 44.789469 | -0.580578 | 2°      | 17:15       | 44.790149 | -0.582859 | Nest      | 195            | 293 | 1h 03m   |
| W69       | PicoPip  | 21/09/17 | 44.787564 | -0.576039 | 15:43    | 44.787762 | -0.575937 | 240°    | 20:00       | 44.788455 | -0.571700 | Garden    | 343            | 76  | 1h 59m   |
| G2        | Pip19    | 26/09/17 | 49.185790 | -2.091615 | 17:52    | 49.185690 | -2.091641 | 245°    |             |           |           | Lost      |                |     |          |
| G4        | PicoPip  | 27/09/17 | 49.225644 | -2.074863 | 16:18    | 49.224035 | -2.074863 | 350°    | 09:20       | 49.224438 | -2.070461 | Recovered | 45             | 352 | 1h 11m   |
| G5        | PicoPip  | 28/09/17 | 49.222725 | -2.073565 | 11:42    | 49.223419 | -2.073400 | 150°    | 13:43       | 49.225433 | -2.072273 | Nest      | 238            | 20  | 2h 01m   |

Ten tagged hornets were radio tracked; 7 in Bordeaux (ID starting with W) and 3 in Jersey (ID starting with G). Hornets were caught either hawking outside hives, foraging for nectar or honeydew, or foraging at artificial bait stations. The hornets were fitted with either Pip19 or PicoPip radio-telemetry tags (see Supplementary Table 1 for tag and hornet weights) and released at a nearby open location permitting vanishing compass directions (= Compass) of departing hornets to be recorded. They were tracked by confirming the direction of strongest signal from consecutive waypoints along the approximate route of travel, or either-side of it, until triangulation from various points suggested a stationary location, the hornet or radio-tag were found, or the nest was found. Both hornets fitted with Pip19 tags flew relatively quickly beyond the range of detection and were lost. Of those fitted with PicoPip tags: W61 was tracked to a conifer where signal was detected the rest of the day (presumed caught amongst the fine needles of the tree; no nest observed) but was lost the following day; W69 was tracked to a private residential garden and signal was detected late into the evening and the following morning (as not accessible, unable to check for presence of nest, hornet or tag); G4 was caught in a rain storm shortly after released, sheltered in a beech tree overnight but was found wet & torpid in a nearby field the following morning and recovered; all remaining hornets were successfully tracked to their previously unknown nests. Summary values provided are displacement distance (D) between release point and recorded destination, compass bearing (B) from release point to destination, and length of time (hours & minutes) actually tracking a hornet.

**Supplementary Table 3. Tracked hornets' waypoint information.**

Each of the ten tagged hornets, referred to in Supplementary Table 2, were radio-tracked from a release point near where they were originally caught. Their flight paths were tracked by moving in the approximate direction of the previous strongest signal, to the extent that terrain and public rights of way permitted this. Signal direction and observational notes were recorded at various waypoints along the tracked route until triangulation from various points suggested a stationary location, the hornet or radio-tag were found, or the hornet's nest was found. In some instances, the location of a tagged hornet near a nest was checked on following days. When tracking of an individual was interrupted (to work on other hornets, for refreshment breaks, etc.) this is indicated in the notes.

(a) Hornet ID = White 17 (W17). Caught hawking outside beehive at the INRA apiary on 27/07/2017. Hornet fresh weight = 0.460 g; Pip19 radio tag = 0.225 g.

| Date       | Time          | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                   |
|------------|---------------|------------------|----------------------------|-----------|-----------|-----------------------------------------|-------------------------|
| 27/07/2017 | 10:00 – 11:00 |                  | Capture location           | 44.787529 | -0.576049 |                                         |                         |
| 27/07/2017 | 14:42         | 00:00            | Release location           | 44.787825 | -0.576114 | 125°                                    | Released at INRA apiary |
| 27/07/2017 | 14:59         |                  | WP 1.2                     | 44.786086 | -0.574837 | (no signal)                             |                         |
| 27/07/2017 | 15:12         |                  | WP 1.3                     | 44.786451 | -0.571537 | (no signal)                             |                         |
| 27/07/2017 | 15:16         |                  | WP 1.4                     | 44.786077 | -0.572945 | (no signal)                             |                         |
| 27/07/2017 | 15:23         |                  | WP 1.5                     | 44.786657 | -0.573293 | (no signal)                             |                         |
| 27/07/2017 | 15:42         |                  | WP 1.6                     | 44.784176 | -0.567820 | (no signal)                             | Abandoned as lost       |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(b) Hornet ID = White 32 (W32). Caught hawking outside beehive at the INRA apiary on 13/09/2017. Hornet fresh weight = 0.475 g; PicoPip radio tag = 0.305 g.

| Date       | Time          | Tracked duration | Reference or waypoint (WP)     | Latitude  | Longitude  | Compass direction(s) of detected signal | Notes                                                                 |
|------------|---------------|------------------|--------------------------------|-----------|------------|-----------------------------------------|-----------------------------------------------------------------------|
| 13/09/2017 | 11:00 – 12:00 |                  | Capture location               | 44.787564 | -0.576039  |                                         |                                                                       |
| 13/09/2017 | 16:45         | 00:00            | Release location               | 44.787745 | -0.575876  | 112°                                    | Released at INRA apiary                                               |
| 13/09/2017 | –             | –                | Opposite playground            | 44.786816 | -0.574659  | 28° & 63°                               | Hornet on the move                                                    |
| 13/09/2017 | 17:07         | 00:22            | WP 2.3                         | 44.787165 | -0.572595  | 14° & 173°                              | Reflections off buildings?                                            |
| 13/09/2017 | 17:11         | 00:26            | WP 2.4                         | 44.786975 | -0.571873  | 30°                                     | Signal across properties                                              |
| 13/09/2017 | 17:15         | 00:30            | WP 2.5                         | 44.788239 | -0.572002  | 138°                                    | Signal more southerly                                                 |
| 13/09/2017 | 17:17         | 00:32            | WP 2.6                         | 44.787676 | -0.571789  | 166°                                    | Hornet moving?                                                        |
| 13/09/2017 | 17:20         | 00:35            | WP 2.7                         | 44.787021 | -0.571286  | 152°                                    | Signal more southerly                                                 |
| 13/09/2017 | 17:25         | 00:40            | WP 2.8                         | 44.786607 | -0.570797  | 168°                                    | Signal more southerly                                                 |
| 13/09/2017 | 17:27         | 00:42            | WP 2.9                         | 44.786422 | -0.570557  | 158°                                    | Signal more southerly                                                 |
| 13/09/2017 | 17:28         | 00:43            | WP 2.10                        | 44.785856 | -0.570454  | 136°                                    | Signal to south-east; follow footpath towards tower block             |
| 13/09/2017 | 17:30         | 00:45            | WP 2.11                        | 44.785474 | -0.570094  | 182°                                    | Spot nest high in tree approx. 10m in front of WP 2.11                |
| 13/09/2017 |               |                  | Nest location                  | 44.785378 | -0.5700706 |                                         | Estimated GPS location based on visually judged distance from WP 2.11 |
| 13/09/2017 | 17:32         |                  | WP 2.12                        | 44.785424 | -0.569491  | 262°                                    | Confirmed signal from nest                                            |
| 14/09/2017 | 09:15         |                  | WP 2.11                        | 44.785474 | -0.570094  | 182°                                    | Signal still from nest                                                |
| 14/09/2017 | 14:10         |                  | WP 2.11                        | 44.785474 | -0.570094  | (no signal)                             | Signal not at nest; W32 left                                          |
| 14/09/2017 | 14:35         |                  | Sweet chestnut tree; tag found | 44.787663 | -0.577256  |                                         | Signal detected; tag found under tree frequented by foraging hornets  |
| 15/09/2017 | 11:00         |                  | Apiary                         | 44.787745 | -0.575876  |                                         | Recaptured W32 hornet hawking outside beehive at INRA apiary          |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(c) Hornet ID = White 59 (W59). Caught at bait station within INRA grounds on 19/09/2017. Hornet fresh weight = 0.356 g; PicoPip radio tag = 0.281 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                         |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|-----------------------------------------------|
| 19/09/2017 | 13:35 |                  | Capture location           | 44.791409 | -0.575086 |                                         |                                               |
| 19/09/2017 | 16:00 | 00:00            | Release location           | 44.791409 | -0.575086 | 140°                                    | Towards INRA's eastern boundary.              |
| 19/09/2017 | 16:14 | 00:14            | WP 3.2                     | 44.788606 | -0.572833 | 356°                                    | Signal more northerly                         |
| 19/09/2017 | 16:19 | 00:19            | WP 3.3                     | 44.789603 | -0.572534 | 322°                                    | Signal more northerly                         |
| 19/09/2017 | 16:27 | 00:27            | WP 3.4                     | 44.791204 | -0.573380 | 153°                                    | Overshot; signal along boundary wall to south |
| 19/09/2017 | 16:38 | 00:38            | WP 3.5                     | 44.790355 | -0.573235 | 50°                                     | Close but W59 then moves                      |
| 19/09/2017 | 16:39 | 00:39            | Flowering ivy              | 44.790049 | -0.573160 | –                                       | Suspect W59 foraging here                     |
| 19/09/2017 | 16:40 | 00:40            | WP 3.6                     | 44.790061 | -0.573180 | 58°                                     | Near ivy; then moves                          |
| 19/09/2017 | 16:54 | 00:54            | WP 3.7                     | 44.789539 | -0.572327 | 298°                                    | Back towards ivy?                             |
| 19/09/2017 | 16:57 | 00:57            | WP 3.8                     | 44.789698 | -0.572433 | 58°                                     | Previous reflection off building              |
| 19/09/2017 | 17:02 | 01:02            | WP 3.9                     | 44.790521 | -0.571210 | 52°                                     | Signal from private garden                    |
| 19/09/2017 | 17:04 | 01:04            | WP 3.10                    | 44.790946 | -0.571332 | 130°                                    | Triangulating                                 |
| 19/09/2017 | 17:06 | 01:06            | WP 3.11                    | 44.790997 | -0.570949 | 180°                                    | Triangulating                                 |
| 19/09/2017 | 17:36 | 01:36            | WP 3.12                    | 44.790534 | -0.571226 | 80°                                     | Nest spotted; hornet traffic                  |
| 19/09/2017 |       |                  | Nest location              | 44.790567 | -0.570806 |                                         | Triangulated location                         |
| 20/09/2017 | 09:05 |                  | WP 3.12                    | 44.790534 | -0.571226 |                                         | Signal still from nest                        |
| 20/09/2017 | 14:43 |                  | WP 3.13                    | 44.790469 | -0.571209 | 76°                                     | Signal still from nest                        |
| 20/09/2017 | 14:46 |                  | WP 3.14                    | 44.790830 | -0.571296 | 138°                                    | Signal still from nest                        |
| 20/09/2017 | 14:49 |                  | WP 3.15                    | 44.790295 | -0.571177 | 30°                                     | Signal still from nest                        |
| 20/09/2017 | 18:30 |                  | WP 3.16                    | 44.787924 | -0.576798 | 46°                                     | Signal still from nest                        |
| 21/09/2017 | 09:05 |                  | WP 3.12                    |           |           |                                         | Signal still from nest                        |
| 22/09/2017 | 07:57 |                  | WP 3.12                    |           |           |                                         | Signal still from nest but weak               |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(d) Hornet ID = White 60 (W60). Caught foraging at willow tree within INRA grounds on 20/09/2017. Hornet fresh weight = 0.376 g; PicoPip radio tag = 0.276 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                              |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|----------------------------------------------------|
| 20/09/2017 | 10:00 |                  | Caught location            | 44.789711 | -0.580583 |                                         |                                                    |
| 20/09/2017 | 11:43 | 00:00            | Release location           | 44.789549 | -0.580870 | 310°                                    | Flew into shrubs & trees                           |
| 20/09/2017 | 11:50 | 00:07            | WP 4.2                     | 44.789519 | -0.581163 | 334°                                    |                                                    |
| 20/09/2017 | 12:03 | 00:20            | WP 4.3                     | 44.790251 | -0.582204 | 121°                                    | Overshot; amongst trees                            |
| 20/09/2017 | 12:04 | 00:21            | WP 4.4                     | 44.79005  | -0.581773 | 114°                                    |                                                    |
| 20/09/2017 | 12:05 | 00:22            | WP 4.5                     | 44.789985 | -0.581555 | 106°                                    |                                                    |
| 20/09/2017 | 12:07 | 00:24            | WP 4.6                     | 44.789939 | -0.581443 | 126°                                    |                                                    |
| 20/09/2017 | 12:13 | 00:30            | WP 4.7                     | 44.789603 | -0.581267 | 93°                                     | Amongst a cluster of trees                         |
| 20/09/2017 | 12:15 | 00:32            |                            |           |           |                                         | Break for lunch                                    |
| 20/09/2017 | 13:46 | 00:32            |                            |           |           |                                         | Renew search                                       |
| 20/09/2017 | 13:48 | 00:34            | WP 4.8                     | 44.789601 | -0.580920 | 138°                                    |                                                    |
| 20/09/2017 | 13:52 | 00:38            | WP 4.9                     | 44.789449 | -0.580761 | 196°                                    | W60 moving                                         |
| 20/09/2017 | 13:54 | 00:40            | WP 4.10                    | 44.789190 | -0.580860 |                                         |                                                    |
| 20/09/2017 | 13:56 | 00:42            | WP 4.11                    | 44.789080 | -0.581038 |                                         |                                                    |
| 20/09/2017 | 14:12 | 00:58            | Mulberry tree              |           |           |                                         | Foraging on tree within WP 4.10, WP 4.11 & WP 4.12 |
| 20/09/2017 | 14:13 | 00:59            | WP 4.12                    | 44.789060 | -0.580875 | 300°                                    |                                                    |
| 20/09/2017 | 14:15 | 01:01            |                            |           |           |                                         | Break; work on other hornets                       |
| 20/09/2017 | 16:15 | 01:01            |                            |           |           |                                         | Return to tracking W60                             |
| 20/09/2017 | 16:19 | 01:05            | WP 4.13                    |           |           | 260°                                    |                                                    |
| 20/09/2017 | 16:20 | 01:06            |                            |           |           |                                         | Break while tracking W61                           |
| 20/09/2017 | 16:25 | 01:06            |                            |           |           |                                         | Return to tracking W60                             |
| 20/09/2017 | 16:25 | 01:06            | WP 4.14                    | 44.78967  | -0.580677 | 240°                                    | Signal still nearby                                |
| 20/09/2017 | 16:30 | 01:11            |                            |           |           |                                         | Break; tracking W61 & W62                          |



**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(d) (W60 continued).

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                           |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|---------------------------------|
| 20/09/2017 | 18:30 |                  |                            |           |           |                                         | Return to tracking W60          |
| 20/09/2017 | 18:30 | 01:11            | WP 4.14                    | 44.789670 | -0.580677 | (no signal)                             | Finish for the day?             |
| 20/09/2017 | 18:40 | 01:11            | La Cave de Pascal          | 44.785811 | -0.581727 | 300°                                    | Detect faint signal             |
| 20/09/2017 | 19:00 | 01:31            | WP 4.16                    | 44.787626 | -0.585642 | 266°                                    | Signal more westerly            |
| 20/09/2017 | 19:03 | 01:34            | WP 4.17                    | 44.787880 | -0.586491 | 276°                                    | Signal more westerly            |
| 20/09/2017 | 19:12 | 01:43            | WP 4.18                    | 44.788510 | -0.589333 | 288°                                    | Signal more westerly            |
| 20/09/2017 | 19:19 | 01:50            | WP 4.19                    | 44.789138 | -0.592787 | 282°                                    | In park 'Bois de Thouars'       |
| 20/09/2017 | 19:21 | 01:52            | WP 4.20                    | 44.789337 | -0.593530 | 280°                                    |                                 |
| 20/09/2017 | 19:26 | 01:57            | WP 4.21                    | 44.789416 | -0.595122 | 304° & 310°                             |                                 |
| 20/09/2017 | 19:29 | 02:00            | WP 4.22                    | 44.789880 | -0.596342 | 240°                                    |                                 |
| 20/09/2017 | 19:35 | 02:06            | WP 4.23                    | 44.789736 | -0.596641 | 320°                                    |                                 |
| 20/09/2017 | 19:37 | 02:08            | WP 4.24                    | 44.789657 | -0.597568 | 0°                                      |                                 |
| 20/09/2017 | 19:38 | 02:09            | WP 4.25                    | 44.789782 | -0.597730 | 30°                                     |                                 |
| 20/09/2017 | 19:39 | 02:10            | WP 4.26                    | 44.789818 | -0.597834 | 73°                                     |                                 |
| 20/09/2017 | 19:42 | 02:13            | Nest location              | 44.789903 | -0.597734 |                                         | Nest in oak tree directly above |
| 21/09/2017 | 09:05 |                  | Nest location              | 44.789903 | -0.597734 |                                         | Signal still at nest            |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(e) Hornet ID = White 61 (W61). Caught foraging at willow tree within INRA grounds on 20/09/2017. Hornet fresh weight = 0.401 g; PicoPip radio tag = 0.278 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                                      |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|------------------------------------------------------------|
| 20/09/2017 | 14:15 |                  | Capture location           | 44.789711 | -0.580578 |                                         |                                                            |
| 20/09/2017 | 16:21 | 00:00            | Release location           | 44.789469 | -0.580578 | 2°                                      | Flew back to capture location                              |
| 20/09/2017 | 16:25 | 00:04            | WP 5.2                     | 44.789670 | -0.580677 | 204°                                    | Seen W61 depart from willow tree and fly in 208° direction |
| 20/09/2017 | 16:30 | 00:09            | WP 5.3                     | 44.789157 | -0.581202 | 86°                                     |                                                            |
| 20/09/2017 | 16:32 | 00:11            | WP 5.4                     | 44.789131 | -0.580740 | 281°                                    |                                                            |
| 20/09/2017 | 16:35 | 00:14            |                            |           |           |                                         | Break while tracking W62                                   |
| 20/09/2017 | 17:30 | 00:14            |                            |           |           |                                         | Return to tracking W61                                     |
| 20/09/2017 | 17:30 | 00:14            | WP 5.5                     | 44.789506 | -0.580840 | 274°                                    |                                                            |
| 20/09/2017 | 18:09 | 00:53            | WP 5.6                     | 44.789756 | -0.580091 | 214°                                    | W61 tracked to cedar tree; no visual; tag snagged?         |
| 20/09/2017 | 18:10 |                  | Atlas cedar tree           | 44.789742 | -0.580093 |                                         | Tree location                                              |
| 21/09/2017 | 10:06 |                  | WP 5.7                     | 44.789742 | -0.580091 | (no signal)                             |                                                            |
| 21/09/2017 | 10:13 |                  | WP 5.8                     | 44.791636 | -0.575231 | (no signal)                             |                                                            |
| 21/09/2017 | 10:19 |                  | WP 5.9                     | 44.787902 | -0.576644 | (no signal)                             | Abandoned as lost                                          |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(f) Hornet ID = White 62 (W62). Caught foraging at willow tree within INRA grounds on 20/09/2017. Hornet fresh weight = 0.431 g; PicoPip radio tag = 0.280 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                  |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|----------------------------------------|
| 20/09/2017 | 14:15 |                  | Capture location           | 44.789711 | -0.580583 |                                         |                                        |
| 20/09/2017 | 16:12 | 00:00            | Release location           | 44.789469 | -0.580578 | 2°                                      | Flew back to capture location          |
| 20/09/2017 | 16:15 | 00:03            | Willow tree                | 44.789695 | -0.580566 |                                         |                                        |
| 20/09/2017 | 16:25 | 00:13            | WP 6.3                     | 44.789670 | -0.580677 | 70°                                     |                                        |
| 20/09/2017 | 16:36 | 00:24            | WP 6.4                     | 44.789440 | -0.580723 | 308°                                    | Flew over nearby building              |
| 20/09/2017 | 16:40 | 00:28            | WP 6.5                     | 44.790477 | -0.581124 | 252°                                    |                                        |
| 20/09/2017 | 16:41 | 00:29            | WP 6.6                     | 44.790581 | -0.581519 | 290°                                    |                                        |
| 20/09/2017 | 16:43 | 00:31            | WP 6.7                     | 44.790896 | -0.581659 | 224°                                    | Signal more easterly                   |
| 20/09/2017 | 16:52 | 00:40            | WP 6.8                     | 44.790414 | -0.582330 | 240°                                    | Signal from in Parc Sourreil           |
| 20/09/2017 | 16:56 | 00:44            | WP 6.9                     | 44.790208 | -0.582486 | 290°                                    |                                        |
| 20/09/2017 | 16:56 | 00:44            | WP 6.10                    | 44.790338 | -0.583148 | 140°                                    |                                        |
| 20/09/2017 |       |                  | Nest location              | 44.790149 | -0.582859 |                                         | Nest high in oak tree in Parc Sourreil |
| 21/09/2017 | 09:45 |                  | Nest location              | 44.790149 | -0.582859 |                                         | Signal no longer at nest               |
| 21/09/2017 | 09:51 |                  | WP 6.12                    | 44.790070 | -0.582946 | 183°                                    | Signal detected but changing           |
| 21/09/2017 | 09:53 |                  | WP 6.13                    | 44.789540 | -0.583118 | 167°                                    |                                        |
| 21/09/2017 | 09:53 |                  | WP 6.13                    | 44.789540 | -0.583118 | 62°                                     |                                        |
| 21/09/2017 | 09:58 |                  | WP 6.14                    | 44.789441 | -0.581920 | 332°                                    | W62 evidently moving                   |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(g) Hornet ID = White 69 (W69). Caught hawking outside beehive at the INRA apiary on 21/09/2017. Hornet fresh weight = 0.368 g; PicoPip radio tag = 0.285 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                       |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|-----------------------------|
| 21/09/2017 | 14:00 |                  | Capture location           | 44.787564 | -0.576039 |                                         |                             |
| 21/09/2017 | 15:43 | 00:00            | Release location           | 44.787762 | -0.575937 | 240°                                    | Flew to chestnut tree       |
| 21/09/2017 | 15:49 | 00:06            | Sweet chestnut tree        | 44.787677 | -0.576053 |                                         |                             |
| 21/09/2017 | 16:10 | 00:27            | WP 7.3                     | 44.787750 | -0.576179 | 293°                                    | Switched trees              |
| 21/09/2017 | 16:11 | 00:28            | WP 7.4                     | 44.787788 | -0.576400 | 126°                                    |                             |
| 21/09/2017 | 16:13 | 00:30            |                            |           |           |                                         | Break while return to lab   |
| 21/09/2017 | 16:56 | 00:30            |                            |           |           |                                         | Return to tracking W69      |
| 21/09/2017 | 16:58 | 00:32            | WP 7.5                     | 44.787857 | -0.576221 | 120°                                    | Signal to south-east        |
| 21/09/2017 | 17:00 | 00:34            | WP 7.6                     | 44.787533 | -0.575501 | 128°                                    |                             |
| 21/09/2017 | 17:07 | 00:41            | WP 7.7                     | 44.787075 | -0.574857 | 336°                                    | Signal from tree            |
| 21/09/2017 | 17:09 | 00:43            | WP 7.8                     | 44.787457 | -0.574979 | 203°                                    | W69 seen flying around tree |
| 21/09/2017 | 17:10 | 00:44            | WP 7.9                     | 44.787312 | -0.575102 | 190°                                    | Foraging?                   |
| 21/09/2017 | 17:11 | 00:45            | WP 7.10                    | 44.787196 | -0.575215 | 52°                                     | Foraging?                   |
| 21/09/2017 | 17:13 | 00:47            | WP 7.11                    | 44.787256 | -0.575008 |                                         | W69 seen flying around tree |
| 21/09/2017 | 17:15 | 00:49            |                            |           |           |                                         | Break while return to lab   |
| 21/09/2017 | 18:50 | 00:49            |                            |           |           |                                         | Return to tracking W69      |
| 21/09/2017 | 18:50 | 00:49            | WP 7.12                    | 44.785892 | -0.570021 | 223°                                    | Not at W32's nest location  |
| 21/09/2017 | 18:51 | 00:50            | WP 7.13                    | 44.785790 | -0.570436 | 2°                                      | Signal more north           |
| 21/09/2017 | 18:53 | 00:52            | WP 7.14                    | 44.786426 | -0.570537 | 326°                                    | Signal more north           |
| 21/09/2017 | 18:58 | 00:57            | WP 7.15                    | 44.786839 | -0.571537 | 278°                                    |                             |
| 21/09/2017 | 19:07 | 01:06            | WP 7.16                    | 44.787676 | -0.571738 | 30°                                     |                             |
| 21/09/2017 | 19:09 | 01:08            | WP 7.17                    | 44.788036 | -0.571357 | 229°                                    |                             |
| 21/09/2017 | 19:12 | 01:11            | WP 7.18                    | 44.788236 | -0.571883 | 132°                                    | Signal from private garden  |
| 21/09/2017 | 20:00 | 01:59            | Private garden             | 44.788455 | -0.571700 |                                         | No access to check for nest |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(g) (W69 continued).

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                                        |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|--------------------------------------------------------------|
| 22/09/2017 | 07:33 |                  | WP 7.20                    | 44.788106 | -0.571331 | 220°                                    | Signal still from same private garden                        |
| 22/09/2017 | 07:37 |                  | WP 7.21                    | 44.787733 | -0.571213 | 292°                                    | Signal still from same private garden                        |
| 22/09/2017 | 07:45 |                  | WP 7.22                    | 44.788914 | -0.572859 | 136°                                    | Signal still from same private garden; unable to gain access |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(h) Hornet ID = Green 2 (G2). Caught in hornet trap near St Savoir, Jersey on 26/09/2017. Hornet fresh weight = 0.47 g; Pip19 radio tag = 0.23 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                                   |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|---------------------------------------------------------|
| 26/09/2017 | 16:20 |                  | Capture location           | 49.185790 | -2.091615 |                                         |                                                         |
| 26/09/2017 | 17:52 | 00:00            | Release location           | 49.185690 | -2.091641 | 245°                                    | Initial orientation flight; then flew in 245° direction |
| 26/09/2017 | 17:54 | 00:02            | WP 8.2                     | 49.185688 | -2.091821 |                                         | Seen circling tree                                      |
| 26/09/2017 | 18:05 | 00:13            | WP 8.3                     | 49.185673 | -2.091934 | 260°                                    | Left tree and flew over wall                            |
| 26/09/2017 | 18:06 |                  | WP 8.4                     | 49.185654 | -2.092096 | (no signal)                             |                                                         |
| 26/09/2017 | 18:09 |                  | WP 8.5                     | 49.185730 | -2.093681 | (no signal)                             | Abandoned as lost                                       |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(i) Hornet ID = Green 4 (G4). Caught at bait station south of Durrell Zoo, Jersey, on 27/09/2017. Hornet fresh weight = 0.41 g; Pip19 radio tag = 0.28 g.

| Date       | Time  | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                                                             |
|------------|-------|------------------|----------------------------|-----------|-----------|-----------------------------------------|-----------------------------------------------------------------------------------|
| 27/09/2017 | 15:10 |                  | Capture location           | 49.225644 | -2.074863 |                                         |                                                                                   |
| 27/09/2017 | 16:18 | 00:00            | Release location           | 49.224035 | -2.070408 | 350°                                    | Released at wrong (not near capture) location in error                            |
| 27/09/2017 | 16:21 | 00:03            | WP 9.2                     | 49.224446 | -2.070860 | 50°                                     |                                                                                   |
| 27/09/2017 | 16:23 | 00:05            | WP 9.3                     | 49.224521 | -2.070597 | 37°                                     | Starts to rain; amongst trees                                                     |
| 27/09/2017 | 16:29 | 00:11            | WP 9.4                     | 49.224832 | -2.069843 | 216° & 228°                             | Light rain continues                                                              |
| 27/09/2017 | 16:33 | 00:15            | WP 9.5                     | 49.224610 | -2.070851 | 90                                      | Within trees at field edge                                                        |
| 27/09/2017 | 16:38 | 00:20            | WP 9.6                     | 49.224611 | -2.071013 | 290                                     | Conflicting signals; reflection?                                                  |
| 27/09/2017 | 16:51 | 00:33            | WP 9.7                     | 49.222967 | -2.066871 | 307° & 172°                             | Relocate for clearer signal                                                       |
| 27/09/2017 | 16:56 | 00:38            | WP 9.8                     | 49.222690 | -2.068691 | (no clear signal)                       | Heavy rain                                                                        |
| 27/09/2017 | 17:17 | 00:59            | Beech tree                 | 49.224673 | -2.070461 |                                         | Strong signal at beech tree                                                       |
| 27/09/2017 | 20:30 |                  | Beech tree                 | 49.224673 | -2.070461 |                                         | Heavy rain; still at beech tree; break for the night                              |
| 28/09/2017 | 07:38 | 00:59            | Beech tree                 | 49.224673 | -2.070461 |                                         | Renew tracking of G4                                                              |
| 28/09/2017 | 07:45 | 01:06            | WP 9.10                    | 49.224438 | -2.070498 |                                         | Signal from patch in meadow                                                       |
| 28/09/2017 | 07:45 | 01:06            |                            |           |           |                                         | Break to collect colleague                                                        |
| 28/09/2017 | 09:15 | 01:06            |                            |           |           |                                         | Renew tracking of G4                                                              |
| 28/09/2017 | 09:20 | 01:11            | WP 9.10                    | 49.224438 | -2.070498 |                                         | G4 found & collected from patch in meadow                                         |
|            |       |                  |                            |           |           |                                         | G4 dried & fed                                                                    |
| 28/09/2017 | 11:26 | 01:11            | WP 9.11                    | 49.225767 | -2.075194 |                                         | Released at correct (near capture) location; G4 refuses to fly; attempt abandoned |

**Supplementary Table 3 (continued). Tracked hornets' waypoint information.**

(j) Hornet ID = Green 5 (G5). Caught at another bait station south of Durrell Zoo, Jersey, on 27/09/2017. Hornet fresh weight = 0.46 g; Pip19 radio tag = 0.28 g.

| Date       | Time   | Tracked duration | Reference or waypoint (WP) | Latitude  | Longitude | Compass direction(s) of detected signal | Notes                                                       |
|------------|--------|------------------|----------------------------|-----------|-----------|-----------------------------------------|-------------------------------------------------------------|
| 27/09/2017 | 16:30. |                  | Capture location           | 49.222725 | -2.073565 |                                         | G5 held overnight in small cage with <i>ad libitum</i> food |
| 28/09/2017 | 11:42  | 00:00            | Release location           | 49.223419 | -2.073400 | 150°                                    |                                                             |
| 28/09/2017 | 12:07  | 00:25            | WP 10.2                    | 49.223203 | -2.073210 |                                         | Landed in grass/clover field                                |
| 28/09/2017 | 12:09  | 00:27            | WP 10.3                    | 49.223207 | -2.073204 | 146°                                    | Assisted & then flew off                                    |
| 28/09/2017 | 12:23  | 00:41            | WP 10.4                    | 49.222670 | -2.073128 | 190°                                    | South of capture location                                   |
| 28/09/2017 | 12:26  | 00:44            | WP 10.5                    | 49.222346 | -2.072862 | 346°                                    |                                                             |
| 28/09/2017 | 12:31  | 00:49            | WP 10.6                    | 49.222329 | -2.072873 | 56° & 203°                              | Confusing signals; swap Yagi antenna & Sika receiver        |
| 28/09/2017 | 12:44  | 01:02            | WP 10.7                    | 49.222314 | -2.072894 | 356°                                    | Clear signal                                                |
| 28/09/2017 | 12:45  | 01:03            | WP 10.8                    | 49.222608 | -2.072771 | 308°                                    | In trees; then moving away                                  |
| 28/09/2017 | 13:00  | 01:18            | WP 10.9                    | 49.224003 | -2.072936 | 3°                                      | Flowering ivy covered tree                                  |
| 28/09/2017 | 13:02  | 01:20            | WP 10.10                   | 49.224161 | -2.072950 | 183°                                    | Foraging on ivy?                                            |
| 28/09/2017 | 13:05  | 01:23            | WP 10.11                   | 49.224155 | -2.072948 | 42°                                     | G5 seen flying away from tree                               |
| 28/09/2017 | 13:10  | 01:28            | WP 10.12                   | 49.224415 | -2.072482 | 7°                                      |                                                             |
| 28/09/2017 | 13:13  | 01:31            | WP 10.13                   | 49.224609 | -2.072407 | 346°                                    |                                                             |
| 28/09/2017 | 13:25  | 01:43            | WP 10.14                   | 49.225832 | -2.072097 | 209° - 241°                             | Signal more south-west                                      |
| 28/09/2017 | 13:29  | 01:47            | WP 10.15                   | 49.225619 | -2.073572 | 72°                                     | Signal more east                                            |
| 28/09/2017 | 13:32  | 01:50            | WP 10.16                   | 49.225566 | -2.072885 | 73° - 127°                              | Signal more east                                            |
| 28/09/2017 | 13:34  | 01:52            | WP 10.17                   | 49.225517 | -2.072633 | 120°                                    | Signal from private garden                                  |
| 28/09/2017 | 13:42  | 02:00            | WP 10.18                   | 49.225406 | -2.072229 | 134° - 166°                             | Given permission to enter garden by owner                   |
| 28/09/2017 | 13:43  | 02:01            | WP 10.19                   | 49.225410 | -2.072080 | 232°                                    | Nest spotted                                                |
| 28/09/2017 |        |                  | Nest location              | 49.225433 | -2.072273 |                                         | Nest in silver birch in garden                              |