The Search for Inquilines in Wood Ant Nests

ROSEMARY WINNALL AND JOHN BINGHAM

"Ants, as is well known, are hostile to most living animals, including strange ants of other species and even of their own; but nevertheless a large number of creatures do manage to live in or near ants' nests. Such creatures when associated with, and not merely accidentally present with ants, are known as myrmecophiles." (Donisthorpe, 1927)

Wood ants *Formica rufa* are commonplace in the Wyre Forest, and yet there is still so much to discover about their life histories and associated mymecophiles. We have for some years recorded the beetles *Coccinella magnifica* (Scarce 7 Spot Ladybird) and *Clytra quadripunctata* around wood ant nests. We have even discovered the Shining Guest Ant *Formicoxenus nitidula* clambering around on the outside of the nests, but we have not before searched within the wood ant nest for creatures living (or lodging) there, animals known as inquilines.

On 10th March 2012, eight of us visited Postensplain to examine material from within two wood ant nests with the express aim of searching for inquilines. This was to be a trial attempt to find the best method with minimum disturbance to the ants.

We chose our first nest along a ride and on the edge of a conifer plantation at SO7386 7917. It was of medium size with a flattened top as it had not been maintained during the winter period when the ants are dormant at the bottom of the nest. It had an open aspect to the south-west and the ground around the nest was mostly bare soil covered with spruce needles. Conifer brash was present nearby from thinning two years earlier. Although early in the season, when we arrived at 10.30 wood ants were already massing on the top of the nest.

First a couple of logs were removed from the top of the nest and examined carefully, but nothing was found. Then a sheet of perspex was slotted into the nest (see photo) to protect one half whilst material from the other side of the nest was removed with a trowel and put into three buckets, keeping material from the top, centre and bottom of the nest separate.

Dividing the ant nest Rosemary Winnall

Small amounts of the nest material was either spread or sieved onto sheets that had been placed near to the nest, so that escaping ants could refind their nest easily. We found that the majority of nest material was made up of spruce needles. As some of the inquilines are very small, the nest material had to be examined extremely carefully, often with the aid of a small paintbrush and hand lens. Fauna was collected either with a pooter or a damp paintbrush. Then the debris was carefully returned to the nest.

To our surprise the wood ants were not aggressive in any way, and precautions we'd taken, such as taping sleeves of jackets and trouser legs were not necessary! Even gloves were not required! We realised that these ants were just emerging from their long winter dormancy and had not eaten for some months. They had no capacity for spraying formic acid or biting, and were completely docile! A similar undertaking in the summer months would be a very different experience!

Searching through nest material Rosemary Winnall

We were surprised to find very little in this nest material. There were some woodlice, all of which turned out to be *Porcellio scaber*, one centipede, a millipede, one beetle larva and three Staphylinid species. The latter were identified later by one of us (JB) as *Tachyporus hypnorum, Othius myrmecophilus* and *Oxypoda formiceticola*. They were all small and were only found after diligent searching.

A second medium-sized nest was examined in the afternoon. This was in a different location at SO7406 7914 under deciduous trees (oak, yew and birch) with an open aspect to the south-east and close to a path. This nest contained no conifer needles, and was a mixture of a many different materials included oak buds, small sticks, pieces of bracken, small gastropods, and even the empty tube of the Land Caddis *(Enoicyla pusilla)*. The ground was vegetated with much bramble and dead bracken. The sun was shining directly onto the nest and the ants were very active, but again quite docile.

The perspex sheet was not used to divide the nest on this occasion, as there was too much surrounding vegetation,


Cylindroiulus punctatus John Bingham

so a small trowel was used to dig into the nest from the top. A similar system for examination of material, collection of fauna, and replacement of the nest material was employed. We found that this nest contained a significant quantity of wood, well rotted, greatly eroded and hollowed out, and much of this disintegrated during the digging process.


A queen *Formica rufa* with workers Rosemary Winnall

Again, many isopods were found, all of which were *Porcellio scaber*. Other creatures were one pseudoscorpion, and again a few small Staphylinid beetles *Quedius brevis and Othius myrmecophilus*. Several *Formica rufa* queens were discovered and one was observed for a while in a tray where it was attended by a few workers (see photo above). No eggs or larvae were found. Several inquiline Shining Guest Ants *Formicoxenus nitidulus* were recorded within the nest material, making this the only recent spring record we have for this species in Wyre (see photo below).


Formicoxenus nitidulus, Shining Guest Ant Rosemary Winnall

This trial investigation was useful in various ways. We learnt that it was better not to use white sheets on which to examine the nest material as these were too bright in the sunshine and the darker sheets were much more comfortable to use. We should have taken a thermometer to measure the temperature of the nest surface and a probe thermometer would have been useful for the inside of the nest. We could have used a sweep net around the nests, especially when the nest was being dug in case flying insects were disturbed, and we should have measured the dimensions of the nests.


Tachyporus hypnorum John Bingham

It was surprising to find so many *Porcellio scaber* woodlice within the nests. Donisthorpe mentions this species as being commonly found, but not truly associated with the ants, unlike the small white woodlouse *Platyarthus hoffmanseggi* which we had been hoping to find.

Of the beetles found all were Staphylinids or Rove beetles. *Tachyporus hypnorum* is a common species that eats aphids and is found in grassy places generally. Its presence in an ants nest is not significant, and it was probably just using the woody debris as shelter. The largest beetle found in the ants nest was *Quedius brevis* which is a widespread species associated with *Formica rufa* and *Lasius fuliginosus* ant nests according to Donisthorpe, but also been found in *Formica sanguinea* nests at Bewdley (no doubt meaning Wyre Forest). It is seldom found away


Quedius brevis John Bingham

from ants nests and it breeds in nests with larvae found in May. It takes, kills and devours host ants especially if they are crippled or torpid. (Donisthorpe 1927). The two smallest beetles were identified with some difficulty. One was *Othius myrmecophilus*, widespread in distribution and commonly found in the nests of many ant species, and not just *Formica rufa*. The other beetle was *Oxypoda formiceticola*, commonly found in *Formica rufa* nests and runs amongst the ants causing no attention to itself. (Joy 1932) (Telfer 2012)

Cylindroiulus punctatus, the Blunt-tailed Snake Millipede is a common millipede, usually found under logs or loose bark in wooded areas. There are several similar species.

The pseudoscorpion was identified as *Chernes cimicoides* (still to be confirmed) which is common in woodlands amongst leaf litter. It can also be found under the bark of trees. Pseudoscorpions are tiny, secretive creatures and belong to the same class of animals as spiders - Araneae. There are 26 species living in Britain, 12 species are common.

Donisthorpe found 106 myrmecophiles associated with *Formica rufa*, so there is still plenty of work to be done. Our investigation should be repeated at different and warmer times of the year - if we are brave enough!


Othius myrmecophilus John Bingham


Oxypoda formiceticola John Bingham


Chernes cimicoides John Bingham

REFERENCES

Donisthorpe, H.,St.,J.,K. (1927) British Ants, their life-history and classification. Routledge

Donisthorpe, H.,St.,J.,K. (1927) The Guests of British Ants, their habits and life histories. Routledge

Joy, N. H. 1932 A Practical Handbook of British Beetles. E.W. Classey

Website ,The beetle fauna of Germany. http://www.kerbtier.de

Website of the Watford Coleoptera group; http://www.thewcg.org.uk/

Telfer 2012. Mark Telfer's beetle website; http://markgtelfer.co.uk/