

Rare Hornet Moth colony found at BGS Keyworth

A colony of these rare clearwing moths has recently been discovered on site at the British Geological Survey headquarters in Keyworth.



Figure 1 Adult male Hornet Moth with a wingspan of 45mm (left) and the slightly smaller, and much more widespread, Lunar Hornet Moth (right), which has also been recorded at BGS Keyworth. The main differences are the yellow face and the pair of yellow 'headlights' on the shoulders of the Hornet Moth.

The BGS headquarters site at Keyworth has been progressively rewilded in recent years and there is a committed team of staff that spend their free time generating projects to improve the site for biodiversity and recording all manner of nature found. During a recent survey for clearwing moths, a single Hornet Moth boring was discovered in the buttress root of a Lombardy Poplar tree. The Hornet Moth is a species of clearwing moth; three other clearwing species had already been recorded at the site attracted using pheromone lures, but the presence of the rare Hornet Moth (Figure 1) had not been suspected — even though there are several established poplar trees including Aspen, Lombardy and Black Poplar, which are all potential host trees.

This is only the third known site of a Hornet Moth colony in Nottinghamshire and there are fewer than 10 known in the East Midlands, the moth is classified as scarce nationally. This colony lies near the present northern limit of the Hornet Moth in Britain.

With the discovery of the first boring, closer examination of the bases of nearby poplars revealed a total of over 60 similar borings on five individual Lombardy and Black Poplar trees. The dense clusters of these borings almost give the appearance that the root-bole of the trees have been sprayed with bullets or resembles a Swiss cheese (Figure 2)! Part of an extruded Hornet Moth pupal case (Figure 2) was also found proving very recent (2023) activity in the colony. Subsequently, a single adult male Hornet Moth was attracted to a pheromone lure.



Figure 2 A complete extruded pupal case about 3 cm in length (left) and a cluster of borings at the base of a poplar (right).

In terms of lifecycle, adult Hornet Moths emerge to fly and mate in June and July each year. The females rarely fly far and deposit their eggs near the base of trees of their host species, which hatch into caterpillars (larvae) that then grow and develop for two to three years. During this time, they bore a tunnel up to 10 cm long into the base of the host tree. Finally, they move to the tunnel entrance and pupate before finally emerging as an adult moth. As they emerge, the moths extrude their larval case from the boring.

Pheromone lures

The use of pheromone lures to detect moths and clearwing species has taken off in recent years in Britain. Small rubber bungs or plastic vials (Figure 3) are impregnated with pheromones that match those released by the female clearwings to attract mates. These sources slowly release the chemical attractant, creating a plume of scent in a downwind direction. Once detected, the male flies to the source to investigate. The lures can be placed in muslin bags or into the basket in the roof of a trap (Figure 3). Pheromone lures have long been used in mainland Europe to capture pest clearwing species that infest fruit crops such as currants and raspberries. Their widespread use in Britain is more recent.



Figure 3. A camouflaged pheromone lure trap (left) and rubber bung and plastic vial lures impregnated with the pheromones (right).

Clearwing moths

Clearwing moths are named for their transparent wings, which resemble leaded stained-glass windows. In all there are about 15 species of clearwings found today in Britain and, with the recent increased use of pheromone lures, their distributions are becoming better defined. In addition to the Hornet Moth, the similar Lunar Hornet Moth (Figure1), which favours willow trees, has been recorded at BGS Keyworth. Both species are hornet mimics with bold yellow and black markings, but they lack the very narrow waists of true hornets between the thorax and abdomen and possess feathered antennae.



Figure 4 The currant clearwing (left) and red-tipped clearwing (right) moths have also been recorded at BGS Keyworth. These delicate moths have wingspans of 20-25mm, so they are much smaller than the two Hornet Moth species.

Two further clearwing species, the Red-tipped (another willow species) and the Currant, have been recorded at BGS to date (Figure 4). Lunar Hornet Moths and Red-tipped Clearwing are found along many of the willow-lined streams draining the Wolds of south Nottinghamshire north towards the River Trent and also along the Grantham Canal. Just such a stream is found immediately behind BGS Keyworth and is no doubt the home ground for these two species. The Currant Clearwing occurs widely, most commonly in gardens and allotments with currant bushes.

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