

Identification & Advisory Service

Classification

Class	Insecta
Order	Diptera
Family	Bombyliidae

Bee-flies

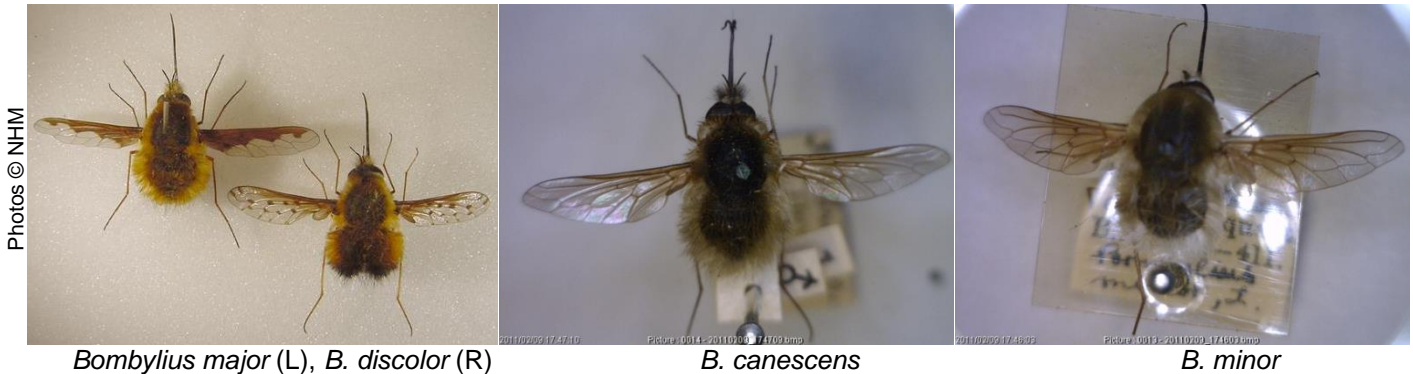
Bombylius sp.

In the British Isles, there are several species of hairy flies that resemble bees. The bee-like appearance is further enhanced by their swift, darting flight, which is usually accompanied by a shrill hum. Unlike bees however, flies have only a single pair of functional wings, whereas bees have two pairs, coupled together with minute hooklets. These bee-flies not only resemble bees, but the larvae of some species live in the nests of solitary 'mining bees'. These flies are harmless to man as they do not bite or spread disease-causing organisms.

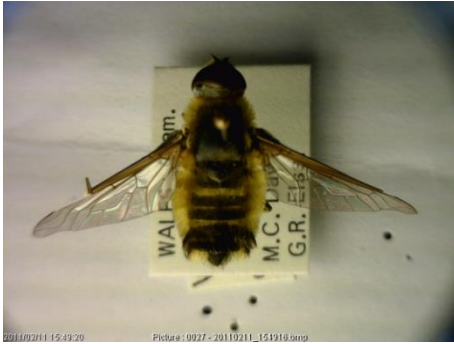
Identification

The commonest species of bee-fly throughout much of southern Britain is the **Large Bee-fly** *Bombylius major*, a spring species flying from late March to the end of May. This insect is most frequently found in open deciduous woodland and in large country gardens, but it also occurs sporadically on the coast. The wings are characteristically patterned, with a broad, chocolate-brown band extending along the leading edge of the wing from base to apex. The body is densely covered in rich brown hairs, but this colour fades and the hairs are easily abraded, old specimens often being partly bald. The proboscis or tongue is especially prominent, being long, projecting and non-retractable. The legs are also long and thin. This insect is often seen hovering before a flower of some low-growing plant such as primrose, bugle or violet, with the proboscis thrust deep into the flower in order to reach the nectar. Throughout feeding the wings continue to beat, and the delicate legs support the fly as it perches on the flower. At other times females are observed quartering the ground, particularly sparsely vegetated soil in its quest for the nests of mining bees.

The other *Bombylius* species found in Britain are *B. discolor*, *B. canescens* and *B. minor*, although none of these are common. *B. discolor* is another spring species, easily identified when at rest by its speckled wings and white stripe down the centre of its abdomen. The other two species have unmarked wings and fly from late May to July or August.



The remaining British bee-flies are *Phthiria pulicaria*, *Villa modesta*, *V. circumdata*, *V. cingulata*, *Thyridanthrax fenestratus* and *Anthrax anthrax*. These are all very uncommon or rare species. However, *V. modesta* is sometimes found in numbers on coastal sand dunes from June to September. *T. fenestratus* occurs mainly on sandy heathland in southern England; it is active from June to late August.

*Villa modesta**Thyridanthrax fenestratus**Phthiria pulicaria*

Distribution and habitat

B. major is the most common and widespread, active in early spring. It is found in a wide variety of habitats including gardens and the edges of woodlands. Its major requirement is the presence of the host species. Loss of host habitats therefore has a direct impact on the survival of this species. *B. discolor* is usually found in the southern part of England, and rare in the North. It parasitizes the larger solitary bees such as *Andrena* sp. which are active in the spring. *B. canescens* found in southern Wales and South-West England and are generally scarce across their range. *B. minor* is found in heathland, hence its common name the Heath Bee-fly.

Life cycle

British bee-flies attack the nests and apparently (one or two species) the adults of solitary bees and wasps. *B. major* attacks the nests of several species of 'mining bees'. When a nesting burrow is located, the fly hovers near the entrance and from time to time, dips the tip of its abdomen to the surface of the soil to lay the eggs. Larvae that subsequently hatch actively move into the bee nest, in order to feed on the bee larvae. The parasite remains inactive until the host larva is ready to pupate. The bee-fly larva then becomes a maggot-like ectoparasite and attaches to the outside of the host, sucking out the body fluids (hypermetamorphosis). The pupal stage is variable, but some will overwinter, with records in Britain and Sweden recording a quiescent stage that may last for two years.

Members of the genus *Bombylius* fly early in the year and are found from April to June in Europe, North America and some parts of Asia. Temperature determines the distribution and emergence of *B. major* and it will not fly in temperatures less than 17°C. The adults exhibit courtship rituals – males hover at height and exhibit territorial behaviour which includes darting at rival males and spinning at females.

Conservation

The survival of bee-flies depends on the conservation of their host species (bumblebees and solitary bees) and their habitats.

To find out more:

A blog entry about Bee-flies on NHM's website:

<http://www.nhm.ac.uk/natureplus/community/identification/blog/2011/04/07/body-of-a-bee-face-of-a-mosquito--spring-is-in-the-air>

Another blog entry, with photos of each bee-fly species:

<http://www.nhm.ac.uk/natureplus/blogs/diptera-blog/2011/04>

A key to the species of *Bombylius*, with good illustration:

<http://home.hccnet.nl/mp.van.veen/bombyliidae/bombylius.html>

Bombylius major – species of the day on NHM's website, with lots of information:

<http://www.nhm.ac.uk/nature-online/species-of-the-day/biodiversity/loss-of-habitat/bombylius-major/index.html>

"Bee mimic flies in to a garden near you" – article with photos and info on NHM's website:

<http://www.nhm.ac.uk/about-us/news/2011/april/bee-mimic-flies-in-to-a-garden-near-you96805.html>