

Magnolia pollination in Cornwall and Gwent

by John D. Carlson

I began this study of *Magnolia* pollination in Spring 1988, at the suggestion of Mr. N. G. Treseder, who said that he had never seen the beetles responsible for pollination in any Cornish garden. During this exercise I examined hundreds of magnolia flowers, some of them many times over. The situation turned out to be far more complex than I ever imagined. The first surprise was, at least as far as gardens in Cornwall and Gwent were concerned, the chief pollinators are not beetles, but various kinds of flies!

My wife and I first noticed this fact on a visit to Cotehele House in North Cornwall, in early April. The various trees of *M. stellata* and *M. × loebneri* contained small flies in the fully, partly, and unopened flowers. A few very tiny spiders were also seen at this time in some unopened flowers. We also noticed that both bees and flies were very much in evidence around two large, tree-like specimens of *M. × soulangiana*. More insect life was found in other specimens of *M. × soulangiana*, including a species of damselfly, which flew off too rapidly to be identified.

Our next visit was to Antony House at Torpoint in northeast Cornwall. Here we found the same small flies on *M. × soulangiana* as well as in opened and unopened flowers of *M. denudata* and *M. sprengeri*.

Our last visit in Cornwall was to Burncoose and South Down Nurseries. I soon found further examples of the same fly on *M.*

mollicomata, *M. × soulangiana*, and on some still receptive flowers of *M. × 'Caerhays Surprise'*.

I identified the two most common flies as *Bibio hortulanus* and St. Mark's fly, *Bibio marci*; in addition quite a few more insects have been identified at home in Gwent, south Wales. I should point out that the observations in Gwent were made almost exclusively on *M. × soulangiana*. Only one other type of fly was seen, namely the common blow-fly, although midges were very common at all times.

The four species of beetles seen were the wasp beetle (*Clytus arietis*), elm bark beetle (*Scolytus scolytus*), the carpet beetle (*Attagenus pellio*) and the weevil (*Curculio nucum*).

Two spider species were also identified. *Diaea dorsata*, which was seen a number of times, and a rather rare spider, *Misumena vatia*, which I only saw once, lying in wait for its prey, perched on the gynoecium of an open flower of *M. × soulangiana*. This spider has the remarkable ability to change color. On the occasion I saw it, the spider was pure white, to match the color of the flower tepals it was on. It is also able to change to green or to yellow to suit its surroundings.

One of the beetle species that I was unable to identify positively was possibly the furniture beetle, which is reputed to eat pollen on occasion. On many occasions I saw large numbers of very small flies and beetles which I could not identify. On a few occasions I was lucky enough to see the flies *Bibio hortulanus* and *Bibio marci* with

some midges on receptive stigmas with pollen actually on their bodies. According to my insect identification books both of these flies are important pollinators of fruit trees.

Rather surprisingly, I did not observe any beetles until the magnolias had been flowering for some time, in fact, I had despaired of seeing them at all. They were never numerous, and can only account for one or two percent of pollinations, by my calculations. By contrast the flies appear to be responsible for something like ninety-five percent of pollinations.

A further point of interest, noted in Cornwall and Gwent, was that

some *M. × soulangiana* and *M. stellata* flowers were still receptive when sufficiently open to allow larger insects, such as bees, to enter. Later whilst quite a few *M. × soulangiana* flowers were still opening, the number of insects of all kinds seemed to decline greatly. This point seems strange to me, and I feel it must have some effect on the pollination of later flowers.

One final point I must make is that in the case of the bees, flies, and midges, I can say with certainty that these were not one-off visits. I observed the insects hovering around the magnolias in question, going from one flower to another flower.

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