

Furry Feet in the Forest

MICK BLYTHE

No, not hobbits. Flies!

On the 22nd of September 2007 in Longdon in the Wyre Forest I collected four very small black flies about three millimetres long from the low canopy of an isolated scrubby oak tree standing next to the main track. They caught my attention as they ran about inside the collecting tube as their front legs were covered in long, beautiful hairs which made them look almost like feathers. They were *Rhamphomyia hirsutipes*, flies belonging to the family Empididae.

Empids (sorry, I should say empidids!) are small to medium sized predaceous flies, usually with long stabbing and sucking mouthparts which are used to suck the juices out of their insect prey. However many empidid species have partially abandoned a predaceous life and the females in particular are often nectar feeders. They may even act as agents of pollination, especially of fruit trees in spring. Empidid males typically swarm and couple with the females in mid-air. During the process they may pass the female an item of prey, either as a love-token or a protein-rich contribution to the family budget. In many empidids this token has become ceremonial and the female does not actually eat it.

Also present in the same net were four males and four females of another empidid, *Rhamphomyia erythropthalma*. (Sorry about the name!) These two species are frequently found together. *Rh. erythropthalma* is almost identical to *Rh. hirsutipes*, except that its legs are more skinny and without the lovely long hairs. In *Rh. erythropthalma* both the males and the females have skinny legs. However in *Rh. hirsutipes* the female has never been found. The hairy-legged flies are always male. It is suspected, in fact, that *Rh. hirsutipes* is not a separate species at all but a polymorphic form of *Rh. erythropthalma*.

Polymorphism is when a species exists in two or more different forms in the same place at the same time. The two or more forms are sharply differentiated; in other words there are no intermediates merging them together, and they occur at the same time so they are not seasonal varieties. The several forms are maintained by natural selection acting on a genetic mechanism in such a way that the rarer ones do not disappear but are maintained in a relatively stable ratio.

Polymorphisms are very common, probably universal. They are most obvious in showy, brightly-coloured

organisms such as moths, ladybirds and banded snails where the polymorphism affects their appearance. The Harlequin ladybird has so many different colour varieties that it can be a nightmare to identify! Plants have polymorphisms as well; thrum-eyed and pin-eyed primroses are an example of a polymorphism which aids pollination. There must be many more hidden polymorphisms such as the human blood groups which are more likely to be overlooked.

The polymorphism in *Rh. erythropthalma* is sex-controlled, showing an obvious effect only in the male. Sex-controlled polymorphisms of this type are well-known in certain butterflies, for instance the dirty-white variety of the Clouded Yellow butterfly is a polymorphism shown only in the female. There is evidence that the



Rhamphomyia hirsutipes

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white females develop more quickly and mature earlier, but these advantages are countered by the fact that they are less preferred by the males and so mate less often. The balance of advantage and disadvantage is likely to help to maintain the polymorphism.

The adult flies of *Rh. erythropthalma* are to be found from August to October and the two polymorphic forms have been recorded throughout Great Britain from the south coast to Scotland. It would be interesting to find out more about them. Are all its populations polymorphic for the hairy-legged form? What is the proportion of hairy-legged to skinny-legged males in the polymorphic populations? Does the proportion vary from place to place or from time to time according to environmental conditions? Where are its larvae to be found? And has anyone actually seen a hairy-legged male mating with a skinny-legged female?