

Recent Changes in Worcestershire Diptera

MICK BLYTHE

Several species of fly have increased their recorded range in the West Midlands over the last decade. It is not always obvious whether this is due to climatic change or to an increase in recording effort, though both these things appear to have happened. The most noticeable climatic change since 2000 has been a succession of very mild winters (see the mean Central England Temperature Annual anomalies 1772-2009 on the MET Office website.) The summer temperatures have not been particularly exciting. It will be interesting to observe the effects of the more severe cold snap of 2009-10.

Most of the species in which the range extension has been noted have been hoverflies (Diptera: Syrphidae), probably because they are relatively conspicuous and popular among naturalists and are therefore frequently recorded. Similar changes may well be occurring in other groups of flies but are more likely to pass unnoticed. New species of fly are regularly recorded for Worcestershire but it is usually difficult to distinguish between new arrivals and previously overlooked species. *Sphegina sibirica* (Syrphidae) appears to be a recently-arrived species in Worcestershire. Worcestershire Biological Recording Centre (WBRC) have not yet recorded it, but the NBN Gateway website has a record from the Wyre Forest for 2005! It is a distinctive species, first recorded in Scotland in 1994 (Stubbs, 1994). *Platycheirus splendidus* (Syrphidae) is another species which is almost certainly present in Worcestershire but has not yet been recorded. In this case it has only recently been separated from *P. scutatus* (Rotheray, 1998).

Population size is not so easy to measure, so it is not clear whether these species are becoming more numerous as well as increasing their range. Butterfly Conservation, the acknowledged experts in the field, have proposed adding six easily recognised hoverfly species to their long-running butterfly transects. A similar project is also being considered by the Hoverfly Recording Group.

Changes in phenology may also be linked with climate change. The Hoverfly Recording Group is particularly interested in very early records of two species, *Epistrophe eligans*, a common pollinator of fruit trees, and *Leucozona lucorum* (both Diptera: Syrphidae). *E. eligans* may appear as early as March, but our earliest record is May 1st (Peter Garner, 1990). Our earliest record for *L. lucorum* is May 15th (1977, Owen Wilson). Clearly our recorders will have to get moving much earlier in the year!

Volucella zonaria (Diptera: Syrphidae)



Volucella zonaria

Kevin McGee

This large hoverfly, the largest UK species, was restricted to the south-east corner of England and the south coast for most of the 20th century. However shortly before the year 2000 it began to spread rapidly northwards and westwards. Morris and Ball (2005) give an excellent and detailed account of its progress. It was first recorded in Worcestershire in 2004, but it is still not common here; with only 8 records in the WBRC database. All our records are from July and August, peaking in August.

Volucella zonaria, as may be seen from the photograph, is an excellent hornet mimic. Its maggot is found in the nests of social wasps, usually *Vespula* species, where it is thought to be a general scavenger.

Volucella inanis (Diptera: Syrphidae)



Volucella inanis

Kevin McGee

V. inanis is another large hoverfly which is spreading northwards from a stronghold in the south-east of

England. It has been recorded in Worcestershire from 2002 onwards and the WBRC database now has 52 records. Its maggot is also found in the nests of social wasps and is thought to feed ectoparasitically on the wasp grubs. The database records range from June to September peaking in August.

Rhingia rostrata (Diptera: Syrphidae)



Rhingia rostrata 16th August 2007

Rosemary Winnall



Rhingia campestris

Harry Green

In the Provisional Atlas to the Syrphidae (Ball and Morris, 2000) *Rhingia rostrata* is referred to as a "rare and enigmatic species", highly irregular in its incidence, and usually seen visiting woodland flowers. The atlas shows the stronghold of the species to be the SE of England, particularly Kent, but with a scattering of records through the Severn Valley and Wales. David Iliff (2004) recorded a large population increase from the Cotswolds northward along the Severn valley through Gloucestershire between 2000 and 2002. However Harry Green (2001) reported the species as widely distributed in Worcestershire. Nigel Jones (2006) reports a large increase in the species in the Welsh Marches. The evidence suggests an increase in existing populations

rather than an expansion into new areas. The species is not difficult to overlook in view of its close resemblance to the common *Rh. campestris* (see photo) but David Iliff is confident that in Gloucestershire at least the increase is a real one.

Sturmia bella (Diptera: Tachinidae)



Sturmia bella, September 2009

Rosemary Winnall

On 9 September 2009 the Wyre Forest Study Group recorded *Sturmia bella* for the first time in the Wyre Forest, from a grassy flush under deciduous trees in Longdon. However it is likely to have been present in Worcestershire well before that as suggested by the dearth of Small Tortoiseshell butterflies (*Aglais urticae*) in recent years.

S. bella is a parasitic fly, a parasitoid of butterfly caterpillars of the family Nymphalidae. It was first recorded in the UK in Hampshire in 1998 (Ford et al, 1998) from a Peacock caterpillar (*Inachis io*), and spread rapidly along the south coast. Allan (2004) recorded very high infection rates among Small Tortoiseshells in Dawlish, Devon, 2003, and Dorset, 2004 with rather lower infection rates among Commas (*Polygonia c-album*). Since then the parasite has been spreading rapidly northwards.

Tachinids are often attracted to the host by chemicals released from the damaged food plant. *S. bella* lays its tiny eggs amongst the glandular hairs on the underside of nettle leaves, and the eggs are subsequently ingested by the host caterpillar along with the leaf. The egg hatches in the gut of the caterpillar and the maggot presumably penetrates the haemocoel of the host. This would appear to be a rather expensive and inefficient method of attacking a solitary host caterpillar, but extremely efficient and cost-effective when used against a colony. This

may help to explain the vulnerability of the Small Tortoiseshell, whose caterpillars aggregate in dense spiny masses to discourage attacks by birds (Carrick, 1936) as compared to the rather more solitary Commas. The nettle plants are often reduced to skeletons, ensuring a high take-up of the eggs, and multiple parasitism occurs regularly. The Peacock is another vulnerable host, and Peter Chandler (2001) has recorded *S. bella* from a Meadow Brown (*Parage aegeria*, now reclassified as a nymphalid).

The fly maggot usually waits for the host caterpillar to pupate before emerging, and lowering itself from the pendulous pupa by means of a fine thread. The adult fly usually emerges in the autumn and must presumably hibernate until host caterpillars are once more available in the new year.

Butterfly Conservation are encouraging our local naturalists to breed Small Tortoiseshells and other nymphalids, to record the survival and infection rates and retain emerging parasites for identification. It would be wrong to assume that any fly emerging from a nymphalid pupa is *Sturmia*. At least five more tachinid species parasitize Small Tortoiseshells, but most of these lay their eggs directly onto the back of the caterpillar and their infections are more sporadic when compared with *Sturmia bella*. *S. bella*, as a recent arrival, is not in the standard identification manual (Belshaw, 1993) but it may be identified using Chandler, Ford and Falk (2001), and there are excellent photographs of it by Chris Raper on the website of the Tachinid Recording Scheme (www.tachinidae.org.uk).

REFERENCES

- Allen, A. A. (2005) The recent occurrence of *Sturmia bella* (Meigen) (Diptera: Tachinidae) in south-west England, including rearings from two host species of Nymphalidae. *British Journal of Entomology and Natural History* 18 (4): 269-271.
- Belshaw R. (1993) Tachinid Flies. *Handbooks for the Identification of British Insects* 10 (4a(i)); R. ent. Soc. Lond.
- Ball, S. G. and Morris, R. K. A. (2000) *Provisional atlas of British hoverflies (Diptera, Syrphidae)*. Huntingdon Biological Records Centre.
- Ball and Morris (2006) Britain's biggest hoverflies – the genus *Volucella*. *British Wildlife* 17 (4): 249-256.
- Carrick, R. (1936) Experiments to test the efficiency of protective adaptation in insects. *Transactions of the Royal Entomological Society of London* 85: 131-140.
- Chandler, P., Ford, T. H. and Falk, S. (2001) *Blepharipa schineri* (Mesnil) new in Britain and notes on recent additions to the British Tachinidae (Diptera). *Dipterists Digest* 8: 11-17.
- Clemons, L. (2001) Apparent recent abundance of *Rhingia rostrata* in Kent. *Hoverfly Newsletter* 32: 8-10.
- Frankum, N. (2002) *Volucella inanis* new to Leicestershire. *Hoverfly Newsletter* 33: 9.
- Grayson, A. (2006) *Volucella inanis* and *V. zonaria* in Yorkshire, plus notes on other species. *Hoverfly Newsletter* 41:
- Green, G. H. (2001) The *Rhingia* twins in Worcestershire. *Hoverfly Newsletter* 31: 2-3.
- Green, G. H., McGee, K. and Westwood, B. (2003) *Volucella inanis* reaches Worcestershire. *Hoverfly Newsletter* 35: 8.
- Iliff, D. (2000) *Rhingia rostrata* found on the Cotswolds. *Hoverfly Newsletter* 30: 5-7.
- Iliff, D. (2001) *Rhingia rostrata* in the Cotswolds: Update. *Hoverfly Newsletter* 32: 10-11.
- Iliff, D. (2002) First record of *Volucella zonaria* in North Gloucestershire. *Hoverfly Newsletter* 33: 10.
- Iliff, D. (2004) Dramatic increase in *Rhingia rostrata* in Gloucestershire since 2000. *Hoverfly Newsletter* 38: 6.
- Jones, N. (2006) A dramatic increase in records for *Rhingia rostrata* in Welsh Marches area. *Hoverfly Newsletter* 42: 8-9.
- Morris, R. K. A. (2004) Testing the range of *Volucella inflata*. *Hoverfly Newsletter* 38: 9-10.
- Morris, R. K. A. and Ball, S. G. (2003) The changing distribution of *Volucella inanis* (L.) (Diptera: Syrphidae). *British Journal of Entomology and Natural History* 16 (4): 221-227.
- Morris, R. K. A. and Ball, S. G. (2005) Sixty years of *Volucella zonaria* (Poda) (Diptera: Syrphidae) in Britain. *British Journal of Entomology and Natural History* 17 (4): 217-227.
- Perry, I. (1998) *Sphegina sibirica* Stackelberg (Diptera, Syrphidae) in the Central Highlands of Scotland. *Dipterists Digest* 5 (1): 8-9.
- Roper, P. (2000) *Volucella inanis* "stalking" a wasp's nest. *Hoverfly Newsletter* 29: 4-5.
- Rotheray, G. E. (1998). *Platycheirus splendidus* sp. n. from Britain, formerly confused with *Platycheirus scutatus* (Diptera, Syrphidae). *Entomologists Gazette* 49: 271-276.
- Wetton, B. (2002) *Volucella inanis* in Nottinghamshire. *Hoverfly Newsletter* 33: 8.
- Wilkins, P. (2002) *Volucella inanis* in Northamptonshire. *Hoverfly Newsletter* 33: 8.



Volucella zonaria

Kevin McGee



Small Tortoiseshell 24th August 2008

Rosemary Winnall