



Wyre Forest Study Group

Worcestershire Entomological Day 2008

MIKEBLOXHAM

Lepidoptera - Saturday 1st November, 9.30 am – 4.30 pm. Chairman for the day: Professor Susan Limbrey

It is important to regularly revisit this important and popular insect order, because during recent years, there has been much concerted effort by a sizeable group of recorders to discover much more about both the distribution and also the precise ecology of a large number of species. The ongoing success of Butterfly Conservation both in attracting and retaining funds by virtue of partnerships with a wide range of different organizations, is also readily apparent. To this end, Entomological Day invited a wide range of speakers to explore different aspects of the lives of butterflies and moths and to outline some of the latest initiatives with regard to species conservation. Unfortunately our county moth recorder Dr Tony Simpson (who has put in so much work on Worcestershire Lepidoptera over the years) was unable to be with us on the day, but an audience of about 50 enthusiastic Study Group members and visitors was able to enjoy a most interesting set of talks.

THE BACK TO ORANGE PROJECT

Dr Jenny Joy – presented by Rosemary Winnall

We were unfortunate that on the day, Dr Jenny Joy was unable to be with us to give her keynote lecture, but it was our good fortune that Rosemary Winnall was able to step up and present it for her. This was appropriate because she is on the board of Grow With Wyre and has been involved with some of the fieldwork for Back to Orange during the last year.

Dr. Jenny Joy is the West Midlands Senior Regional Officer for Butterfly Conservation and sits on the board of Grow With Wyre – the Wyre Forest Landscape Partnership Scheme. Back to Orange is one of the scheme projects operating with grant monies from the SITA Trust and HLF, and it aims to bring about habitat restoration work, research and monitoring of Lepidoptera. Jenny has been studying Pearl-bordered Fritillaries in the Wyre Forest since 2002.

Wyre Forest (2634 hectares) is one of the largest areas of woodland on an ancient site, in Britain. It is the remnants of a great wood that once stretched along the Severn Valley from Worcester to Bridgnorth and retains many rare animals and plants. Its impressive list of butterfly and moth species includes nearly half the number recorded in this country.

The 'Back to Orange' Project

This three year project has been funded by the SITA trust (using landfill tax donations) via its 'Enriching Nature' fund to help conserve the fritillary butterflies for which the Forest is so well known. Some £74,000

of funding is being used for essential restoration work in six special areas to maintain fritillary strongholds for future generations.

The Project is actually part of a larger partnership initiative called 'Grow With Wyre' (with the Forestry Commission as lead partner) which is a £3.8 million scheme funded by the Heritage Lottery Fund which will help many local organizations and specialist groups deliver 18 varied projects over the next three years. A brief look at the Grow With Wyre scheme (with outline map of the area) was necessary for the audience to gain a full idea of its scope.

- **Habitat protection and restoration:** to include work on special trees and hedgerows, orchards, forest management, grazing animals, provision of a deer larder, and monitoring and management for Lepidoptera through 'Back to Orange' (the main subject of this talk).
- **Landscape character and heritage:** the creation of an archive and recording centre, historical research and interpretation, restoring Knowles Mill and Coopers Mill.
- **Sustainable Energy:** the development of a sustainable wood-fuel energy project.
- **Education and Skills:** the building of a new Community Discovery Centre, developing a volunteer programme and increasing learning opportunities.
- **Access:** improving rights of way.

Butterfly Conservation in the Wyre Forest

Following this important introductory section, we had a retrospective look at the involvement of Butterfly Conservation in Wyre. Two butterfly transects set up in 1989 are still in use and advice has been continually given on survey, monitoring and habitat management. As a result of this seminal work, Wyre can be confirmed as a stronghold of our nationally important butterflies and moths. The introduction of Wyre Forest Lepidoptera Liaison Meetings twice a year in 2003 (at the instigation of Jenny Joy) has been a significant recent development.

That the transect data from Wyre has enduring value can be seen by inspection of the results. Silver-washed Fritillary counts have recorded peaks and troughs but the capacity of the butterfly to bounce back to good numbers seems proven (see also Dave Grundy's lecture comments) making this the strongest regional site.

The true status of the Pearl-bordered Fritillary here has always been a subject of debate. Wyre ranks as one of the top 5 national sites for it. With regard to an apparent decline demonstrated in the earlier fixed transect results, the matter of where and how they are monitored



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came up for discussion. For this reason a series of timed counts were set up in 2003. These involved walking at a given rate over a set area for a given time and were more flexible than a set transect walk. Results from seven different sites have provided potentially valuable ecological clues about the butterfly.

So what will 'Back to Orange' deliver?

It will enable a three year survey, monitoring and research programme on key Lepidoptera, allow management work to be carried out in six areas of the forest, and hopefully result in many more local people becoming interested and involved in surveying and monitoring for Lepidoptera.

Four key work areas include the compilation of a records database, a survey and monitoring programme, a 'Plantations on Ancient Woodland Sites' (PAWS) initiative and a project to assess the long-term open space requirements of key Lepidoptera.

The records database will show record coverage from the start to end of the project with the production of maps to demonstrate achievement and inform survey effort.

The research, survey and monitoring programme is already involving baseline vegetation and Lepidoptera investigations at several levels. The input of money has enabled production of an important baseline report ('Monitoring of ground flora in rides and clearings prior to liming, bracken treatment and/ or tree thinning' by Kate & Rob Thorne). Assessment of the liming requirements on given sites has been made. Old deer lawns used to be limed and had a good flora - the current project will probably involve small areas only and aims to raise the pH to gain a more diverse plant community for nectaring. Liming will take place only on areas where the ground flora is very poor. Hurst Coppice Powerline (photographed by Phil Rudlin) was presented as an example of a pilot scheme where this treatment has now been applied.

The PAWS work is as yet in its infancy but the monitoring of Lepidoptera has already produced plenty of information on key species. An updated general assessment is provided in the report on Dave Grundy's talk. The audience was fascinating to learn that he had explored the use of a 'cherry-picker' hoist to get moth traps into the tree tops (with thanks to funding by Back to Orange and help from the Forestry Commission)!

We were reminded that work on one key work area - assessment of long-term open space requirements of key Lepidoptera - has yet to start.

The lecture concluded with an overview of a number of Forest sites where activity associated with the Back to Orange Project was taking place. Much work is in progress with regard to opening up plantation areas and improving corridors. We saw pictures of developments along the Pipeline, the Roxel boundaries and the Longdon area in general.

In summary the project has already made significant inroads into investigations on key Lepidoptera. It is promoting work to improve Lepidoptera habitats in six areas of the Forest and it hopes to shortly see increased involvement in its activities from a wide range of interested people.

RARE MOTHS AND BUTTERFLIES OF THE WYRE FOREST

Dave Grundy

Dave Grundy has not only become a key worker on regional Lepidoptera during recent years, but has also been involved in a number of special projects in the Wyre Forest which have given him both good opportunities to study the records of the rarer butterflies and moths and also time to go in search of some himself.

The audience was reminded that Wyre Forest is currently the fifth best recorded site for these insects in the British Isles. In 2008 the species total stands at 1206 with 56,000 records currently on scheme databases and many more awaiting entry. There are 1500 species recorded for the premier site - the New Forest - and an amazing 1200 species have been reported from a private garden of John Radford in Walberton in Sussex. Location and size of a site are indeed important factors, but the outstanding diligence on the part of certain recorders suggests current data still gives us little insight towards understanding the larger picture with regard to distribution of our butterflies and moths.

Dave commenced his review of Wyre rarities (Nepticulidae and Incurvariidae) by noting that the rare *Stigmella mespilicola* continues to be found mining the Wild Service in a few locations and *Lampronia fuscata* which galls birch (causing a conspicuous swelling in the twig at a node) has now been recorded 3 times in Wyre.

An interest in clearwings has recently seen the use of pheromones at a number of British locations recently and this has led to a slightly better picture of their activity. Diligent searchers have added 39 records of the Yellow-legged Clearwing to the forest list in 2008.

Inspection of oak trunks may reveal emergence holes and end pupal remnants. Another good find was a single White-barred Clearwing.

A return to smaller moths (Glyphipterigidae to Oecophoridae) suggested that *Glyphipterix forsterella* was still swept in small numbers from rushes and sedges and there had been two recent new records of the rare *Schiffermuellerina grandis*. This moth is usually associated with veteran oaks. A study of cleared and felled areas of the forest had revealed *Oecophora bractella* an uncommon micro-moth also associated with ancient forests and several observers have been fortunate to see *Esperia oliviella*.



Esperia sulphurella

Rosemary Winnall

The butterflies of the forest continue to be assiduously recorded. Of the skippers, the inexperienced observer is still likely to encounter problems with the Small and Essex because the black underside of the terminal antennal segment of the latter has to be clearly seen. In recent years we had a good record for it in 2005. With regard to the Dingy and Grizzled Skipper, both can be found along the pipeline, but there is some alarm about recent management practice that may be causing a decline in numbers. The Wood White, alas, is not nearly as widespread as it was in the past. There appears to be one surviving colony at Postensplain. Observers might well concentrate on looking for eggs which are laid on Greater Birds-foot Trefoil and also Bitter Vetch. The Small Pearl-bordered Fritillary (UK BAP) population probably remains relatively stable but in small numbers and isolated individuals may be seen roaming through the Forest; the 2007 Silver-washed Fritillary counts, however, provided 256 sightings suggesting that this magnificent insect is still reasonably frequent.

In reviewing Drepanidae, Dave drew special attention to the Oak Lutestring - a UKBAP research species.

Occasional specimens can still be found in August, but the suspicion is that the national decline in numbers continues. In contrast, the Devon Carpet (*Lampropteryx otregiata* - Geometridae) is a scarce species that appears to be expanding its territory in recent years. It was added to the Wyre list in 2002. Other geometrids such as the Argent and Sable appear now to have been completely lost to the Forest, having no recent records. Of the pugs, Lead-coloured Pug can still be found associated with Cow-wheat in June and the Bilberry Pug retains a reasonably good foothold. 2007 saw the second record of the Nationally Scarce Waved Carpet in damp valley woodland, whilst another scarce close relative, the Drab Looper (UKBAP priority species) although present, is an enigmatic moth - what is its true flight period? Currently it seems very variable. It may have several different foodplants. It is encouraging that Bilberry in the Forest can still provide surprises - Little Thorn (*Cepphis advenaria*) provided an addition to our list in 2008. The Orange Moth appears to have declined in numbers recently and uncertainty also clouds the current status of the Nationally Scarce Great Oak Beauty.

With regard to Sphingidae, the prize for 2008 must go to Denise Bingham, who found a specimen of Narrow-bordered Bee Hawk during 2008 (photographed by John Bingham - see his article in this Review). All workers ought to keep a watch for this Nationally Scarce insect during 2009.

Of the Arctiidae, the Scarlet Tiger (Nationally Scarce) was a newcomer to Wyre in 2005. Of Noctuidae, Neglected Rustic is of special interest, studies indicating the grey-brown variety as being the common one in the Forest. The Nationally Scarce Silver Cloud is pretty frequent in Wyre light trap catches but remains elusive elsewhere. The Angle-striped Sallow, both resident and migrant, is still found, whilst the Waved Black, with larvae in rotting wood, seems best sought for in Bell Coppice. This is another moth which saw a considerable expansion through Britain after the Second World War. In contrast to Beautiful Snout, records for its close relative the Nationally Scarce Buttoned Snout are limited to 2 records before 1908.

It was appropriate that the speaker closed his review of species with some data on the Common Fan Foot. The subject of one of his special studies, it is a Nationally Scarce UK BAP Priority Species with a population that has undergone a steep decline in recent times. Typically found in dense Woodland by Dowles Brook, 2006 records gave the first indications that the situation may be slightly improving for this moth.



Scarlet Tiger (*Callimorpha dominula*)

Rosemary Winnall

The talk concluded with Dave Grundy issuing a challenge. Where are the rare and scarce species? We still have data on very few of them. We need new volunteers to step forward so we can site extra transects and explore the Forest more closely. We may also be able to influence the public to help with the problem of random butterfly and moth release which remains a threat to any scientific work on Lepidoptera evaluation in the Forest.

BUTTERFLY MONITORING: A PERSONAL VIEW

Owen Tudor

Owen Tudor has been studying butterflies for many years and has published papers about his research in the Wyre Forest. His extensive recording and survey experience enables him to provide valuable insights into the importance of data collection and long-term study.

Owen Tudor is well known regionally as a naturalist of many parts. He has had success as an author on Lepidoptera and has been quite obsessive in his study of butterflies. The foundations of his work began when he was a youngster in the 1940's. He enjoyed early experience in getting to understand the behaviour of butterflies and moths by setting up screens with light sources such as car headlights and made early acquaintance with sugaring methodology. The obsession extended into gardening and landscape where he would be always be on the watch for his quarry and an over riding interest in numbers developed in that he would count and note down the species and the exact numbers present at each observation point. He observed that attaining high levels of recording skill is a slow process and this led to diversification of the orders he studied - dragonflies being a case in point. His interest was noted by the school lab technician who made up cyanide killing bottles for him. Conversations and communications with leaders in the field such as Newman and Ford soon ensued and he

was delighted when Ford made reference to one of his articles - a great honour in those days. Ford combined supreme skills both as a taxonomist and a philosopher, especially on the origin and establishment of species over time. These early days saw Owen visit the Forest by train and his teens saw extensive sugaring experiments there - in fact he has just achieved the remarkable record of having made several thousand recording visits to Wyre. His career as a student was not straightforward, in that he was attracted to take up studies at Imperial College and also Birmingham (he was greatly interested in the work of Yapp) but could not convince himself that the courses on offer were able to meet his needs. Nottingham provided an agreeable alternative, where capture/recapture studies were amongst his interests.

During this period his interest in techniques for observation and estimation of Lepidoptera never waned - he decided that the observation area is always critical. He experimented with a 10 metre 'box' and developed a precise measurement regime for a set of phenomena he saw as critical. A set of observations might take place at an exact location at a set time for a set period. Temperature would be measured using an array of thermometers placed in a variety of locations within the study area, An anemometer measured wind speed. A hygrometer was used and a light meter was also an essential. The emphasis on species and numbers was always a priority during such sessions. Other activity involved a selected species 'watch' to record it as flying, sunning, nectaring or ovipositing etc. Binoculars could be very useful here. Later work in butterfly conservation saw him regularly using the familiar 5 metre box (see United Kingdom Butterfly Monitoring Scheme publications).

The impressive array of data obtained had to be intensively studied to see if any outcome was apparent - if anything seemed of special note, extra experiments focused on a particular phenomenon might ensue. A surprising number of things did influence behavior and it became apparent that individual species responded in subtle ways to changes in field conditions.

Behavioural studies led him to an extended comparison of Small and Essex Skipper activity - a difficult task- but it led him to conclude that whilst differences might exist, he was not able to reliably record them. For many other species he was able to discern a characteristic set of differences.

At the conclusion of his talk he allowed himself to be drawn into some general observations at the instigation of the audience. He reckoned that the Painted Lady is now partially a British resident and that the Wall still remains scarce. Small Heath numbers are steadily declining but the rise of



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the Comma and Ringlet continues. On climate change he would not commit himself save to note that he had recorded eleven butterfly species during October 2008...!

Literature

Owen distributed literature in which he gave a general overview of butterfly data for the 37 species he had recorded in Wyre.

He categorized the insects in three ways:

Stable (no real changes though some seasonal variations)
12 species

- Common - Large Skipper, Brimstone, Common Blue and Meadow Brown.
- Fewer records but most years: Wood White, Purple Hairstreak, Green Hairstreak, Small Copper, Small White, Large White.
- Variable from year to year: Painted Lady and Clouded Yellow.

Declining (with last period seen where relevant)
13 species

- Small and Essex Skipper, Dingy Skipper, Grizzled Skipper, White-letter Hairstreak (early 1980's), Small Tortoiseshell, Small Pearl-bordered Fritillary, Pearl-bordered Fritillary, High Brown Fritillary (mid 1980's), Dark Green Fritillary (mid 1980's), Marsh Fritillary (early 1960's), Wall (1986), Small Heath.

Expanding (with first period seen where relevant)
12 species

- Orange Tip, Holly Blue, Red Admiral, White Admiral (early 1980's), Peacock, Comma, Silver-washed Fritillary, Speckled Wood, Marbled White (irregular trend from 1970's to present times), Gatekeeper, Ringlet and Green-veined White.

Owen has, over the course of time, used what is a fairly well known traditional Index of Diversity for butterflies. A set of selected values based on his most comprehensive transect method is given below.

With approaching 1 million individual records at his disposal, we can see the outcome when Owen utilizes some of the sets to illustrate its application. The results currently appear to make an intriguing

contribution to debate on trends in butterfly conservation on the selected Wyre sites.

THE BROWN HAIRSTREAK (*THECLA BETULAE*)

John Tilt

John Tilt: John is the Reserve Manager at Grafton Wood and also co-ordinator for Butterfly Conservation's recording transects in the West Midlands. He has been involved in the Brown Hairstreak Project for 11 years and has been a keen bird and butterfly recorder for much longer.

The Brown Hairstreak is a nationally elusive insect. Its history in Worcestershire mirrors this, in that older records existed for a scattering of sites such as Trench wood, but a long absence of records suddenly ended when painstaking work by Jack Green in 1970 re-discovered it in Grafton Wood. The purchase of the site for Worcestershire Wildlife Trust (and Butterfly Conservation) has given the butterfly a valuable foothold in the midst of the County and has provided important opportunities for study of its life history.

John is indeed fortunate to have had the task of overseeing much of the activity subsequently focused on the Brown Hairstreak. In recent years it has become possible to gain a very good grasp of the life cycle, dates of likely emergence and distribution both here and in the immediate vicinity. Work of interest involves studies of additional aspects such as predation, but of salient importance is the ongoing project on appropriate conservation practice. Much of this has been dependant on a careful study of the hairstreak's life history at Grafton, which John described in detail as the talk unfolded.

The secretive habits of adults have always made life difficult for the observer. Males like to spend their time at the top of trees and females, although seen more readily, are still unlikely to be spotted by the casual lepidopterist. These factors led Grafton workers to concentrate on watching Blackthorn shoots (the larval

$$\text{Diversity} = \frac{N(N-1)}{\sum n(n-1)} \quad \begin{array}{l} N = \text{total number of observations.} \\ n = \text{number of individuals for each species.} \end{array}$$

A set of selected values based on his most comprehensive transect method is given here:

Area	year	1971	1976	1981	1986	1991	1996	2001	2006
Silligrove and Sturt		9.5	10.4	10.9	8.8	Insufficient records			
Earnwood, Pipe & Longdon	Data inadequate	80's ave 7.9			7.2	7.0	6.3	5.5	
Button Bridge	Data inadequate				6.4	8.9	9.3	10.4	11.7



Brown Hairstreak (*Thecla betulae*)

John Tilt



foodplant) for the fairly conspicuous eggs. Observations from that point revealed egg-laying in August (even until October in recent times!). This took place at nodes in the young blackthorn shoots. This was followed by overwintering of the ovum until April when photographs taken, revealed the young emergent larva entering a leaf bud and eating its way to the centre. Studies suggested that the developing larva remained on leaves close to the oviposition site and were usually feeding from April to the middle of June. Pupation took place from the period from then until July (ants had been noticed investigating pupae).

Emergence of adults provided some major surprises, because the importance of master trees (usually ash) became apparent. These might also be designated as 'assembly' trees and were of sufficient size to stand out from the surrounding woodland. Observers noticed hairstreaks emerging from around 8 until 11a.m. and flying to the tops of these trees. There they remained for extensive periods (previously mentioned) apparently feeding on honeydew produced by aphid colonies - often prolific on ash. Mating flights took place in the vicinity of the tree followed by more general dispersal. The subsequent behaviour saw long periods of nectaring on flowers such as Bramble. During periods such as this it was possible to get good close views of the adult insects. Females searching for egg-laying sites would then move to Blackthorn, 'tasting' the leaves and crawling about to see that the plant was 'authentic' before ovipositing.

Drawing upon general concepts emerging from such studies, conservation practice was formulated. It was necessary to see that young Blackthorn shoots remained in good quantity, so appropriate cutting and planting regimes were put in place. The importance of maintenance of the open spaces within the woodland itself where hairstreak activity had been regularly observed meant that coppicing / pollarding practice also remained on the agenda. A Farm Stewardship scheme was devised for the hedges extending outward from the wood in a widespread local network. It had been noted that Blackthorn was present in most of the hedges and farm owners had the life cycle of the hairstreak explained to them so they could see a few relatively simple steps that would allow the rare insect to proliferate. The steps included:

- freeing Blackthorn in hedges and allowing some cut strips by hedges to enable it to sucker.
- ensuring that patterns of hedge management were appropriately varied. A good butterfly hedge might contain short sections fairly heavily cleared, followed by lightly cut sections, laid elements and (most importantly) retained elements such as short mature sections including the hedgerow boundary trees of the traditional Worcestershire countryside.
- developing a cycle of hedgerow management that would reflect the need to deal with these different elements sequentially.
- avoiding excessive use of flailing. This might be essential along some roads but should be kept to a necessary minimum.

A review of Brown Hairstreak threats suggested that indiscriminate flailing was a major mechanical factor and of natural threats, predation by birds might account for 74% loss of larvae.

John's most informative talk concluded by warming the hearts of assembled lepidopterists with the information that the Brown Hairstreak has been reported from some 130 one km squares in the adjoining parts of the County. A significant breakthrough in conservation of a rare butterfly can indeed be credited to Worcestershire naturalists.

TACHINIDS

Mick Blythe

On this occasion the audience had the privilege of hearing one of Worcestershire's most accomplished entomologists speaking on parasitic Diptera – Tachinid flies. The topic could hardly have been particularly popular in a room full of lepidopterists, but all

recognized the significant part this remarkable family regularly plays in the lives of countless butterflies and moths every year by destructive internal parasitism of larval stages. Mick hinted to the audience that his interest in the family has evolved to a stage where he is beginning to fully appreciate many of the taxonomic problems involved – he is currently engaged in a personal learning process and might not be able to do full justice to his subject.

He started by explaining the key features that distinguish Tachinid flies from their closely similar allies. We heard of meral bristles and the subscutellum – neatly illustrated and soon a variety of different insect would be unfolded for us. Alas – as Mick explained – study of parasitic flies was not quite straightforward! Several authors had written keys with two authors recently central to tachinid identification literature having a radically different approach.

Van Emden had written the first comprehensive key- lots of small but detailed pictures and descriptions of phenology and host preferences, but a key with focus on references to small and often inconspicuous characters. Nascent tachinid workers loved reading about the insects but found it pretty difficult to get into a position where they could confidently believe they had correctly identified one. This key was admirable in many ways but was partly built on rather inflexible notions that taxonomy would remain stable – it has not and the work is now of reduced value. More recently we had Robert Belshaw's



Caption 1.
Carcelia bombylans, a tachinid parasitoid of Lepidoptera larvae. Most *Carcelia* species are parasitoids of hairy caterpillars, attaching their eggs directly to the hairs. Hawkbatch, Wyre Forest, 24/06/08.



Caption 2.
Linnaemya vulpina, a tachinid parasitoid of Lepidoptera larvae, in the UK usually *Lycophotia porphyrea* (Lepidoptera: Noctuidae), the True Lover's Knot moth. This host is a heathland species, the caterpillar feeding on heather. However this fly was caught by Kevin McGee beside a woodland track in Postensplain, Wyre Forest, 05/07/08.

key. He went to the opposite extreme, producing a key much easier to navigate, but with descriptions rather scanty so the user was presented with the alternative dilemma. Belshaw had given a 'key to a door to a house that wasn't there.' This key is still very valuable however, the biological notes and host lists being important to any student of these flies.

The formation of the Tachinid Recording Scheme has been the most significant recent development. Tachinid workers have cooperated to iron out difficulties in a variety of different areas and a very good set of pictures now exists on their website. Our speaker was quick to acknowledge the value of input from the scheme and recommends that anyone with a developing interest should contact it as a matter of priority. Those involved are usually ready to assist beginners in identification of specimens. Breeding records are of great value and use of the group to ensure correct identifications makes excellent scientific sense.

In discussion of special larval properties, Mick noted that parasitic larvae may enter the host in a variety of ways but when in situ tend to do one of three things. They either remain at the site of entry, breathing external air via a respiratory funnel partly constructed by the host as a wounding response, or migrate to specific tissues or remain in the haemocoel. An overview suggests that many larvae are capable of flexibility in these matters, so may alter both their behavior and also sites within the



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host, as development takes place. These factors have greatly contributed to the 'success' of the Tachinidae in their parasitic role.

The initial stages of tachinid attack were of great complexity and interest. Eggs of different species showed great variability in rate of development. Some ancestral types laid on unprotected caterpillars, would remain inactive for several days. Others such as *Nemorilla floralis* lays fully incubated eggs that hatch virtually on contact with a host.

Different species groups also tended to employ different ovipositing strategies. *Carcelia* species attacking hairy caterpillars, glued eggs to the hairs. *Eurythia* species laid eggs on the host's foodplant and the hatching larva 'grabbed' the passing caterpillar. The eggs of the common *Lydella stabulans* rapidly hatch in the vicinity of hosts and travel about to find them. *Pales pavidus* eggs are not active but develop when eaten by a passing host caterpillar. It is often true that species which sprinkle their eggs over the leaves of the foodplant to be eaten by the host produce the greatest number of eggs. However the eggs of these species are very tiny, so the overall "reproductive investment" is probably comparable to that of the species which expect more from their maggot and so produce a larger and more expensive egg.

The adult female tachinids are also structurally complex with many and varied reproductive adaptations. Uterine adaptation may allow for the very different developmental periods previously mentioned and a number of females have strongly developed ovipositors or 'piercers' that can penetrate a host integument.

Mick reminded the audience that there were over 250 species of British Tachinidae. That coupled with the fact that very few have only one host, made for the success of the family. This was compounded when we appreciated that several had very many hosts and that many parasitic larvae might develop from a single caterpillar in certain cases. He also emphasized that the group did not entirely focus attacks on butterfly and moth larvae - groups such as bugs, beetles and earwigs also fell victim to some of the more specialized representatives.

He emphasised the importance of confirming the identification of the host species and the collection of more information about the life cycle. Identifying a tachinid seen feeding on a nectar source is one thing; the identification of a tachinid seen emerging from an identified species of caterpillar is quite another! It is vital data about the ecology of two

different species. The serendipitous nature of such data makes it even more valuable.

The time available had not enabled Mick to be more expansive and the nature of the questions from the floor showed that a whole morning might easily have been devoted to this complex group of insect - so critical and influential in entomological ecosystems. The audience was left coming to terms with the presence of 'ambush maggots' and this may have made them glad to see the conclusion of Mick's finely crafted and well illustrated lecture.

GARDEN MOTH SCHEME

Dave Grundy

Dave has been studying and recording moths extensively across the region and is well known for his dedicated moth research, excellent training courses and leadership of the Wyre Forest Moth Group. In addition Dave conceived and now co-ordinates the Garden Moth Scheme which has many contributors from across the country.

Entomological Day gave Dave an excellent opportunity to further promote his now well – established Garden Moth Scheme. It had its origins in 2003 and garden trapping took place in 50 West Midlands Region gardens until 2007. These early years produced predictable results for some garden species but data also showed unexpected features and it was felt that the growth of the scheme into a national enterprise might enable everyone not only to see if patterns revealed were similar across the country but also would enable a vastly greater volume of information to be gathered. The number crunchers would also begin to take a real interest as the application of statistical procedures became a realistic route for determining the validity of trends etc. Currently 148 gardens are involved.

As the project gathered momentum, a very practical website came into being and it now offers a useful all-round service to anyone thinking of running a moth trap in the garden. At the time of writing it is possible to download 'GMS News' dating from Autumn 2007. Additional items available include assistance in moth identification and how to run a trap in the garden effectively and record your findings. The recording forms are in a variety of different formats and are also designed for recorders in different regions.

The 'Notes from Contributors' sections in the newsletters are fascinating, covering both events in individual gardens and the occasional surprise when a scarce moth puts in an appearance. You can also

	<u>The Ten Commonest UK Garden Moths</u>	Total moths	148 Gardens. Average per Garden
Position	Common Name		
1.	Large Yellow Underwing	2345	15.84
2.	Setaceous Hebrew Character	2252	15.22
3.	Light Brown Apple Moth	1371	9.26
4.	Lunar Underwing	1139	7.70
5.	Square-spot Rustic	912	6.16
6.	Common Marbled Carpet	884	5.97
7.	Lesser Yellow Underwing	783	5.29
8.	Blair's Shoulder-knot	478	3.23
9.	Snout	410	2.77
10.	Black Rustic	408	2.76

access the 'Chat site' to share information with those already recording for the scheme. The website gives information about its own general meetings and also those of Butterfly Conservation's English Moth Recording Scheme.

Dave rapidly summarized many aspects of his scheme and pointed out a number of trends that appear to have become established during its duration, some showing species possibly having an alarming decline in numbers. This brief account concludes with a table of popular favourites taken from his 2008 report. Typing 'Garden Moth Scheme' and specifying 'UK' will enable speedy access using any search engine on your computer.

CONCLUDING THE DAY

Before the audience departed there was time for some questions and then Professor Limbrey concluded the main proceedings. Mike Bloxham thanked her for chairing the meeting and commended Mick Blythe for much organizational input. He acknowledged the usual debt we had to Rosemary Winnall for her great enthusiasm in general oversight of the event. We were privileged to hear Rosemary herself provide the closing words. We were again indebted to the administrators of Heightington Hall for permitting us to host the event there.



L-R Rosemary Winnall, Mick Blythe, Dave Grundy, John Tilt, Owen Tudor

Tony Wood